

**IMPACT OF FREE MATERNAL HEALTH SERVICE PROGRAM ON HEALTH
SERVICE UTILIZATION IN KENYA; THE CASE OF MANDERA COUNTY.**

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DECLARATION

I declare that this study is specific to me and it had not been previously presented to other universities for the award of any degree.

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This Research Proposal has been submitted for examination with my approval as University Supervisor.

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Date.....

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DEDICATION

I dedicate my work to my parents; my Mother, Mrs Jamila Issack Adan and my late father, Mr Ibrahim Haji Ahmed. To also the mothers of Mandera County who are continuously struggling to access Maternal and Child Health services beating all odds and obstacles on their way.

To all resource persons of health economics fraternity who are involved in research studies on emerging trends in this discipline.

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ABBREVIATIONS AND ACRONYMS

ANC	Antenatal care
CEDAW	Elimination of discrimination against women
EOC	Essential obstetric care
KDHS	Kenya Demographic and health survey
MDG	Millennium development goal
MMR	Maternal mortality ratio
MOH	Ministry of health
SMI	Safe motherhood initiative
TBA	Traditional birth attendance
UNFPA	United nation population fund
WHO	World health organisation
WRA	Women of reproductive age
CDC	Center for Disease Control
HIPC	Highly Indebted Poor Countries
HRBA	Human Rights-Based Approach
SRHR	Sexual and Reproductive Health Rights
CARMMA	Campaign on Accelerated Reduction of Maternal Mortality in Africa
HMIS	Health Management Information System
CHMT	County Health Management Team
SDG	Sustainable Development Goals
OLS	Ordinary Least Squares

TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT.....	iv
ABBREVIATIONS AND ACRONYMS.....	v
TABLE OF CONTENTS	vi
LIST OF FIGURES	ix
LIST OF TABLES	x
ABSTRACT.....	xi
CHAPTER ONE: INTRODUCTION.....	1
1.1. Background information	1
1.2 Problem Statement	7
1.3 Study Objectives	8
1.4 Study Questions	8
1.5 The Study Significance	9
CHAPTER TWO: LITERATURE REVIEW.....	10
2.1 Introduction.....	10
2.2 Theoretical Literature.....	10
2.3 Empirical Literature	12
2.4. Overview of the Literature Review.....	16
CHAPTER THREE: STUDY METHODOLOGY	18
3.1 Introduction.....	18
3.2 Analytical and Conceptual Framework	18
3.2.1. Anderson’s (1968) Health Behavior Model	18
3.2.2 The Model of Health Demand by Grossman.....	19
3.2.3 Conceptual Framework	19
3.3. Model Specification	20

3.4 Description of Variables	21
3.5. Diagnostic Tests.....	23
3.5.1 Heteroskedasticity	23
3.5.2. Multicollinearity.....	23
3.6. Study Area and Justification	24
3.7 Target Population.....	25
3.8 Data source and Type.....	25
3.9 Research Design, Sample Size and Sampling Procedure	25
3.10 Data Analysis	26
3.11 Ethical Considerations and Limitations	27
CHAPTER FOUR: DATA ANALYSIS AND DISCUSSION OF RESULTS.....	28
4.1 Introduction.....	28
4.2 Descriptive Statistics.....	28
4.3 Descriptive analysis of the Health Profiles	29
4.3.1 Health Infrastructure	29
4.3.2 Supportive Supervision.....	30
4.3.3 Essential supplies	31
4.3.4 Medical equipment.....	32
4.3.5 Services Availability	32
4.3.6 Ambulatory Service	33
4.3.7 Maternal health costs	33
4.3.8 Staff capacity building	34
4.3.9 Sensitization of Free Maternity Service.....	34
4.4 Diagnostic Tests.....	35
4.4.1 Heteroskedasticity test	35
4.4.2 Multicollinearity test.....	35
4.5 Multiple Regression Output.....	36
CHAPTER FIVE: CONCLUSION AND RECOMMENDATION.....	42

5.1 Introduction.....	42
5.2 Conclusion	42
5.3 Policy Recommendation	43
5.4 Further Areas of Research	45
REFERENCES.....	46
APPENDICES	52
APPENDIX I: LETTER OF TRANSMITTAL	53
APPENDIX II: TARGET POPULATION	54
APPENDIX III: QUESTIONNAIRE FOR THE HEALTH WORKERS	55

LIST OF FIGURES

Figure 1: Anderson's (1968) Health Behaviour Model	18
Figure 2: Conceptual Framework.....	20

LIST OF TABLES

Table 1 : Counties with the Highest MMR Burden	6
Table 2 : Leading Percentage Causes of Maternal Mortality in Kenya	7
Table 3: Operationalization and Description of Variables	22
Table 4: Descriptive Statistics	28
Table 5: Infrastructure.....	30
Table 6: Supportive Supervision.....	31
Table 7: Essential Supplies	31
Table 8: Medical Equipments	32
Table 9: Services Available	32
Table 10: Ambulatory Services	33
Table 11: Maternal health costs	33
Table 12: Staff Capacity Building	34
Table 13: Sensitization of Free Maternal Services.	34
Table 14: Heteroskedasticity Test.....	35
Table 15: Multicollinearity Test	36
Table 16: Model Regression Summary.....	36

ABSTRACT

The overall purpose of the study was to evaluate how the free Maternal Health Services program affects health care utilization in Kenya; a case of Mandera County. Cross-sectional research study method was used focusing on implementation, effect on maternal health service utilization and results thereof. The following research objectives guided the study:- Examine the impact of Free Maternal Health Service Policy on maternal health service utilization, to profile the status of Free Maternal Health care Program implementation and lastly to propose evidence-based policy recommendations on how to accelerate the usage of maternal health care services. Questionnaires were used to collect data. Respondents included; selected health workers from each of the study sites where maternal health services are directly provided and others at the administrative and managerial level. Analysis of data was through descriptive statistics and multiple regression using Ordinary Least Squares, OLS, giving quantifiable statistics and the results obtained with the help of Microsoft Office Excel programme. The study results would be presented by the use of tables and other relevant methods. The results showed improvement in health care services, hence significant enhancement of health care utilization. The second objective was to describe profiles for the implementation status of free maternal health care program and this was addressed by finding out the availability of the infrastructure, essential supplies, medical equipment, availability of health services, ambulatory services and supervision of the programs which majority of the respondents confirmed they were available. In conclusion, the study proposes that the government should take necessary measures to improve these services; concerted efforts to ensure sustainability of the program by ensuring all the necessities that are attributed to the success of this program are available.

CHAPTER ONE: INTRODUCTION

1.1. Background information

Globally enhancing access to maternal healthcare services had been a priority for more than three decades. Many initiatives were developed to address factors that contributed to inaccessibility of maternal health services (Arhinful, 2006). One of the actions was safe motherhood that was rolled out in 1987 which concentrated on improving access to quality maternal healthcare services and increase skilled professional deliveries at the health facilities (Asante, Chikwama, Daniels and Armar-Klemesu, 2007).

Another initiative was the United Nations' (UN) Millenium Development Goals (MDGs), which were developed in 2000 by the countries of the world (Borkowski, 2005). These had eight goals which were to be achieved by 2015. Goal 5 of Millenium Development Goals, MDG, was to promote improved maternal health services, and it targeted the reduction of Maternal Mortality Rate (MMR) by seventy five percent starting 1990 to 2015. Kenya has achieved little towards achieving Goal 5 of MDG. From the year 2003 to 2008, Kenya's MMR increased from 414 upto 488 per 100 000 live births (KDHS 2008/9). After the expiry of MDG in 2015, came another global initiative, Sustainable Development Goals (SDGs), which had 17 goals. Goal 3, Good Health and Wellbeing for all, at all ages, had its target to decrease MMR to below 70 per 100 000 live births by the year 2030 globally (Gupta and Vegelin, 2015).

As per the World Health Organization (WHO), an estimate of 585,000 women in the reproductive age bracket worldwide die of complications related to pregnancy annually. More than 99 percent of this occurs in the countries of the world that are under developed. Sub-Saharan Africa records the worlds highest MMR, estimated at 686 persons per 100,000 live births (World Bank, 1994). Most of the under developed countries are found in Sub Saharan Africa. With effective and accessible maternal health services, 75 percent of these deaths could have been prevented. In many areas, services do not exist and where they do, they are often underutilized. Women play an essential role in the society which includes reproduction, production and community services. It has been demonstrated that the high levels of maternal morbidity and mortality experienced in developing countries are preventable through access to skilled professionals, equipping facilities

with the requisite tools and provision of essential resources required to effectively implement standard services as regards maternal health care (Fortney, 1988).

According to Nakamara (2010), maternal health was referred to as the status of health of women particularly the reproductive age group during antenatal, delivery and postnatal period. Besides, in case of a complication, late presentation of the pregnant woman at the health facility combined with poor quality of health care, causes rise in maternal and prenatal mortality and severe morbidity. This is compounded by the three types of delay associated with accessing the nearest health facility; delay to make decision by the pregnant women and her confidantes, delay to reach the facility and delay to be attended to by a qualified health professional. Obstetric complications are a risk to all women and therefore it is necessary that access to universal and effective Essential Obstetric Care (EOC) is prioritized (WHO, 1998).

Indeed according to WHO, globally, estimates of more than 500,000 women succumb to pregnancy related complications each year. Despite Millions of them surviving, most end up suffering from childbirth-related complications. In the year 2003, the Safe Motherhood Initiative (SMI) estimated that 30 to 50 morbidities occur from maternal death. Prenatal care aims at detection of pregnancy-related complications in advance, if possible to prevent them and to direct women to the appropriate special medical care services. Issues of postnatal care include recovery after childbirth, newborn care concerns, breastfeeding, family planning and nutrition (Burns & Grove, 2007).

One the widely regarded life's most unfortunate outcomes is maternal death. The death of a woman, who was a critical pillar in procreation, was a harsh paradox. Such a death which is an incomparable loss for the children left behind can almost entirely be prevented given proper medical surveillance and interventions, and as such maternal mortality is often viewed as a picket indicator of the quality of a health care delivery system (Cochran, 1963). The Centre for Disease and Control (CDC) points out that the total health expenditure in the United States of America (USA) is the highest in the world. Women in the USA however have a higher lifetime risk of dying from obstetric complications than in 40 other nations of the world (Druker, 2007). For example, in the USA, the likelihood that a woman will die during childbirth is five times higher than in

Greece. Similarly, this likelihood is four times and three times greater in USA than in Germany and in Spain respectively. In the USA, more than two women die every day from causes related to pregnancy and the risk is greater for African-Americans as they are more likely to die from pregnancy related complications more than four times as compared to the Whites. Even compared with other industrialized countries, MMR is higher for white women in the USA (Ngechu, 2004). In more than 20 years, these rates and discrepancies have not improved. In the year 1987, MMR increased from 6.6 to 13.3 deaths per 100,000 live births (Becak, 2006).

Japan was reported to have achieved a substantial fall in MMR by two thirds over the period from 1960 to 1970, with its maternal mortality rate falling from 130 to 50 deaths per 100 000 live births within that ten year period. Many countries were motivated by Japan's achievements in attaining Goal 5 of MDG, reducing MMR by 75 percent by the year 2015, which was the year targeted by the Millennium Declaration (Bourbonnais, 2013). Many factors contributed to its achievements and these included universal access to skilled professional care through training the health workforce, including midwives and nurses, and equitable distribution so that they are accessible to all women of reproductive age. Japan invested heavily in its health workforce and the health systems so that all pregnancy-related cases are managed effectively and with proper referral systems in place, hence eradicating one of the major contributors to high maternal mortality. All maternal health services are free and of improved quality in Japan, hence high utilization (Patton, 2009).

In developing countries and in Sub-Saharan Africa especially, child delivery was believed to be related with suffering, poor health status and even loss of life. This resulted in accelerated effort globally to reduce maternal mortality and hence much attention to maternal health through various initiatives (Ogawa, 2003). Globally, there is a growing motion and particularly in the African region, to minimise financial access barriers to general health care services, but with a particular focus on high priority services and vulnerable groups. For instance, in Burundi, expectant mothers and children aged below five years were offered free services as from the year 2006 and health service utilization seems to have improved as a result, although there's no formal evaluation that has been undertaken to prove that. In 2006, user fees were abolished for rural districts in Zambia and an 80 percent subsidy policy for deliveries was launched in Burkina Faso eighty percent

subsidy program for skilled deliveries was adopted. Subsequently, many countries particularly in sub Sahara Africa followed in the footsteps of countries that had taken bold measures to promote skilled deliveries in health facilities, (Ouma, 2010).

In Kenya for instance, most recently in 2007, changes have been made to the policy on user fees. Child delivery was pronounced to be free, although no evidence is there yet for the implementation or effect to that. Other countries include Liberia who waived fees for primary care in 2007 and Ghana who introduced delivery fee exemption policies in 2004. The intention was to cater for all public and private facility costs for intrapartum care (Nagaya, 2000). Payment was initially effected through the local government administration and later through the health system. Funding came from a debt relief fund, under the Highly Indebted Poor Countries (HIPC) Initiative. Furthermore, some of the basic principles of reproductive health programme are quality and access and must be addressed in order to achieve maximum utilization and hence reduction in maternal mortality. There is no short cut to quality. It is either there or not there and hence its definition is a challenge. However, there is good progress with family planning section of reproductive health in defining its quality elements (Bruce, 1990). Quality of care is paramount in enhancing service and hence the recognition and prioritization by health system managers in putting systems in place to address the same.

Much effort had been directed towards providing facility-based maternal and Child health services at the detriment of quality of care which was critical in promoting access in terms of acceptability and utilization of services and that had been the norm in most developing countries (National Cancer Institute, 2005). Quality and standards should be given higher attention as without it access and equity may not be achieved. Therefore public hospitals in Kenya should work towards achieving quality care through effective health systems.

There has been observed progress in Sub-Saharan Africa though in Kenya, contrary to the experience in the developed world whereby a womans lifetime risk for maternal death is at 1:3800, the maternal mortality risk is very high at 1 in 39. Promoting access and uptake of maternal health services is therefore inevitable so that the trend can be reversed and this can be achieved only by investing in quality care that is effective and reliable. According to Kenya Demographic Health Survey (KDHS) of 2012, it's approximated that in Kenya, around 43 percent of deliveries were

conducted by skilled professionals. Traditional Birth Attendants (TBAs) conducted and assisted 28 percent of the births. 22 percent are delivered at home assisted by friends and relatives while 7 percent of deliveries occur without any assistance. Majority of women in Kenya had been victims of pregnancy related complications over many years and hence enhanced uptake of maternal health services is a step towards achieving universal coverage (Makimoto & Tsukasaki, 1999).

Enhanced skilled professional care during antenatal, delivery and postnatal period will go a long way in reducing pregnancy-related risks to both mother and child. In many facilities/communities, motherhood is celebrated while many women directly associate it with shortcomings in terms of pregnancy-related complications especially in places where women are not able to get skilled care (Hodgkin, 1996).

In Mandera, most deliveries that occur in public health facilities are conducted in hospitals, with only 22.7 percent happening in dispensaries and health centers (KDHS, 2014). Bearing in mind that level 2 and level 3 health facilities are closest to the population, while secondary hospital level care remained inaccessible to the majority. Therefore there is an urgent need to find out ways of reversing this trend and ensuring that women give birth in facilities nearest to them.

Healthcare workers in Mandera have appreciated the implementation of Free Maternal Healthcare Policy. Since its introduction, there have been less maternal deaths and stillbirths. Nevertheless, the health workers face challenges that they suggest have to be addressed. The problems include insufficient funds, partly caused by partial reimbursements by the government, as well as lack of motivation. Underfunding is a major implementation challenge and also a major cause of shortages. Staff shortage and enormous workload are significant implementation problems that was caused by failure to employ more professional staffs by respective governments and inequity in the distribution of the few existing health workforce leading to burn out and demotivation. KDHS (2014), proposes that strategies for effective implementation should include; increasing funding and providing adequate reimbursement in order to improve supplies; employing additional health workers to improve health workforce capacity to deal with increased workload, and motivating them by improving their remuneration and working conditions; regular supportive supervisions and infrastructural improvement to promote quality of care and access, hence increase

in health service utilization. According to the healthcare workers, until the government addresses these issues, the Free Maternal programme was deemed to fail. (Nagaya, 2000).

With this background, the Jubilee Government that came to power in March 2013 had rolled out Free Maternal Health policy to be implemented at every government facility with effect from June 2013. Mandera County experiences a high MMR which was at 3795 per 100 000 live births, UNFPA Kenya (2014). Deliveries by skilled professionals stand at 38.7 percent as compared to 62 percent nationally (KDHS, 2014).

The table below shows Kenyan counties with the highest MMR burden.

Table 1 : Counties with the Highest MMR Burden

S/NO	COUNTY	MATERNAL MORTALITY RATE
1.	Mandera	3795
2.	Wajir	1687
3.	Turkana	1594
4.	Marsabit	1127
5.	Isiolo	790
6.	Siaya	691
7.	Lamu	676
8.	Migori	673
9.	Garissa	646
10.	Taita Taveta	603
11.	Kisumu	597
12.	Homa Bay	583
13.	Vihiga	531

Source: United Nations Population Fund (UNFPA) and National Council for Population and Development (NCPD); Kenya population situational analysis, 2013.

It is therefore evident that Mandera County has the highest MMR and is part of the fifteen counties accounting for 60 percent of maternal deaths in Kenya.

Also, the table below enumerates the five major causes of pregnancy related deaths in Kenya as percentages.

Table 2 : Leading Percentage Causes of Maternal Mortality in Kenya

S/NO	LEADING CAUSES	PERCENTAGE (%)
1.	Raptured Uterus	3
2.	Sepsis	6
3.	Eclampsia	13
4.	Obstructed labour	34
5.	Hemorrhage	44

Source: UNFPA and NCPD; Kenya population situational analysis, 2013.

1.2 Problem Statement

Despite the roll-out of the Free maternal health policy in Kenya, MMR had remained high at 3795 per 100,000 live births across Mandera County. Deliveries by skilled professionals in Mandera stands at 38.7 percent as compared to 62 percent at the national level (KDHS, 2014). This trend is worrying, and an amicable evidence-based solution needs to be developed urgently in order to halt this catastrophic situation as pertains maternal mortality, hence the research study. A study on this particular case has never been conducted and therefore, there is a need for it to fill the knowledge gap that exists.

From the existing data, observation and group discussions among health care providers, globally, it was indicated that every minute, a woman died from pregnancy related complications and child birth. Each year, about 500, 000 women die from pregnancy-related issues of which 99 percent occur in developing countries. Antenatal clinic attendance and deliveries assisted by skilled professionals impacted significantly on maternal deaths and morbidity. Improved health outcomes are directly related to the access and utilization of maternal and child health services.

The 2010 KDHS estimates that in a lifetime, for every twenty five women, one risked succumbing to pregnancy and childbirth complications.

The risk of mortality and morbidity could be reduced by promoting the access and use of health services especially in areas where women of reproductive age were faced with poor health status. Overall, the use of ANC remained minimal as majority of expectant mothers made their first visit late contrary to standard practices. In 1989 access to skilled health workforce for deliveries reduced from fifty one percent to forty two percent in 2004, an indication of declining access and use of maternal health services among women. Based on the 2010 Kenya preliminary census report, young persons (age 14-24) who constitute about 36 percent of the population is the fastest growing part of the population. These young persons are faced with many challenges which range from early initiation to sex, unemployment, abortion, unwanted pregnancies among others.

Similar to several other health indicators, the maternal mortality and morbidity burden is higher and the risk of developing pregnancy-related complications and subsequent death during childbirth is also higher among this group. Free maternal health care service implementation will depend on increased resources outlay, improved health facility infrastructure, staffing and improved remuneration of medical staff, given the underlying poverty issues and absence of quality of care in Kenya (Pencheon, Guest, Melzer & Gray, 2008).

1.3 Study Objectives

The goal is to evaluate the implementation status and the impact the Free Maternal Health Care Program has on the use of maternal health services in Kenya; the case of Mandera County. Specifically, the study will;

- i. Profile the status of implementation of free maternal healthcare programme.
- ii. Examine the impact of Free Maternal Health Program on health service utilisation.
- iii. Propose evidence-based policy recommendations on how to accelerate the utilisation of maternal health services.

1.4 Study Questions

- i. What are the implementation status profiles of Free Maternal Health Care program?
- ii. What impact does Free Maternal Health Program have on health service utilisation?
- iii. What evidence-based policy recommendations propose how to accelerate maternal health service utilisation?

1.5 The Study Significance

After completion, the findings from the study would be used to determine the factors that are deemed to affect the successful implementation and impact of the program on health service utilization in government facilities in Kenya. The prime beneficiaries of this study are; primary stakeholders, governments and women of reproductive age since it would be conducted in typical settings where factors highlighted would most likely be experienced.

This would help in understanding the influence factors, and possible health intervention alternatives that would promote access to skilled deliveries. In the previous two decades, Kenya had made positive strides that had emphasized on provision of maternal health services, encouraging women to deliver and be assisted under skilled health care professional. The study would also portray the various issues that the government and investors need to prioritize on the provision of accessible maternal health services. Also the study results would be useful to scholars, researchers and other knowledge seeking persons as it would form a foundation for further areas of research study. Scholars may use the findings as a base for discussion on maternal health care in developing countries.

1.6 Organisation of the Paper

This paper has been arranged and organised in the following chapters for a clear sequence and ease of compiling. First chapter looks at the study background. Second chapter concentrates on literature review pertaining factors influencing implementation and impact of free maternal health policy on utilization of health services in public health facilities in Kenya, while chapter three covers the research methodology. Chapter four looks at Data analysis, then discussions of study results. Finally, the last chapter, Chapter Five handles Conclusions, followed by Recommendations.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Different previous studies that had been done regarding evaluation of the implementation status and impact of free maternal health program on utilisation of health services in Kenya are reviewed in this chapter. The purpose is to provide a broader perspective on health workers' view on the status of free maternity health care policy implementation and the effect it has on both health service utilisation and maternal mortality in Kenya as a whole.

2.2 Theoretical Literature

Development assistance to neonatal and maternal health in the world was approximated at over US\$ 663 million in 2003 (Filippi *et al.*, 2006). An approximated extra US\$ 1 billion in 2006, increasing to US\$ 6.1 billion in 2015, was required to expand coverage to desired levels. According to Filippi *et al.* (2006), such approximations omit the incentive costs for improving quality of care, prevent informal charges and ensure staff are retained in rural areas. 1 out of 16 women of child bearing age die during pregnancy or delivery in Sub-Saharan Africa and this risk, which is 175 times lower, is 1:2800 in developed countries. The 529 000 maternal mortalities are just a tip of the iceberg, and it is estimated that many more women experience pregnancy-related complications (9.5 million), near miss incidences (1.4 million) and other likely disastrous consequences following childbirth (Filippi *et al.*, 2006).

The literature review focussed on implementation and impact of the free maternal health programme at Government of Kenya facilities. It's a systematic process of identifying, locating and critically examining relevant work that has been published to acquire information about the study topic (Burns & Groove, 2007). Related research is reviewed both in developed and in developing world while particularly emphasising on finding methodological problems in developing nations. On top of maternity charges that are faced by mothers at delivery, the challenge of high MMR has become a matter of concern and a major risk to women at childbirth.

According to the constitution of Kenya (2010), the Bill of Rights contained in Article 26 entails the right to life and it stipulates that everybody has the right to life. In such a set up, we ought to view maternal health with at an angle that goes beyond charges on maternity care and address the issue of maternal deaths fully. In fact, this evoked immediate actions by the UN member states

agreeing to incorporate the health of the mother both in MDG and SDG through Goal 5 and Goal 3 respectively.

As required by the Centre for Elimination of Discrimination Against Women (CEDAW), all nations should make sure that women access suitable maternal and child health services, reproductive and emergency care services (CEDAW, 2010). The Jubilee Government in its manifesto states that every Kenyan should be having access to quality healthcare and speaks of raising the budget allocated to health sector from six to ten percent in 2014/15 fiscal years. However, this is still below 15 percent of the overall national budget that was the recommended allocation as agreed on in April 2001 Abuja Declaration (WHO, 2011).

Kenya is one of the countries of the world that is a signatory to the MDG, targetting by 2015 to achieve a reduction in MMR to 147 out of 100,000 live births in comparison to 488 out of 100,000 live births in 2011. Its implementation started in 2002 but was factored into the mainstream development agenda in 2011. Lowering pregnancy related deaths had made the government of Kenya and its partners joining hands and resources in promotion of maternal healthcare services. Lowering maternal morbidity and mortality calls for different strategies and approaches in promoting the health of the mother.

Placing women rights at the centre stage will promote safe motherhood concerning the MDG number 5. Previously, research had indicated that consumption of maternal health services in Low and Middle Income had significant consequences not only for the mother but also for the child (Bourbonnais, 2013).

UNFPA, as one of the organizations involved in women's Sexual & Reproductive Health Rights (SRHR), is known to be the chief propagator of Human Rights Based Approach (HRBA) and it outlines the following obligation levels to the right holders that are to be promoted by governments and other stakeholders;

- Respect to SRHR without any interference.
- To protect these rights through legislation to avoid violation of these rights by any individual, state or organization.

- To promote those rights by putting institutions and systems in place through allocation of resources.

In November 2010, the Campaign on Accelerated Reduction of Maternal Mortality in Africa (CARMMA), through their slogan, “No woman shall succumb to death while giving birth,” had influenced many Sub-Saharan countries to act and stop this menace of maternal mortalities and various African countries such as Zambia, Liberia, Burkina Faso, Niger, Burundi and Sudan responded by enacting policies that promote free or near free access to services. Kenya was not left behind and hence its formulation and subsequent implementation of maternal health service policies. All these policies should be in line with local, regional and international requirements in fulfilling rights based approach to the provision of the services as an obligation to every government (Bourbonnais, 2013).

The Kenyan government and global organisations have realised with much concern the number of women dying from birth-related causes. More than 500,000 women die yearly which translates to one woman per minute dying somewhere from this preventable cause. MDG number 5 is about lowering maternal deaths, thus implementation of free maternal health programme which therefore helps to reduce these mortalities as more women will deliver in health facilities supervised by skilled professionals. The expectation was that some individuals have a tendency to utilise public health services as compared with others and individual characteristics could predict this likelihood. Those persons who are in the knowhow of benefits of accessing skilled professional deliveries would at all times deliver at it, while those who do not understand the merit will automatically avoid it. Religious, cultural beliefs and level of education at times hinders women from utilising maternal health services thus the government through its various organs need to put in place mechanism to encourage more health facility deliveries supervised by a skilled health care worker. Those with Strong attitudes towards quality of care, would have higher tendencies to utilise health care services in facilities where they perceive that quality is a priority (Rebhan, 2005).

2.3 Empirical Literature

A study by Yared and Asnaketch (2003), shows that utilisation of maternity health care services in Ethiopia is insufficient as indicated by the main maternity health care indicators, that is

antenatal care, delivery and postnatal care services. In rural areas where over 80 percent of the population resides, the situation is worse (Addai, 2000). The study reveals that the most important factors determining utilisation of maternity health care services in Ethiopia are demographic and socio-cultural (Celik & Hotchkiss, 2000). Maternal health service utilisation is also dependent on various other factors which include, but not limited to, availability of the services, quality of care, cost and others like personal characteristics, health beliefs, and social structures since it is a complex behavioural phenomena (Dzakpasu *et al.*, 2014).

Studies by Stewart, Stanton, and Ahmed (1997), had proposed that women educational empowerment could have a positive impact on service utilisation and hence the need to promote women literacy (Mengistu & James, 1996). There's need to direct health programs to attract women with limited or no education by conducting sensitization and putting motivational strategies in place for this target group. One good criteria for targetting educational campaigns on the rewards of safe motherhood programs should be parity. Maternity health care programs need to be broadened as well as heightened in remote areas along with educational campaigns that are culturally appropriate inorder to enhance cultural acceptability. Studies into the features of traditional religion that cast down the use of such health services is also needed (Pelto, 1987).

Lang'at and Mwanri (2015), in their study on assessing implementation status of free maternity services program, concluded that a strategy on free maternity health care in Kenya seeks to increase access to skilled care especially by women in the disadvantaged rural settings. In line with literature, the current study supports the idea that doing away with user fees improves uptake and utilisation of maternal health services and is likely to improve maternal outcomes in Malindi District if the currently identified issues are dealt with (Mbugua, Bloom & Segall, 1995).

Results of the current study give useful evidence to policy makers to acquire an understanding of what does work and what doesn't work for the program thus allowing them to focus efforts on increasing the provision of what is known to be effective in lowering poor maternal health outcomes thus escalating the progression towards the achievement of MDG number 5 (Wilkinson, Gouws, Sach & Karim, 2001).

As found out by the World Bank and the WHO (2007), other than enhanced financing of health systems, effective training and adequate motivation of the health workforce is equally paramount and much emphasis should be directed towards improving the said parameters so as to promote the delivery of effective and efficient health services. Proper training of health workforce is also critical in improving stakeholder relationship and customer service management and hence better results (Graham & Murray, 1998).

Training on various skills including infection control, interpersonal skills and supervisory skills is critical in promoting continuous improvement of service delivery. In order to equip the health workforce with the emerging trends, continuous professional development and capacity building should be encouraged and undertaken. Integrating Traditional Birth Attendants (TBAs) and capacity building them on life saving skills and identification of early pregnancy-related complications will go a long way in enhancing timely and effective referral of cases to a health facility for skilled professional care (Schneider & Gilson, 2000). Enactment of proper policies to guide the implementation of free maternal health program particularly on funding especially reimbursement. These will improve reliability and sustainability of service delivery in public health facilities as the study recommends.

Much effort should be directed towards previously perceived marginalized parts of Kenya in which there is minimal socio-economic development. By doing that, maternal health indicators are expected to significantly improve.

One of the counties that need affirmative action in matters implementation of free maternity health services is Mandera County in which majority of the deliveries occur through unskilled care and also so few can access antenatal services as compared to the well developed areas of this country. For this county to be at par with other counties whose health indicators are positive, special measures should be put in place that will approach the existing scenario wholesomely. The high MMR of 1000 to 1200 persons per 100,000 live births reported in the greater North Eastern region requires concerted effort in reducing it to minimal levels that will result in favourable health indicators (Boniface, 2012). Collaboration between the county and national government is key to overcoming this monster through mobilization of resources and hence quality of care. Mandera

County should come up with strategies that will focus on rural and informal settlements so that access to skilled care by majority of women was achieved and hence improved utilization.

Emmanuel *et al.* (2015), in his study to find out the challenges, weaknesses and gaps in provision of free maternity health services in Kenya, concluded that the major challenges to the success of the policy included; inadequate funding caused partly by partial reimbursements from the national government, and lack of staff motivation. A major implementation challenge was underfunding which was a main cause of supplies shortage among others (Moses, Manji, Bradley, Nagelkerke, Malisa & Plummer, 1992).

Staff shortage and high workload are key challenges of implementation that result from failure by the government to boost the human resource capacity and promote equitable distribution of health workforce, so as to manage increased use of maternity health services (Campbell & Graham, 2006). The study recommends that, to achieve successful and effective implementation of the program the following strategies are deemed to be appropriate; employment of additional health workers hence improving the capacity of human resource to handle increased workload, equitable distribution of human resource for health, staff motivation and adequate remuneration, improving the staff working conditions, providing adequate commodities and supplies, increased funding, timely and regular reimbursements, increasing the health facilities' capacity to cope with increased patient numbers through upgrading of infrastructure, and promoting regular supportive supervision of health workforce (WHO, 2008).

Some of the recommendations made on how to accelerate usage of maternity health services have brought positive outcomes. Majority of the demand side strategies and interventions aimed to increase appropriate care-seeking involve some form of community involvement to investigate the intervention and to subdue particular challenges faced by that community (Filippi *et al.*, 2010). Pregnant women need to be supported during the motherhood journey, to harmonise the divergent maternity health practices, and to connect expecting women with younger generations, Countdown to 2015 Initiative (2012). Situation-friendly instruments can help in connecting expectant women with their daughters, peers and with the forefront health worker and help in strengthening community systems for improved maternal health. New methods are also needed at community

level to come up with a more supportive maternal health environment that has linkage with formal health system (Hogan *et al.*, 2010).

According to a study by Rosier *et al.* (2014), in Nairobi Kenya, it is suggested that in cases when women can choose their caregivers either public or private, a major point of concern could be to improve quality of care for ANC and deliveries at private facilities (Ronsmans *et al.*, 2003). To offer women who are poor affordable and better quality options, a voucher program for reproductive health was tried in the NUHDSS slums between the years 2006 and 2012. 34.2 percent of all registered deliveries during that time took part in the program. The extension of the program is thought to be a promising point for increasing maternity health service utilisation in Nairobi. It is worthwhile however to note that from available evidence, transport cost, which is omitted in the voucher, poses a hindrance to its utilisation (Campbell & Graham, 2006).

2.4. Overview of the Literature Review

As per the review of literature discussed above, studies show that there are similarities in the factors that hinder access to quality and safe maternal health services particularly across Sub-Saharan countries. Most studies have concentrated on socio-economic and cultural parameters which hinder the access of maternity services. Many Sub-Saharan countries had put measures in place to address financial barriers through waiving of costs associated with maternal health services. Kenya and some other countries had addressed this by introducing free maternal health care policies that are aimed at increasing utilisation and reducing maternal mortality.

Addressing the following key areas would promote utilisation and decrease maternal deaths. These are; access to quality maternal health services, costs, information and attitude (WHO, 2010). Many countries had addressed the issue of costs, but less effort was directed towards putting in place functional and effective health systems that would determine access and quality of services. The study, therefore, would concentrate on intrinsic factors of health systems that would influence the provision of quality healthcare services directly and indirectly, hence access. These intrinsic factors would determine the successful implementation of the policy, consequently its effect on health service utilization.

CHAPTER THREE: STUDY METHODOLOGY

3.1 Introduction

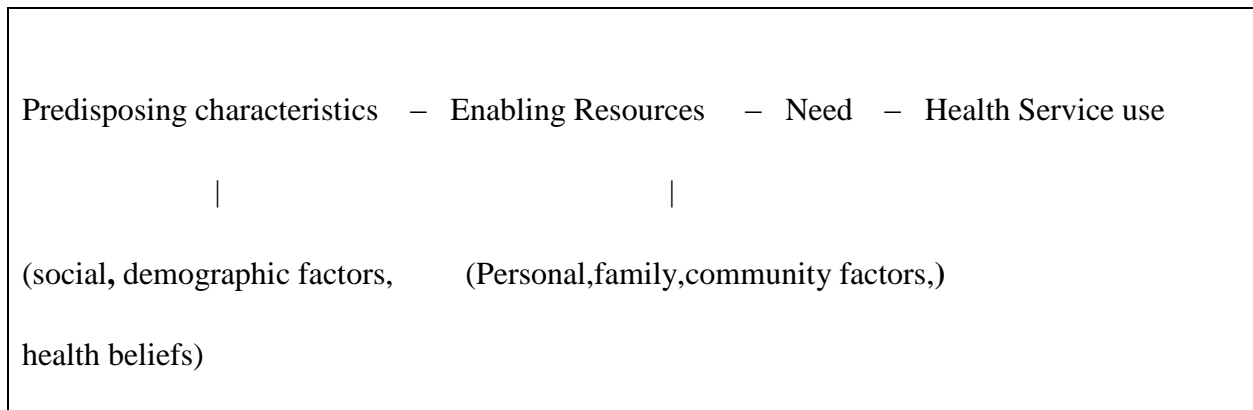
This chapter presents, health concept models, the study design, the target population, sampling procedure and sampling size, data collection tools, data collection procedure, data analysis techniques, ethical considerations, limitations of the study, description & operationalisation of variables.

3.2 Analytical and Conceptual Framework

3.2.1. Anderson's (1968) Health Behavior Model

The health behaviour model by Anderson (1968) posits that certain characteristics determine or contribute to execution of health care services. These features are divided into 3 classifications, that is, enabling features, need-based feature and predisposing traits as outlined in the figure below;

Figure 1: Anderson's (1968) Health Behaviour Model



One of the main goals of the model was to give and define access measures to medical care (Andersen, 1995). Resources are defined as enabling as they are promoting factors for the need for health service use hence increasing access and utilisation.

The model of 1970s included health care systems, explicitly confirming the critical role played by government policies and equitable resource distribution in determining quality, safety, access and equity in service delivery, hence improved health care utilisation (Andersen, 1995).

3.2.2 The Model of Health Demand by Grossman

Also according to the health demand model by Grossman, people want health and subsequently demand for medical care inputs. This type of demand is referred to as derived demand as health is not a normal good and hence cannot be bought from the market. Health is produced by a combination of medical care inputs and time as shown by the equation below (Pruckner, 2010).

$$i) \quad I = I (M,T).....1$$

Where; I = Health investment

M = Medical care inputs

T = Time spent improving health

Therefore, the availability of medical care inputs and hence effective health systems would influence health care utilisation.

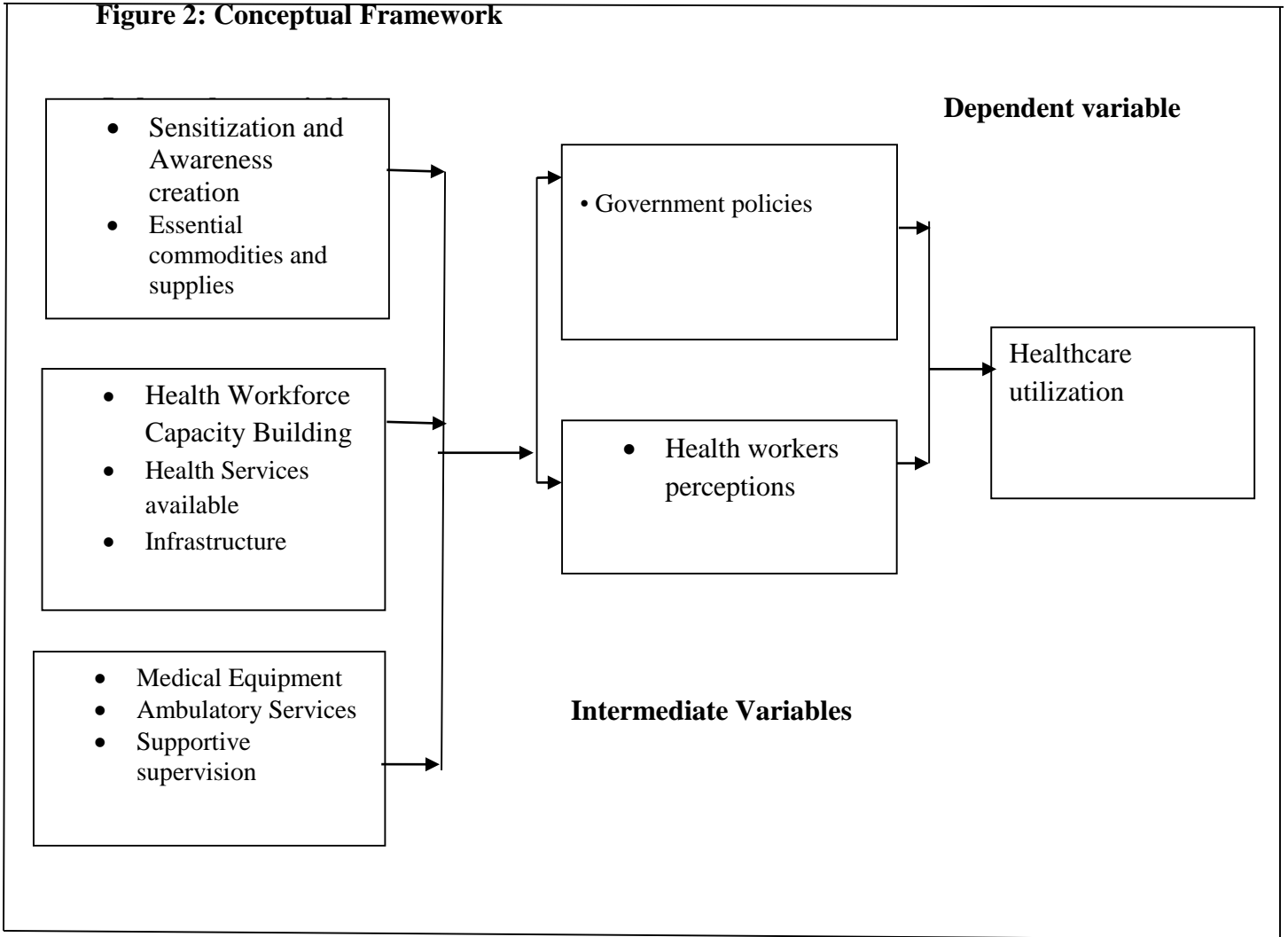
Therefore, for the government to implement free maternal health care, political goodwill is needed to enable allocation of more resources to the health sector and strengthen health systems so that quality, safety, equity, and access are addressed effectively and efficiently.

3.2.3 Conceptual Framework

In this research, independent/predictor variables are the predecessor conditions hypothesized to affect the dependent variable. Predictor variables are therefore the inputs that ought to be in place for the successful implementation of the program at Kenyan health facilities especially the government owned ones with special attention to Mandera County, and they include; essential commodities and supplies, staff motivation and capacity building, medical equipments, ambulatory services, health services available and supportive supervisions. Intermediate variables represent factors or processes that may alter the effect of predictor variables on the dependent variable and include government policies and health workers perceptions.

The diagram below shows the relationship between the dependent variable and predictor variables considering the effect of the intermediate variables on their relationship.

Figure 2: Conceptual Framework



Source: Author

3.3. Model Specification

Multiple Regression would be used to analyse the effect of each predictor factor on the dependent variable which is healthcare utilisation, expressed in terms of number of skilled deliveries. The independent variables are; infrastructure, medical equipment, essential supplies, ambulatory services, services available, supportive supervision, staff capacity building, sensitization/creation of awareness and costs to access.

The Multiple Regression below was used to analyse how all the selected independent variables affect healthcare utilisation (the dependent variable). The study used regression equation similar

to Campbell and Graham (2006), who studied implementation and effect of free maternal healthcare services.

$$HU = f(S, I, ES, M, A, SS, SAC, SCB, C, e) \dots\dots\dots 2$$

Where;

HU = Health care utilization, S = Services available, I = Infrastructure, ES = Essential Supplies, M = Medical Equipment, A = Ambulances, SS = Supportive supervision, SAC= Sensitization and Awareness creation, SCB = Staff Capacity Building, C = Costs, e = error term

Therefore, the analytical model that can be derived from the above variable relationships is as below.

$$HU = \beta_0 + \beta_1S + \beta_2I + \beta_3ES + \beta_4ME + \beta_5A + \beta_6SS + B_7SAC + B_8SCB + B_9C + e \dots\dots\dots 3$$

3.4 Description of Variables

The description and anticipated effect on dependent variable of the explanatory factors in this research are as shown.

Table 3: Operationalization and Description of Variables

S/no	Variable	Proxies	Description of variables	Unit of measurement	Expected signs
1.	Healthcare Utilization	Healthcare utilization	Number of women accessing & using maternal healthcare services.	Number of skilled deliveries (Gitobu et al, 2018)	Positive
2.	Infrastructure	Theatre Delivery room Labor ward	These are essential infrastructure that is needed in the successful implementation of the Free Maternity Health Services and are key facility components.	Dummies (1,0) where 1= present 0 = absent	Positive
3.	Supportive Supervision	Supportive Supervision	This is the act of continuously monitoring and periodic assessment of performance and subsequent facilitation of continuous improvement by a management team	Number of visits	Positive
4.	Essential Supplies	Maternal Sanitary Pads Gloves	These are commodities that are essentially needed before, during and after delivery.	Dummies (1,0) Where 1= present 0=absent Per variable	Positive
5.	Medical Equipment	Delivery set Ultrasound Machine	These are equipments that will promote effective decision making before and during delivery.	Dummies (1,0) Where 1=present 0=absent	Positive
6.	Health Services available	ANC MCH/ FP Diagnostic services	These are essential supportive services needed to successfully implement the Free Maternal Health Program.	Dummies (1,0) Where 1=present 0=absent	Positive
7.	Ambulatory services	Ambulances	They are used for emergencies and referrals. For an effective referral system, functional ambulatory services are inevitable whether outsourced or facility based.	Dummies (1,0) Where 1=present 0=absent	Positive
8.	Sensitization and awareness creation	Sensitization and awareness creation	This asks whether adequate sensitization and awareness creation was done to the target population	Yes (1) No (0)	Positive
	Staff capacity building		Knowledge and skills development for the health workforce.	Yes (1) No (0)	Positive
9.	Costs	Cost to access	These are direct or indirect costs incurred by the client to access services	Yes (1) No (0)	Negative

Source: Authors own computation

3.5. Diagnostic Tests

The spread of cross-sectional data can sometimes deviate from the normal with unobservable variables (error term) within the data distribution playing a critical role in determining the variations. These variations can either be constant or non-constant given any value of the explanatory variable. When the error term has the same variance, the phenomenon is referred to as homoskedasticity or constant variance assumption and does not depend on predictor variables. When there is deviation from the above assumption, the phenomena can be referred to as either; Heteroskedasticity, Multicollinearity or Autocorrelation.

3.5.1 Heteroskedasticity

The term heteroskedasticity refers to unequal spread or scatter. When the error term or residual has non-constant variance, the phenomenon is referred to as heteroskedasticity. This can happen in both cross-sectional and time-series data especially when the range between the highest and lowest value was large.

This phenomena can be detected by two methods; the graphical method and the formal test. The graphical method plots the square of the residual against the fitted values of Y and X. The following formal methods can be adopted; The Breusch-Pagan LM/cook-weisberg Test.

In resolving heteroskedasticity, the generalised least squares & weighted least squares can be used. In the former, each term is divided by the standard deviation of the residual while in the latter weights are used to adjust the sample terms.

This uses the original regressors, their squares and interactions in auxiliary regression (Kleiber *et al.*, 2008-2017).

3.5.2. Multicollinearity

It occurs due to correlation between 2 or more independent variables. If the correlation is high, the situation must be solved. Multicollinearity in a model will lead to incorrect interpretation of results if unchecked and unresolved. It is present when a variable is deleted or added to a model and this results in a change in the predictor coefficient or on altering or dropping of a data point, a change in the predictor coefficient is observed. It can also be construed to be present when one or more models are used and this produces a change in the predictor coefficient.

Multicollinearity are of two types; Data based and Structural

Data based happens when data collection is done poorly, while structural happens when a researcher introduces a variable into a model or creates a variable out of an existing variable.

Multicollinearity can lead to high standard error of predictor coefficient and hence an inflated variance of predictor coefficient.

Multicollinearity can be detected using Variance Inflation Factor (VIF). This detects the amount of variance inflation in a model and hence measures the tolerance, that is the level of variability in a predictor variable that can not be explained in another explanatory variable.

VIF formulae is as below;

$$VIF = 1 / (1 - R^2) \dots\dots\dots 4$$

Where 1 - R² is the tolerance and R² is the square of the residual.

Multicollinearity can be solved by either through principal component analysis which combines the correlated variables or by deleting or removing the predictor variables causing the problem (Daoud, 2017).

3.6. Study Area and Justification

Mandera County was located in the larger North Eastern region of Kenya. It had a population of 1 025 756 persons as per 2009 census and an area of 25 797.7 km². There are 6 constituencies in Mandera County which are: Mandera East, Lafey, Mandera West, Banisa, Mandera South and Mandera North Constituencies. Its fertility rate has decreased from 7 (2003) to 5.9 children per woman (KDHS, 2008-09), as compared to the country's 4.6. Only four percent of married women access family planning services. Injectables are predominantly utilized with 2 percent using injectables and 1 percent using implants (Mandera 1st County Integrated Development Plan, 2013-2017).

Mandera County was selected as the area of study since it had been rated as the county with the highest MMR as compared to other counties and it stands at 3795 maternal mortalities per 100 000 live births (UNFPA Kenya, 2014), even after the adoption of the Free Maternal Health Policy which was introduced by the Jubilee Government in June 2013. Also, deliveries by skilled

professionals is at 38.7 percent as compared to 62 percent nationally (KDHS, 2014). This is alarming, therefore, high impact interventions needed to reverse these worrying trend. This research study would therefore unearth some of the factors, challenges and gaps that may have contributed and led to this state of despair of poor usage of maternity health services in this country. The research when complete would document its findings, recommendations and give policy directions on the best way to reverse the situation at hand if adopted, both at the county and national level.

3.7 Target Population

The study targeted health workers particularly the ones that are directly involved in the provision of maternity health services in public hospitals in Mandera County. The target population consisted of approximately 318 health workers who were composed of medical officers, clinicians, and nurses, who were part of the skilled professionals. According to Julke (2009), the element of the target population are often people, households or companies for use in a survey. The distribution of the health workers per facility is as per Appendix 11.

3.8 Data source and Type

The data type is cross-sectional that was collected at different time period. The source of data for this research was primary data from the field collected through questionnaires to the targetted health workers and secondary data through review of existing records at the selected health facilities specially the ones available at the HMIS, finance, human resource departments and any other documents available deemed necessary for the study.

Quantitative analysis was done by use of Stata, while for qualitative data, analysis was done by sorting, coding and interpreting the data into specific themes and categories.

3.9 Research Design, Sample Size and Sampling Procedure

The research was a cross-sectional study whose concern was to find out what, where and how of a phenomenon. Combined quantitaive plus qualitative research methods were adopted. The primary study was the quantitative research followed by the qualitative approach to collaborate and back up the findings of the primary research.

The study used 95 percent level of confidence and sample size determined using Yamane formula (Yamane, 1967) (refer to appendix 11).

The sampling methods that were adopted are stratified and purposive sampling. Stratified sampling was employed during the selection of the health facilities that would be part of the research study. There are designated categories of health systems depending on the care given and administrative unit under which the facility is located in the devolved system. We have county referral and subcounty hospitals, then health centres and dispensaries that are level 5, 4, 3 and 2 respectively. The study concentrated on county and sub-county hospitals as they register high utilisation of the health care services.

Purposive sampling was administered for the health workers since the health workers to be involved in the study were the ones who were skilled professionals, knowledgeable and had the necessary skills on the subject under study.

By using Yamane formula of sample size calculation with an error of 5 percent and 95 percent degree of confidence(Yamane 1967), the calculation approximately came up with a sample size of 177 clients from all the four hospital sites selected.

The research tool used was questionnaires that was administered by Data clerks under the supervision of the lead researcher. Respondents were health workers within the selected public hospitals across Mandera County.

3.10 Data Analysis

Stata version 4.0 was the preferred choice for data analysis, complemented by Microsoft Excel. Descriptive analysis such as mean, percentages and frequencies for each variable were computed and tabulated in frequency distribution tables, pie charts and bar charts to describe the data characteristics.

Descriptive analysis was conducted on quantitative data. Descriptive statistics include: standard deviation, mean, frequency distribution and percentages. Inferential statistics were done using product moment correlation technique. Values for correlation coefficient range between -1 and 1 which is used to measure the degree by which 2 variables are linearly related with greater

magnitude being an indication of higher degree of association between 2 variables. This analysis was conducted at 95 percent confidence level.

3.11 Ethical Considerations and Limitations

Ethical considerations include, but not limited to; respect of respondent privacy and freedom, the right to self-determination, autonomy, volunteerism, confidentiality, and safety. While carrying out this research, research assistants sought the voluntary informed consent of participants before administering the questionnaire, and without subjecting them to any form of threat or undue influence. The respondents were also assured that their participation would be maintained confidential and used for the sole purpose of this research, and anonymity would also be maintained; they would be allowed to write their names on the questionnaires. Appropriate chain of command was observed including obtaining prior government approval before commencing the process of collecting data.

Ethics is defined as that which is acceptable or unacceptable in professional practices. Anyone involved in any form of research should be aware of agreements shared by a researcher(s) and participants about what is proper and improper while conducting a research (Babbie & mouton, 2001).

The likely challenges include but not limited to; restricted access to information needed, inability to sample all facilities, reluctancy of respondents to give information for fear of been reprimanded, time constraint and inadequate funding.

Only 166 out of 177 targeted health workers across the sampled four facilities responded as the remaining samples didn't return the questionnaires and hence no response. The response rate was 94% as the remaining could not be traced to return the filled questionnaires.

CHAPTER FOUR: DATA ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

Discussion of results were done in this chapter in line with the specific objectives. First was the health profile and followed by diagnostic statistics. The section ends by the discussion of the regression model.

4.2 Descriptive Statistics

The descriptive statistics explains the statistical properties of the variables in this study as presented in table 4;

Table 4: Descriptive Statistics

	Variable	Obs	Mean	Std. Dev	Minimum	Maximum
Healthcare utilization	Number of deliveries	166	1.1145	0.1714	0	6
Infrastructure	Labor Ward	166	0.988	0.1094	0	1
	Functional Theatre	166	0.8012	0.4003	0	1
	Delivery room	166	1.0000	0	0	1
Essential Supplies	Gloves Supply	166	1.0000	0	0	1
	Maternal Sanitary Pads Supply	166	0.9878	0.1094	0	1
Medical Equipments	Delivery set	166	1.0000	0	0	1
	Functional Ultrasound Machine	166	0.661	0.4763	0	1
Health Services	ANC Services	166	1.0000	0	0	1
	Maternal Child Health	166	1.0000	0	0	1
	Diagnostic services	166	0.9397	0.2387	0	1
Ambulatory services	Ambulance	166	1.0000	0	0	1
Costs	Maternal Health Costs	166	0.0482	0.2148	0	1
Capacity Building	Capacity Building	166	0.7409	0.4394	0	1
Sensitization and Awareness creation	Sensitization and Awareness creation	166	0.8193	0.3859	0	1
Supportive Supervisions	Supportive Supervision	166	3.2651	2.1325	0	12

Source: Computation by Author

The table's first column shows the number of observations for each sampled variable as 166. The mean represents the average value for each selected variable. As per the results, supervision frequency had the highest mean of 3.26506 while maternal health costs had the lowest value of 0.0481928. On the other hand, Standard deviation shows how the observations of the variables of the study vary from the mean and just like the mean, supervisions frequency had the highest standard deviation accounting for 2.132487. The least value of the standard deviation was zero for Delivery room, Gloves Supply, Delivery set, ANC Services, Maternal Health services and Ambulatory services.

The maximum property shows the highest value attained by the variables while the minimum shows the least value that the variable could achieve. Supportive supervision frequency had the highest maximum value of 12 to indicate the number of times the supervision of the program was carried out.

The zero value on the minimum column for the variables was an indication of the absence of the said service in the medical facilities while one was an indication of the presence of the service. Therefore the value does not necessarily mean the size of the service.

4.3 Descriptive analysis of the Health Profiles

The Cumulative responses under every variable is summarised and described. The percentage for every measure (present, absent) determined. This would help in confirming the expected results for every explanatory factor.

4.3.1 Health Infrastructure

To explore the infrastructural availability, there were three indicators namely; labor wards, delivery rooms and Functional theatre. Upon carrying out a multiple response frequencies for general infrastructure availability, the following was obtained:

Table 5: Infrastructure

Variable	<i>Responses</i>		% Present	% Absent
	Present	Absent		
Labour Ward	164	2	98.8%	1.2%
Functional Theatre	133	33	80.1%	19.9%
Delivery room	166	0	100%	0%
Total	463	35	93%	7%

In reference to the results, majority of the responses agreed that the infrastructural components; Labour Ward, Functional Theatre and Delivery were available in the selected hospitals. Of the total respondents to this question, 98.8% percent confirmed the presence of Labour Wards in the hospitals while the rest consisting of 1.2% percent said Labour wards were not available. 80.1% of the respondents confirmed the availability of Functional Theatres in the sampled health facilities. 19.9% of the respondents said Ffunctional Theatre was not available. while 100% of the respondents confirmed the presence of delivery rooms. Therefore with majority of the respondents supporting the presence of the infrastructures, was an indication that indeed the hospitals had adequate infrastructure.

4.3.2. Supportive Supervision

In order to find out about the presence of the supportive supervision , the following output was generated .

Table 6: Supportive Supervision

	Frequency	Percent	Valid Percent	Cumulative Percent
Absent	5	3.0	3.0	3.0
Present	161	97.0	97.0	100.0
Total	166	100.0	100.0	

The results show that 97 percent of the respondents agreed that the provision of the support services was available while the remaining 3 percent said the services were not available. Therefore the conclusion that supportive supervisions were provided.

4.3.3 Essential supplies

To explore the Essential medical supplies availabilities, two indicators were considered; Gloves and Maternal Sanitary Pads Supply. Upon carrying out a multiple response frequencies for essential supplies availability, the following was obtained:

Table 7: Essential Supplies

Vaiable	Responses		N	% Present	% Absent
	Present	Absent			
Gloves	166	0.0	166	100%	0.0%
Maternal Sanitary Pads	164	2	166	98.8%	1.2%
Total	330	2	332	99.4%	0.6%

From the results on the availability of essential supplies, 98.8% of the respondents said that Maternal Sanitary Pads were available while 1.2% confirmed that they were not available. 100 percent of the respondents agreed that Gloves were available. On average 99.4% of the respondents confirmed that essential supplies were available in the health facilities they worked in, while the rest which consisted of the rest 0.6% percent said that essential services were not available in the facilities. Therefore the conclusion can be that there was provision of the essential supplies in the health facilities.

4.3.4 Medical equipment

The table 8 below shows the results for multiple response variable measurement of the availability of the medical equipment by delivery set and functional Ultrasound Machines.

Table 8: Medical Equipments

Variables	<i>Responses</i>		% Present	% Absent
	Present	Absent		
Delivery set	166	0	100%	33.7%
Functional Ultrasound	110	56	66.3%	0%
Total	276	56	83.1%	16.9%

As per the results, 83.1 percent of the responses confirmed medical equipments were available in the medical facilities and 16.9 percent of the respondents noted that medical equipments were not available in the medical facilities. Therefore there were adequate medical equipments in the hospitals.

4.3.5 Services Availability

In determining the availability of services in the health facilities, multiple response analysis was conducted in which ANC Services, Maternal Health/Child Health/FP and Diagnostic services were taken into account.

Table 9: Services Available

Variable	Responses		N	% Present	% Absent
	Present	Absent			
ANC Services	166	0	166	100%	0%
Diagnostic Services	156	10	166	94%	6%
MCH/FP Services	166	0	166	100%	0%
Total	488	10	498	98%	2%

The higher percentage of those interviewed confirmed the availability of the above mentioned services in the facilities. At least 98 percent confirmed the availability of the services. The rest, 2% of the respondents said that these services were not available in the facilities. The results indicated that the services were generally available in the health facilities.

4.3.6 Ambulatory Service

One of the most important services in almost all the health facilities is the provision of the ambulatory services especially during the times of emergencies. The findings of its availability as shown in table: 10..

Table10: Ambulatory Services

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
Present	166	100.0	100.0	100.0
Absent	0	0.00	0.00	100.0

The study results showed that 100 percent of the respondents confirmed that there were ambulatory services in their health facilities. The implication is that all the health facilities at least provided ambulatory services.

4.3.7 Maternal health costs

In a bid to assess the affordability of the maternity services in the specified facilities by finding out whether the clients were incurring any costs for accessing the services, the following results were achieved as in table 11.

Table 11: Maternal health costs

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
No	158	95.2	95.2	95.2
Yes	8	4.8	4.8	100.0
Total	166	100.0	100.0	

The results indicated that majority of the clients interviewed were not paying any costs for maternity services in the health facilities. Only negligible 4.8 percent of the respondents said clients were incurring costs on the maternity services. Therefore maternity services were free according to the majority.

4.3.8 Staff capacity building

In a bid to measure the ability of the staff to implement this program, the study sought to find out if capacity building had been carried out. The results are presented on table 12.

Table 12: Staff Capacity Building

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
No	43	25.9	25.9	25.9
Yes	123	74.1	74.1	100.0
Total	166	100.0	100.0	

The indication is that 74.1 percent of the staff interviewed had gone through staff capacity building. The rest of the staff had not been trained and they accounted for 25.9 percent.

4.3.9 Sensitization of Free Maternity Service

Sensitization helps in creating awareness and the respondents were asked on whether sensitization had been done or not. For the findings refer to table 13.

Table 13: Sensitization of Free Maternal Services.

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
No	30	18.1	18.1	18.1
Yes	136	81.9	81.9	100.0
Total	166	100.0	100.0	

The results show that 81.9 percent of the respondents said that sensitization on free maternity services had been done while 18.1 percent said that sensitization about the services had not been done.

4.4 Diagnostic Tests

4.4.1 Heteroskedasticity test

Heteroskedasticity arises due to changing variance in the variance of the residuals and this creates room for spurious results. p value lower than 0.05 indicates presence while values greater than 0.05 show the absence of heteroskedasticity.

Table 14: Heteroskedasticity Test

Breusch-Pagan / Cook-Weisberg test for Heteroskedasticity
Ho: Constant Variance
Variables: Fitted values of Healthcare Utilization
$\text{Chi}^2(1) = 3.57$
$\text{Prob} > \text{chi}^2 = 0.0588$

Source: Authors own computation

The p value was found to be 0.0588 which is greater than 0.05 which implies that there was no problem of heteroskedasticity.

4.4.2 Multicollinearity test

Multicollinearity is the situation where the independent variables are related to each other in the model. The rule is that the mean VIF value less than 8 indicates the absence of Multicollinearity. On the other hand, a value greater than 8 indicates the presence of Multicollinearity.

Table 15: Multicollinearity Test

Variable	VIF	1/VIF
Supportive Supervision	2.41	0.414667
Sensitization	2.32	0.431901
Infrastructure	2.20	0.453612
Capacity Building	1.99	0.502952
Preparation	1.99	0.503562
Healthcare Services	1.72	0.580818
Essential Supplies	1.34	0.745874
Cost to access	1.04	0.965252
Ambulances	1.01	0.985740
Mean VIF	1.78	

Source: Authors computation

The mean VIF was found to be 1.78 which implied that there was no Multicollinearity.

4.5 Multiple Regression Output

The study carried out Multiple Regression to find out the effect of the independent Variables on the dependent variable which was health care utilization measured by number of skilled deliveries. The output of the Regression was as shown in table 17.

Table 16: Model Regression Summary

	Variable	Coefficient	Standard Error	t	P	95% level of confidence	
						Lower	Upper
	Constant	2.111	1.077	1.960	0.001	0.506	3.748
Infrastructure	Labour Ward	1.019	0.484	2.105	0.007	1.006	1.383
	Functional Theatre	0.662	0.188	3.521	0.014	0.164	0.581
	Delivery Room	0.293	0.181	1.619	0.641	0.105	0.532
Essential Supplies	Gloves	1.205	0.192	6.276	0.031	1.109	1.628
	Maternal Sanitary Pads	0.548	0.184	2.978	0.005	0.005	0.911
Medical Equipments	Delivery set	0.285	0.193	1.477	1.003	0.116	1.097

	Ultrasound Machines	0.532	0.219	2.429	0.016	0.001	0.965
Health Services	ANC Services	0.299	0.198	1.510	0.194	0.093	0.609
	Diagnostic Services	0.346	0.188	1.840	0.049	0.001	0.517
	MCH/FP	0.295	0.193	1.528	0.203	0.116	0.597
Ambulatory services	Ambulances	0.327	0.178	1.837	0.049	1.129	2.525
Supportive supervision	Supportive Supervision	0.442	0.189	2.233	0.004	0.005	1.035
Costs	Maternal Health Costs	-1.005	0.198	-5.076	0.103	-1.885	-0.186
Sensitization	Sensitization and Creation of awareness	0.609	0.184	3.310	0.018	0.001	2.305
Staff Capacity Building	Staff Capacity Building	0.452	0.179	2.525	0.012	0.099	0.805
	$R^2 = 0.960$ Adjusted $R^2 = 0.596$ $F = 0.007$						

Source: Computation by author

The R-squared signifies the proportion of change in the dependent variable that is accounted for by the explanatory factors. While the p calculated tells about the level of confidence on each individual variable on the correlation with the dependent variable, which is the important thing. The results indicate a value of adjusted R-squared to be 0.596. This implies significant variation of the dependent variable is accounted for by changes in explanatory variables. Constant indicates the level of health care utilization would be 2.111 when no variables are considered in the model. It has a t value, 1.960 and p value, 0.001. On interpretation, the constant was found to be

significant. The t calculated, 1.96 was the same as t critical value (1.96) and p value 0.001 was less than 0.05. Reject the null hypothesis and accept the alternate hypothesis.

The t statistic equals to the coefficient divided by the standard error in the regression model. While the Standard error is defined as an approximate value of the standard deviation of the coefficient of every variable.

The value of F determines the significance of the model. It tests the null hypothesis, H_0 that Model coefficients are equal to zero. In this model the F value was 0.007 which implies that there was 0.7% chance that all the regression parameters coefficients were zero. This is too insignificant.

Regarding Infrastructure that had three components; labour ward, functional theatre and delivery room, there regression results were as follows; Labour ward had coefficient of 1.019 which implies that if it's increased by one unit then health care utilization would increase by 1.019. Therefore labour ward had a significant positive effect on healthcare utilisation. The t value for labour ward was 2.105, which was greater than t critical, 1.96 that means it is statistically significant and that was confirmed by p value of 0.007 which was less than 0.05.

Functional Theatre had coefficient of 0.662 which meant an increase by one unit will increase health care utilization by 0.662 or 66.2% which is highly significant. Its t value was found to be 3.521. The t calculated (3.521) greater than t critical (1.96), hence statistically significant. That was supported by p value of 0.014 that was less than 0.05. Reject the null hypothesis (H_0) and accept the alternate hypothesis (H_1).

Delivery room had a coefficient of 0.293. That meant, one unit increase in delivery room would result in 0.293 or 29.3% increase in health care utilization. The t value was 1.619 and signifies that effect of availability of delivery room was insignificant as proved by the t value (t calculated, 1.619 less than t critical, 1.96) and confirmed by p value of 0.641 that was much greater than p critical of 0.05, hence insignificant.

Regarding Essential Supplies; Gloves had a coefficient of 1.205 which implied that an increase of the variable by one unit would result in health care utilization increasing by 1.205, therefore its effect on healthcare utilization was highly significant which was supported by the high value of t

calculated at 6.276 and much less p value of 0.031. t calculated was found to be greater than t critical of 1.96, while p value of 0.031 was less than 0.05 hence the significance. Reject the null hypothesis and accept the alternate hypothesis. This is justified and supported by a p value that was less than 0.05.

Maternal Sanitary pads had coefficient of 0.548, t value of 2.978 and p value of 0.005. Coefficient of 0.548 implied that if maternal sanitary pads were increased by one unit, then healthcare utilization would increase by 54.8%. That was significant effect. The t calculated of 2.978 was greater than t critical of 1.96 which signifies that there was statistical significance of the variable and that was confirmed by a p value of 0.005 that was less than 0.05 which was the accepted level of confidence.

The statistical significance of Essential Supplies was above average and was expected as Gloves and Maternal Sanitary Pads form critical components of Hygiene and Infection Prevention Control measures in every health facility.

In reference to Medical Equipments; Delivery set had a coefficient of 0.285. That implied, health care utilization would increase by 0.285 if delivery set was increased by one unit. It had a t value of 1.477 which was less than t critical of 1.96. The effect of the variable was insignificant. P value of 1.003 that was greater than 0.05 confirmed the t value output.

Ultrasound had a coefficient of 0.532. If ultrasound was increased by one unit, then the dependent variable would increase by 0.532 which was positive effect. t value of 2.429 that was greater than t critical 1.96. That meant the effect was significant. The finding was supported by p value of 0.016 which was less than 0.005. Null hypothesis rejected while accepting alternate hypothesis.

According to the Regression results for Health Services available; ANC Services had coefficient of 0.299, t value of 1.510 and p value of 0.194. Coefficient of 0.299 meant that health care utilization would increase by 29.9% when ANC Services were increased by one unit. t value of 1.510 which was less than t critical value of 1.96, implied statistical insignificance and was justified by p calculated of 0.194 been greater than p critical of 0.05 (p calculated, 0.194 > p critical, 0.05).

Diagnostic services had a Coefficient of 0.346, t value of 1.849 and p value of 0.049. For the coefficient, an increase of one unit by the variable would result in 0.346 increases in the dependent variable that was health care utilization. That was slightly insignificant as proved by the t value of 1.849 that was less than t critical value of 1.96 but closer to it and confirmed by p value of 0.049 which is slightly less than 0.05.

Coefficient for MCH/FP was 0.295 while the t calculated was 1.528 and p value of 0.203. The coefficient 0.295 implies that if MCHLFP services are increased by one unit then healthcare utilization would increase by 29.5%. A t value of 1.548 that was less than the t critical of 1.96, meant that MCH/FP services availability was statistically insignificant to influence healthcare utilization. The finding was confirmed by p calculated of 0.203 greater than p critical of 0.05.

The Coefficient, t value and p value for the ambulance variable were 0.327, 1.837 and 0.049 respectively. Health care utilization increased by 32.7% if ambulatory services were increased by one unit. That was slightly significant bordering on insignificance as supported by the values of t calculated at 1.837 which was less than 1.96, t critical and p value at 0.049 that was less than but closer to 0.05, p critical.

Supportive Supervision had 0.422 as it's coefficient. An increase by one unit of the variable would increase the dependent variable by 0.422. t value of 2.233 which is greater than the t critical means that you reject the null hypothesis and accept the alternate hypothesis. In conclusion, it is true to say that supportive Supervision had significant effect on health care utilization. This is supported by the p value, 0.004 which was less than 0.05.

Costs to access maternal health services had negative coefficient and t value (-1.005 and -5.076) while the p value was 0.103. Cost had negative effect on health care utilization. If cost was increased by one unit, health care utilization would reduce by 1.005. The p value, 0.103 was also much greater than 0.05, while the t value, -5.076 was much lesser than t critical, 1.96. On interpretation, it was found to be highly insignificant. Cost reduces health care utilization as it makes health services inaccessible. The possibility of that was the fact that health expenses strain

household income. This concurred with the findings by Ronsmans et al (2003) that giving poor women better quality and affordable health services would improve health service utilization.

Sensitization and awareness creation had a coefficient of 0.609. Health care utilization would increase by 60.9% if adequate sensitization was enhanced by one unit. The t calculated of 3.310 which was greater than t critical of 1.96 means that the null hypothesis was rejected and alternate hypothesis accepted. That proves the significance of adequate sensitization and awareness creation in the success of free maternal health program. P value of 0.018 confirms the finding as it was less than 0.05 and hence the significance of this variable. Similarly Mengistu and J. James (1996) proposed that health programs need to focus on attracting women with little or no education by conducting sensitization and putting motivational strategies in place for this target group. Therefore sensitization and awareness creation was found to play critical role in promoting health service utilization.

Staff capacity building had a coefficient, 0.452. This means that health care utilization would increase by 45.2% if one unit was added to staff capacity building. t value was 2.525 which was greater than t critical of 1.96, confirming the significance of staff capacity building in promoting the successful implementation of free maternal health care policy. P value was 0.012 less than 0.05 and was a confirmation of the t significance.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1 Introduction

This section gives summary, conclusions and policy recommendations based on the study findings. Then ends with proposal of areas that need further research based on knowledge gap identified.

5.2 Conclusion

First objective; to describe implementation status profiles of free maternal health program and that was addressed by finding out the availability of various components of health system building blocks as stipulated by WHO in health system strengthening. Some of these Health system components that are important for the successful implementation of the policy that were sampled in this study included; Infrastructure, Essential Supplies, Medical Equipments, Health Services, Ambulatory services. Other parameter that were considered included; sensitization and awareness creation of the population of the availability of free maternal health services and the benefit packages provided through it, staff capacity building on Maternal health services provision and the costs incurred when accessing the services. Majority of the respondents who were health workers confirmed the availability of these parameters under study except the costs incurred in which the majority confirmed there were no costs incurred whether directly or indirectly. A smaller percentage of the respondents said that the parameters were not available except for Ambulatory services and costs. Ambulatory services, all the respondents confirmed its availability while very few respondents confirmed the availability of costs to access health services.

The second objective was to determine the the impacts of the Free Maternal Health Care program on maternal health service utilisation in Kenya and specifically Mandera county. This was achieved by carrying out a multiple regression in which the health care utilization was treated as the dependent variable against the factors that measure free health care program as the independent variables. In conclusion; health care utilization had significantly increased with an increase in the variables; labor wards, Ultrasound services, Gloves, maternal sanitary pads, functional theatre, Supportive supervision, adequate sensitization and awareness creation and staff capacity building. Labour ward and Gloves were highly significant and hence played greater role in influencing health service utilization. This is similar to the findings by Makela, *et al.*, (2010) that alternative

community supportive strategies needed that will link the community with the facility based health systems to provide conducive environment for improved access. While the effect on health care utilization was minimally significant, bordering insignificance for delivery room, delivery set, ambulatory services, ANC Services, MCH / FP services and Diagnostic services., costs incurred to access services whether formal or informal decreases access to health services and hence a reduction in its utilization.

5.3 Policy Recommendation

The following policy recommendations were proposed;

Firstly, set up centre of excellence for maternal health services that would provide all related services under one roof. This makes it comprehensive, efficient and effective. Adequate medical inputs should be availed and sustainability plan put in place. According to the findings from the study, medical inputs and infrastructure like; labor wards, functional theatre, Ultrasound services, Gloves and maternal sanitary pads form critical components of any facility providing maternal health services. These promotes access, quality and safety of care. This will in turn increase volume of utilization of these services.

Second, continuous supply of Essential Commodities including gloves and Maternal Sanitary Pads.availability. These supplies increase utilization of maternal health services. Gloves and Maternal sanitary pads are critical for hygiene and Infection Prevention Control strategy. This promotes quality and safety of health services and hence more clients seeking services.

Third, Labour ward was considered to be very important component of an effective maternal health services. Therefore provision of adequate and well equipped labor Ward was critical for the successful implementation of the program. Strategies must be put in place to avail standard labor wards in every facility. Provide clean and standard labor wards with adequate bed capacity.

Fourth, Functional Ultrasound services had been found to promote health service utilization. Provide these services at all facilities in the county that provide maternal health services. It forms critical part of maternal health services delivery.

Fifth, from the study, increased sensitization and awareness promotes higher volume of utilization. Therefore, this has to be accelerated so that a larger population of the targeted group was reached. It can be done through radio stations especially the local FM stations that inform the general public through vernacular languages. Other strategies that could be adopted include; public barazas, women chama group meetings, during health education talks and use of community Health Volunteers to spread the information. Traditional Birth Attendants should be taken on board as community health volunteers as they play critical role in promoting safe and skilled deliveries in health facilities. They should be motivated and empowered to take up this responsibility. For this strategy to be achieved a public relations (PR) unit should be established in every Sub County Health Facility.

Sixth, Staff capacity building plays vital role in promoting quality of care and hence increased utilization. Training Needs Assessment should be conducted for all the staff to identify knowledge and skills gaps as pertaining to maternal health services delivery and provision. Capacity Building should be done equitably to avoid disparities in knowledge and skills development among the health workforce. Other than the core activities, areas that need consideration include; customer service management and infection prevention control.

Seventh, supportive supervision forms a critical component of a health system management. This can be internal or external or both. Internal supportive supervision is through Quality Improvement Teams (QIT) who is constituted from the Facility Health Management Team. Their responsibilities are to identify gaps, challenges and weakness in various departments/units particularly those pertaining to quality management systems. Recommend solutions, write reports and share it with the critical team of the facility who will in turn through the facility manager urgently provide interventions to those shortcomings. This should be done biweekly. There are also Work Improvement Teams at the departmental level selected from the staff members that are tasked with system thinking and give a report proposing priority interventions. Then there is the external supportive supervision conducted by County Health Management Team and Sub County Health Management Team. This will promote systems and processes improvements. Both the type Must be done regularly and follow up should be done for the proposed priority interventions to assess

whether successfully implemented or not. It provides oversight. This is under leadership and governance pillar as per WHO building blocks of a health system.

Eighth, Even though the profiling shows that much of the services are available at the medical facilities, this study recommends that there should be concerted efforts to ensure sustainability of the program by ensuring all the necessities that are attributed to the success of this program are availed. One of the implementation strategies that can be adopted is public private partnership. This promotes effective resource mobilization and sustainability. It also enhances stakeholder engagement and involvement, hence promoting ownership, strengthening sustainability. Public private partnership is inevitable when pursuing the strategy of setting up centre of excellence. Stakeholder involvement at all stages of decision making, implementation and performance monitoring/evaluation very necessary for it's success. Stakeholders including but not limited to Non-Governmental Organizations who have health related mandate should be taken on board. Also wealthy individual should be motivated to get on board.

5.4 Further Areas of Research

This study recommendations are limited to Mandera county because the county is unique from other counties due to its geograpghy and population demographics, therefore a study should be carried out on more than two counties in which such progam had been initiated in different regions in the country. Other area that needs more study is informal costs associated with accessing maternal and child health services.

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APPENDIX I: LETTER OF TRANSMITTAL

Enow Ibrahim Haji
P.O. Box 71227-00625
Nairobi.
15th July 2016

DEAN OF STUDENTS
UNIVERSITY OF NAIROBI
SCHOOL OF ECONOMICS
P.O. BOX 30197
NAIROBI.

Dear Sir / Madam

I submit herewith a proposal in support of my research study entitled assessing the status of implementation and effect of free maternal health care policy in mandera county. A case of health workers perspective" to be performed under your supervision, as part of the requirement for the award of master of the degree of science in health economics of the university of Nairobi.

Your consideration will be greatly appreciated.

Yours sincerely
Enow Ibrahim Haji
REG NO: X53/79283/2015

APPENDIX II: TARGET POPULATION

Name of health facility	No of health workers	Percentage	Proportion of sample size
Mandera County referral hospital	165	52%	83
Rhamu Sub County	41	13%	24
Banisa Sub County Hospital	48	15%	34
Elwak sub-county hospital	64	20%	36
TOTAL	318	100%	177

Source: County Health Human Resource Department, CHHRD

Yamane Formula

Sample size calculation (Yamane formula 1967)

$$n = N/1 + Ne^2$$

where

n = sample size

N = Population size (number of health workers)

e = level of precision at 95% level of confidence

therefore; sample size, $n = 318/1+318 (0.05)^2 = 177$

Sample Size = 177 health workers

APPENDIX 111: QUESTIONNAIRE FOR THE HEALTH WORKERS

Section A: Interview/Questionnaire Schedules For Healthcare Workers

This interview/Questionnaire schedule has been generated for the sole purpose of gathering information for research project geared towards establishing factors that will influence implementation and effect of free maternal healthcare policy on healthcare utilisation in public hospitals in Mandera County.

Instructions:

1. Please select the most appropriate answer.
2. Answer all the questions as much as possible.
3. Do not write your name.

A. Demographic characteristic

1. Sex
 1. Male ()
 2. Female ()

2. Age
 1. 20 – 30 yrs. ()
 2. 30 – 40 yrs. ()
 3. 40 – 50 yrs. ()
 4. Above 50 yrs. ()

3. Work experience
 1. 1 - 10yrs
 2. 10 – 20 yrs. ()
 3. 20 – 30 yrs.()
 4. Above 30 yrs. ()

B. Facility Name

1. Mandera county referral hospital ()
2. Rhamu sub-county hospital ()
3. Elwak sub-county hospital ()
4. Banisa sub-county hospital ()

S/NO	QUESTIONS	SCALE
	Rate the following parameters in your facility using (1,0) where 1 = present and 0 = absent	
	C. INFRASTRUCTURE	
1.	labor ward	
2.	Functional Theatre	
3.	Delivery room	

	D. SUPPORTIVE SUPERVISION	
4.	Supportive Supervision	
	E. ESSENTIAL SUPPLIES	
5.	Gloves	
6.	Maternal sanitary pads	
	F. MEDICAL EQUIPMENTS	
7.	Delivery set	
8.	Functional Ultrasound Machine	
	G. SERVICES AVAILABLE	
14.	ANC Services	
15.	Maternal Health/Child Health/FP	
17.	Diagnostic services	
	H. AMBULATORY SERVICES	
18.	Ambulances	

- i. Do clients incur any cost to access maternal health care services in your facility? yes()
no ()
If yes, specify how much
- ii. How many skilled deliveries did you conduct in the last one year.....
- iii. Was staff capacity building done on the implementation of the free maternal health policy?
Yes () no()
- iv. Do you think clients were sensitized on the provision of free maternity services by the government? Yes () no ()

Thank you for your corporation