

**MATERNAL COMPLICATIONS AMONG WOMEN MANAGED THROUGH  
FOCUSED ANTENATAL CARE IN PUBLIC COUNTY HOSPITALS IN NAIROBI  
CITY COUNTY, KENYA**

**MUKHWANA RAHELI MISIKO (BScN)**

**Q139/CTY/PT/24922/2013**

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE AWARD OF A DEGREE OF MASTER OF PUBLIC  
HEALTH (REPRODUCTIVE HEALTH OPTION) IN THE SCHOOL OF PUBLIC  
HEALTH AND APPLIED HUMAN SCIENCES OF KENYATTA UNIVERSITY**

**OCTOBER 2020**

## DECLARATION

### Student's declaration

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

Signature ..... Date .....

Mukhwana Raheli Misiko - Q139/CTY/PT/24922/2013

Department of Population, Reproductive Health and Community Resource Management

### Supervisors' certification

We confirm that the work reported in this thesis was carried out by the candidate under our supervision.

1. Signature ..... Date .....

Professor Margaret N. Keraka

Dean School of Public Health and Applied Human Sciences

2. Signature ..... Date .....

Dr. Meshack Onyambu

School of Pharmacy

Department of Pharmacognosy, Pharmaceutical Chemistry & Pharmaceutics and Industrial Pharmacy.

## **DEDICATION**

This thesis is dedicated to my family for their support, humble time, prayer and words of motivation.

## **ACKNOWLEDGEMENT**

First, I would like to thank God Almighty for giving me good health, source of knowledge and wisdom through which the completion of this thesis was completed.

My sincere gratitude goes to my supervisors, Prof Margaret Keraka and Dr Meshack Onyambu for their generous contributions, positive criticisms, advice and commitment in guiding me through the entire process of developing this thesis.

Special appreciation goes to Kenyatta University, School of Public Health and Applied Human Sciences and the Department of Population, Reproductive Health and Community Resource Management, especially my lecturers for their maximum cooperation, extra devotion and help to made me successfully undertake this course.

I am also thankful for the invaluable input and cooperation of Nairobi City County and study respondents for their willingness to participate in this study.

Lastly, I am greatly indebted to my family, friends and relatives for their financial, moral and spiritual support without which this work could not have been a success.

God bless you all.

## TABLE OF CONTENTS

DECLARATION .....	ii
<b>DEDICATION</b> .....	iii
<b>ACKNOWLEDGEMENT</b> .....	iv
LIST OF TABLES .....	viii
LIST OF FIGURES.....	ix
ABBREVIATIONS AND ACRONYMS .....	x
DEFINITION OF TERMS.....	xi
ABSTRACT.....	xii
<b>CHAPTER ONE: INTRODUCTION</b> .....	<b>1</b>
1.1 Background of the study .....	1
1.2 Problem Statement .....	2
1.3 Justification .....	3
1.4 Research questions .....	4
1.5 Null hypothesis .....	4
<b>1.7 Delimitation and Limitation</b> .....	<b>6</b>
<b>1.7.2 Delimitation</b> .....	<b>6</b>
1.6.2 Limitation.....	6
1.7 Conceptual Framework.....	7
<b>CHAPTER TWO: LITRATURE REVIEW</b> .....	<b>8</b>
2.1 Maternal Health.....	8
<b>2.2 Antenatal Care</b> .....	<b>10</b>
2.2.1Description of antenatal care.....	10
2.2.2 Benefits of antenatal care .....	11
2.3 Focused Antenatal Care .....	11
2.3.1 Aim and objective of FANC .....	13
2.3.2 Focused Antenatal Care in Kenya.....	14
2.4 Demographic and socio-cultural factors and FANC .....	15
<b>2.5 General Knowledge on FANC</b> .....	<b>18</b>
<b>2.6 Attitude towards utilization of FANC</b> .....	<b>19</b>
<b>2.6.1 Women’s perspectives on FANC</b> .....	<b>19</b>
<b>2.6.2 Health care workers perspective on FANC</b> .....	<b>20</b>
<b>CHAPTER THREE: MATERIALS AND METHODS</b> .....	<b>22</b>
3.1 Research Design.....	22

3.2	Variables .....	22
3.2.1	Dependent variables .....	22
3.2.2	Independent variables.....	22
3.2.3	Intervening variables .....	22
3.3	Location of the study.....	22
3.4	Study population .....	23
3.4.1	Inclusion criteria.....	24
3.4.2	Exclusion criteria.....	24
3.5	Sampling techniques .....	24
3.6	Sample size determination .....	25
3.7	Construction of research instruments .....	26
3.8	Pre-testing of tools .....	26
3.8.1	Validity and Reliability .....	27
3.9	Data Collection techniques.....	27
3.10	Data analysis .....	28
3.11	Legal and Ethical considerations.....	28
	<b>CHAPTER FOUR: RESULTS .....</b>	<b>30</b>
	<b>4.1 Socio-demographic characteristics of respondents .....</b>	<b>30</b>
4.2	Association between socio-demographic factors and maternal outcomes .....	31
4.3	Maternal complications .....	34
4.3.1	Presence of maternal complications .....	34
4.4	FANC knowledge factors.....	36
4.4.1	Respondents responses on questions on knowledge of FANC .....	36
4.4.2	Respondents' knowledge level on FANC .....	38
	<b>4.4 Women's attitude towards FANC .....</b>	<b>39</b>
<b>4.4.1</b>	<b>Respondents' responses on attitude towards FANC .....</b>	<b>39</b>
<b>4.4.2</b>	<b>Level of attitude towards FANC .....</b>	<b>41</b>
<b>4.4.3</b>	<b>Association between attitude towards FANC and maternal complication .....</b>	<b>42</b>
	<b>CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>43</b>
<b>5.1</b>	<b>Discussions .....</b>	<b>43</b>
<b>5.1.1</b>	<b>Socio-demographic factors .....</b>	<b>43</b>
<b>5.1.2</b>	<b>Maternal complications .....</b>	<b>45</b>
<b>5.1.3</b>	<b>Knowledge on FANC .....</b>	<b>47</b>
<b>5.1.4</b>	<b>Women's attitude towards FANC.....</b>	<b>50</b>

<b>5.2 Conclusions</b> .....	52
5.3 Recommendations .....	53
5.3.1 Recommendations from the study .....	53
5.3.2 Recommendations for further study .....	53
REFERENCES .....	54
APPENDICES .....	58
Appendix i: Consent form for Health Workers .....	58
Appendix ii: Consent for Mothers .....	60
Appendix iii: Questionnaire for Mothers .....	62
Appendix v: Key Informant Interview Guide .....	66
Appendix viii: Research authorization from National Council for Science, Technology and Innovation .....	69
Appendix x: Map of study area .....	71

**LIST OF TABLES**

Table 2.1: WHO guidelines on focused antenatal care.....	12
Table 3.1: Sampling frame.....	26
Table 4.1: Socio-demographic characteristics of respondents.....	31
Table 4.2: Association between socio-demographic characteristics and maternal complications among respondents.....	33
Table 4.3: Distribution of maternal complications per hospital.....	34
Table 4.4: Association between mode of delivery and maternal complication among respondents.....	35
Table 4.5: Responses on knowledge on FANC among respondents.....	38
Table 4.6: Association between knowledge levels and maternal complication among respondents.....	39
Table 4.7: Responses on attitude towards FANC among respondents.....	41
Table 4.8: Association between attitude and maternal complications among respondents...	42

**LIST OF FIGURES**

Fig 1.1: Conceptual framework.....	7
Fig 4.1: Maternal complications among respondents.....	34
Fig 4.2: Types of maternal complications among respondents.....	35
Fig 4.3: Knowledge level on FANC among respondents.....	39
Fig 4.4: Level of attitude among respondents .....	42

**ABBREVIATIONS AND ACRONYMS**

ANC	Antenatal care
FANC	Focused antenatal care
HIV	Human Immunodeficiency Virus
JHPIEGO	John Hopkins Program for International Education in Gynecology and Obstetrics
KDHS	Kenya Demographic and Health Survey
KNH	Kenyatta National Hospital
SDGs	Sustainable Development Goals
MDHS	Malawi Demographic and Health Survey
MMR	Maternal Mortality Ratio
MOH	Ministry of Health
NHMB	Nairobi Health Management Board
STI	Sexually Transmitted Infection
SPSS	Statistical Package for Social Sciences
TTV	Tetanus Toxoid Vaccine
UNICEF	United Nations Children's Fund
UNFPA	United Nations Funds for Population Activities
UoN	University of Nairobi
WHO	World Health Organization

## DEFINITION OF TERMS

Focused Antenatal care	Care given during the antenatal period. It is individualized, targeted to make assessment that is cost effective with evidence based intervention
Maternal complication	Complication experienced during pregnancy, childbirth and after delivery.
Maternal death	The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.
Maternal mortality	Refers to the death of a woman while pregnant and 42 days after a termination of a pregnancy not related to accidental causes.
Maternal mortality ratio (MMR)	The number of maternal deaths during a given time period per 100 000 live births during the same time.
Neonatal mortality rate	The number of neonatal deaths per 1000 live births. A neonatal death is defined as death during the first 28 days of life (0-27 days).
Skilled birth attendants	The people with midwifery skills (midwives, doctors and nurses with additional midwifery education) trained to proficiency in the skills necessary to manage normal deliveries and diagnose, manage or refer obstetric complications.
Women of Reproductive age	Women between the age of 15 years and 49 years

## ABSTRACT

Focused Antenatal Care is antenatal care that provides individualized counseling, targeted assessment and provides safe, cost effective, and evidence-based intervention. The noted public health major problem has been maternal mortality in developing countries. Majority of maternal deaths occur due to complication during pregnancy and eventual child delivery. The rate of maternal mortality was estimated at 686/100,000 live births in Sub-Saharan Africa. In Kenya maternal mortality rate is at 362/100,000 live birth. The implementation of Focused Antenatal Care was a strategy aimed at improving maternal health in developing countries. Utilization of Focused Antenatal Care has influenced pregnancy outcomes and this varies from country to country. This study therefore aimed at investigating maternal complications among women managed through Focused Antenatal Care in selected public county hospitals in Nairobi City County, Kenya. The study was conducted in postnatal wards of Mbagathi, Mama Lucy Kibaki and Pumwani Maternity Hospitals. The study adopted a cross-sectional descriptive study design. The study used quantitative and qualitative data collection methods. Quantitative data was collected using questionnaires administered to women in their postnatal period who had attended their antenatal care clinics at the selected public county hospitals. A total of 397 postnatal women were interviewed for the study. Qualitative data was collected using Key Informant Interview guides with 12 health care providers who were involved in provision of focused antenatal care services to clients. Quantitative data was analyzed using Statistical Package for Social Sciences to generate descriptive statistics and results presented as frequency tables, bar graphs, pie charts and percentages. Qualitative data from key informants was triangulated with quantitative data as direct quotes and narrations. Inferential statistics were done using Chi Square tests to determine the association between study variables at 95% confidence interval ( $p < 0.05$ ). Before data collection, the study sought approval from Kenyatta University Graduate School, ethical approval from Kenyatta University Ethics and Review Committee, research permit from the National Commission for Science, Technology and Innovation, research authorization from Nairobi City County, research permission from relevant hospital management and consent from study respondents. The study was conducted between 2<sup>nd</sup> January to 28<sup>th</sup> February 2019. The study results revealed that 30% of respondents reported to have encountered a maternal complication during their current delivery outcome. Socio-demographic factors such as age ( $p=0.002$ ), occupation ( $p=0.001$ ), income ( $p=0.011$ ), number of deliveries (0.001) and mode of delivery ( $p=0.001$ ) were significantly associated with maternal complications. The study results further revealed that 54.7% of respondents had high knowledge levels with 63.7% having positive attitude towards FANC utilization. Knowledge level of FANC was significantly associated ( $p=0.017$ ) with maternal complications among respondents. The study concludes that the women managed through FANC from Nairobi City County had relatively low maternal complications with majority of socio-demographic characteristics playing a significant influence. The respondents further had high knowledge levels and positive attitude towards FANC utilization. These results would be of use to the Ministry of Health for purposes of health education, policy formulation and implementation concerning workable short and long-term maternal and child health interventions. This will ensure strict adherence to FANC utilization thus improved maternal outcomes during pregnancy and eventual child delivery.

## CHAPTER ONE: INTRODUCTION

### 1.1 Background of the study

Reduction of maternal and neonatal mortality remains a major challenge to attaining global social and economic development. A reduction in maternal mortality ratio (MMR) has been witnessed globally. Maternal mortality ratio (MMR) in Sub-Saharan Africa is still high despite the strategies and interventions (Hogan et al. 2010). Maternal mortality is still a huge public health problem as 99% of all maternal mortality rates occur in developing countries. The rate of MMR in developing countries stands at 239 per 100,000 live births and 12 per 100 000 live births in developed countries in 2015 (WHO, 2015)

The maternal mortality rate was estimated to be 686 per 100,000 live births in 2015 in sub-Saharan Africa (UNICEF, 2016). The United Nation Sustainable Development Goals (SDG) goal number 3 and target number one aims at improving maternal health by reducing maternal mortality ratio to less than 70/100,000 live births (Tadele, 2017). It was expected that the goal be achieved by an annual decline of maternal mortality by 5.5% antenatal deaths and childbirth by between 1990 and 2015, which fell, by only 1.7% (WHO, 2012). This target was not been met by countries in the Sub-Saharan region.

Studies across the world have shown that Focused Antenatal Care is effective in lowering the negative pregnancy outcomes including, stillbirths, maternal morbidities and mortalities (WHO, 2014). Developing countries addressed maternal mortality by implementing Focused Antenatal Care, introduced by World Health Organization (WHO) in 2001 and gave direction on the implementation of the new ANC model. This model required that the pregnant woman would attend ANC four times during the pregnancy (Pattinson, 2016). The Focused visits were to help in improving the maternal and neonatal outcomes.

Death related to maternal and perinatal period occur to women who have not received any antenatal care. Access to ANC in low resource countries is at 70% and 95% in the industrialized countries (Tadele, 2017). Kenya introduced Focused antenatal care (FANC) antenatal clinics so that the monitoring of complications of pregnancy is identified early and mothers referred appropriately (Gitonga, 2016). Focused antenatal care targets to optimize antenatal visits for the low resource countries, where the caregiver and the mothers should be able to optimize the visits (Vogel et al., 2013). The limited number of ANC visits is because of the cost and other barriers to ANC access and thus the 4 FANC visit model (Pattinson, 2016).

## **1.2 Problem Statement**

Good care during pregnancy is important for the health of the mother and the development of the unborn baby. Inadequate care breaks a critical link in the continuum of care, and affects both the mother and baby (WHO 2016)

The Ministry of Health in Kenya adopted the WHO model of FANC. This model was debatable considering that Kenya's health care system had some weakness (Gitonga, 2016). The requirements and re-organization of the new antenatal services would pose a challenge to them. The government of Kenya continues to face logistical, insufficient involvement with the stakeholders, budgetary planning and high staff turnover. This affects the implementation and sustainability of health service provision (MOH, 2015).

Pregnant women in Kenya underutilize antenatal care services (Chweya et al, 2018). They make their first visit in their second trimester of pregnancy and hardly attend the four recommended FANC appointments (KDHS, 2014). About 90% of the pregnant women attend the first visit and this keeps on reducing in the second, third and fourth visit (KDHS, 2014). Despite strategies put in place like free maternity and Linda mama initiative managed

by the National Hospital Insurance fund, the maternal mortality in the country has remained high at 362 per 100,000 live births in the country and 212 per 100,000 live births in Nairobi County (KDHS 2014). The study will investigate maternal complications among women managed through FANC in public county hospitals in Nairobi, Kenya.

Nairobi county hospitals is unique in that the population is cosmopolitan and is the capital city of Kenya. The population in Nairobi is of diverse background and thus a representation of the country's population. Mama Lucy Kibaki Hospital, Pumwani Hospital and Mbagathi Hospital are the only county public hospital in Nairobi County. They are referral hospitals of the other smaller facilities in their jurisdiction and between the hospitals; they provide delivery services to over 20,000 women every year.

### **1.3 Justification**

The WHO introduced FANC in an effort to improve maternal and neonatal health in challenged resource countries (Tadele, 2017) introduced FANC. As a result, its utilization, pregnancy outcomes and acceptability by the pregnant women and health workers improves the pregnancy outcomes and reduces the morbidity and mortality. Evidence shows that FANC improves the quality of care and it is acceptable among the ANC clients (Chweya et al, 2018).

Factors such as socio-demographic characteristics, availability and utilization of ANC services during pregnancy, perception on barriers associated with proper utilization of ANC services, system related factors, and knowledge and attitude associated with antenatal services have continually been associated with ANC attendance. Understanding of their epidemiology remains limited in Kenya (KDHS, 2014).

To improve utilization and early enrolment and of ANC services, it was important to determine the associated factors with a view of improving maternal outcomes. Maternal

morbidity has a high costs incurred in treating women because of pregnancy related complications. This calls for urgent need to determine the associated factors.

In Kenya, 90% of pregnant women utilize ANC services at least once and only 58% completed the prescribed four visits (KDHS, 2014). Proper timing of ANC visits would help detect complications and inform mothers on early danger signs in pregnancy thus reduce maternal mortality (WHO, 2016). Despite all this, the MMR remains unacceptably high at 362/100,000 with about 30% of women sustaining lasting complications (KDHS, 2014).

#### **1.4 Research questions**

- 1) What is the proportion of maternal complications among postnatal women managed through Focused Antenatal Care in Public county hospitals in Nairobi City County?
- 2) What is the relationship between socio-demographic factors and maternal complications among postnatal women managed through Focused antenatal care in public county hospitals in Nairobi City County?
- 3) What is the level of knowledge on Focused Antenatal care among postnatal women managed through FANC in public county hospitals in Nairobi City County?
- 4) What is the association between mothers' attitude towards FANC and maternal complications amongst women managed through FANC in public county hospitals in Nairobi City County?

#### **1.5 Null hypothesis**

Socio-economic factors, knowledge level and mothers' attitude towards Focused Antenatal Care does not influence maternal complications among women attending public county hospitals in Nairobi City County, Kenya.

## **Study Objectives**

### **1.6.1 Broad Objective**

To investigate the occurrence of maternal complications of women managed through Focused Antenatal Care in public county hospitals in Nairobi City County.

### **1.6.2 Specific Objective**

1. To find out the proportion of maternal complications among postnatal women managed through Focused Antenatal Care in Public county hospitals in Nairobi City County.
2. To determine the relationship between socio-demographic factors and maternal complications among postnatal women managed through Focused antenatal care in public county hospitals in Nairobi City County.
3. To determine the level of knowledge on Focused Antenatal care among postnatal women managed through FANC in public county hospitals in Nairobi City County.
4. To examine the association between mothers' attitude towards FANC and maternal complications amongst women managed through FANC in public county hospitals in Nairobi City County.

### **1.6 Significance and Anticipated Output**

The quality of Focused Antenatal Care is a major step, which was used by the Ministry of Health to improve pregnancy outcomes and reduce morbidity and mortality in the public health facilities in Kenya. The study evaluates the socio-economic factors, knowledge levels and attitude towards Focused Antenatal Care and maternal complications. The results of this study will help to strengthen the capacity of Focused Antenatal Care usage. The results also encourage sustained use of the service and improve customer satisfaction. It also empowers

women seeking antenatal care to make their own informed decision. The results forms a knowledge base for future reference as it adds to the existing literature on FANC utilization.

## **1.7 Delimitation and Limitation**

### **1.7.2 Delimitation**

The study was only bound to the three county public hospitals in Nairobi City County. These was conducted among the postnatal mothers in the postnatal wards who had been managed through FANC. The study involved talking those mothers who were managed under FANC and their files perused to supplement information given. The study sought further in-depth additional information from key informants who were healthcare workers rendering their services in the antenatal clinic in the selected public county hospitals.

### **1.6.2 Limitation**

The study focused on the postnatal mothers seeking their views of their antenatal period rather than the mothers attending antenatal clinic at that time. It also did not include the women who attended antenatal clinics in private, faith-based hospitals that may have better and well-equipped facilities, as their views were not considered.

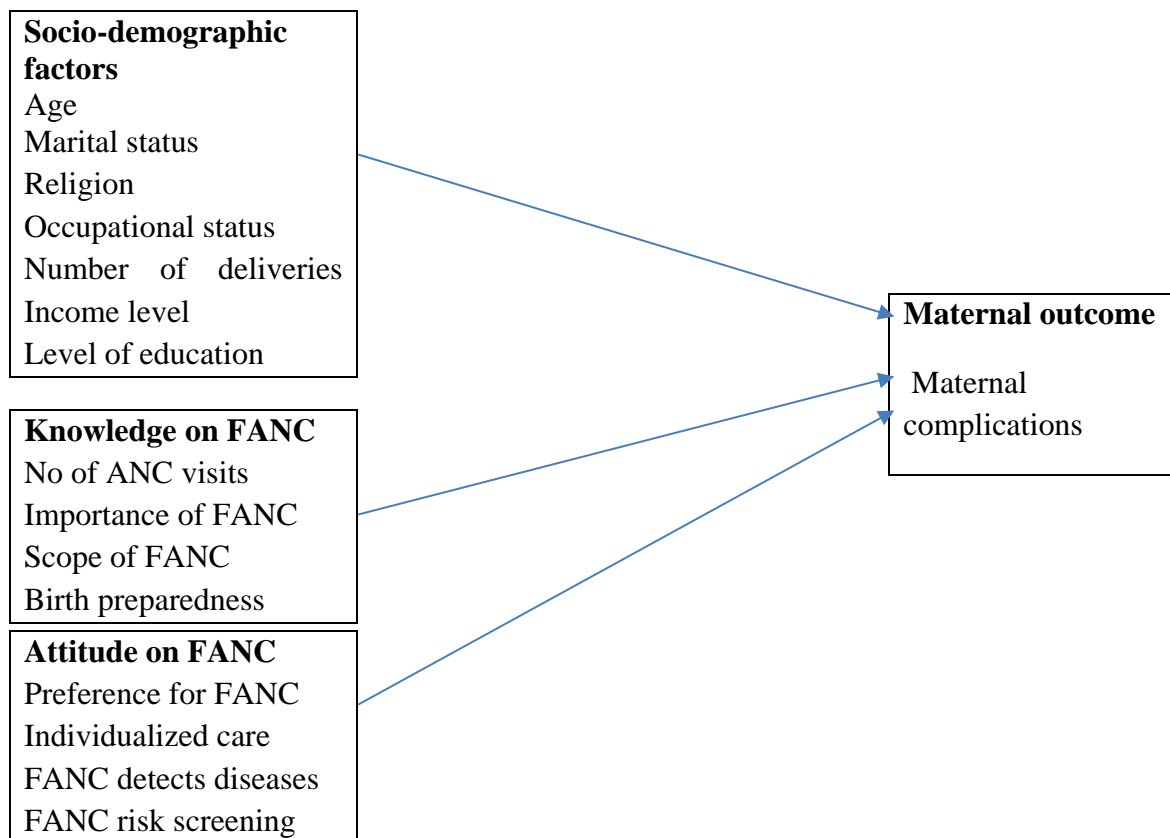
## 1.7 Conceptual Framework

### Health Belief Model

The Health Belief Model, which is a modification of Becker, Maiman and Rosenstock (1974), was the basis for this study. The concept adopted by this model pointed out the needs of the quantitative study to supplement it with the existing body of knowledge. A cognitive theory of behavior, which is the foundation, was developed from the Health Belief Model. According to Bandura (1977), it was said that behavior is based on the behavioral desired outcome. Health behavior is predicted according to the information perceived by the determinant, which is perceived, susceptibility, severity, benefits and other factors, which are associated by engaged behavior.

#### Independent variables

#### Dependent variable



*Fig 1.1: The conceptual framework*

*Source: Adopted and modified from Becker, Maiman and Rosenstock, (1974).*

## CHAPTER TWO: LITRATURE REVIEW

### 2.1 Maternal Health

Medically pregnancy related health is referred to as maternal health. Among the indicators used in determining health in women who are pregnant is nutrition, illness during pregnancy, morbidity and mortality (American Pregnancy Association, 2015). The low-income countries still have a challenge as maternal morbidity and mortality remains a big problem in health care. Maternal mortality ratio (MMR) is expressed as any death related causes per every 100,000 live births (Roback , 2014).

In 2015 there was a decline of maternal deaths by 44% from 385 to 216 per 100,000 live births from 1990. As maternal health continues to be global challenge, Sub-Sahara Africa accounted for 66% of the death followed by South Asia at 22%, according to UNICEF, WHO, and UNFPA (2015). In 2015 the highest region with a maternal Mortality ratio at 546/100,000 was Sub-Saharan Africa which was two thirds of all maternal deaths worldwide (Alkem et al, 2016). At the same time, the MMR in Kenya was 362/100,000 which had reduced from 495 in 1995.

Gaps that seen in the developing countries have led to the increase in their MMR. This has caused great disparities. In 2014 the MMR in Kenya was 362/100,000 live births compared to 5/100,000 live births in Australia during the same period (KDHS, 2014). Towards achieving the MDGs, the decrease of maternal mortality was not straight forward, as the interventions were not going to be simple. There was need to achieve women's right, a good competent health system and skilled birth attendants. The developing countries gained reproductive Age Life Expectancy (RALE) over 5 years in the twentieth century, of which approximately 10%, or half a year, was attributable to reductions in maternal mortality.

According to Canudas-Romo et al. (2014), RALE fluctuated between 0.24 and 1.47 or 6% and 14% in countries in Sub-Saharan Africa.

In developing countries, the cause that is leading in women's death of reproductive age are complications of pregnancy and childbirth (Tsfaye et al, 2018). The mortalities and trauma are preventable and are nonexistent in the first world. Globally, bleeding accounts for 24% of maternal deaths, where 13% is in the high-income countries and 34% in the low-income countries (Say et al, 2014; Tsfaye et al, 2018). Other causes that have fueled MMR in low resource countries is the deficient obstetric care, underutilized antenatal and postnatal care.

Half of maternal mortalities are due to indirect causes such as unsafe abortion, malaria, HIV, anaemia and eclampsia that accounts for half of the maternal deaths (Van den Akkert et al, 2017). In Ethiopia, postpartum hemorrhage accounted for 46.5% of all maternal complications (Tsfaye et al, 2018). In another multi-country survey on maternal complications by Vogel et al, (2014), it was revealed that hypertensive complications were the most common type of maternal complications across majority the countries involved.

There has been reported increase in maternal complications during pregnancy and delivery in the United States. In fact, 45% of deliveries are associated with delivery complications because of lifestyle changes leading to obesity and other lifestyle diseases. It is further worrying that majority of these complications occur among Hispanic women at 40% (Kathryn et al, 2018). Hemorrhage during pregnancy is reported to be the leading cause of maternal complications in USA and other developed countries (Lotte et al., 2017).

The third SDG goal, target number 1 was to improve maternal health, and minimize maternal deaths. WHO advocated improvement of maternal health in the safe motherhood initiative in 1987 in Nairobi, Kenya. These is where International Consortium of United Nation agencies, governments and Nongovernmental organization who were responding to the

increasing levels of the poor health of the neonates and pregnant women in the low income countries. The aim was to ensure that there is reduction by about 70% of maternal mortality by 2015 from 1990 by the pregnancies and deliveries handled safely in all level facilities (Kassebaum et.al 2015).

## **2.2 Antenatal Care**

### **2.2.1 Description of antenatal care**

Antenatal care (ANC) which a pregnant woman receives during pregnancy and it could be both medical and nursing care. These are regular checkups that allow the health worker to detect and treat any disease that could occurs during this period and preventing any health problems that may cause harm to the mother and the unborn baby (WHO 2016). During ANC the pregnant woman is given information concerning her nutrition, appropriate place to deliver, education on the danger signs that she should watch for and when to seek health intervention when the symptoms occur during the period of the pregnancy. These are the signs that would endanger her life and that of the fetus (Nice Clinical Guidelines 2017).

A variety of antenatal care models practiced globally have historical factors like cultural, economic status, human resource and financial resource management especially on how the government allocates to the health sector budget (WHO 2016). The traditional model of prenatal care is used in most developed countries. They have a large number of antenatal visits, about 7 – 10 visits in pregnancy, the visits start early and up to 28 weeks, they would be monthly then continue with weekly visit until delivery. The ANC visits include ultrasound evaluation and frequent tests. The birth is done under skilled birth attendant and with prompt access to emergency treatment if there were any complications. Focused Antenatal Care was incorporated in the low-income countries because the traditional ANC had not successful in low- income countries like Kenya.

According to WHO (2016) antenatal women would visit once or even twice during the advanced stage of their pregnancy. The ten principles that WHO developed were to reflect on the effective antenatal care. That care was to be simplified but comprehensive which was important based on simple procedures, which used appropriate technology, and not sophisticated, or technology that was not complex. The most important principle to be implemented was an efficient referral system (Ngxongo et al, 2001).

### **2.2.2 Benefits of antenatal care**

Contribution in better outcomes in pregnancy was the provision of effective antenatal care, which is also quality care and is timely, (WHO and UNICEF, 2016). The regular visits to the clinic developed confidence between the health care provider and the pregnant woman. It gave the woman individualized health promotion messages and identified maternal complications that would occur. Antenatal visits gave basic services that were individualized, nutritional education, immunization with tetanus toxoid, folic acid and iron tablets (WHO and UNICEF 2015). Where there is absence of antenatal care there has been identification of risk factors and this has led to poor pregnancy outcomes and increase maternal mortality and morbidity, (de Graaf et al, 2013). Inadequate prenatal care identified with bad outcomes in pregnancies, which were low birth weight, small for dates, and preterm births, which increased the neonatal mortality rate (Barker et al 2013)

### **2.3 Focused Antenatal Care**

Individualized care given to an antenatal woman is called Focused Antenatal Care (FANC). The overall health, childbirth preparation, readiness, and early detection of complications are often emphasized. It provides friendly, timely, safe and simple care to an expectant woman and have the same outcomes to the neonates and mothers as those of the ANC model that was traditionally practiced, (WHO and UNICEF 2003). Focused Antenatal Care is goal oriented; where the expectant woman and the fetus are not affected despite, the reduced

number of even though the number of antenatal visits. The visits are targeted and not ordinary, (Ministry of Health 2014). Majority of less developed countries have FANC integrated in the healthcare system.

FANC reduced the time to travel to the clinic, the cost, loss of working hours, waiting time in the clinic, the value of the message and the care of the other children is enhanced (WHO, UNICEF, UNFPA 2014). In Kenya, Ghana and South Africa, studies have shown that both the health workers and the clients accepted FANC. Effective implantation was going to improve the same condition of care, (Pell, et al, 2013). Table 1 outlines the visits with the corresponding gestational age of the FANC model that was recommended by WHO.

**Table 2.1: Clinical Guidelines by WHO on Focused Antenatal Care (FANC)**

First Visit (8-12 weeks)	Second Visit (24-26 weeks)	Third Visit (32 weeks)	Fourth Visit (36-38 weeks)
Confirmation of pregnancy, classification of expectant women for specialized or basic care, calculation of expected date of delivery, screening and treatment of preventable measures given such as tetanus toxoid (TTV), folic and iron supplements, sulfadoxine pyrimthamine	Assessing fetal and maternal wellbeing, development of birth plan, reproductive health counseling and advice, breastfeeding, screening for anaemia and hypertensive disease induced in pregnancy, giving preventive measures such as folic acid and iron supplements. Continue with counseling.	Assessing fetal and maternal wellbeing, check on hypertension, diabetes, anemia in pregnancy and multiple pregnancy. Administer preventive measures like second dose of tetanus toxoid, iron supplements, reviewing the birth plan and emergency plans, Continue with counseling.	Assessing the fetal and maternal wellbeing. Check for pregnancy induced hypertension and diabetes, check for anaemia, two or more babies in this pregnancy and malpresentation. Iron supplements given to prevent anaemia. Reviewing and modifying the birth plan and any emergency that may occur. Advice as per the other visits.

**Source: WHO 2002.**

### **2.3.1 Aim and objective of FANC**

FANC aimed at achieving a good outcome for the baby and mother. This helps in prevention of complications, which may occur in pregnancy, labour, delivery and postpartum period.

The following objectives would assist in achieving this;

Early detection and treatment of complications; the focus is to keep on assessing and examining for infectious diseases and chronic conditions on the pregnant woman. These conditions may endanger the life of the unborn baby and the mother if not taken care of. They are sexually transmitted diseases and infections like syphilis and HIV, tuberculosis, malaria and malnutrition. Other conditions are like anaemia, eclampsia, and fetal malpresentation in the third trimester and vaginal bleeding. Chronic disease like heart disease, diabetes and kidney injury or failure are examined so that the expectant woman and the fetus are not in danger, (JHPIEGO 2007)

Prevention of complications; the health worker ensures that complications are prevented by administering folic acid and iron supplement for the prevention of anaemia, tetanus toxoid to prevent tetanus in the neonate and the woman, providing advice sleeping under an insecticide treated net for the prevention of malaria, prevention of diarrhea and intestinal worms by encouraging environmental hygiene, (JHPIEGO 2007).

Birth preparedness and complication readiness; the health provider gives the pregnant woman a chance to discuss on where or the place that is appropriate for her to give birth. This should be a facility that caters for the health needs of the woman and if she requires a companion during labour, which mode of transport she would use to go to the facility and the items she will require for a clean and safe delivery. She is also taught on the danger signs to look out for, (JHPIEGO 2007).

Health promotion and counseling; the health provider discusses with the pregnant woman. This is to build confidence in the pregnant woman to discuss her fears and ask questions concerning her pregnancy labour and what to expect during the postnatal period. They discuss about drug and substance abuse, nutrition, use of herbs and other medication during pregnancy. She is given options on family planning, immunization and she is counseled on exclusive breastfeeding, (JHPIEGO 2007).

### **2.3.2 Focused Antenatal Care in Kenya**

In all health facilities in Kenya irrespective of which level they are, antenatal care is offered. This is a priority health issues for the Ministry of health and the National coordination Agency for population (NCPD). Kenya incorporated FANC in the national guidelines in 2003 (MOH 2004) and was first piloted in Lugari and Busia Districts (Birungi and Ouma 2006). In Kenya FANC package was made comprehensive with emphasis put on early and timely intervention with the health worker who were skilled and prepared for any complication.

In Kenya, provision of antenatal care is integrated with the MCH welfare clinic. These clinics deal with immunization, under-fives and family planning. Primary health facilities provide 53.7% of the antenatal care services. This includes dispensaries, health centers and sub- county hospitals daily while 2.9.3% are provided at county and referral hospitals and the other 16.4% of antenatal care is provided for by the private institutions. 92% of the pregnant women in Kenya attend antenatal clinic once during the pregnancy while 40% visit ANC 4 times during their pregnancy (KDHS 2014). It was recommended that there should be an average 4 visits during pregnancy.

## **2.4 Demographic and socio-cultural factors and FANC**

According to a study done in Italy by Valentine T. et al (2018), the quality of maternity services was perceived differently in different socio-demographic groups: women's expectations affected satisfaction, but in different ways, in various socio-demographic groups, both during pregnancy and at delivery. The same study also found out that keeping these socio-demographic factors into account in the analysis of satisfaction may help organizations to identify areas where pregnancy and delivery services can be better targeted and where increasing awareness among professionals in their everyday practice is most needed. Demographic, socio-economic and behavioral factors such as age, time and cost of travel to the health facility, big family size and poor access to social support are associated with poor antenatal care attendance have an influence in how women utilize antenatal care (WHO, 2014).

A study done on maternal health care across sub-Saharan Africa found that low level of education, rural residence, and low household income were all associated with poor ANC attendance (McTavish, Moore, Harper, Lynch 2010). Rwanda adopted the previous WHO model of antenatal care, which recommends one visit during each trimester of gestation and a final visit immediately preceding delivery for women without pregnancy-related complications or risk factors, still only a proportion of pregnant women make all four recommended visits during pregnancy. This raises concerns regarding the adoption and implementation of the WHO new guidelines, which recommend that the number of contacts a pregnant woman has with a health provider throughout her pregnancy should increase from four to eight (WHO, 2016).

It has been shown that maternal education also influences the use of the FANC services. A study done in Nepal by Neupane et al (2011) showed that the highly educated women were more likely to use FANC. Similar results were found in 2012 by Namasivayam, which

showed that demographic factors like religion, ethnicity, marital status, occupation and family size also showed some influence.

In a study done in central Nepal, more than half of the women were unaware of the benefits or consequences of antenatal care visits. Varieties of factors including socio-demographic, socio-economic, cultural and service availability as well as accessibility influence the use of maternal health services. Significant results of the study was that maternal age, maternal education, occupation of the parents, economic status and type of family increased the probability of use of antenatal care services during pregnancy. There was association between higher levels of education with greater use of antenatal care services (Srijana and Supendra, 2014)

The cost of health care services, prescription drugs and transportation determine the affordability of health care. Studies in Ghana, Swaziland, Zaire, and Uganda showed a decline in use of health services because of introduction of user fees. Sudan provided free of charge ANC services at public health facilities, however, clients are expected to compensate costs for laboratory investigations and treatment. Communities should further be informed that regardless of age of the woman and parity all pregnant women must be supported to utilize FANC services. Effective use of mass media (radio and TV) is needed to increase public awareness among multiparous women about antenatal care visits, increasing the use of antenatal care (Ibrahim et al, 2012).

The nearer the health facility the more likely that a pregnant woman will attend her scheduled antenatal visits. The distance to the health facility will influence utilization of FANC. Some of the women have to travel long distances to access care. This made the pregnant women visit the clinic once and they would only return if there was a complication during the pregnancy, (Choulagai et al, 2013).

The level of education determines the uptake of focused antenatal care. An increase in the level of education was found to increase the likelihood of FANC uptake. Education is one of the factors that influence utilisation of health services. Women with higher level of education were more likely to attend more antenatal care visits and earlier in their pregnancy. These concurring findings were found in study in Mwingi district (Kitui County), Kenya, where women with secondary level of education and above were more likely to attend ANC than those with lower levels of education (Nzioki, Onyango, and Ombaka 2015).

In a study in the same area (Tharaka Nithi County) by Gitonga and Felarmine (2016), education was also found to influence the place of delivery where women with higher level of education were more likely to deliver in a health facility than those with lower level of education. It was also noted among women in Tharaka sub-county (Tharaka Nithi County, Kenya) birth preparedness was more likely among the more educated than the less educated Gitonga, Keraka and Mwaniki (2014). These implied that education had a critical influence on many aspects of maternal health.

The marital status of women determined uptake of FANC. Married women were more likely to attend the targeted visits as recommended compared to the unmarried. Married women were found to attend the antenatal visits earlier than the unmarried does. This concurs with other studies by Simkhada and colleagues that found that married women were more likely to attend antenatal clinics than the single women were. This is secondary to support from partners and social acceptability of pregnancy. Adolescents and unmarried younger women hid their pregnancy to avoid social embarrassment. This delayed their initiation of antenatal care visits and the single or divorced mothers more likely attended focused antenatal care than mothers who were married (Pell et al, 2013).

The type of employment strongly influenced the uptake of FANC. Women in formal employment were more likely to attend the stipulated antenatal visits compared to those in

non-formal employment. The level of household income influenced FANC uptake. Women from households with higher income had a higher uptake than those from low-income households. The economic status of households and individuals is a determinant of uptake of health services. High cost has been found to be a prohibiting factor to use of antenatal services. Women with high household economic status were noted to attend antenatal visits early and more frequently. The same study also found out that women earning more than a dollar per day were more likely to attend at least four antenatal visits than those earning less than a dollar per day (Nzioki, Onyango and Ombaka 2015).

## **2.5 General Knowledge on FANC**

Significant exposure through mass media, pregnant women would use antenatal services more. This knowledge was critical in the use and acceptability of FANC. In India in the city of Nepal, another study found out that women who watched television were more likely to attend antenatal care. Adequate knowledge statistically has shown to have positive effect on FANC use (Asp G, Petterson K, et al 2014). Similarly, in Nigeria Amosu et al. (2011) found that the health worker and pregnant woman ignorance on FANC was what was affecting the acceptability and the use of FANC.

Although the WHO recommended early ANC before 12 weeks, the gestational age for ANC initiation previously reported varied across countries in Asia and Africa from 12 to 20 weeks (Eleje et. al 2015; Belayneh et. al, 2014 and Haddad et. al 2016). Where ANC improved there was intervention of community health worker who visited the pregnant women. This increased their knowledge of ANC and even the utilization of the ANC services in the health facilities. The community workers were local residents living in the community, thus they had a good understanding of the local lifestyles and beliefs, particularly religious and traditional beliefs, which might affect a woman's attitudes or knowledge toward ANC. It was supported by the lack of knowledge on time to start ANC among pregnant women has

been identified in the studies from Ethiopia and Nigeria (Belayneh et.al 2014 and Eleje et.al 2015).

In a meta-analysis of qualitative studies done by Finlayson and Downe (2013) found that the main reasons for late attendance of women were perceived pregnancy as a normal life event, lack of understanding of ANC benefits, embarrassment, and cultural and/or supernatural implications of pregnancy disclosure. Those reasons are attributed to being unaware of the benefits of early ANC initiation; thus, encouraging women to have early ANC and access core ANC services is required. Evidence of a recent systematic review on regional and global levels and trends of early ANC coverage from 1990 to 2013 without intervention by Moller et al (2017) showed small improvement which accounted for 1% to 3%. They used knowledge–counseling intervention, which improved the utilization of antenatal services.

## **2.6 Attitude towards utilization of FANC**

### **2.6.1 Women’s perspectives on FANC**

A study that conducted in South Africa and Nigeria reported that women started ANC late because they needed to find money for transport and new clothes (Abimbola, et al 2016). These shows that socio-economic status may be associated with the decision to seek health services especially on time to start ANC. In addition, we report that long waiting time has also negative impact in decision to start ANC early. In another study done in Benin, they reported that waiting time was one of the determinants of low utilization of ANC during the first trimester (Edgard-Marius, et al 2015).

Poor attitude of the health workers prevents some women from starting ANC early. Disrespectful care was reported in different settings and impact negatively on the quality of services (Nyondo, Chimwaza, Muula, 2014 and Pell, 2013). This is the strongest predictor

about how responsive service delivery is to those who need them. Women will seek skilled maternal care utilization where there is performance of health facilities. Where there is basic, essential obstetric care in a facility positively contributes to the utilization of all indicators of skilled maternal services. The facility has to have essential services for normal situations and complications and these services should be available 24 hours a day and 7 days a week (Worku, Yalew, Afework, 2013)

The competence of staff in the facility who were capable of handling complications and giving enough information is what the women base their perception of the services they receive this was a study in Malawi with respect to handling complications (Matejić et al, 2014). The findings were different from a study in Mulago, Uganda where only 38% of the mothers revealed that they had received adequate information on the symptoms and expected health problems (Kigenyi, et al 2013). However, in Serbia, mothers were content with the information given regarding their rights during and after delivery by the midwives, which partly support our findings (Matejić, et al 2014).

### **2.6.2 Health care workers perspective on FANC**

The attitude that the health worker has towards the pregnant woman will determine whether the woman will use the antenatal services or not. Many women who receive bad reception and treated with harshness at the health facilities will prefer to give birth under the care of a traditional birth attendant. The villages in Sub-Saharan Africa still house traditional birth attendants, (White Ribbon Alliance 2015). According to Conrad et al. (2011), in a multi study done in Bukina Faso, Uganda and Tanzania, showed that the health worker did not comply with the WHO guidelines of FANC. These in turn affected the acceptability of the antenatal services. Yego (2007) contradicted Conrad study. He found out that the shortage of human resource and supplies prevented the successful implementation of FANC.

Studies conducted in South Africa, Kenya and Ghana assessing the acceptability, feasibility, and effects of FANC, indicated that FANC by both the providers and the pregnant women. This helped improve the quality of care that the women received, (Nyarko et al. 2006; Birungi and Onyango-Ouma, 2006; Chege et al, 2005).

## **SUMMARY**

The increased maternal deaths in developing countries are due maternal complication during pregnancy and childbirth. This is occasioned by poor antenatal care. No literature addresses the areas on antenatal care that need to be strengthened for a good outcome. The results of this study will identify the areas that need to be strengthened in antenatal care to improve pregnancy outcomes.

Universal health coverage has made antenatal care and delivery affordable. Most of the literature said that cost was a barrier in utilization of antenatal care. The study will explore the utilization of antenatal care with the free maternity care offered by the government of Kenya in all public hospitals.

Good outcomes are pegged on the women's knowledge of the antenatal care that receive. Literature has shown that for women who had aware of the care will have less complications during pregnancy, as they will be aware of their danger signs. This study will address the type of knowledge that they have.

There is very little literature on patient attitude towards Focused Antenatal Care. The study will establish the attitude towards the antenatal care they receive.

## **CHAPTER THREE: MATERIALS AND METHODS**

### **3.1 Research Design**

The research was a across sectional descriptive study which describes the phenomenon at that particular time. Quantitative data was collected using questionnaires aimed at addressing the objectives of the study. It was used to elicit information from the target population at that point in time. Qualitative data was collected using in-depth interview guides. A descriptive study allowed the collection of data that provided answers on the status of care (Kothari, 2008). This design was suitable as it explored the necessary information regarding the study objectives and covered the target population to allow generalization of information.

### **3.2 Variables**

#### **3.2.1 Dependent variables**

Maternal complications was the dependent variable that was measured by checking the hospital records and asking respondents on whether they experienced maternal complications during pregnancy and child birth by the research assistants..

#### **3.2.2 Independent variables**

The independent variables considered included socio-demographic factors such as age, educational level, employment and marital status; knowledge level on FANC and attitude towards FANC among respondents.

#### **3.2.3 Intervening variables**

The use of focused Antenatal care (FANC) was the inter

### **3.3 Location of the study**

The study was conducted in Nairobi county in the three county hospital namely Pumwani Maternity Hospital, Mbagathi Hospital and Mama Lucy Kibaki hospital. The Nairobi

County is the capital city of Kenya that hosts about 3,138,369 million people according to the census of 2009. 55% of that population lives in the informal sector where these hospitals are accessible to them. This population also has challenges in access clean water, sanitation and essential services. The population of childbearing age is about 861,210 and about 111,391 get pregnant yearly, which is about 30% of the total population (KDHS, 2014).

The county is divided into eight health administrative sub counties which are Central, Embakasi, Westlands, Makadara, Kasarani, Pumwani, Dagoretti, kasarani and Kibera which are served by the three county hospitals. The facilities in the county provide comprehensive obstetric services and are equipped with supplies and equipment to provide antenatal care, delivery, postnatal care, family planning and immunization. Patients who require care that is more specialized are referred to Kenyatta National Hospital. The Nairobi Health Management Board (NHMB) whose objective is to offer quality health, which is affordable by the Nairobi residence, manages the facilities. The women who utilize maternal and child health services are often of low social cadres. They are more susceptible to maternal morbidity and mortality.

### **3.4 Study population**

The study population comprised of 397 women who have delivered and have attended their antenatal clinic from the first trimester of pregnancy at the antenatal clinics of the three county public hospitals in Nairobi. The women were in their postnatal period waiting for discharge in the postnatal wards. They were interviewed and their records perused. Health workers who were interviewed were midwives, doctors and clinical officers working in the antenatal clinics of the three public County Hospitals. Decision makers in the hospitals were given an in-depth interview. They included the doctors and nurse in-charge of the maternity department in the public county hospitals. These also include any other person who holds these offices in their absence.

### **3.4.1 Inclusion criteria**

The study included women who had delivered and were admitted in the postnatal wards of the selected hospitals. Women who had attended all the ANC visits in the public county hospitals were included. Those who consented and were therefore willing to participate in the study were included.

### **3.4.2 Exclusion criteria**

The study excluded women who were too sick and unable to talk during the data collection period.

## **3.5 Sampling techniques**

A structured questionnaire was administered for women in their postnatal period. An In-depth interview was done on the decision makers in the three public county hospitals in Nairobi. The questionnaires included questions on socio-demographic, social economic factors antenatal care, and health system factors. This enabled to interview mothers who use the public ANC facilities during pregnancy in Nairobi and collected representative sample.

Nairobi County was purposively selected for this study because it is unique in that the population is cosmopolitan and is the capital city of Kenya. The population in Nairobi is of diverse background and thus a representation of the country's population.

Mama Lucy Kibaki Hospital, Pumwani Hospital and Mbagathi Hospital are the only county public hospital in Nairobi County. They are referral hospitals of the other smaller facilities in their jurisdiction and between the hospitals; they provide delivery services to over 20,000 women every year.

Use the ANC data for the month of June the preceding year of the study was to calculate the sample size for each facility. Systematic sampling was used to calculate it by dividing the average daily number of women admitted in the postnatal ward of the hospital after delivery with the desired sample size used to randomly the study respondents. Systematic sampling used was appropriate for the study because it allowed simple randomization and was easy to implement.

### 3.6 Sample size determination

The sample size was calculated using the Cochran's formula (Mugenda and Mugenda 2003) as follows:

$$n = \frac{z^2 pq}{d^2}$$

Where:

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

Z = Standard normal deviation at the 95% confidence level. In this case, it is 1.96

P = the proportion in the target population estimated to have characteristics being measured.

This was the proportion of women receiving antenatal care according to the set standard and guidelines in public hospitals in Nairobi. 50% will be used for lack of a reasonable estimate.

$$q = (1-p) \text{ Hence } q = (1 - 0.5) = 0.5$$

d = the margin of error set at 0.05 i.e. at 95% confidence limit

$$\begin{aligned} \text{Hence } n &= \frac{(1.96)^2 (0.5) (0.5)}{(0.05)^2} \\ &= \frac{0.9604}{0.0025} \end{aligned}$$

Therefore, the calculated sample size was = 384 postnatal mothers.

10% of respondents was added to cater for non-responses. Therefore, 422 questionnaires were distributed for data collection. According to the clinic records of the public hospital, the three hospitals combined received 3,381 in the month of Jan 2019.

**Table 3.1: Sampling framework**

HOSPITAL	ANC UTILIZATION			SAMPLE SIZE
	3 months statistics	1 month statistics	Calculation according to population	
Pumwani Maternity Hospital	6160	2053	1538	<b>192</b>
Mbagathi Hospital	4508	1502	1130	<b>141</b>
Mama Lucy Hospital	2856	952	713	<b>89</b>
<b>TOTAL</b>	<b>10142</b>	<b>3381</b>	<b>3381</b>	<b>422</b>

The calculation for the nth interval was calculated according to the total population to be sampled divided by the sample size, which came to an interval of 8.

i.e  $3381/422 = 8.011$  when we round of we get an interval of 8.

### **3.7 Construction of research instruments**

The interviews were done using a structured questionnaire. Closed and open-ended questions were asked. The data collected was on social economic, social demographic antenatal care and health system. The in-depth interviews were done using open-ended questions to guide the interviewer. Data was later transferred to a computer database. Each data entry form was given a unique identifier, which is the participant's number.

### **3.8 Pre-testing of tools**

The questionnaire developed was pre-tested at Kenyatta National Hospital to find out if the target population understands it. A total of 42 respondents were included into the pretest representing 10% of the total sample size. Kenyatta National Hospital receives a large

number of patients as the three public county hospitals. The hospital receives almost the same number of patients and is used by students for their clinical rotations. After pretesting, some questions were adjusted for better understanding by respondents without changing the meaning.

### **3.8.1 Validity and Reliability**

The validity of the study was based on the adequacy to which the statements, questions and indicators of the research instrument measures the attributes of the study. The instrument was subjected to criticism from experts in the department of Population and Reproductive Health. Reliability which is a measure that contains variable error was improved through a pretesting the research instruments as well as use of trained research assistants.

### **3.9 Data Collection techniques**

Questionnaires were used to collect quantitative data from postnatal women in their respective wards in the selected hospitals. Trained research assistants who were nurse interns administered the questionnaires. The research assistant asked the questions because most of the women seeking care at the three public county hospitals are of low educational status thus have to be assisted in reading and understanding the questions. The questionnaire for the postnatal women were designed to collect information on socio-demographic data, maternal outcomes, knowledge of FANC and their perception towards FANC. Key informant interview guides were used to collect qualitative data from healthcare workers. The principal researcher gave the interviews and took notes as the interview was being recording. The interview guide was designed to capture their current practices as well as their perception towards FANC utilization.

### **3.10 Data analysis**

Quantitative data was collected with each questionnaire scrutinized to make sure that they were completely and properly filled. The data was coded and entered in a Microsoft excel and later exported to the statistical package for social sciences (SPSS) version 22.0 for analysis. The data entered was cleaned and edited to check for errors during the entry process. Data analysis was done using appropriate statistical tests, which included descriptive statistics to yield the frequencies and percentages while inferential statistics were calculated using chi square tests to establish the association between variables. This was done at 95% confidence intervals and results with p-values of less than 0.05 were considered significant. Qualitative data was recorded on a recorder then, transcribed to verbatim, the data was then triangulated with quantitative data and presented as direct quotes and narrations. The analyzed data was presented in frequency tables, percentages, pie charts or bar graphs. The researcher checked and kept the filled-up questionnaires in readiness for data processing and analysis. The filled in questionnaires and KII guides were stored in closed cabinets and later accessed by the researcher only.

### **3.11 Legal and Ethical considerations**

The research sought approval from Kenyatta University Graduate School. Ethical clearance to conduct the study was sought from Kenyatta University Ethics and Review Committee (KUERC). Research permit was sort from the National Commission for Science, Technology and Innovation (NACOSTI). Further approval was sought from Nairobi City prior to the study. Permission was given by the three selected hospital management to conduct the study in the study hospitals. Informed consent was sought from study respondents, which involved consent form and participant's role explanation. The respondents then gave their consent through signing the forms prior to the interview. Confidentiality of study participants was maintained throughout all stages of the study by

assigning respondents unique numbers. The right of study participants to withdraw was communicated to them and strictly observed. The participants were informed that the study was not going to affect the care they received while in the hospital.

## CHAPTER FOUR: RESULTS

### 4.1 Socio-demographic characteristics of respondents

The study administered 422 questionnaires to women who had delivered and attended their antenatal clinic from the first trimester of pregnancy at the antenatal clinics of the three county public hospitals in Nairobi. The study was conducted between Jan-Feb 2019. Duly filled and returned questionnaires were taken into account and considered for analysis. After data checking and cleaning, 397 questionnaires were deemed fit for analysis representing a response rate of 94.1%. The returned rate superseded the minimum sample of 384 respondents making it adequate for this study.

The results showed that the respondents were at least 15 years of age. Slightly more than half 204 (51.4%) of the respondents were aged between 20-29 years followed by 118 (29.7%) who were aged between 30-39 years. Regarding the respondents' marital status, majority of them 243 (61.2%) were married while 113 (28.5%) reported to be single. Small number of the respondents 23 (5.8%) and 18 (4.5%) reported to have been widowed and divorced/separated respectively.

Concerning highest level of education attained, slightly more than half of the respondents 207 (52.1%) reported that secondary education was their highest educational level while 108 (27.2%) had tertiary education. In reference to occupational status, less than half of the respondents 166 (41.8%) revealed that they were self-employed while 149 (37.5%) were employed.

Majority of the women 318 (80.1%) reported that they were Christians while 62 (15.6%) were Muslims. When the respondents were asked on the number of deliveries they have had, less than half 174 (43.8%) had had 1 delivery, while 125 (31.5%) reported to have had 2 or 3 deliveries so far. Regarding level of income, less than half of the respondents 162 (40.8%)

earned between Kshs 21,000-30,000 while 76 (19.1%) earned between Kshs 11,000-20,000.

The results are presented in table 4.1 below.

**Table.4.1: Socio-demographic characteristics of the respondents (n=397)**

<b>Independent variable</b>	<b>Respondent response</b>	<b>Frequency (N)</b>	<b>Percentage (%)</b>
Age	15-19	50	12.6
	20-29	204	51.4
	30-39	118	29.7
	40-49	25	6.3
Marital status	Single	113	28.5
	Married	243	61.2
	Widowed	23	5.8
	Divorced/Separated	18	4.5
Level of education	No formal education	18	4.5
	Primary	64	16.1
	Secondary	207	52.1
	Tertiary	108	27.2
Occupation	Employed	149	37.5
	Self employed	166	41.8
	Not-employed	82	20.7
Religion	Christian	318	80.1
	Muslim	62	15.6
	Others	17	4.3
No of Deliveries	1	174	43.8
	2-3	125	31.5
	More than 3	98	24.7
Level of income	≤11,000	39	9.8
	11,000-20,000	76	19.1
	21,000-30,000	162	40.8
	31,000-40,000	65	16.4
	41,000 and above	55	13.9

#### **4.2 Association between socio-demographic factors and maternal outcomes**

The study sought to determine the relationship between socio-demographic factors on incidences of maternal complications. The results showed that more than half 154 (55.4%) of the respondents aged between 20-29 years did not get maternal complications. There was an association between age of the respondent and getting a complication ( $p=0.002$ ). Majority of the respondents 79 (66.4%) who got maternal complications were married. However,

there was no statistical association between marital status and getting maternal complication ( $p=0.051$ ). One of the Nurse in a Key Informant Interview session reported;

*“...Most of our clients come here alone without their husbands or partner. Delays on the way without help of a partner can results to complications. Also, when the partners support the women through escorting them to the clinics it helps the women in following the schedules and also following the instructions given to avoid complications ...”*

The research findings also revealed that, more than half of the respondents 154 (55.4%) who did not report any complications had secondary education. There was no association between level of education and getting maternal complication ( $p=0.170$ ). Regarding occupation, most of the respondents 70 (58.8%) who reported to have had maternal complication were employed. There was an association between occupational status and getting a maternal complication ( $p=0.001$ ). In regards to religion, the results showed that majority 246 (88.5%) of the respondents who did not report any maternal complication were Christians. However, there was no association between religion and getting a maternal complication ( $p=0.402$ ).

Concerning number of deliveries, the results revealed that majority 78 (65.5%) of the respondents who had maternal complications reported to have had one delivery. There was a significant statistical association between number of deliveries and getting a maternal complication ( $p=0.001$ ). The results further revealed that, slightly below half 114 (41.0%) of the respondents who did not report any complication earned between Kshs 21,000-30,000. There was a significant statistical association between level of income and getting a maternal complication ( $p=0.011$ ). One of the health care providers in a key informant interview revealed that:

“...some of the clients come from far places thus they need to afford the indirect and direct costs associated with seeking for the services. Sometimes lack of finance can cause delays in reaching the hospital and thus results to complications...”

The results are presented in table 4.2 below.

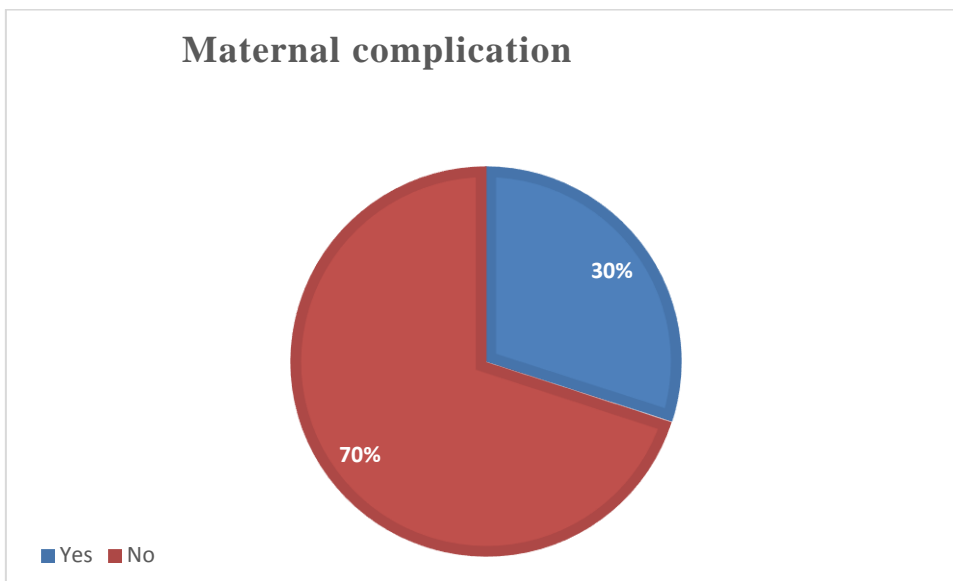
**Table 4.2: Association between socio-demographic characteristics and maternal complications among respondents (n=397)**

Independent variable	Respondent response	Dependent variable (Maternal complication)		Statistical significance
		Yes (N=119)	No (N=278)	
Age	15-19	15(12.6%)	35(12.6%)	$\chi^2=14.778$ df=3 p=0.002
	20-29	50(42.0%)	154(55.4%)	
	30-39	46(38.7%)	72(25.9%)	
	40-49	8(6.7%)	17(6.1%)	
Marital status	Single	18(15.1%)	95(34.2%)	$\chi^2=23.619$ df=3 p=0.051
	Married	79(66.4%)	164(59.0%)	
	Widowed	14(11.8%)	9(3.2%)	
	Divorced/Separated	8(6.7%)	10(3.6%)	
Level of education	No formal education	5(4.2%)	13(4.7%)	$\chi^2=5.024$ df=3 p=0.170
	Primary	25(21.0%)	39(14.0%)	
	Secondary	53(44.5%)	154(55.4%)	
	Tertiary	36(30.3%)	72(25.9%)	
Occupation	Employed	70(58.8%)	79(28.4%)	$\chi^2=32.986$ df=2 p=0.001
	Self employed	34(28.6%)	132(47.5%)	
	Not-employed	15(12.6%)	67(24.1%)	
Religion	Christian	72(60.5%)	246(88.5%)	$\chi^2=42.539$ df=2 p=0.402
	Muslim	39(32.8%)	23(8.3%)	
	Others	8(6.7%)	9(3.2%)	
No $\square$ of Deliveries	1	78(65.5%)	96(34.5%)	$\chi^2=37.699$ df=2 p=0.001
	2-3	30(25.2%)	95(34.2%)	
	More than 3	11(9.3%)	87(31.3%)	
Level of family monthly income (Kshs)	$\leq$ 11,000	8(6.7%)	31(11.1%)	$\chi^2=23.364$ df=4 p=0.011
	11,000-20,000	33(27.7%)	43(15.5%)	
	21,000-30,000	48(40.3%)	114(41.0%)	
	31,000-40,000	23(19.4%)	42(15.1%)	
	41,000 and above	7(5.9%)	48(17.3%)	

### 4.3. Maternal complications

#### 4.3.1 Presence of maternal complications

This section consists of whether the respondents reported any maternal complications. The results revealed that majority 278 (70%) of the respondents did not report any maternal complication while 119 (30%) reported they had complications. The results are presented in figure 4.1 below.



*Fig 4.1: Maternal complications among respondents*

#### 4.3.1.1 Maternal complications per hospital

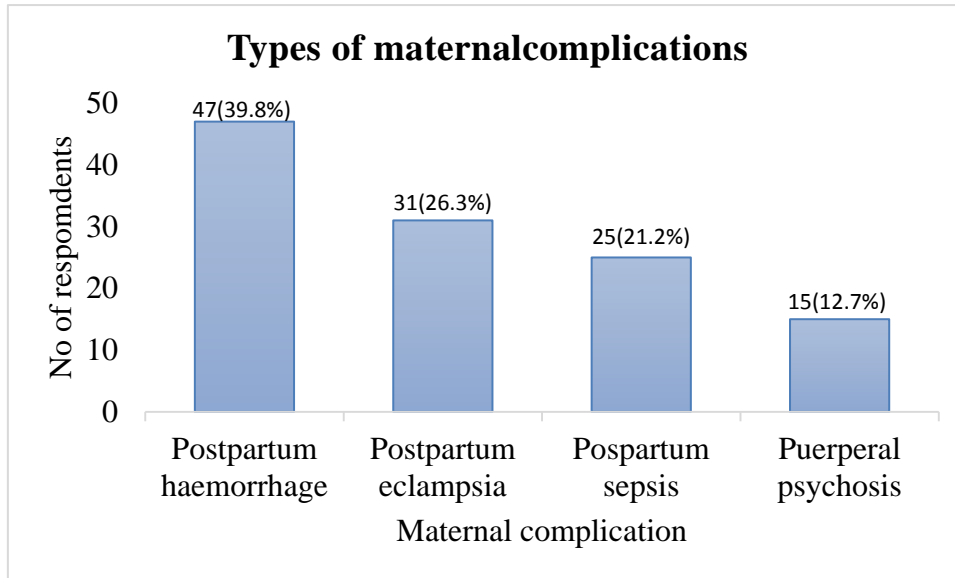
Regarding the distribution of maternal complications per hospital, the results revealed that less than a half 52(43.7%) of respondents were from Mbagathi District Hospital, followed by Pumwani 48(40.3%) and the rest 19(16.0%) Mama Lucy Kibaki Hospital. The results were as presented in table 4.3 below.

**Table 4.3: Distribution of maternal complications per hospital**

Hospital	No of complications	Per cent (%)
Pumwani	48	40.3
Mbagathi	52	43.7
Mama Lucy Kibaki	19	16.0
<b>Total</b>	<b>119</b>	<b>100.0</b>

### 4.3.2 Types of maternal complications

Regarding the type of maternal complications experienced among respondents, 47 (39.8%) had postpartum hemorrhage, 31 (26.3%) reported postpartum eclampsia, 25 (21.2%) had postpartum sepsis and 15 (12.7%) reported puerperal psychosis. The results are presented in figure 4.2 below.



*Fig 4.2: Types of maternal complications*

### 4.3.3: Mode of delivery among respondents

The researcher further sought to know the association between mode of delivery and having a maternal complication. The results showed that majority 205 (73.7%) of the respondents who did not report any maternal complication delivered through the vagina. There was a significant statistical association between mode of delivery and getting a maternal complication ( $p=0.001$ ). The results are as in the table 4.4 below:

**Table 4.4: Association between delivery mode and maternal complications among respondents (n=397)**

Independent Variable	Respondent response	Dependent variable (Maternal complication)		Frequency (N)	Statistical significance
		Yes (N=119)	No (N=278)		
Delivery mode	Vaginal	65(54.6%)	205(73.7%)	270 (68.0%)	$\chi^2=14.001$ df=1 p=0.001
	Caesarean section	54(45.4%)	73(26.3%)	127(32.0%)	

#### **4.4 FANC knowledge factors**

##### **4.4.1 Respondents responses on questions on knowledge of FANC**

Regarding respondents' knowledge on antenatal care, the study participants were given a checklist seven (9) statements on focused antenatal care. They were supposed to indicate whether the statements were true or false according to them. Their responses were computed as either correct or incorrect. In relation to whether the first ANC visit should occur during the first trimester of pregnancy (8-12weeks), the findings indicate that more than a half 224 (56.4%) of respondents had correct knowledge while the rest 173(43.6%) had incorrect knowledge.

Qualitative results from key informants revealed that women indeed should visit the ANC clinic during the early stages of pregnancy so that they get all the required supplements and vaccines to avoid any future complications. During the KII sessions, a Nurse at the ANC clinic said;

*".. the first visit is very important for the pregnant women because most tests are conducted and they are offered with the required supplements, vaccines as well as health education regarding pregnancy. They are also encouraged to continue attending clinics to get subsequent services."*

Most of the respondents 246 (62.0%) had incorrect knowledge on whether WHO recommendation on a minimum of 4 ANC visits per pregnancy while 151 (38.05) had correct knowledge. On whether FANC was important for improving better pregnancy, more than half 220 (55.4%) of the respondents had correct knowledge while 177 (44.6%) had incorrect knowledge. The results also showed that majority 264 (66.5%) of the respondents had correct knowledge on whether FANC was the approved antenatal care by WHO for pregnant women while 133 (33.5%) had incorrect knowledge.

When the respondents were asked whether each FANC visit includes care that is appropriate for the duration of pregnancy, slightly more than half 215 (54.2%) had incorrect knowledge while 182 (45.8%) had correct knowledge. In relation to whether FANC dealt with each woman's specific need, majority 271 (68.3%) of the respondents had correct knowledge while 126 (31.7%) had incorrect knowledge. The results showed that, slightly more than half 208 (52.4%) of the respondents had correct knowledge on whether FANC focused on quality of care rather than quantity of care used while 189 (47.6%) had incorrect knowledge.

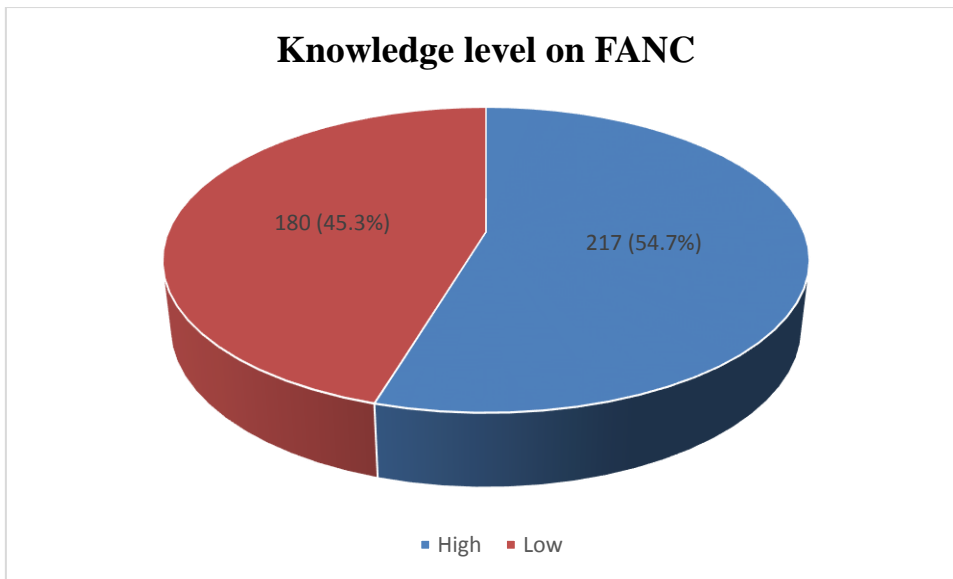
Results further revealed that when respondents were asked whether FANC helped in birth preparedness and complication readiness planning, slightly more than half 214 (53.9%) had correct knowledge while 183 (46.1%) had incorrect knowledge. When the respondents were asked whether pregnant women were provided with vaccines and supplements during ANC check-ups, more than half 221 (55.7%) had incorrect knowledge while 176 (44.3%) reported correct knowledge. The results are as showed in table 4.5 below:

**Table 4.5: Knowledge factors on FANC among respondents (n=397)**

Knowledge variable	Respondent's knowledge response	Frequency (N)	Percentage (%)
The first ANC visit should occur during the trimester of pregnancy (8-12 Weeks)	Correct	224	56.4
	Wrong	173	43.6
The WHO recommends a minimum of 4 ANC visits per pregnancy	Correct	151	38.0
	Wrong	246	62.0
FANC is important for improving better pregnancy outcomes	Correct	220	55.4
	Wrong	177	44.6
FANC is the approved antenatal care by WHO for pregnant women	Correct	264	66.5
	Wrong	133	33.5
Each FANC visit includes care that is appropriate for the duration of pregnancy	Correct	182	45.8
	Wrong	215	54.2
FANC deals with each woman's specific need	Correct	271	68.3
	Wrong	126	31.7
FANC focuses on quality of care rather than quantity of care used	Correct	208	52.4
	Wrong	189	47.6
FANC helps in birth preparedness and complication readiness planning	Correct	214	53.9
	Wrong	183	46.1
Pregnant women are provided with vaccines and supplements during ANC check-ups	Correct	176	44.3
	Wrong	221	55.7

#### 4.4.2 Respondents' knowledge level on FANC

This section consisted of results concerning knowledge on FANC among respondents. The nine questions on knowledge had scores, which ranged from 0-9 marks. Each correct answer was awarded a score of 1 while a wrong answer was awarded a score of zero (0). The scores of knowledge were further divided into two categories; low knowledge level ranged from 0-4 scores while high knowledge level ranged from 5-9 scores. The results revealed that 217 (54.7%) of the respondents had high knowledge levels while the rest 180 (45.3%) had low knowledge levels as shown in figure 4.3 below.



**Fig 4.3: Knowledge levels on FANC among respondents**

#### **4.3.3: Association between FANC knowledge level and maternal complication among respondents**

Majority 169 (60.8%) of the respondents did not report any maternal complications had higher knowledge level on FANC. There was a significant statistical association between knowledge level and getting a maternal complication ( $p=0.017$ ). The results were as presented in the table 4.6 below:

**Table 4.6: Association between knowledge level on FANC and maternal complication among respondents (n=397)**

Independent Variable	Respondent response	Dependent variable (Maternal complication)		Statistical significance
		Yes (N=119)	No (N=278)	
Knowledge level	High	48(40.3%)	169(60.8%)	$\chi^2=14.069$ df=1 p=0.017
	Low	71(59.7%)	109(39.2%)	

#### **4.4 Women's attitude towards FANC**

##### **4.4.1 Respondents' responses on attitude towards FANC**

Regarding attitude of respondents towards focused antenatal care, there were seven (7) questions on a Likert scale of scores ranging 1-4 in which "1" meant strongly disagree and

“4” meant strongly agree. The results revealed that majority 248 (56.0%) of respondents of which 139(35.0%) agreed and 109 (27.5%) strongly agreed that they preferred FANC during pregnancy since it involved counselling about women’s reproductive health. The results revealed that slightly more than a half 216 (54.4%) of which 121(30.5%) agreed and 95 (23.9%) strongly agreed that FANC helped in preventing negative outcomes of pregnancy.

Majority 268 (67.5%) of the respondents of which 142 (35.8%) strongly agreed and 126 (31.7%) agreed that attending FANC was good for the wellbeing of the mother. Regarding FANC helping in detecting diseases early in a pregnant woman, slightly more than half 209 (52.6%) of which 112 (28.2%) strongly disagreed and 97 (24.4%) disagreed with the statement. The results further showed that half 202 (50.9%) of the respondents of which 137 (34.5%) strongly agreed and 65 (16.4%) agreed that they preferred FANC because seeing other women in the clinic helped in relieving their anxiety.

About half 200 (50.4%) of the respondents of which 104 (26.2%) disagreed and 96 (24.2%) strongly disagreed that they hated traditional ANC because it did not screen for risk factors. More than half 237 (59.7%) of the respondents of which 156 (39.3%) agreed and 81 (20.4%) strongly agreed that they felt FANC gave them an opportunity to access individualized care.

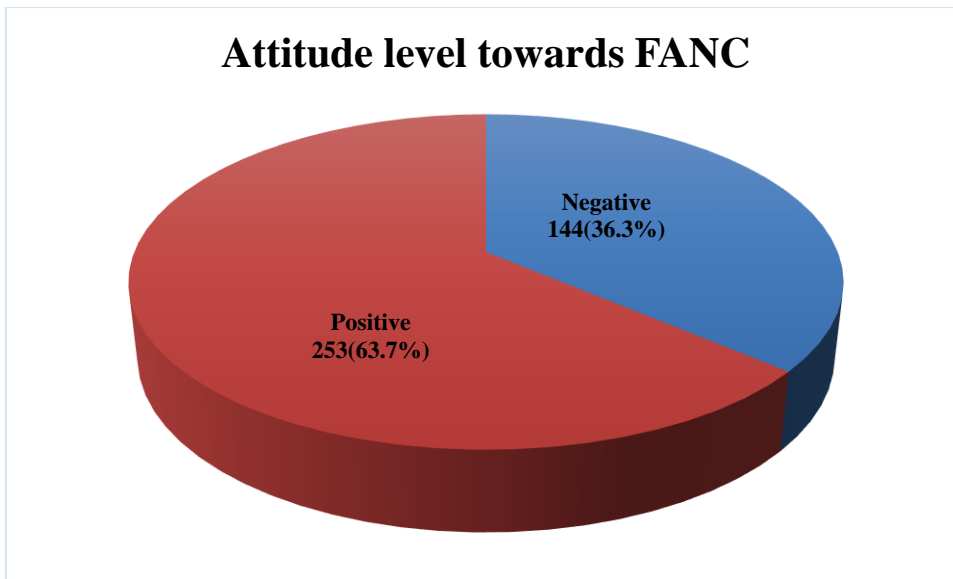
The results are as presented in table 4.7 below:

**Table 4.7 Attitude towards FANC among respondents (n=397)**

Independent variable	Respondent's response (%)			
	Strongly Disagree	Disagree	Agree	Strongly agree
I prefer FANC for use during pregnancy since it involves counselling about women's health	90(22.7%)	59(14.9%)	139(35.0%)	109(27.5%)
FANC prevents negative pregnancy outcomes	78(19.6%)	103(25.9%)	121(30.5%)	95(23.9%)
Attending FANC is for wellbeing of the mother	73(18.4%)	56(14.1%)	126(31.7%)	142(35.8%)
FANC detects disease early in a pregnant woman	112(28.2%)	97(24.4%)	86(21.7%)	102(25.7%)
I prefer FANC because seeing other women in the clinic relieves anxiety	80(20.2%)	115(29.0%)	65(16.4%)	137(34.5%)
I hate traditional ANC because it does not use screening for risk factors	96(24.2%)	104(26.2%)	126(31.7%)	71(17.9%)
I feel FANC as the opportunity for individualized care	72(18.1%)	88(22.2%)	156(39.3%)	81(20.4%)

#### 4.4.2 Level of attitude towards FANC

This section consists of results concerning attitude towards FANC among respondents. The seven (7) questions on attitude had a minimum score of 7 and a maximum score of 28. The scores were further divided into two categories; Negative attitude scores ranged from 7-17 while positive attitude had scores ranging from 18-28. The results revealed that 253 (63.7%) of respondents had a positive attitude towards FANC while the rest 144 (36.3%) had a negative attitude. The results were presented in figure 4.4 shown below.



*Fig 4.4: Attitude towards FANC*

#### 4.4.3 Association between attitude towards FANC and maternal complication

The results revealed that majority 161 (63.6%) of the respondents who did not report any complications had a positive attitude towards FANC. However, there was no statistical association between attitude and getting a maternal complication ( $p=0.637$ ). These results were as presented in table 4.8 shown below.

**Table 4.8: Association between attitudes towards FANC and maternal complication among respondents (n=397)**

Independent Variable	Respondent response	Dependent variable (Maternal complication)		Statistical significance
		Yes (N=119)	No (N=278)	
Attitude level	Positive	92(36.4%)	161(63.6%)	$\chi^2=13.564$ df=1 p=0.637
	Negative	27(18.8%)	117(81.2%)	

## **CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Discussions**

#### **5.1.1 Socio-demographic factors**

The study sought to determine the influence of socio-economic factors on incidences of maternal complication. About age, the study revealed that majority of the respondents were aged 20-29 years. This may be due to high population growth across the world increasing the number of women in the reproductive age bracket. There was an association between age of the respondent and getting a maternal complication. The cases of maternal complications were higher in younger women with underdeveloped reproductive health systems and in older women with weakened reproductive organs.

The results were in agreement with a study done in Nepal, which revealed that age was significantly associate with maternal complications. This is because mothers with advanced ages are more likely to use focused antenatal care services based on their maternal experiences thus reduced maternal complications (Srijana and Supendra, 2014). The results were consistent with a WHO survey, which showed that age was associated with poor FANC attendance thus increased maternal complications (WHO, 2014. Younger maternal age was associated with fewer FANC utilization as they try to shy off from using such services hence leading to more maternal complications, which would have been identified in early stages of pregnancy (Vogel et al, 2014).

Regarding educational status of respondents, the results revealed that majority of respondents had secondary level of education. This is because it meant that most of the respondents with secondary education were in stable relationships. There was a significant statistical association between education and maternal complications. Education enlightens women on the importance of using FANC during pregnancy thus reduces the probability of complications occurring.

The results were in agreement with a study done in Tharaka Nithi County, Kenya, which revealed that women with higher education were more likely to deliver in health facilities due to knowledge of associated risks (Gitonga, 2016). In another study in Kitui County in Kenya, it was also shown that women with higher education were more likely to utilize FANC services, thus reduced maternal complications (Nzioki et al., 2015). Studies done in Sub-Saharan Africa and Nepal attributed increased utilization of FANC to reduced maternal complications among pregnant women (McTavish et al., 2010 & Neupane et al., 2011).

In relation to occupational status, the results showed that majority of the respondents were self-employed with majority of those in employed category having highest complications. This can be attributed to the idea that they may have been involved in heavy industrial jobs leading to pregnancy complications. There was an association between occupational status and getting a maternal complication. The results were in agreement with a study done in Nepal, which showed that occupation affects FANC utilization thus in turn affects maternal complications in pregnant women (Namasivayam, 2012 and Srijana & Supendra, 2014). The results also concurred with another study done in Kitui County, which revealed that employed women were more likely to use FANC services thus utilize the recommended number of ANC visits by WHO as compared to their non-employed counterparts (Nzioki et al., 2015).

The results reported that majority of respondents were middle-income earners. The results further showed that there was a significant statistical association between level of income and maternal complication. Women with higher income levels can be able to utilize the services of private ANC services thus reduced maternal complications as compared to their counterparts in low-income categories. The results concurred with a study done in Sub-Saharan Africa, which revealed that income was significantly associated with maternal

complications as those with higher income levels can afford quality ANC services (McTavish et al., 2010).

Similar results were also reported by a survey done by WHO which revealed that the level income affects the number of FANC visits made by pregnant women (WHO, 2016). According to studies done in Ghana, Uganda, Swaziland and Zaire, confirms that availability of funds affects accessibility in terms of transportation to health care facilities to seek FANC services (Ibrahim et al., 2012). Adverse maternal morbidity outcomes affects minority and low income pregnant women in the United States of America (Admon et al., 2017). In South Africa and Nigeria, women started late ANC visits since they needed to find money for transport and new clothes (Abimbola et al., 2016).

In regards to marital status of respondents, the results revealed that majority respondents were married. However, there were no significant statistical association between marital status and maternal complications with regards to utilization of FANC services. The results were contrary to a study done in Nepal which showed that marital status plays a significant role in utilization of FANC services thus reduced maternal complications due to support from their partners (Namavasiyam, 2012). Inconsistent results were also reported by a study done by Pell et al. (2013), which explained that married women attend more FANC services compared to adolescent, unmarried and single/divorced mothers who enter late into ANC attendance as a result of trying to hid and shy off from their pregnancies,

### **5.1.2 Maternal complications**

The results revealed a significant number of women reported to have encountered a maternal complication while carrying out latest pregnancy and childbirth. Globally, there has been a reported increase in maternal complications as women experience serious and life-threatening challenges during pregnancy and eventual delivery recently (Lotte et al., 2014).

High global population growth rate means that there is a rise in the number of women in the reproductive age group thus increase in maternal complication levels (Say et al, 2014).

The results of this study were contrary to a study done in United States of America, which reported a higher prevalence of maternal complication as compared to this study. This was attributed to increased lifestyle changes that have led to lifestyle diseases such as obesity thus more complications that are maternal. The rates of maternal complications were most common in Hispanic women as compared to the whites (Kathryn et al, 2018). These results were also inconsistent with survey done in developing countries, which reported a slightly higher rate of maternal complication. This was higher than the benchmark set by WHO. The University of Colombia, which was set at 15% as an indicator for unmet need for maternal complications (Filippi et al, 2015).

Regarding the type of maternal complication experienced by respondents, the results showed that hemorrhage was the most prevalent complication. This could be attributed to the fact that women lose a lot of blood during delivery, which may require blood transfusion. This could be attributed to active management of third stage of labour not being practiced. The results concurred with other studies in the United States of America and Ethiopia, which revealed that hemorrhage is the leading cause of maternal complication that accounts for approximately three quarters of maternal deaths in the world (Say *et al.*, 2014; Lotte *et al.*, 2017 and Tsefaye *et al.*, 2018). The results were contrary to another study done in the United States of America, which revealed that hypertensive disorders were the most common maternal complications among pregnant women that was attributed to lifestyle changes among women (Voge *et al.*, 2014).

The results also revealed that majority of respondents with a vaginal mode of delivery did not encounter any maternal complication during delivery. However, there was a significant

statistical association between mode of delivery and maternal complication. This may be because women experiencing life-threatening complications have higher likelihood of hospital referrals, which may lead to emergency caesarean section to deliver the mother out of danger. The results were in agreement with a survey conducted in Western Kenya, which revealed that majority of maternal complications leading to deaths occur in the course of normal delivery (MoH, 2014). This is because most deliveries across the world occur through the vaginal mode of delivery. This results to other complications such as obstructed labor when the mother may not deliver normally at ease (Tsefaye et al., 2018).

These findings were also contrary to a study done in Brazil which revealed that majority of patients with higher maternal complications were delivered through caesarean section (Roseli et al., 2013). This may be attributed to the fact that seventy five per cent of caesarean deliveries are done under emergency when the life of the mother is thought to be in jeopardy. Women with CS deliveries are attributed to higher risk for maternal complication manifestation (Lotte et al., 2017). This means that caesarian section is associated with higher rates of maternal complication occurrence.

### **5.1.3 Knowledge on FANC**

The results revealed that majority of respondents had correct knowledge on the importance of FANC as they attributed it improving better pregnancy outcomes. This could be attributed to the fact that the concept of FANC was not new to them. The respondents were from an urban residence where access to information is not limited as well the concept being implemented in Kenya in a few decades ago. The results were consistent to a study by Finlayson and Downe (2013), who argued that lack of an understanding of benefits of attending a focused antenatal care coupled with perceiving pregnancy as a normal life event are attributed to poor ANC attendance thus increased maternal complications. Absence of

FANC attendance leads poor pregnancy outcomes and increase in maternal mortality and morbidity (De Graaf et al, 2013).

Regarding on the timing of first ANC visit, majority of respondents had correct knowledge as they revealed that first ANC visit should be made during the first trimester stemmed at 12 weeks of pregnancy. This was in accordance with the WHO FANC model which states that the first ANC visit should be made early to allow identification pregnancy complications at an early stage where necessary efforts can be made to reduce the magnitude of injury (WHO, 2016). Similar results were also reported in some studies done in Asia which revealed that the study respondents had adequate knowledge with regards to early ANC initiation (Eleje et al., 2015& Haddad et al., 2016). The same results were also reported by a studies done in Ethiopia and Nigeria which attributed lack of correct knowledge on FANC to late start of ANC attendance among respondents (Belayneh et al., 2014).

Regarding the number of minimum ANC visits as approved in the WHO FANC model, most of the respondents stated that each pregnant woman required a minimum of 4 ANC contact schedules with health care providers for pregnancies without complications (Alshabanah et al., 2018). This was in accordance with WHO recommendations, which opts for a minimum of 4 ANC visits for normal pregnancies with further visits for complicated pregnancies (WHO, 2016). This means that the respondents were knowledgeable attributed to better information access in urban areas such as Nairobi City County. Inadequate antenatal care visits is characterized by bad outcomes in pregnancy, increasing poor maternal outcomes (Barker et al., 2013). Similar results were also reported in Nepal, which stated that women who had watched TV as a source of health information utilized more ANC visits as compared to their counterparts who did not thus reduced maternal complications (Pettersson et al., 2014).

The results also revealed that majority of respondents were aware that FANC deals with each woman's specific need. The quality of care that matters rather than its quantity. This indeed shows that the respondents had prior exposure to the components of FANC implemented for positive pregnancy outcomes. The results were similar to a study done in Nigeria which showed that majority of those who interviewed reported that FANC was meant for individualized care among pregnant women attending healthcare ANC services (Ojong et al., 2015). Having correct knowledge on the individual components of FANC is necessary for its utilization among respondents (Amasu et al., 2011). According to UNICEF (2015), FANC led to individualized ANC visits, which included nutritional education, tetanus toxoid immunization, and folic acid and iron tablet supplementation. Poor perceived quality of handling complications affects seeking services in Malawi (Matejic et al., 2014).

Based on the knowledge variables studied, the results revealed that the respondents had high knowledge levels concerning FANC utilization. This is explained by the fact that there was more correct answers to the knowledge questions under review. In fact, knowledge on FANC had a significant association with maternal complication occurrence. This is because high knowledge levels means majority of respondents would seek the required FANC services thus reduced maternal complications.

This results were consistent with a study done in Calabar Hospital in Nigeria which revealed that majority of study respondents had good knowledge towards FANC (Ojong et al., 2015). In another study done in Egypt, it was also shown that most the respondents interviewed had appropriate knowledge on FANC attendance (Alshabanah et al., 2018). Possession of adequate knowledge on FANC is associated with its utilization, which further leads to reduced maternal complications hence positive delivery outcomes among intended users (Moller et al., 2017).

#### **5.1.4 Women's attitude towards FANC**

The results revealed that majority of respondents preferred FANC during pregnancy since it involved counselling about women's reproductive health. This explained by the fact that women are curious about their health during pregnancy hence they do not take it as a normal life event. The results were consistent with a study done in Nigeria which revealed that majority of respondents viewed FANC as an opportunity for pregnant women to be counselled on their pregnancy status (Ojong et al., 2015). In Uganda, provision of information on the symptoms and expected health problems during ANC visits promotes FANC attendance hence improved maternal outcomes (Kigenyi et al., 2013).

This study results further showed that most of the respondents who were management of FANC believed that it helped pregnant women in preventing negative outcomes of pregnancy. This is because they are guided on how to take care of their pregnancy during their gestational periods. This helps them to prepare psychologically for delivery thus reducing the chances of maternal complications. The same results were reported in a study done in Egypt, which attributed positive pregnancy outcomes to the benefits of FANC among hospital deliveries (Alshabanah et al., 2015). This was attributed to guidance on the correct diet to feed and engaging in exercises to improve their pregnancy outcomes. Inadequate ANC attendance is associated with bad pregnancy outcomes leading to maternal complications (Barker et al., 2013).

Majority of respondents in this study felt attending FANC was for the wellbeing being of the mother as well as the foetus. This may be explained by virtual of most pregnant women increasing their rates of ANC attendance. When implemented as required by the WHO guidelines, it helps in early detection diseases and other complications during pregnancy (WHO, 2014). This turn helps prevent and manage maternal complications at an early stage.

These results were in agreement with a study done in Tanzania, which showed that women's acceptance for screening meant that they were aware and willing to undergo such tests to avoid maternal complications as a result of pregnancy (Gervase, 2016). Regular ANC checkups helps in detecting and treating any disease during pregnancy thus preventing occurrence of health problems that may arise (New Clinical Guidelines, 2017).

The results further showed that most of the respondents they preferred FANC because seeing other women in the clinic helped in relieving their anxiety. They felt that FANC gives them an opportunity to access individualized care from care providers. The results however were inconsistent with a study done in Saiya County in Kenya, which attributed FANC to several barriers, which prevents individualized care among clients (Chweya et al., 2018).

The results further revealed that women a positive attitude towards utilization of FANC services in Nairobi City County. Generally, women prefer to take care of themselves as well as their unborn babies. This explains the reason for the majority of the women reporting high utilization rates reduce unnecessary maternal complications. However, the results did not show a significant statistical association between level of attitude and maternal complication among respondents. The results were similar to a study done in Nigeria which showed that majority of respondents had a positive attitude towards FANC utilization (Idang, Ugah, 2015).

However, in another study done in Dodoma Municipal in Tanzania, the results were contrary in that majority of respondents reported a negative attitude towards FANC (Callaghan-Koru, et al., 2016). This may be attributed to the nature of how services are provided under FANC, with long waiting and congestion in public hospitals across the developing countries. The results were contrary to a study done in by Nyondo et al. (2014), which showed poor attitude towards healthcare workers affected seeking of FANC services early.

## 5.2 Conclusions

The results revealed that majority of socio-demographic factors influenced utilization of focused antenatal care services thus reduced maternal complications. In fact, age, occupation, level of income, and education showed significant statistical association with maternal outcomes. This explains the variation utilization of FANC services among respondents.

The study revealed that the rates of occurrence of maternal complications were relatively low. This was in comparison to other studies done across different regions in the world. Hemorrhage during delivery was the most common maternal complication among respondents. The mode of delivery was significantly associated with maternal complications.

Majority of the respondents had high knowledge levels in regards to FANC utilization. This was because they scored correctly in majority of knowledge variables interviewed. Knowledge on FANC was significantly associated with maternal complications due to perceived use of ANC services among respondents. High knowledge level explains the reason for high utilization of FANC services thus reducing maternal complications.

The study revealed that majority of the respondents had positive attitude towards utilization of FANC services. They scored positively across majority questions with regards to FANC services. This influenced the use these services among respondents. Positive attitude leads to increased use FANC services thus reduced maternal complications.

### **5.3 Recommendations**

#### **5.3.1 Recommendations from the study**

- i. The healthcare providers providing antenatal services should give education to women. These will empower women and ensure barriers to access of FANC services are broken to improve uptake of such services.
- ii. Health care providers should encourage use of FANC services at their disposal to reduce chances of late entry into ANC services to ensure early intervention and prevent maternal complication.
- iii. Policy makers should tailor and scale up male/partner involvement and awareness programs. This would ensure improved transfer of correct knowledge on FANC thus signify importance of seeking such services while pregnant.
- iv. Health care providers should have a positive attitude towards FANC, this will increase patients' attitudes towards FANC utilization.

#### **5.3.2 Recommendations for further study**

Do a study to determine quality of FANC service provision in health facilities in Kenya.

## REFERENCES

- Abimbola JM, Makanjuola AT, Ganiyu SA, Babatunde UMM, Adekunle DK, Olatayo AA. Pattern of utilization of ante-natal and delivery services in a semi-urban community of north-Central Nigeria. *Afr Health Sci.* 2016;16(4):962–71
- Admon LK, Windelman TNA, Moniz MH, Davis MM, Heisler M, Dalton VK. Disparities in chronic conditions among women hospitalized for delivery in the United States, 2005-2014. *Obstetrics & Gynecology.* 2017;130(6):1319-26.
- Amanuel Alemu T. G., “Focused antenatal care service utilization and associated factors in Dejen and Aneded Districts, Northwest Ethiopia,” *Primary Health Care: Open Access, vol. 4, no. 4, article no. 170, 2014.*
- Amosu AM, Degun AM, Thomas AM, Olanrewaju MF, Babalola AO, Omeonu PE, Ola OO. A Study on the Acceptance and Practice of Focused Antenatal Care by Healthcare Providers in the South-West Zone of Nigeria. *Arc. Appli. Sci. Res,* 2011; 3(1): 484– 491.
- Alkema L, Chou D, Hogan D, Zhang S, Moller AB, Gemmill A, et al. *Lancet.* 2016; 387 (10017): 462-74.
- Asp G, Pettersson KO, Sandberg J, Kabakyenga J, Agardh A. Associations between mass media exposure and birth preparedness among women in southwestern Uganda: a community-based survey. *Global Health Action* (2014) 7:22904. doi:10.3402/gha.v7.22904
- Bandura A. Self-efficacy: Toward a Unifying Theory of Behaviour Change. Stanford University. *Psychological Review, 1977, Vol. 84, No.2, 191-215.*
- Belayneh T, Adefris M, Andargie G. Previous early antenatal service utilization improves timely booking: cross-sectional study at University of Gondar Hospital, Northwest Ethiopia. *J pregnancy.* 2014;2014:132494
- Birungi H and Onyango-Ouma W. (2006) *Acceptability and sustainability of the WHO focused antenatal care package in Kenya.FRONTIERS Final Report.* Washington, DC: Population Council.
- Callaghan-Koru J, McMahon S, Chebet J, Kilewo C, Frumence G, Gupta S, Stevenson R, Lipingu C, Baqui A, Winch P. A qualitative exploration of health workers' and clients' perceptions of barriers to completing four antenatal care visits in Morogoro Region, Tanzania. *Pubmed (October 2016).* Oxford University press.
- Choulagai B, Onta S, Subedi N, Mehata S, Bhandari GP, Poudyal A, et al. Barriers to using skilled birth attendants' services in mid-and far-western Nepal: a cross-sectional study. *BMC Int Health Hum Rights* (2013) 131:49. doi:10.1186/1472-698X-13-49
- Chweya R A., Gohar I E., Basyomi N R., and Chelegat D J., (2018). Nurses' compliance with FANC in Saiya County, Kenya. *IOSR Journal of Nursing and Health Science, 7(2): 01-18.*
- Conrad P, Schmid G, Tientrebeogo J, Moses A, Kirenga S, Neuhann F, Müller O, Sarker M (2011) Compliance with focused antenatal care services: do health workers in rural Burkina Faso, Uganda and Tanzania perform all ANC procedures? *Tropicalmedicine&international health: TM & IH, 17(3), pp.300–307.*

- De Graaf JP, Steegers EA, Bonsel GJ. Inequalities in perinatal and maternal health. *Curr Opin Obstet Gynecol.* 2013;25:98–108
- Edgard-Marius O, Charles SJ, Jacques S, Justine GC, Virginie MA, Ibrahim MA, et al. Determinants of low antenatal care services utilization during the first trimester of pregnancy in southern Benin rural setting. *Univers J Public Health.* 2015;3(5):220–8.
- Eleje GU, Onmusulu DN, Ezeama CO, Perceptions of focused prenatal care among women attending two tertiary centers in Nigeria. *Int J Gynaecol Obstet.* 2015;132(2):174-177.
- Filippi V, Chou D, Graham W and Say L (2014). *Levels and causes of maternal mortality and morbidity.* Geneva, World Health Organization.
- Finlayson K, Downe S. Why do women not use antenatal services in low- and middle-income countries? A meta-synthesis of qualitative studies. *PLoS Med.* 2013;10(1):e1001373
- Gitonga E, Keraka M, and Mwaniki P, “Birth preparedness among women in Tharaka Nithi County, Kenya,” *African Journal of Midwifery and Women's Health*, vol. 9, no. 4, pp. 153–157, 2015.
- Gitonga E. and Felarmine M, “Determinants of health facility delivery among women in Tharaka Nithi County, Kenya,” *The Pan African Medical Journal*, vol. 2, supplement 2, p. 9, 2016.
- Haddad DN, Makin JD, Pattinson RC, Forsyth BW. Barriers to early Prenatal care in South Africa. *Int J Gynaecol Obstet.* 2016;132(1):64-67.
- Hogan M C, Foreman K, et al (2010) Maternal mortality for 181 countries 1080-2008: a systematic analysis of progress towards melinium Development Goal 5. *The lancet* 375(9726): 1609-23
- Ibrahim El, Eltigani HEI, Lamia El, Muna A.B (2012) Communication strategic planfor reproductive health sudan. *Journal Health Policy Plan* 17:71-77.
- Idang N, Ugah L. Knowledge and attitude of pregnant women towards focused Antenatal care services in University of Calabar Teaching Hospital, Calabar, Nigeria. *International Journal of Nursing, midwifery and health related cases (January 2015) Vol.1, page 14-23.*
- JHPIEGO. *Focused Antenatal Care: Malaria in pregnancy, Prevention of Mother to Child Transmission, Tuberculosis. Orientation package for service providers.* Kenya, 2007.
- Kathryn R F, Megan M H, Kevin C H, Jennifer E F.(2018).*Trends and disparities in delivery hospitalizations involving several maternal morbidity, 2006-2015.* Rockville; MD: Maryland
- KDHS. (2014). *Kenya Demographics and Health Surveys 2010-14.* Nairobi, KNBS.
- Kigenyi O, Tefera GB, Nabiwemba E, Orach CG. Quality of intrapartum care at Mulago national referral hospital, Uganda: clients’ perspective. *BMC Pregnancy Childbirth.* 2013;13(1):162.
- Lotte B. C, Kari K., Maija J., Mika G., and Pelle G., (2017). Mode of first delivery and severe maternal complications in the subsequent pregnancy. *Acta Obstet Gynecol Scand* 2017; (96): 1053-1062.

- Matejić B, Milićević MS, Vasić V, Djikanović B. Maternal satisfaction with organized perinatal care in Serbian public hospitals. *BMC Pregnancy Childbirth*. 2014;14(1):14.
- McTavish S, Moore S, Harper S, Lynch J. National female literacy, individual socio-economic status, and maternal health care use in sub-Saharan Africa. *Soc Sci Med*. 2010;71(11):1958–63.
- MoH (2014). *A price too high to bear: Research findings*. Nairobi, Ministry of Health.
- MOH (2015). *National Guidelines for Quality Obstetrics and Perinatal Care*. Nairobi, Ministry of Health.
- Moller AB, Petzold M, Chou D, Say L. Early antenatal care visit: a systematic analysis of regional and global levels and trends of coverage from 1990 to 2013. *Lancet Glob Health*. 2017;5(10):e77-e983.
- Namasivayam A., et al., The role of gender inequities in women's access to reproductive health care: a population-level study of Namibia, Kenya, Nepal, and India. *Int J Womens Health*, 2012. 4: p. 351–364. *pmid:22927766*
- Neupane S, Doku DT. Determinants of time of start of prenatal care and number of prenatal care visits during pregnancy among Nepalese women. *J Community Health*. 2011 Nov 30; [Epub ahead of print].
- Nyarko P, Birungi H, Armar-Klemesu M, Arhinful D, Deganus S, Odoi-Agyarko H, Brew G. (2006) *Acceptability and Feasibility of introducing the WHO Focused Antenatal Carepackage in Ghana. FRONTIERS final report*. Washington, DC: Population council.
- Nyondo AL, Chimwaza AF, Muula AS. Stakeholders' perceptions on factors influencing male involvement in prevention of mother to child transmission of HIV services in Blantyre, Malawi. *BMC Public Health*. 2014;14(1):691
- Nzioki J. M, Onyango R. O, and Ombaka J. H, "Socio-demographic factors influencing maternal and child health service utilization in mwingi; A rural semi-arid district in Kenya," *American Journal of Public Health Research*, vol. 3, no. 1, pp. 21–30, 2015.
- Pattinson R. (2016). *Audit of Mpumalanga stillbirths. Presentation at ANC guideline development group meeting (21–23 March)*. Geneva: World Health Organization.
- Pell C, Meñaca A, Were F, Afrah NA, Chatio S, Manda-Taylor L, et al. Factors affecting antenatal care attendance: results from qualitative studies in Ghana, Kenya and Malawi. *PLoS One*. 2013;8(1):e53747
- Rosato M, Laverack G, Grabman LH, Tripathy P. Community participation: lessons for maternal, newborn, and child health *The Lancet*, September 2008, Volume 372, Issue 9642, 13–19, Pages 962-971.
- Roseli M. Y, Eliane A. A, Mercelo Z.N, (2013). *Maternal complications associated with type of delivery in a University Hospital*. Sao Paulo, Brasil.
- Rosenstock IM. *The Health Belief Model and Preventive Health Behaviour*. Health EducBehav December 21, 1974 vol. 2 no. 4 354-386.

Say L, Chou D, Gemmill A, Tuncalp O, Moller A-B, Daniels J, Gulmezoglu M, Temmerman M, Alkema L. 2014. *Global causes of maternal death: a WHO systematic analysis*. The Lancet Global Health.

Srijana P. and Supendra K. (2014), Socio-economic and Demographic Determinants of Antenatal Care Services Utilization in Central Nepal, *Int J MCH AIDS*. 2014; 2(2): 212–219

Tadele Girum (2017). Correlates of maternal mortality in developing countries: an ecological study of 82 countries. *Matern Health Neonatol Perinatol*, 2017; 3:19

Tesfaye G., Loxton D., Chojenta C., Assefa N., Smith R., (2018). Magnitude, trends and causes of maternal mortality among reproductive aged women in Kersa health and demographic surveillance system in east Ethiopia. *BMc Women's Health* 2018, 18:198.

Valentina T, Chiara S. G. De Santis S. N. (2018) Socio-demographic determinants of women's satisfaction with prenatal and delivery care services in Italy *International Journal for Quality in Health Care*, Volume 30, Issue 8, October 2018, Pages 594–601, <https://doi.org/10.1093/intqhc/mzy078>

Vogel JP, Habib NA, Souza JP, Gulmezoglu AM, Dowswell T, Carroli G (2013). Antenatal care packages with reduced visits and perinatal mortality: a secondary analysis of the WHO Antenatal Care Trial. *Reprod Health*. 2013;10:19. doi:10.1186/1742-4755-10-19.

Vogel JP, Souza JP, Mori R, Morisaki N, Lumbiganon P, Laopaiboon M, Ortiz-Panozo E, Hernandez B, Perez-Cuevas R, Roy M, Mittal S, Cecatti JG, Tuncalp O, Gulmezoglu AM, on behalf of the WHO Multicountry Survey on Maternal and Newborn Health Research Network. Maternal complications and perinatal mortality: findings of the World Health Organization Multicountry Survey on Maternal and Newborn Health. *BJOG* 2014; 121 (Suppl. 1): 76–88.

WHO (2014). *WHO Handbook for guideline development, 2<sup>nd</sup> edition*. Geneva, World Health Organization.

WHO (2016). *Recommendations on ANC for positive pregnancy experience*. Geneva, World Health Organization.

WHO (2016). Pregnant women must be able to access the right care at the right time, 7 November 2016, Geneva, WHO.

WHO, UNICEF, UNFPA and World Bank (2013). *Trends in Maternal mortality: 1990 to 2010*, Geneva, WHO.

WHO, UNICEF, UNFPA, and the World Bank (2014). *Trends in maternal Mortality: 1990 to 2015*. Geneva, World Health Organization.

Worku AG, Yalew AW, Afework MF. Factors affecting utilization of skilled maternal care in Northwest Ethiopia: a multilevel analysis. *BMC Int Health Hum Rights* 2013;13:1.

Yengo ML. (2009) *Nurses' perception about the implementation of focused antenatal care Services in District facilities of Dar es Salaam*, University of South Africa.

## APPENDICES

### Appendix i: Consent form for Health Workers

Study No.....

#### CONSENT FORM

##### Introduction

My name is Raheli Misiko Mukhwana. I am a Masters student pursuing my Masters in Public Health Reproductive health Option at the Kenyatta University. I shall be conducting a study on “Utilization of Focused Antenatal Care and pregnancy outcomes in the public county hospitals in Nairobi”. The results of this study will hopefully improve the uptake of focused antenatal services among pregnant women.

##### Procedures to be followed

I have an interview guide that will guide the interview. I will ask open-ended question that you will respond to. A tape recorder will be used to record the interview. The items in the questionnaire focus on your knowledge as regards to Focused Antenatal Care. The Items also seek to identify the acceptability of focused antenatal care by the health workers. I want to stress that your participation in this study is voluntary and all efforts to protect your identity and keep the information confidential will be taken. Refusal to participate will not affect your work in any way.

##### Discomforts and Risks

Some of the questions you will be asked are on intimate subject and may make you uncomfortable. If this happens, you may refuse to answer these questions if you so choose. You may also stop the interview at any time. The interview will take approximately half an hour.

##### Benefits

If you participate in this study, you will help us to learn how to improve the utilization of focused antenatal care in the country, also improve the pregnancy outcomes, and thus reduce maternal and neonatal morbidity and mortality.

##### Reward

If you agree to participate in this study, no kind of reward will be given to the participants.

##### Confidentiality

The interviews will be conducted in private area in the antenatal clinic. Your name will not be recorded on the questionnaire. The questionnaires will be kept in a locked cabinet for safekeeping.

**Contact Information**

If you have any questions, you may contact Prof. Margaret Keraka on 0721817521 or Dr. Meshack Onyambu on 0726099487 or the Kenyatta University Ethical Review Committee Secretariat on [chairman.kuerc@ku.ac.ke](mailto:chairman.kuerc@ku.ac.ke), [secretary.kuerc@ku.ac.ke](mailto:secretary.kuerc@ku.ac.ke), [ercku2008@gmail.com](mailto:ercku2008@gmail.com)

**Participant’s statement**

The above information regarding my participation in the study is clear to me. I have been given a chance to ask questions and my questions have been answered to my satisfaction. My participation in this study is voluntary. I understand that my records will be kept private and that I can leave the study at any time.

Name of Participant.....

\_\_\_\_\_

\_\_\_\_\_

Signature or Thumbprint

Date

**Investigators statement**

I, the undersigned, have explained to the volunteer in a language she understands, the procedures to be followed in the study and the risks and benefits involved

Name of  
Interviewer.....

\_\_\_\_\_

\_\_\_\_\_

Signature or Thumbprint

Date

**Appendix ii: Consent for Mothers****CONSENT FORM**

Study No.....

**Introduction**

My name is Raheli Misiko Mukhwana. I am a Masters student pursuing my Masters in Public Health Reproductive health Option at the Kenyatta University. I shall be conducting a study on “Utilization of Focused Antenatal Care and pregnancy outcomes in the public county hospitals in Nairobi”. The results of this study will hopefully improve the uptake of focused antenatal services among pregnant women.

**Procedures to be followed**

I have attached a questionnaire, which asks you to respond to a series of statements and questions. I wish to ask you about the care that you have received during this pregnancy with this child. Your view will help improve antenatal care for yourself and other women in this clinic.

I want to stress that your participation in this study is voluntary and all efforts to protect your identity and keep the information confidential will be taken. Refusal to participate will not affect your work in any way.

**Discomforts and Risks**

Some of the questions you will be asked are on intimate subject and may make you uncomfortable. If this happens, you may refuse to answer these questions if you so choose. You may also stop the interview at any time. The interview will take approximately half an hour.

**Benefits**

If you participate in this study, you will help us to learn how to improve the services in offering of focused antenatal care in the clinic, also improve the pregnancy outcomes, and thus reduce maternal and neonatal morbidity and mortality.

**Reward**

If you agree to participate in this study, no kind of reward will be given to the participants.

**Confidentiality**

The interviews will be conducted in private area in the postnatal ward. Your name will not be recorded on the questionnaire. The questionnaires will be kept in a locked cabinet for safekeeping.

**Contact Information**

If you have any questions, you may contact Prof. Margaret Keraka on 0721817521 or Dr. Meshack Onyambu on 0726099487 or the Kenyatta University Ethical Review Committee Secretariat on [chairman.kuerc@ku.ac.ke](mailto:chairman.kuerc@ku.ac.ke), [secretary.kuerc@ku.ac.ke](mailto:secretary.kuerc@ku.ac.ke), [ercku2008@gmail.com](mailto:ercku2008@gmail.com)

**Participant’s statement**

The above information regarding my participation in the study is clear to me. I have been given a chance to ask questions and my questions have been answered to my satisfaction. My participation in this study is voluntary. I understand that my records will be kept private and that I can leave the study at any time.

Name of Participant.....

\_\_\_\_\_

Signature or Thumbprint

Date

**Investigators statement**

I, the undersigned, have explained to the volunteer in a language she understands, the procedures to be followed in the study and the risks and benefits involved

Name of Interviewer.....

\_\_\_\_\_

Signature or Thumbprint

Date

### Appendix iii: Questionnaire for Mothers

#### STUDY: UTILIZATION OF FOCUSED ANTENATAL CARE AND PREGNANCY OUTCOMES IN THE PUBLIC COUNTY HOSPITALS IN NAIROBI, KENYA.

Questionnaire No: ..... Date: .....

#### PART A: RESPONDENTS PERSONAL CHARACTERISTICS

1. How old are you?

- a) 11-15.                      b) 16-20.                      c) 21-25.                      d) 26-30.  
e) 31-35.                      f) 36-40.                      g) 41-45.

2. What is your marital status?

- a) Married                      b) Single                      c) Divorced                      d) Widowed  
e) Separated

3. What is your religion or denomination?

- a) Christian                      b) Muslim                      c) No religion  
d) Others (Specify).....

4. What is your highest level of education?

- a) Primary                      b) Secondary                      c) College                      d) University

5. What do you do for a living?

- a) Business                      b) Farming                      c) Casual labour                      d) Employed

6. How many deliveries have you ever had?

- a) None                      b) One.                      c) Two.                      d) Three.  
e) Four                      f) More than four

7. How many children are alive?

- a) None                      b) One.                      c) Two.  
d) Three.                      e) Four                      f) More than four

8. How much money do you earn in a month

- a) less than 11,000                      b) 11,000 – 20,000                      c) 21,000 – 30,000  
d) 31,000 – 40,000                      e) above 40,000

#### PART B: QUESTIONS ABOUT FOCUSED ANTENATAL CARE (FANC)

8. With regard to your previous pregnancy, did you attend Antenatal care clinics?

- a) Yes                      b) No

9. Before you started antenatal care, was it necessary for you to get permission from anyone to attend the antenatal care clinics?

- a) Yes                      b) No

10. From whom did you ask for permission to attend antenatal care clinics?

- a) Husband                      b) Uncle.                      c) Mother.                      d) Mother In-law  
e) Other (Specify).....

11. Do you remember having any obstetric problems with previous pregnancies?

- a) Yes                      b) No

If yes could this have an influence on antenatal care visits?

- a) Yes                      b) No

12. How many antenatal care visits is a pregnant woman supposed to make during the whole pregnancy period? Enter Number

a) When there is no problem \_\_\_\_\_

b) When there are problems \_\_\_\_\_

### **PART C: QUESTIONS ABOUT KNOWLEDGE**

13. Were you satisfied with the services offered at this facility?

- a) Yes                      b) No

14. How well do you know the FANC? For knowledge not mentioned probe further  
Establishing rapport between pregnant mothers.

<b>Please answer by circling the appropriate number from each instance. 1= Yes and 2= No</b>		
The first ANC visit should occur during the trimester of pregnancy (8-12 Weeks)	1	2
The WHO recommends a minimum of 4 ANC visits per pregnancy	1	2
FANC is important for improving better pregnancy outcomes	1	2
FANC is the approved antenatal care by WHO for pregnant women	1	2
Each FANC visit includes care that is appropriate for the duration of pregnancy	1	2
FANC deals with each woman's specific need	1	2
FANC focuses on quality of care rather than quantity of care used	2	2
FANC helps in birth preparedness and complication readiness planning	1	2

Pregnant women are provided with vaccines and supplements during ANC check-ups	1	2
--	---	---

### ATTITUDE TOWARDS FANC AMONG THE WOMEN

15) How do you feel towards the services rendered to you?

Independent variable	Respondent's response (%)			
	Strongly Disagree	Disagree	Agree	Strongly agree
I prefer FANC for use during pregnancy since it involves counselling about women's health	1	2	3	4
FANC prevents negative pregnancy outcomes	1	2	3	4
Attending FANC is for wellbeing of the mother	1	2	3	4
FANC detects disease early in a pregnant woman	1	2	3	4
I prefer FANC because seeing other women in the clinic relieves anxiety	1	2	3	4
I hate traditional ANC because it does not use screening for risk factors	1	2	3	4
I feel FANC as the opportunity for individualized care	1	2	3	4

Challenges of focused antenatal care

16. When you wanted to start focused antenatal care, was each of the following a problem or not?

Please answer by circling the appropriate number from each instance. 1= Problem 2= Not a problem			
a)	Transport money	1	2
b)	Long distance	1	2
c)	Desirability	1	2
d)	Perception of being a low risk	1	2
e)	Waiting to get permission to start focused antenatal care clinics	1	2

17. What do you like most about focused antenatal care services at this facility?

- a) Good health worker attitude
- b) Short waiting hours
- c) Availability of staff

d) Flexibility of clinic schedules

17. Do you have to pay in order to start focused antenatal care clinics?

- a) No                      b) Yes

**PART D: OUTCOME OF THE PREGNANCY (check records hospital records of the mother)**

Did the mother deliver in the facility?

- Yes                              No

18. Mode of delivery

- a) Vaginal delivery                      b) Caesarian section

19. Baby outcome

- a) Alive    b) Stillbirth

20. Maternal complication

- a) Postpartum hemorrhage                      b) Postpartum eclampsia                      c) Postpartum Sepsis  
d) Puerperal psychosis                      e) other – Specify .....

**Thank you for participating!**

## Appendix v: Key Informant Interview Guide

### UTILIZATION OF FOCUSED ANTENATAL CARE AND PREGNANCY OUTCOMES IN PUBLIC COUNTY HOSPITALS IN NAIROBI, KENYA.

Questionnaire No: ..... Date: .....

Name of facility .....

Position in the facility .....

Number of Health workers working in the facility

a) Doctors..... b) Clinical officers..... c) Nurses.....

- 1) Please tell me the kind of antenatal care provided in this facility.
- 2) Has Focused Antenatal Care been put in place in the facility and how has it been organized.
- 3) What kind of training was offered for health workers and Focused Antenatal Care and has it changed the way care is offered in the facility.
- 4) What are some of the challenges as a facility do you face as you offer Focused Antenatal Care
- 5) How is the outcome of patients who attend antenatal care at the hospital in relation to the others who attend ANC in other facilities?
- 6) What can be done to improve the care mothers receive during pregnancy

## Appendix vi: Research authorization from Kenyatta University Graduate School



### KENYATTA UNIVERSITY GRADUATE SCHOOL

E-mail: [dean-graduate@ku.ac.ke](mailto:dean-graduate@ku.ac.ke)

Website: [www.ku.ac.ke](http://www.ku.ac.ke)

P.O. Box 43844, 00100  
NAIROBI, KENYA  
Tel. 810901 Ext. 57530

Internal Memo

FROM: Dean, Graduate School

DATE: 12<sup>th</sup> November, 2016

TO: Mukhwana Raheli Misiko  
C/o Population & Reproductive  
Health Department.

REF: Q139/CTY/FT/24922/2013

SUBJECT: APPROVAL OF RESEARCH PROPOSAL  
=====

This is to inform you that Graduate School Board, at its meeting of 2<sup>nd</sup> November, 2016 approved your Research Proposal for the M.Sc Degree Entitled, "Utilization of Focused Antenatal Care and Pregnancy Outcomes among Pregnant Women at Kenyatta National Hospital, Nairobi, Kenya".

You may now proceed with data collection, subject to clearance with the Director, Ethics Office, Kenyatta University and the Director General, Commission for Science, Technology & Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking forms per semester. The form has been developed to replace the progress report forms. The supervision Tracking Forms are available at the University's website under Graduate School webpage downloads.

Thank you.

GIDEON KAIMENYI  
FOR: DEAN, GRADUATE SCHOOL


c.c. Chairman, Department of Population and Reproductive Health

Supervisors:

1. Prof. Margaret N. Keraka  
Department of Population and Reproductive Health  
Kenyatta University
2. Dr. Rekha Sharma  
Department of Zoological Sciences  
Kenyatta University

GK/rwm

## Appendix vii: Ethical clearance from KU Ethics and Review Committee



**KENYATTA UNIVERSITY  
ETHICS REVIEW COMMITTEE**

Fax: 8711242/8711575  
 Email: [chairman.kuerc@ku.ac.ke](mailto:chairman.kuerc@ku.ac.ke)  
       [kuerc.secretary@ku.ac.ke](mailto:kuerc.secretary@ku.ac.ke)  
 Website: [www.ku.ac.ke](http://www.ku.ac.ke)

P. O. Box 43844,  
 Nairobi, 00100  
 Tel: 8710901/12

---

Our Ref: KU/ERC/ APPROVAL/VOL.1 (208) Date: 24<sup>th</sup> September, 2018

Mukhwana Raheli Misiko  
 P.O.Box 43844-00100  
 NAIROBI

Dear Misiko,

APPLICATION NUMBER: PKU/642/1724 "UTILIZATION OF FOCUSED ANTENATAL CARE AND PREGNANCY OUTCOMES AMONG PREGNANT WOMEN IN PUBLIC COUNTY HOSPITALS IN NAIROBI, KENYA"

**1. IDENTIFICATION OF PROTOCOL**

The Application before the committee is with research topic "Utilization of Focused Antenatal Care and Pregnancy Outcomes among Pregnant Women in Public County Hospitals in Nairobi, Kenya" received on 01<sup>st</sup> January, 2018 and discussed on 14<sup>th</sup> August, 2018.

**2. APPLICANT**

Mukhwana Raheli Misiko

**3. SITE**

Nairobi, Kenya

**4. DECISION**

The committee has considered the application and has given the KENYATTA UNIVERSITY RESEARCH BOARD approval for the study. The Kenyatta University Research Board has considered and APPROVED that the research may proceed for a period of ONE year from 14<sup>th</sup> August, 2018.

**Appendix viii: Research authorization from National Council for Science,  
Technology and Innovation**



**NATIONAL COMMISSION FOR SCIENCE,  
TECHNOLOGY AND INNOVATION**

Telephone: +254-20-2213471,  
2241349, 3310571, 2219420  
Fax: +254-20-318245, 318249  
Email: dg@nacosti.go.ke  
Website : www.nacosti.go.ke  
When replying please quote

NACOSTI, Upper Kabete  
Off Waiyaki Way  
P.O. Box 30623-00100  
NAIROBI-KENYA

Ref. No. **NACOSTI/P/18/48380/26267**

Date: **29<sup>th</sup> November, 2018**

Raheli Misiko Mukhwana  
Kenyatta University  
P.O Box 43844-00100  
**NAIROBI**

**RE: RESEARCH AUTHORIZATION**

Following your application for authority to carry out research on *“Utilization of focused antenatal care and pregnancy outcomes among pregnant women in public county hospitals in Nairobi, Kenya”* I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **28<sup>th</sup> November, 2019**.

You are advised to report to **the County Commissioner, the County Director of Education and the County Director of Health Services, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a **copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

**DR. STEPHEN K. KIBIRU, PhD.  
FOR: DIRECTOR-GENERAL/CEO**

Copy to:

The County Commissioner  
Nairobi County.

The County Director of Education  
Nairobi County.



Appendix x: Map of study area

