FACTORS ASSOCIATED WITH UPTAKE OF FREE MATERNITY SERVICES AT BARINGO COUNTY REFERRAL HOSPITAL

EMILY JEBUNGEI CHESUMEI

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Factors Associated With Uptake of Free Maternity Services at Baringo County Referral Hospital

Emily Jebungei Chesumei

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DECLARATION

This thesis is my original work and has not been presented for any award in any other university.

Signature: …… Date: ……

Emily Jebungei Chesumei

This thesis is submitted for examination with our approval as University supervisors;

Signature ……. Date: …….

Dr. Beatrice N. Kiage, PhD.

JKUAT, Kenya

Signature …… Date: ……....

Dr. Joseph K. Mutai, PhD.

KEMRI, Kenya

DEDICATION

This thesis is dedicated to my husband, John Kiplimo and our children Debra, Daniel and Dorothy, for the sacrifice they made while I pursued my studies along with great encouragement and input. Special dedication should also go to my beloved parents and siblings, for their prayers, encouragement and moral support throughout the study period.

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ABBREVIATIONS AND ACRONYMS

ANC	Antenatal Care
FGD	Focus Group Discussions
FMS	Free Maternity Services
GOK	Government of Kenya
IEA	Institute of Economic Affairs
KDHS	Kenya Demographic and Health Survey
KEMRI	Kenya Medical Research Institute
KI	Key Informant
KNBS	Kenya National Bureau of Statistics
KES	Kenya Shillings
MCH	Maternal Child Health
MDG	Millennium Development Goal
MMR	Maternal Mortality Ratio
MOH	Ministry of Health
NCAPD	National Coordinating Agency for Population and Development
NHS	National Health Services
SAB	Skilled Attendance at Birth
SBA	Skilled Birth Attendant
SDG	Sustainable Development Goals
SSA	sub Saharan Africa.
TBA	Traditional Birth Attendants
UAB	Unskilled attendance at birth
UK	United Kingdom
UN	United Nations
USA	United States of America
WHO	World Health Organization
WSP	Women Studies Program

DEFINITIONS OF TERMS

Delivery/ Birth	It is the process of a pregnant mother bringing forth her young one from womb.
Delivery practice	It is the type of care a mother utilized during delivery with regard to the place of delivery and type of attendant
Uptake of free maternity services	It is the choice of a mother to deliver in government health facility offering free maternity services
Maternal health indicators	It includes delivery practice, preparedness of health facilities for delivery and delivery outcome for both mother and neonate.
Maternal death	Is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes (WHO *et al*., 2007)
Maternal mortality ratio	It is the number of maternal deaths per 100,000 live births (WHO *et al*., 2007).
Skilled Birth Attendant	Refers to an accredited health professional such as a midwife, doctor or nurse who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns (WHO, 2008)
Parthograph	It is a composite graphical, single sheet of paper record of key maternal and fetal data during labor, entered against time. Measurements include cervical dilation, fetal heart rate, duration of labor and vital signs.

ABSTRACT

High maternal mortality is a global issue. According to world health organization developing countries especially in sub-Saharan Africa bore the greatest brunt. Kenya was among the ten countries with very high maternal mortality ratio, at 510 per 100,000 live births. Free maternity services program was launched in June 2013 in government facilities to improve skilled attendance at birth, hence reduce maternal mortality. Inadequate preparation evident by a lack of a strategic plan and existing deficiencies in public maternity facilities made the program's success uncertain. The objective of the study was to determine factors associated with uptake of free maternity services amongst women attending maternal child health services at Baringo county referral hospital. It was a facility based cross sectional design, a sample of 379 was obtained using Cochran's formula and systematic sampling applied. Data was collected through semi structured questionnaire, a focus group discussions and key informants interviews. Ethical clearance was obtained from Kenyatta National Hospital / University of Nairobi ethical review committee. Quantitative data was analyzed using Statistical Package for Social Sciences while qualitative data was manually done based on themes. Of the 379 participants interviewed, above 70% were; 21 to 30 years, married and with secondary education. Three quarter chose place of delivery due the good reputation of the facility and 95.8% of the deliveries were in government facilities. Significant association to uptake of free maternity services were; reason of availability of modern equipment /technology (P=0.007, OR=43.357) and having a referral /expected complications (P=0.018, OR=42.732). Satisfaction of maternity services was significantly associated with reason of modern equipment /technology and courteous staff (p-value=<0.01, OR=0.041) and (p-value=< 0.01, OR =0.062) respectively. In conclusion availability of modern equipment /technology and referrals enhanced utilization of free maternity services. Therefore maternity facilities should be well furnished with modern equipment /technology and should have clearly outlined and functional referral systems to enhance skilled attendance at birth.

CHAPTER ONE

INTRODUCTION

1.1 Background information

In 2015, about 830 women died daily, globally, due to complications of pregnancy and child birth. Almost all of these deaths occurred in low-resource settings and most could have been prevented (WHO *et al*, 2015). The risk of a woman dying from a maternal-related cause during her lifetime in a developing country is about 33 times higher compared to one living in a developed country (WHO *et al*, 2015). Maternal deaths is a painful reality for many families around the world, it is not just statistics but women with names and faces (Ki-Moon, 2010). Women are at the core of society and families. Their roles are critical to the socio-economic well-being of communities. A mother's death begins a chain of disruption, economic loss and pain, it far too often leads to the death of her baby, loss of educational and life opportunities for her surviving children and a deepening cycle of poverty for her family (GOK *et al*., 2014). The loss of a woman during delivery is a big loss to the whole society and should be prevented at all costs.

Maternal deaths majorly happen during labor, delivery and immediate period after delivery. In Africa, obstetric hemorrhage account for 33.9% of maternal deaths, infections 9.7%, unsafe eclampsia 9.1%, Human Immunodeficiency Virus (HIV) /Acquired Immunodeficiency Syndrome (AIDS) 6.2%, obstructed labor 4.1%, abortion 3.9%, anemia 3.7%, embolism 2%, Ectopic pregnancy 0.5%, other direct causes 4.9%, unclassified causes 5.4 % and indirect causes at 16.7% (Khan *et al.*, 2006). Most of these conditions can be prevented through medical interventions thus the need for skilled attendance at birth (SAB). Maternal health campaigns begun through safe motherhood panel established in 1997 that came up with key messages; that every pregnancy faces risks and can develop life-threatening complications with little or no advance warning, therefore the need to access quality maternal health services that can detect and manage

life-threatening complications. It acknowledged the importance of skilled attendance at birth (SAB), backed up by transport in case emergency referral is required. Finally, it emphasized the importance of both clinical and interpersonal aspects of care, including the capacity to provide emergency obstetric care (Starrs, 2006). The global Strategy for reduction of maternal morbidity and mortality highlighted the following requirements; country-led health plans, comprehensive, integrated package of essential interventions and services, health systems strengthening, health workforce capacity building and coordinated research and innovation (Ki-Moon, 2010).

The global community consolidated efforts to address among other global issues maternal mortality and came up with Millennium Development Goals (MDG). The initiative aimed at cutting Maternal Mortality Ratio (MMR) by 75% between 1990 and 2015 and improving universal accessibility of reproductive health services. This culminated in a drop of global MMR by 44%, from the 1990 level of 385 per 100,000 live births to the 2015 level of 216 per 100,000 live births and global lifetime risk of a maternal death was more than halved from 1 in 73 to 1 in 180 (WHO *et al.,* 2015). The annual number of maternal deaths decreased by 43% from approximately 532 000 in 1990 to an estimated 303 000 in 2015 (WHO *et al.,* 2015).

The gains would have been better appreciated had it been equal in all the regions. However developing regions and especially Sub-Saharan Africa (SSA) lags behind, accounting for approximately 99% (302 000) and 66% (201 000) respectively of the global maternal deaths (WHO *et al.,* 2015). Developed countries had a MMR of 12 per 100,000 live births, developing countries had 239 per 100,000 live births and SSA had it at 546 per 100,000 live births. Kenya was among eighteen countries all in SSA with very high MMR at 510 per 100,000 live births (WHO *et al.,* 2015). Kenya's Demographic Health Survey (KDHS) 2014 reported it at 362 per 100,000 live births with no significant difference to conclude a change from previous 2008/09 KDHS of 520 per 100,000 live births (KNBS *et al.,* 2015).

Building on the momentum generated by MDG 5, are the Sustainable Development Goals (SDGs) with a new transformative agenda towards ending preventable maternal mortality. The target 3.1 of SDG 3 is to reduce the global MMR to less than 70 per 100,000 live births by 2030. Global targets for ending preventable maternal mortality by 2030 are; every country should reduce its MMR by at least two thirds from the 2010 baseline and no country should have an MMR higher than 140 per 100,000 live births WHO *et al.*, 2015). Top among World Health Organization (WHO) strategies towards ending preventable maternal mortalities are; addressing inequities in access to and quality of sexual, reproductive, maternal and newborn health care and ensuring universal health coverage (WHO *et al.*, 2015).

Free maternity services' (FMS) policy was launched in June 2013 after a presidential directive (MOH, 2013). It was part of campaign manifesto for the political party that won the elections; its inclusion likely motivated by the grim state of maternal indicators (Govt., 2010; NCAPD *et al.*, 2011). The roll out of FMS happened without prior elaborate planning and strategy, but this was done concurrently or afterwards. Its operational strategy was being formulated at the time of this research. The Health policy project, funded by USA agency for international development (USAID), provided technical support to the government in initial analysis of required resources and its implementation (MOH, 2013). Abolishing maternity fees generated mixed reactions of how sustainable FMS would be and whether quality of services will be upheld. However, user fee exemption is popularly used globally and is among the proven single strategies effective in improving health services delivery in developing countries (Peters *et al.*, 2009).

1.2 Statement of the Problem

High maternal morbidity and mortality is associated with unskilled attendance at birth (UAB) (WHO, 2014). Government's healthcare system is a potential avenue of reducing maternal mortality due to its widespread availability and constitutional commitment to offer equitable reproductive services to all Kenyans. There are, however, huge numbers

of UAB in Kenya, clearly indicating something amiss with hospital delivery services. According to KNBS *et al.*, (2015), ninety-six percent of expectant mothers in Kenya attend antenatal care (ANC), but this proportion dwindled on facility deliveries. The biggest challenge probably lies in making maternity services both physically and financially accessible and acceptable to mothers.

The Government of Kenya (GOK) in a bid to address poor maternal health trends instituted FMS as a measure to ensure that financial barriers do not prevent pregnant women from accessing hospital delivery services (MOH, 2013). This was however implemented without adequate preparation of health facilities to build their capacity to accommodate the anticipated increase of maternity clients. Although the government policy was a bold step in attracting more women to utilize hospital maternity services, aspects contributing to its optimal uptake or otherwise have not been adequately explored. This study therefore seeks to highlight factors attributed to uptake of FMS as experienced by mothers attending maternal child health (MCH) services at Baringo county referral hospital.

1.3 Justification of study

Free maternity services program in government hospitals is a noble course that addresses economic inequalities in maternal health in Kenya. An in-depth analysis of both positive and negative contributing factors to FMS uptake is crucial to monitor if intended purpose is being achieved. Since FMS policy is new in the Health Sector having been implemented in June 2013, not many studies have been done on it hence it is timely to assess factors influencing its uptake. The outcome of such a study may provide useful information on the state of maternity services to concerned authorities like the GOK, ministry of health (MOH), county governments as well as other interested parties like; researchers, non-governmental organizations and faith based organizations. Information from this study will give a real picture on the utilization of FMS in the study area. It will guide next

courses of action to improve maternal health services in Kenya and in other countries contemplating implementation of FMS in their jurisdiction.

1.4 Research Questions

The research questions are inquiries to specific issues around utilization of FMS and helped to focus the study. These were;

1. How was the uptake of FMS among the women attending MCH clinic at Baringo county referral hospital?
2. Were maternity services accorded during the last delivery of the women attending MCH clinic at Baringo county referral hospital satisfactory?
3. What factors characterized the uptake of maternity Services amongst women attending MCH clinic at Baringo county referral hospital?

1.5 Objectives

1.5.1 Broad Objective

To determine factors associated with the uptake of FMS among women attending MCH clinic at Baringo county referral hospital.

1.5.2 Specific Objectives

Specific objectives of the study states specific and clear results expected from the study. These were;

1. To determine the proportion of women who delivered in government facilities with FMS amongst women attending MCH clinic at Baringo county referral hospital

2. To determine the satisfaction levels of the women attending MCH clinic at Baringo county referral hospital concerning maternity services obtained in their last delivery
3. To determine factors associated with uptake of FMS amongst women attending MCH clinic at Baringo county referral hospital

CHAPTER TWO

LITERATURE REVIEW

2.1 Skilled attendance at birth

Skilled attendance at birth (SAB) is significant in the reduction of maternal deaths and was included in MDG 5 and now in SDG 3 target 3.1.2. Globally, almost 80% of live births occurred with the assistance of skilled health personnel in the latest period 2012-2017, up from 62% in the 2000-2005 periods (WHO *et al.*, 2015). Sub-Saharan Africa also showed progress over the same period, and by 2012-2017 over 50% of births were attended by skilled health personnel, however inequalities was noted as other regions had higher SAB (WHO *et al.*, 2015). According to KNBS *et al.* (2015), there was an increase in facility based deliveries from 43% in 2008-09 to 62% in 2014, of which 46 % of the births were in a public-sector facility and 15 % in a private-sector facility. On delivery attendants; 62% of deliveries were assisted by a SBA (doctor, nurse, or midwife), 13 % by relatives or friends, and 19 % by a TBA (KNBS *et al.*, 2015).

Studies in Kenya have shown poor trends of SAB. A study in Nyandarua found 51.8% UAB while in Malindi 58.5% admitting to have given birth in their homes after ANC attendance (Wanjira Mwangi & Mathenge., 2011; Carter, 2010). Cotter, Hawken, & Temmerman (2006), in their study at Kikoneni Health Centre found that, of the 994 women who attended ANC, only 7.4% presented themselves for delivery services and only 5.4% of expected births in the population occurred in health facilities. Kenya's poor uptake of SAB relates to challenges of maternity services such as; inadequate resources, shortage of skilled health personnel, regional health services disparities including constrained access to facilities due to poor infrastructure in some places, socio-cultural barriers, lack of awareness and poor referral systems (GOK, 2013).

The Kenyan constitution (2010) has in it the right for every person to reproductive health care services, including maternity services which are attained through primary health care

approach (WHO, 2018). Kenya's national reproductive health policy aims at; increasing equitable access to reproductive health services, improving the quality, efficiency and effectiveness of services at all levels and improving responsiveness to clients' needs (MOH, 2007). Free maternity services policy was expected to attract more mothers to deliver in health facilities especially if quality was upheld, as hospital charges have been found to be significant in preventing SAB. In fact, high out of pocket expenses on maternity services in SSA has been associated with high MMR (Alverez *et al*., 2009). Moreover, it has been known that user fees caused exclusion, diminished uptake of services, and made bad maternal outcomes worse (Levine, 2007).

However, there are countries which had high MMR in the past and have made tremendous steps in reducing on account of other strategies. Sri Lanka has the most notable success of dramatically reducing its MMR over the past half century from between 500 and 600 per 100,000 live births in 1950 to 29 per 100,000 in 2013. It was evident that long-term government commitment to broad, systematic improvement of health services for pregnant women can save lives effectively in a low-income country (Levine, 2007). In Africa, Rwanda had an extremely high MMR of 1,300 per 100,000 live births in 1990 when Kenya had it at 687 per 100,000 live births. It has managed to bring it down to 290 per 100,000 live births by 2015 achieving MDG 5 unlike Kenya at 510 per 100,000 live births (WHO *et al.*, 2015). Its strategy has been; deployed community health workers and volunteers to address immediate, urgent health needs and investing in a long-term vision to build a professional health workforce (WHO *et al.*, 2015).

2.2 User fee exemptions

Health is paramount for any individual, society or country and it correlates with productivity and development, thus a reason for governments to invest in it without reservations (Peters *et al.*, 2009). Maternal health is greatly crippled by incessant maternal mortalities, yet there is a lot of information, policies and strategies meant to address it, including the popularly ventured, user fee exemptions. This is the fruit of a long strife

towards universal healthcare coverage which started with the WHO's "Health for All" initiative in the 1970s and the Alma Ata Declaration of 1978. In 2005, all WHO Member States made a commitment to universal health coverage with a belief that all people should have access to health services they need without risk of financial ruin or impoverishment (WHO, 2011).

Many developed countries have embraced the concept of universal health care coverage with mechanisms of easing access to services, mainly user fee exemptions or use of public and private insurance cover. Good examples are New Zealand, United Kingdom (UK), Ireland, Australia and some European countries which have maternity care in public hospitals at no cost (Rowland *et al.*, 2012). Canada has some costs on elements of pre and postnatal Maternity care while Netherland's maternity care is provided under national or private health insurance. Whereas in the United States of America, healthcare is primarily funded through private health insurance and support is offered to women with low incomes through the Medicaid system (Rowland *et al.*, 2012; Legislative Counsel, 2010).

A number of developing countries followed suit by introducing FMS, specifically to increase access to SAB and eventually accelerate the achievement of MDG 5, the predecessor of SDG 3 target 3.1 (WHO *et al.*, 2015). These developing countries were; South Africa in 1994, Burundi in 2006, Ghana in 2007, Kenya in 2013 among others (Schneider and Gilson, 1999; Atinga *et al*., 2014; Kippenberg, 2006). These countries have faced similar challenges which accompanied introduction of FMS, key among them being; overstretched resources due to rising numbers of clients and poor preparation prior to implementation (Jumare *et al*., 2013; Atinga *et al*., 2014; Kippenberg, 2006). The situation was compounded by the long standing inefficiencies in the health sector and poor allocation of funds by governments, way below the recommended 15 % by the Abuja Declaration (Atinga *et al*., 2014; IEA, 2014; WHO, 2011).

In South Africa, elimination of user fees for maternity services led not only to increased utilization but also resistance by health care providers, whose workload increased with no

corresponding benefits (Jumare *et al.,* 2013). It was noted that without other necessary structural reforms like; increased 24-hour availability of services, improved resourcing and referral, enhanced technical capacity and changed attitudes to patients, gains made by removing financial barriers alone may not be adequate (Jumare *et al.,* 2013). Likewise, Burundi's policy of free medical care for Burundian mothers intended to improve lives, instead overstretched the nation's health system. Public hospitals in Burundi recorded double, sometimes triple, the numbers of maternity clients with FMS. Some of the challenges that came up were; overcrowded wards, shortage of staff, as well as patients' inability to afford prescribed medications (Kippenberg, 2006).

Kenya's health system has been dynamic having gone through various phases and service delivery approaches. It started with free health for all soon after independence, under the "elimination of disease" policy that lead to a rapid expansion of the health infrastructure. That was not sustained due to economic, political and social pressure, hence in 1988 cost sharing was introduced (Chuma and Okung'u, 2011). Hospital deliveries until June 2013 were being charged variedly, depending on the facility. A study found that a mean of Kenyan shillings (KES) 1,049 was spent on a normal delivery and KES 2,023 for complicated delivery in government hospitals (Perkins *et al*., 2009). Despite the cost implications to the government, FMS was introduced with a social inclusive notion of ensuring equitable access to hospital delivery services thus increasing SAB (IEA, 2014).

Financial intervention towards maternity services had been done before using vouchers and direct reimbursement to restructure incentives among patients and health care providers in some parts in Kenya. In the first two years of the program (June 2006–October 2008), more than 60,000 women delivered using the safe motherhood voucher and the proportion of emergency obstetric surgeries increased dramatically at facilities contracted for the procedures (Bellows *et al.*, 2010). Another example at the Coast Region is a project that observed a four-fold increase in hospital deliveries among study participants who had both the cost of services covered and transport to the hospital provided. This is a testament that financial element of maternity services is significant in

influencing uptake of SAB (Mwangome *et al.,* 2012). However, Perkins *et al.*, (2006) commented that elimination of user fees does not always trigger an immediate increase in use of professional maternity care and can result in gaps in the availability of drugs and supplies, overworked and demoralized staff and poorer overall quality of care.

Ultimately, the real challenge was implementation, at the foremost standards of services had to be maintained, yet most public hospitals had unmet standards, which undermined the supposedly safe environments they ought to be (NCAPD *et al.*, 2011; Ki- Moon, 2010; Bourbonnais, 2013). Furthermore, resource insufficiency was a long standing problem in government maternity facilities, even with cost sharing, yet this extra fund was there to meet some expenses (Bourbonnais, 2013; GOK, 2013). The situation could have gotten worse with FMS, more so because financial allocation to health lies far below the recommended 15% of total government spending according to Abuja declaration (IEA, 2014; WHO, 2011).The GOK allocated Kenya shillings (KES) 4 billion for FMS in the 2014-2015 fiscal year (IEA, 2014).

Free maternity services' policy states that health facility's expenses will be reimbursed directly by the government; at KES 2,500 for every delivery at health centers and dispensaries and KES 5,000 for those in public hospitals. This covers normal, caesarean and complicated deliveries. No fees were to be charged for antenatal, post-natal care, referrals and in managing complications related to pregnancies (MOH, 2013). Free maternity services, provided an opportunity for mothers that had financial barriers to access SAB. Despite all the likely benefits of FMS, it was imperative to assess factors that influence its uptake, acceptability and quality of these services. This will help monitor progress and impact of FMS, as well as identify challenges and possible solutions to them.

2.3 Factors associated with uptake of Maternity Services

Factors associated with uptake of FMS are multifaceted and interlinked, encountered at individual, community or hospital level. It can be categorized into various themes such

as; maternal socio demographic profile, knowledge, beliefs and practices, resources and customer care (Mwangome *et al*., 2012).

2.3.1 Maternal Factors

Maternal factors are aspects related to an individual mother that influence uptake of SAB, mainly her socio demographic profile, knowledge, beliefs, practices and experiences (Mwangome *et al.,* 2012). A study in Haiti is a good example, it found out that older age augmented uptake of maternity services, while to the contrary higher parity lowered it (Babalola, 2014). Similarly, a Kenyan study found that more than three births in a life time increased unskilled attendance at birth (UAB) (Wanjira *et al*., 2011). Higher levels of education among mothers or couples, has been highlighted in studies in Nepal, Haiti, Ghana and Ethiopia to have positive associations to SAB (Karkee *et al.,* 2013; Babalola, 2014; Esena *et al*., 2013; Tsegay, 2013). Further to this, are findings of a study in Kenya where mothers who had UAB were likely to have less than three years of education, lower knowledge scores on safe births and a perceived similarity of birth attendance, whether skilled or unskilled (Wanjira *et al*., 2011).

Traditional beliefs and customs and low level of health awareness reduced SAB in a study in Nepal (Karkee *et al.,* 2013). In Kenya two studies at the coast, by Carter (2010) and Cotter *et al*., (2006) corresponded closely in findings that barriers to SAB were; misconception of unanticipated problems at birth, lack of awareness on the importance of SAB and traditional practices through TBA. Several studies have highlighted economic status of a mother, husband's occupation or house hold income as significant in uptake of SAB (Karkee *et al.,* 2013; Babalola, 2014; Esena *et al.*, 2013; Tsegay, 2013). In addition, findings of a study in Ghana confirmed that maternal occupation, as well as religion had statistical association with SAB, however in Nepal some women's occupation impacted negatively on SAB (Esena *et al.*, 2013; Karkee *et al.,* 2013). Low status of women in the society as well as some cultural practices have been identified to impede SAB as was the case in studies in Nepal and at the Kenyan coast (Karkee *et al.,* 2013; Carter, 2010; Cotter

et al., 2006). In addition, Attendance of ANC and associated aspects like ANC advice appeared to have positive influences on uptake of SAB in studies in Nepal, Haiti and Ethiopia (Karkee *et al.,* 2013; Babalola, 2014; Tsegay, 2013).

2.3.2 Resources

Utilization of maternity services is dependent on availability of resources that facilitate access or establishment of maternity facilities and provision of services. Thus, there exists an association of availability of resources or lack of it to uptake of SAB. Community resources, mainly infrastructural, include; maternity facilities, roads and transport that ease accessibility and indirectly; educational facilities and economy. Thus long distance to facilities, transportation difficulties, poor education and poor economy have been found to negatively affect uptake of SAB in studies in Nepal, Haiti and Ghana (Karkee *et al.*, 2013; Babalola, 2014; Esena *et al.*, 2013). This was also the case in Studies at the Kenyan coast that found barriers to SAB to be among others; cost, distance and transport (Carter, 2010; Cotter *et al*., 2006). Carter (2010) found accessibility as the primary barrier, even when participants' economic burdens were lifted. Similarly, Mwangome *et al.*, (2012) found that despite support some respondents did not manage hospital birth due to distance, poor roads and financial constraints.

Hospital resources play a vital role in utilization of SAB and these include; building structures, equipment, materials, medicine and staff. Atinga *et al*., (2014) noted that the reason for the slow pace in achieving maternal health goals in developing regions could be due to the health systems' capacity. The Kenya service provision assessment survey done in 2010 on health facilities evidently brought to light some of the existing loop holes that could compromise services. It showed that; 38% met standards for equipment processing and only 28% had basic requirements for delivery room, infrastructure and equipment. On support for quality deliveries 21% had the requirements, 50% had basic supplies for managing normal delivery, 40% had supplies for common complications and 62% had supplies for serious complications. Only 41% of staff had received training

related to delivery services 12 months preceding the study (NCAPD *et al.*, 2011). This poses a challenge to quality of services, ultimately affecting its acceptability and can be a threat to uptake of SAB.

As noted by women's studies program of Tribhuvan University, public health facilities in developing countries tend to be underfunded and inefficient (WSP, 2011). The challenges that characterize government maternity facilities in Kenya have been identified as inadequate infrastructure and resources. Indeed, there have been complains of overcrowding, shortage of staff and lack of required materials and equipment (Bourbonnais, 2013). Moreover, demands for better pay, better working conditions and recurrent staff strikes do not help the situation hence compromised quality of maternity services. In fact, the situation was anticipated to get worse with FMS if more funds and organization were not put into the program.

2.3.3 Customer care

Customer care is mainly executed by hospital staff and is influenced by dynamics around them like; the adequacy of number of staff, competence, responsiveness, personal relational skills, availability of resources and processes of service delivery. Studies on customer care in the UK have given findings that; 96% of the participants felt treated with respect most of the time while 87% were satisfied with labor and birth care. In Canada , 78.5% of the participants were very satisfied with the respect shown to them, 75.9% with the competence of caregivers, 72.6% with their involvement in decision making and 65.4% with the information given to them (Rowland *et al.*, 2012). The UK report by House of Commons accounts committee (2014), similarly, found that the vast majority of women had good experiences, but outcomes and performance could be much better.

Poor customer care is demonstrated by negligence and rudeness of health care providers and in some cases to the extent of abuse and mistreatment of clients. This has been a longstanding barrier to SAB (Bourbonnais, 2013) as was a case in Kano state (Nigeria)

where the attitude of staff towards pregnant women was cited as their main reason for avoiding orthodox maternity care (Galadanci *et al*., 2010). Furthermore, Esena *et al.*, (2013) demonstrated that poor attitude of health workers and poor quality of care discouraged SAB. Two studies at the Kenyan coast, had findings, that poor customer care made mothers fearful of hospitals and made them think of hospitals as hostile environments for giving birth hence preferring home deliveries (Carter, 2010; Cotter *et al*., 2006).

Poor provider attitude was further found by a study in Nairobi slums to be among primary deterrents to SAB. The participants of that study noted that their poverty prevented them from affording hospital-based delivery and gave hospital staff undue reason to mistreat them. Moreover, they had considerable recognition and awareness of hospital's expertise in managing obstetric emergencies however, they would not consider hospitals appropriate for uncomplicated deliveries, instead they preferred TBAs depicted as naturally and divinely gifted, more effectual and dependable (Izugbara *et al.*, 2009). In addition, in a related study, the TBAs thought of themselves as playing an important role in society and identified the non-cooperative and disrespectful attitudes of hospital staff as the main negative attribute and not their lack of formal training. They attributed the continued demand for their services to the high quality and wide-ranging nature of their services and to their sensitivity to their clients' needs, which contrasts with the abusive treatment many women receive in hospital settings (Izugbara *et al.*, 2008).

2.4 Outcome of utilization of Maternity Services

Quality maternity services guarantees better outcomes and improved uptake. Outcome of maternity services can be measured through assessing clients' satisfaction levels on various facets of care or assessing quality of services at a facility level and by trends of maternal health indicators (Hulton *et al.*, 2010). An example of such assessment was England's national survey for users of maternity services conducted in 2010, it confirmed that not only are outcomes generally good but that on the whole, women are satisfied with

the care they receive (Commissioning Board, 2012). In the United States of America (USA), maternity services had higher expenses among developed countries and a MMR 14 per 100,000 live births (Rowland *et al.,* 2012; WHO *et al.,* 2015). On outcomes of deliveries, a study in Lao had 42.7 % of participants satisfied with the condition of their newborns while 32.5% were dissatisfied, 43.5% were satisfied with condition of mother and 18.3% were dissatisfied (Khammany *et al*., 2016).

In developing countries, many women especially the poor, undereducated, or living in rural areas, do not receive basic maternity care hence have uncontrolled MMR. In some instances services are inadequate as was the case in South Africa where maternal health problems continued even after introduction of FMS. This was attributed to FMS policy which increased utilization rate and consequently overcrowding of public health facilities. Furthermore, the long waiting times, lack of consistent training for health personnel, increased workload and inadequate physical infrastructure, resources and equipment made it difficult to reduce MMR (Jumare *et al.,* 2013).

In Western Kenya, a funded safe motherhood project yielded positive impact in maternal health by a reduction in the case fatality rate, improved provider knowledge, experience, and practices. There was increased use of parthographs (a chart that guides observation of mother and fetus during labor), improved management of complications, fewer women giving birth after 12 hours of labor and more deliveries with SBA at home as well as attendance for postpartum care. Management and organizational issues improved hence fewer women had to bring in drugs and supplies during labor, more health facilities provided manual vacuum aspiration (MVA) services and 24-hour cover for maternity services and were using guidelines and protocols (Warren *et al.,* 2004).

2.5 Conceptual Framework

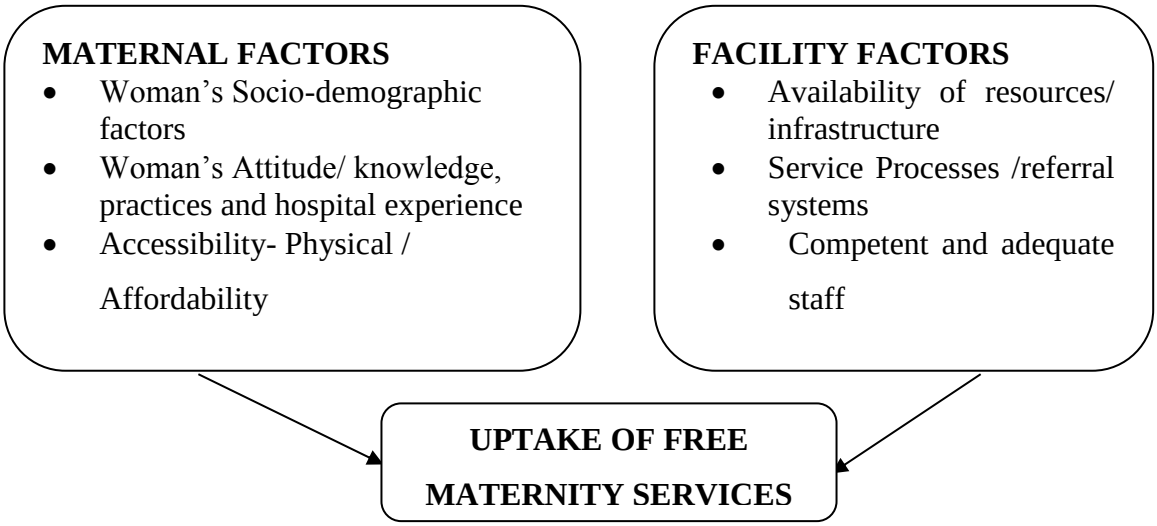

Figure 2.1: Factors associated with uptake of free maternity services.

There are factors that would either enhance or limit utilization of FMS and these could be attributed to either the woman or the facility offering the services. The mother's and facility factors were the independent variables while uptake (yes/no) of FMS was the dependent variable (Figure 2.1).

The mother's factors were; her socio-demographic factors, her attitude, knowledge and practices, her accessibility to maternity facility considering cost, distance and availability of transport and her experience or perception towards hospital services accorded. On the other hand, facility factors were; availability of resources, presence of competent and adequate staff, customer care in service delivery and processes within the facility, focusing mainly on referrals.

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study Site

The study was done at the Maternal Child Health (MCH) clinic of Baringo county referral hospital. Baringo county is vast with an area of 11,015.3 square kilometers and varying topography from arid, semiarid to highland regions (BCG, 2014). The county had an average population density of 50 persons per square kilometer in 2009 and was projected to rise to 60 by 2017 (BCG, 2014). The human development index was estimated at 0.5656 above the national index of 0.5506 and human poverty index was 30.6% compared to the national level of 29% (BCG, 2014). The major economic activity of the county is pastoral (33%) and mixed (93.9%) farming (BCG, 2014). The county does not have a good road network and there is an average of 15 kilometers distance to the nearest health facility (KIRA, 2014). It has 53.5 % SAB, 69.4% fully immunized children and 80% immunization coverage (KNBS *et al.*, 2015; BCG, 2014). Baringo county referral hospital covers referrals from the whole county and is situated in Kabarnet town which also hosts the county government, within Kabarnet Mosop location.

Kabarnet Mosop location is mainly peri-urban and cosmopolitan, it has a population of about 18,000 people (KNBS, 2009), it is on Tugen hills, hence highland with a rugged terrain, characterized by hills, cliffs and valleys. Kabarnet town has an active robust economy with good infrastructure and facilities, having been an old time administrative headquarters (BCG, 2014). The road network is much better than the rest of the county, mainly all weather roads but for a few interior earth roads. The main economic activity is business, employment and subsistence farming. Baringo county referral hospital houses the only maternity unit within the town and environs and MCH services for the residents of the town are mainly offered there.

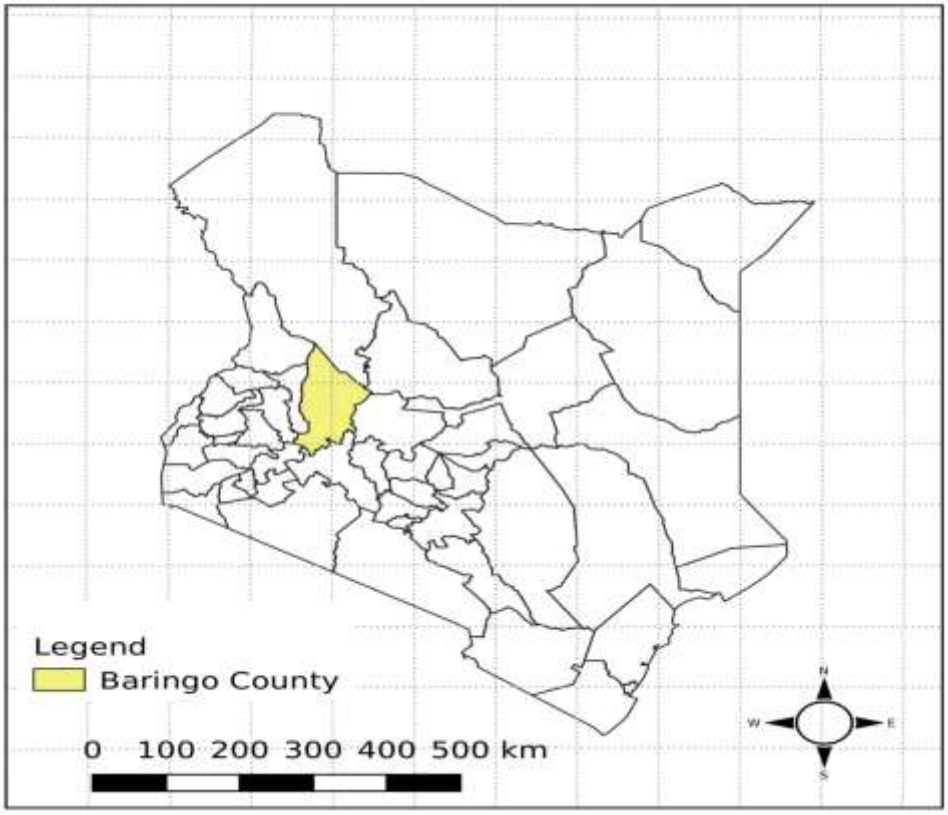

Figure 3.1: Baringo County map

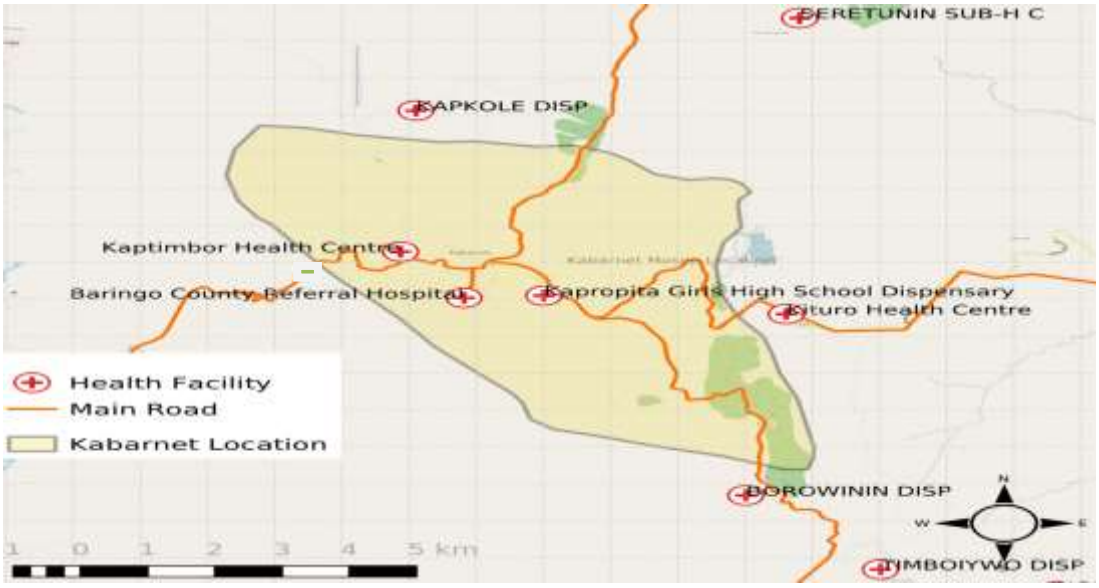

Figure 3.2: Kabarnet Mosop Location map

3.2 Study Design

The study utilized cross sectional study design, with both quantitative and qualitative data collection methods. The use of mixed methods increased the breadth and depth of understanding the research questions while offsetting each method's weaknesses. Qualitative data gave a voice in the study, elucidating more information and grounding quantitative data findings (Wisdom and Creswell, 2013).

3.3 Study Population

The study population was made up of women who had given birth in the last three years prior to the time of study. The three years was meant to cover the period since introduction of FMS. It was also for women attending MCH clinic at Baringo county referral hospital. Maternal child health clinic was the most suitable as all mothers despite place of delivery converge there for their children's immunization. Baringo county has immunization coverage of 80% and that includes remote areas, therefore Kabarnet Mosop location at the epicenter of the county's development should be way better.

3.4 Inclusion and exclusion Criteria

This process was employed to determine the most suitable participants for the study and whose involvement will adequately answer the study's research questions.

3.4.1 Inclusion criteria

The characteristics that the subjects had to have to be included in the study, these were;

- Women who had a recent birth (three years and below)
- Women seeking MCH services at Baringo county referral hospital during the study period
- Women who gave informed consent to participate in the study

3.4.2 Exclusion Criteria

The characteristics that disqualified prospective participants from the study even though they meet inclusion criteria were;

- Women who were unable to participate in the study because of a health condition
- Women who were unable to participate in the study as a result of interruptions from child or health practitioners

3.5 Sample Size Calculation

Using the estimated national proportion of skilled attendance at birth (44%) in Kenya as reported by the most recent demographic data available at the time of the study (KNBS and ICF Macro, 2010), the sample size of the clients was calculated using Cochran's formula (Cochran, 1963).

$$\boldsymbol{n} = \frac{\boldsymbol{z^2 pq}}{\boldsymbol{e^2}}$$

Where; P is the proportion of women in Kenya who had skilled attendance at birth (44%), q is 1minus p, e is Precision at 5% and Z is normal deviate for two-tailed alternative hypothesis, at 5% level of significance, Z is 1.96.

Therefore; $\mathbf{n = \frac{1.96^2 * 0.44*(1-0.44)}{0.05^2} = 378.63}$

Hence sample size was 379 mothers.

3.6 Sampling Procedure

The average number of mothers attending the MCH clinic per day were about twenty (according to hospital records), the clinic operated five days a week hence an expected total of 100 clients per week, 400 per month and 1,200 for the three months of study. To obtain the sample interval, the sample frame being the total expected clients of the three months of study (1,200) was divided by the sample size of 379 making it 3. At the start of each day, data collection was done using simple random sampling to pick the first participant from among the first three mothers and thereafter, systematic sampling was applied, where every third mother was sampled. If a sampled mother did not meet the inclusion criteria or withdraws midway the next mother was sampled.

3.7 Data Collection

Quantitative data was obtained through a semi structured questionnaire (Appendix ii) administered to selected mothers at the MCH Clinic, where immunization services mandatory to all children are offered. The questionnaire was designed in English, then translated and administered in Kiswahili by the researcher and/or trained research assistant. The questionnaire was pre-tested in Ngong sub-district hospital, MCH clinic on 30 mothers attending services and thereafter refined to its final version. A section of the waiting bay was set aside for the purpose of data collection to ensure privacy and confidentiality was maintained.

The questionnaire captured; demographic characteristics (age, education level, marital status, previous deliveries), socio-economic data (sources and amount of income and spouse's support), knowledge, attitude and practices on maternal services (antenatal attendance, delivery practices, experience during deliveries, assessment of hospital delivery and its importance) and hospital factors associated with uptake of FMS such as staff competence and personal relations, availability of resources, and condition of facility.

Qualitative data was obtained through one focus group discussions (FGD) and two key informants' interviews. The FGD was conducted on a group of eleven mothers obtained randomly from the study population but who did not participate in filling the questionnaire. They were identified by figures 1 to 11. A discussion guide was used, which focused on factors associated with uptake of maternity services (appendix iii). The researcher moderated the discussions while the research assistant took the notes.

Interviews were conducted with two key informants who were purposively chosen. The first key informant (KI 1) was the hospital superintendent and the only obstetric gynecology specialist in the hospital. He was the head of maternity services. The interview was conducted using a guide (appendix IV). The issues captured in the interview included; financial support from government for maternity services at the facility, capacity of hospital to handle mothers utilizing free maternity services, coping mechanisms adopted by the facility in delivery of free maternity services and positive and negative factors associated with utilization of FMS as well as what the hospital does to encourage Skilled attendance at birth.

The second key informant (KI 2) was a TBA, she was interviewed on importance of hospital delivery, reasons why women utilize their services and any collaboration or support from Baringo County referral Hospital using an interview guide (appendix v). In both interviews, the researcher moderated the interviews while a research assistant took the notes.

3.8 Data management and analysis

Data collected from the questionnaire was entered into Microsoft access database (2007), cleaned then analyzed with statistical package for social sciences (SPSS) version 20. Five point likert scoring was done to assess satisfaction of varied aspects of maternity services and facility by getting a weighted average for every item. Binary logistic regression was used to assess the effect of various predictive factors highlighted in the conceptual frame

(Figure 2.1) to satisfaction of services accorded and uptake of FMS. A p-value less than 0.05 were considered statistically significant.

3.9 Ethical Considerations

Scientific and ethical approvals were obtained from Kenyatta National Hospital/ University of Nairobi Ethical Review Committee. Written request to the hospital administration was done for permission to be allowed to collect data within the hospital. The nurse in charge of MCH was then informed about the study and in turn introduced the research team to the mothers. Mothers who met the study requirements criteria were requested to voluntarily sign an informed consent form (Appendix i) or indicate their consent by a thumbprint while witnessed by the interviewer, were enrolled into the study. Participants were allowed to withdraw from the study whenever they wanted and were assured anonymity and confidentiality of data obtained from them. Anonymity was maintained by omitting details that can identify participants, such as their names, in the questionnaire. To ensure confidentiality, participants were interviewed in a private corner of the MCH waiting bay away from the sight and hearing of other people. The research team was trained on maintaining confidentiality and data was secured from access of any unauthorized person.

CHAPTER FOUR

RESULTS

4.1 Introduction

The findings of this study which was conducted between February and May 2015, at Baringo county referral hospital, MCH clinic, are presented in this chapter. Study participants were 379 mothers, 11 mothers for FGD and 2 key informants. Data was obtained using both quantitative and qualitative techniques as guided by study objectives. Quantitative data was presented in form of tables and charts while qualitative data was organized according to themes. Convergent integration design was used to bring both data together (Wisdom and Creswell, 2013; Guetterman *et al*, 2015).

4.2 Socio demographic characteristics of study participants

All study participants were within reproductive age of 15 to 49 years, with the highest proportions being in categories 26-30 years (37.7%) (31.7%) (Figure: 4.1).

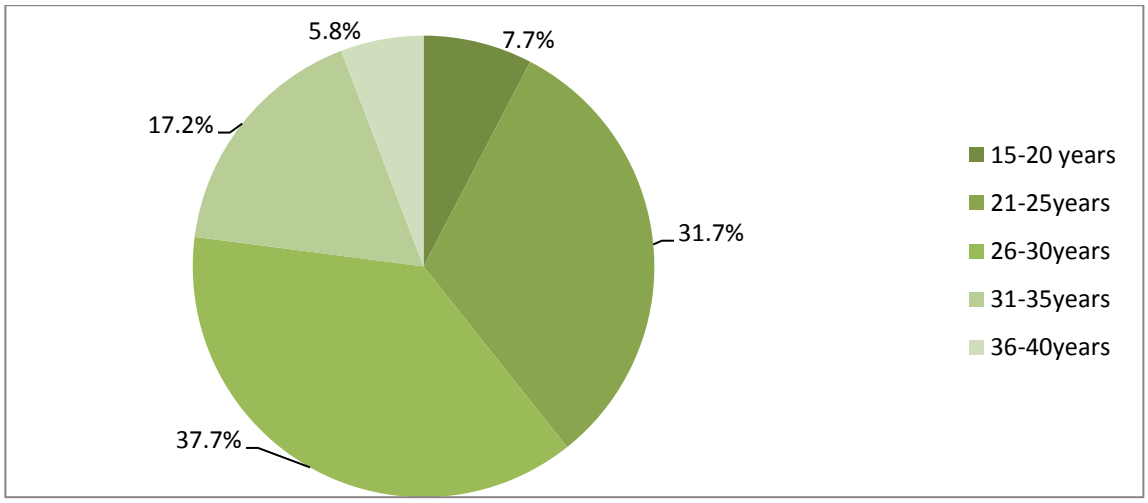

Figure 4.1: Distribution of respondents by Age, Baringo County referral Hospital, Kenya, 2015

Regarding the respondents' social characteristics; more than three quarter had secondary education, 73.1% were married and 43.5% had a parity of 4-6 followed by 32.5% of 1-3 parity. Business and farming was the most popular sources of income by more than half of respondents (53.6%), followed by employment (21.4%) and casual work (7.1%). Most of the participants (83%) earned more than KES 200 per day (Table 4.1).

Table 4.1: Social characteristics of respondents, Baringo County Referral Hospital, Kenya, 2015

Description	Frequency	Percent Frequency	95% CI for % Frequency Lower	Upper
Level of Education				
1. Lower primary school	12	3%	1.7	5.3
2. Upper primary school	71	20%	15.8	23.8
3. **S**econdary school	159	44%	38.8	49.0
4. Tertiary education	119	33%	28.0	37.9
Marital Status				
1. married	270	74%	68.9	78.2
2. single	77	21%	16.9	25.3
3. divorced	6	2%	.5	3.0
4. separated	14	4%	1.9	6.0
Parity				
1. 1 to 3 children	118	34%	28.9	38.9
2. 4 to 6 children	161	46%	40.3	51.1
3. 7 to 9 children	70	20%	16.0	24.0
4. 10 and more	1	0%	0.0	.9
Income Levels				
1. KES 50-200	62	17%	13.2	21.4
2. KES 201-500	91	26%	20.8	30.7
3. KES 501- 1,000	61	17%	13.2	20.8
4. KES 1,001- 2,000	41	12%	8.5	15.2
5. KES Above 2,000	100	28%	23.7	33.2
Sources of income				
1. employment	77	23%	18.4	27.2
2. business	135	39%	33.9	44.4
3. farming	35	10%	7.0	13.7
4. casual work	26	8%	5.0	10.2
5. Dependant	26	8%	4.7	10.5
6. business & farming	28	8%	5.3	11.1
7. employment & business	15	4%	2.0	6.7

Qualitative data was obtained through a FGD of 11 mothers and interviews of 2 key informants. Focus group discussions' participants were serialized for identity from P1 to P11. They contributed openly on their experience of FMS, attractions, challenges and barriers to it. Focus group discussions' participants' distribution by age was noteworthy as the older women were likely to be mature and more experienced (Figure 4.2).

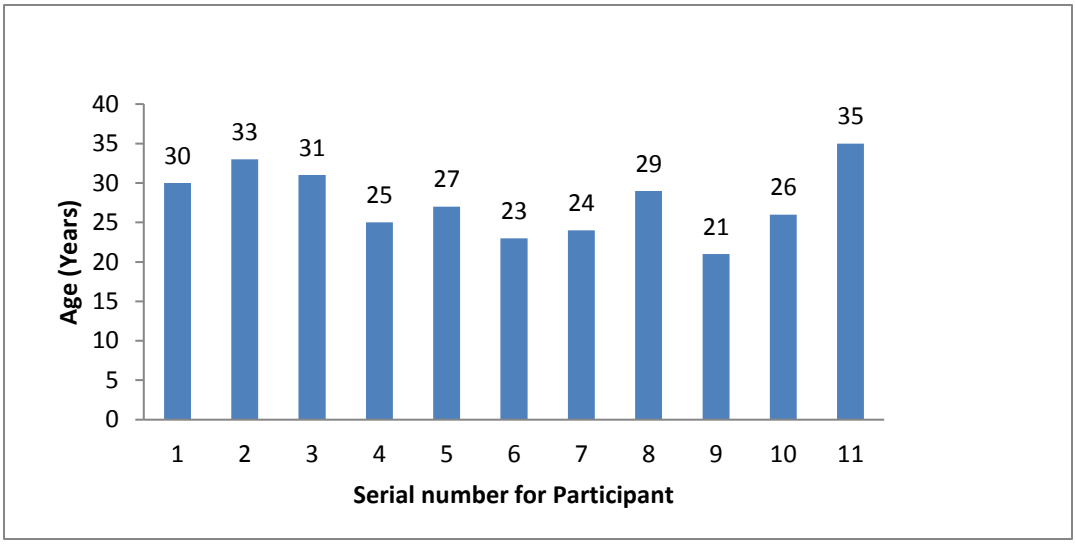

Figure 4.2: Distribution of FGD participants by age, Baringo County Referral Hospital, Kenya, 2015

Focus group discussions' participants' distribution by parity was similarly significant as women with higher parity have more experience (Figure 4.3).

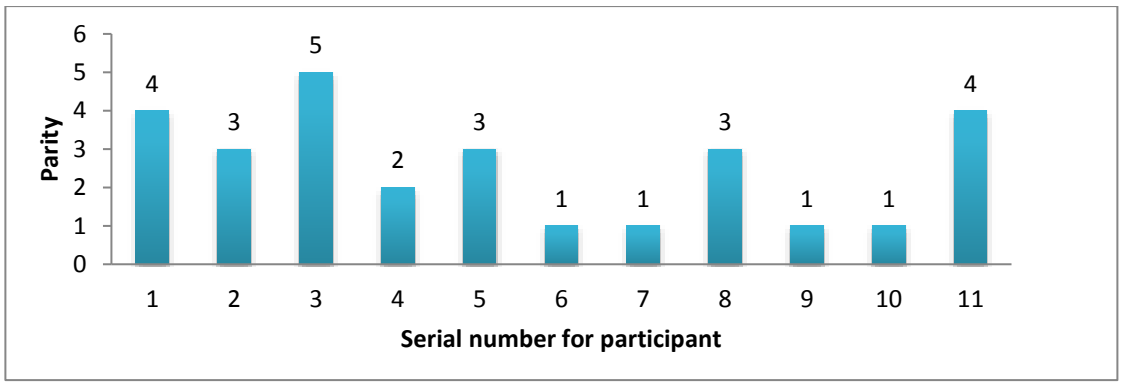

Figure 4.3: Distribution of FGD participants by parity, Baringo County Referral Hospital, Kenya, 2015

The hospital superintendent, a 46-year-old male, also the obstetrics and gynecology specialist and head of maternity services at Baringo county referral hospital was the first Key informant (KI 1). The second key informant (KI 2) was a TBA, a 48-year-old female, a housewife and a subsistence farmer. She was living within Kabarnet town, about 4 KM from the hospital. She was quick to admit that her work was not commercial but community service.

4.3 Pregnancy to delivery profile

4.3.1Antenatal care attendance

At the first month of pregnancy, 1.1% respondents began ANC, followed by a steady rise of participants on first ANC attendance, peaking at the fifth month, by then 57.1 % had attended. Some mothers begun as late as the ninth month of pregnancy (Figure 4.4).

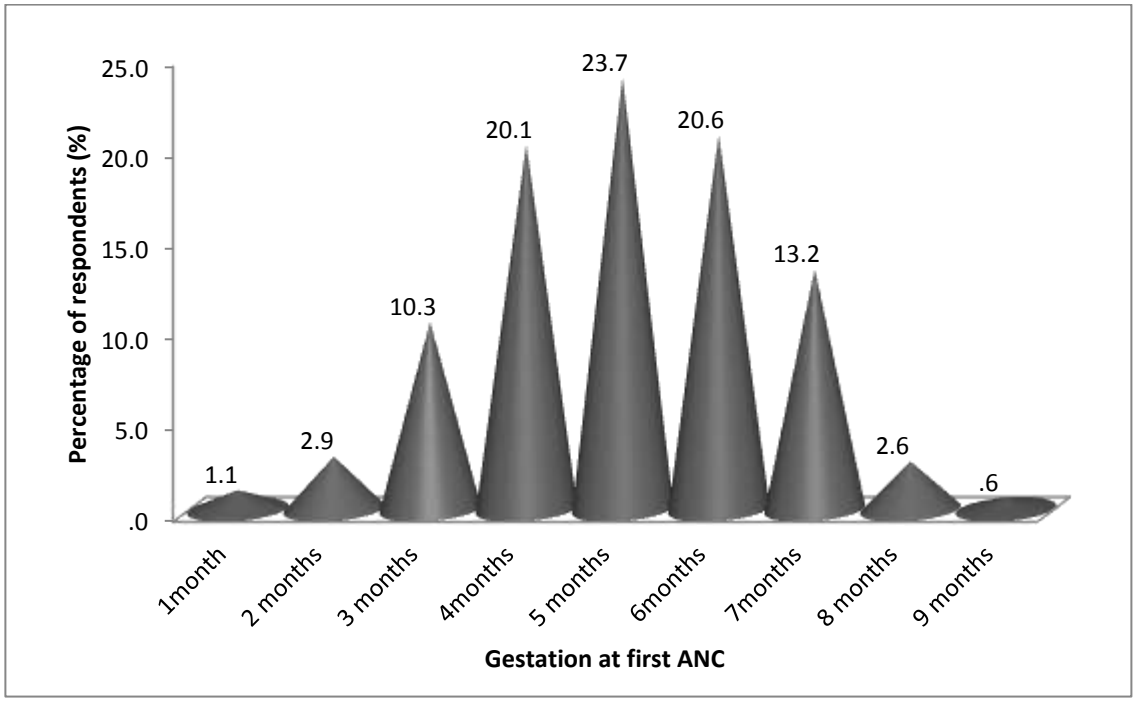

Figure 4.4: Gestation at first ANC, Baringo County Referral Hospital, Kenya, 2015

4.3.2 Delivery particulars

Almost all respondents (97.4%) attended ANC during their last pregnancy, expressed the importance of a hospital delivery (99.5%), desired hospital delivery next time (96.8 %) and had a birth plan (89.4 %). More than three quarter of the respondents decided on place of delivery, either on their own (50.9%) or with their spouses (26.9%), while 74.7% of those married had a supportive husband. Most of the respondents (88.4%) lived within 7km to a maternity facility and many (93.1%) delivered after FMS was launched and in government facilities (95.8%). Nurses assisted most of the deliveries (43%), medical students did 30.9% and doctors 17.7%. About two thirds of the mothers spend nothing on their last delivery, (Figure 4.5).

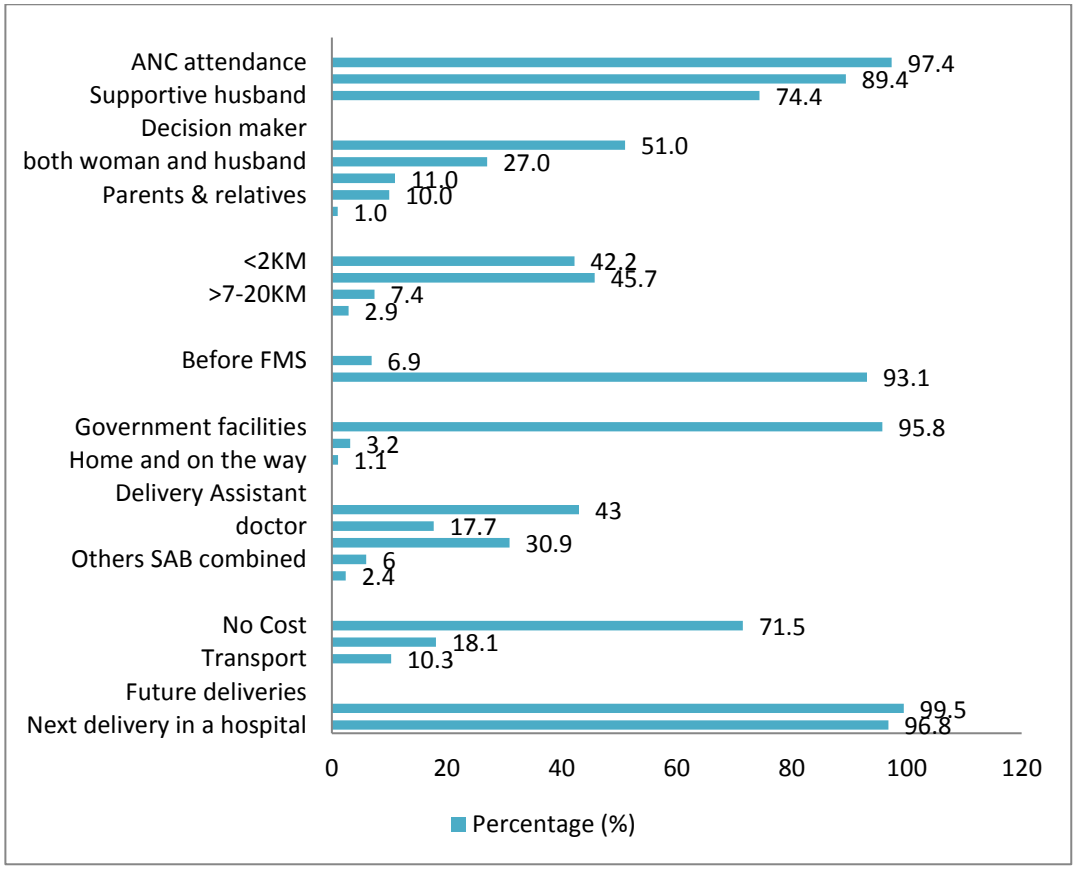

Figure 4.5: Delivery particulars of respondents, Baringo County Referral Hospital, Kenya, 2015

4.3.3 Mothers' reasons for delivery place and importance of hospital delivery

The reasons for place of delivery were akin to the views on importance of hospital delivery. Majority of participants (73.1%) stated that good reputation of facility and services offered influenced their choice of place of delivery, proximity to maternity facility (51.4%) and affordability (25.1%) also featured strongly as other reasons. Similarly, good services (71.8%) and no or minimal cost (24.5%) were popularly quoted by respondents as an importance of hospital delivery, followed by; prompt assistance (20.6%) professional services (14.1%), safety of mother and baby (9.3%), hygienic environment /prevention of infections (8.4%), availability of equipment and technology (6.3%), health education to the mother (8.2%), Place of ANC attendance (19.6%) and referrals (4.7%) (Figure: 4.6).

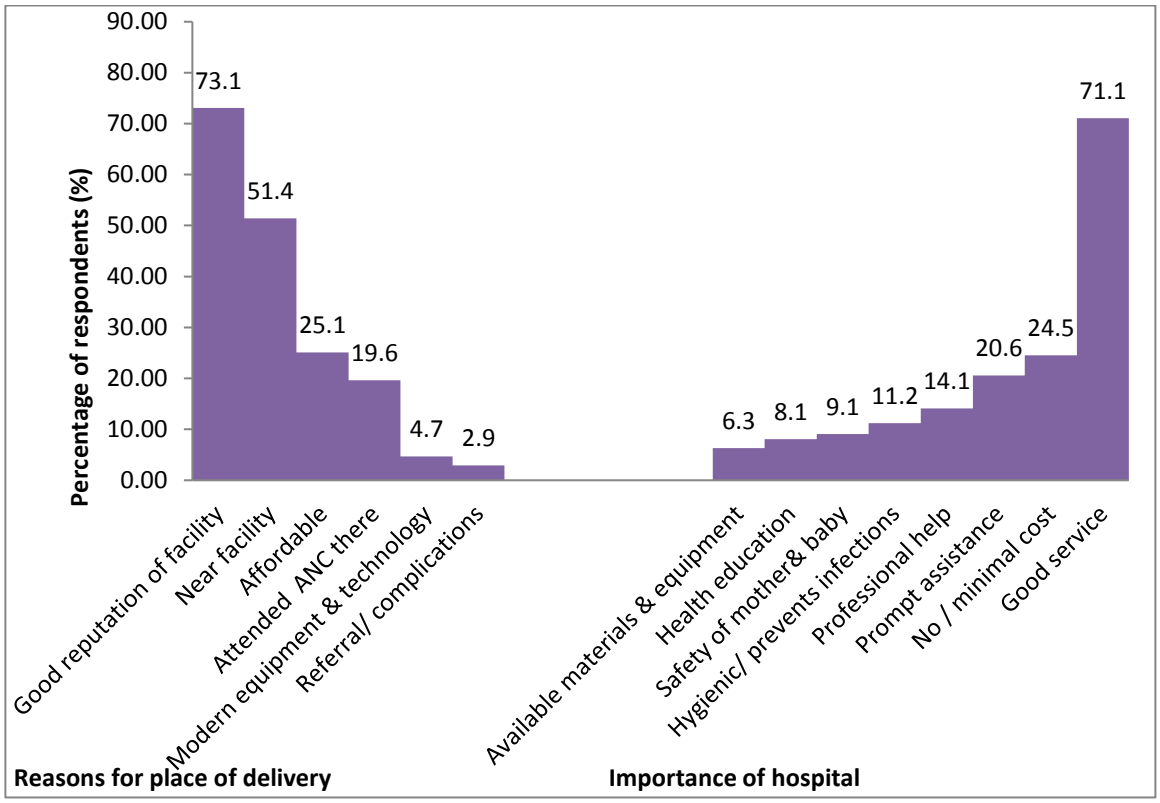

Figure 4.6: Reasons for choice of place of delivery, Baringo County Referral Hospital, Kenya, 2015

4.3.4 Reasons for consulting a traditional birth attendant

Respondents advanced various reasons why women prefer the services of a TBA with 16.3% of them having consulted a TBA before, during or after delivery. Fear of some sort was the main reason for TBA preference as indicated by 24.1% of the respondents. It included fear of episiotomies, stitching, vaginal examinations, Caesarean section, staff or general hospital environment. Challenges of transport to hospital (20.5%), distance (17.9%), expenses (14.8%), traditions and culture (10.3%) and unsatisfactory hospital services (6.9%) were the other reasons (Figure 4.7). Some respondents (1.3%) felt that the services offered by the TBA were similar to those offered at the hospital while l.1% and 0.5% would still prefer a home delivery and TBA assistance respectively (Figure 4.7).

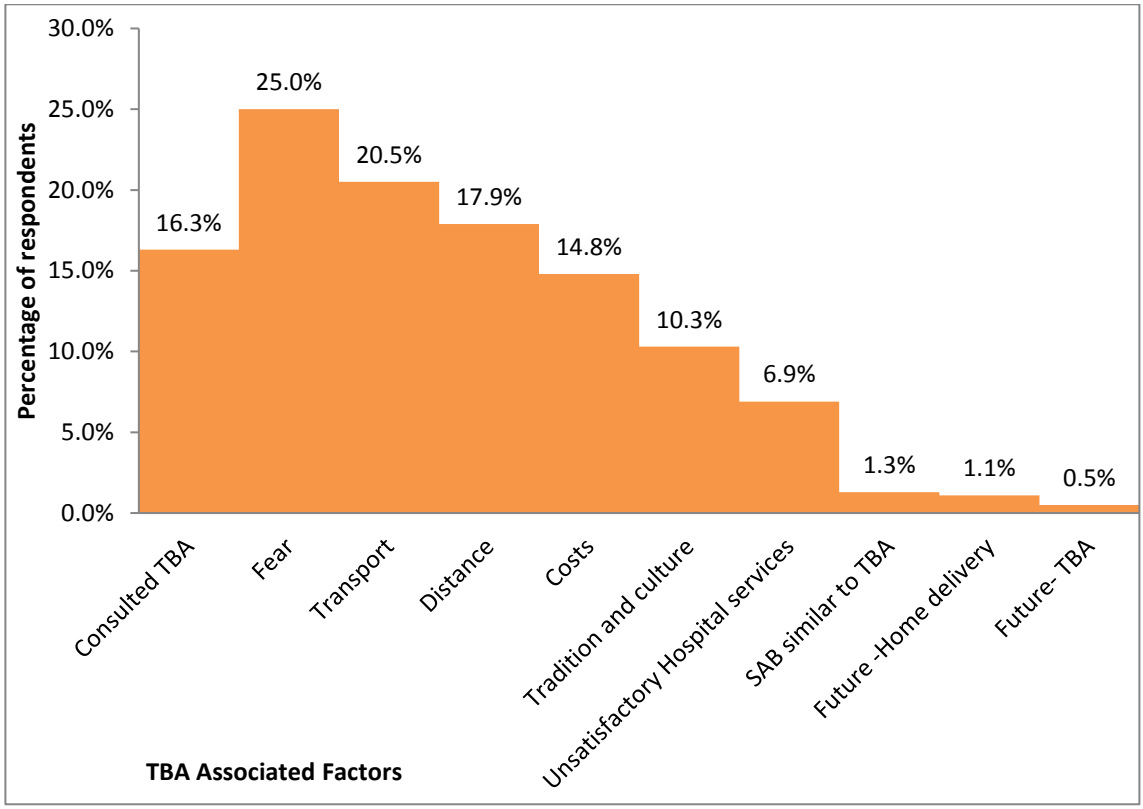

Figure 4.7: TBA Associated Factors, Baringo County referral Hospital, Kenya, 2015

4.4 Mothers' satisfaction levels on services accorded

Out of the 99.5% of the participants who responded on whether they were generally satisfied with maternity services offered, majority (93.1%) were satisfied. In order to understand the level of mother's satisfaction at the facilities, participants were asked to rate different aspects of maternity services accorded using a five point likert scoring scale of; very good, good, fair, poor, and very poor. Very good and good ratings were considered satisfactory while poor and very poor as unsatisfactory, fair was midway. The aspects that had most proportions of satisfactory rankings were; staff competence (91.1%), staff courtesy (88.2%) and availability of medicine (78.8%) while those with unsatisfactory were; availability of materials and equipment each by 15.1% and visual privacy by 7.7 % (Figure 4.8).

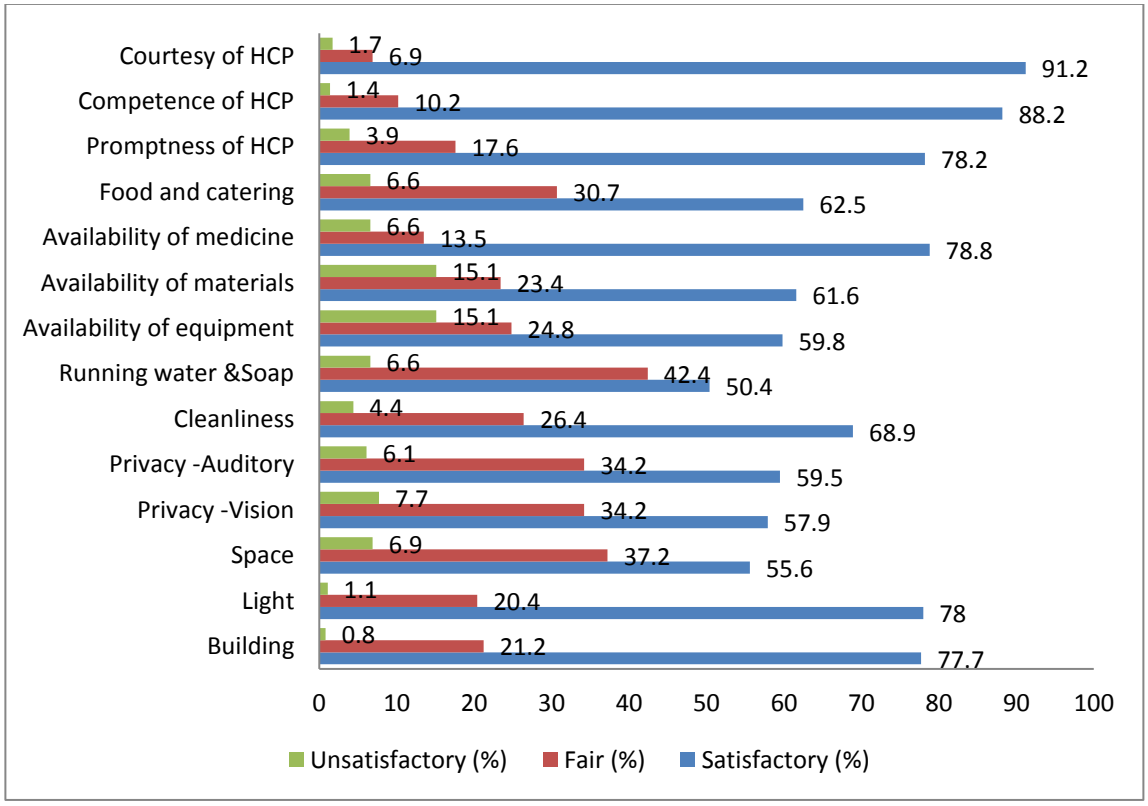

Figure 4.8: Proportions on likert scale scoring of aspects of maternity services' delivery, Baringo County Referral Hospital, Kenya, 2015

Aspects were scored out of the five points likert scale, details in Appendix VIII, Part A. The aspects that lead were similar to the ones leading on satisfactory rating and were aspects related to the staff, competence had 4.09 points, followed by Courtesy (4.08). The aspects with low scores were related to hospital resources with the least being, availability of running water (3.47) followed by Availability of equipment (3.5), space 3.51 and materials (3.54) (Figure 4.9).

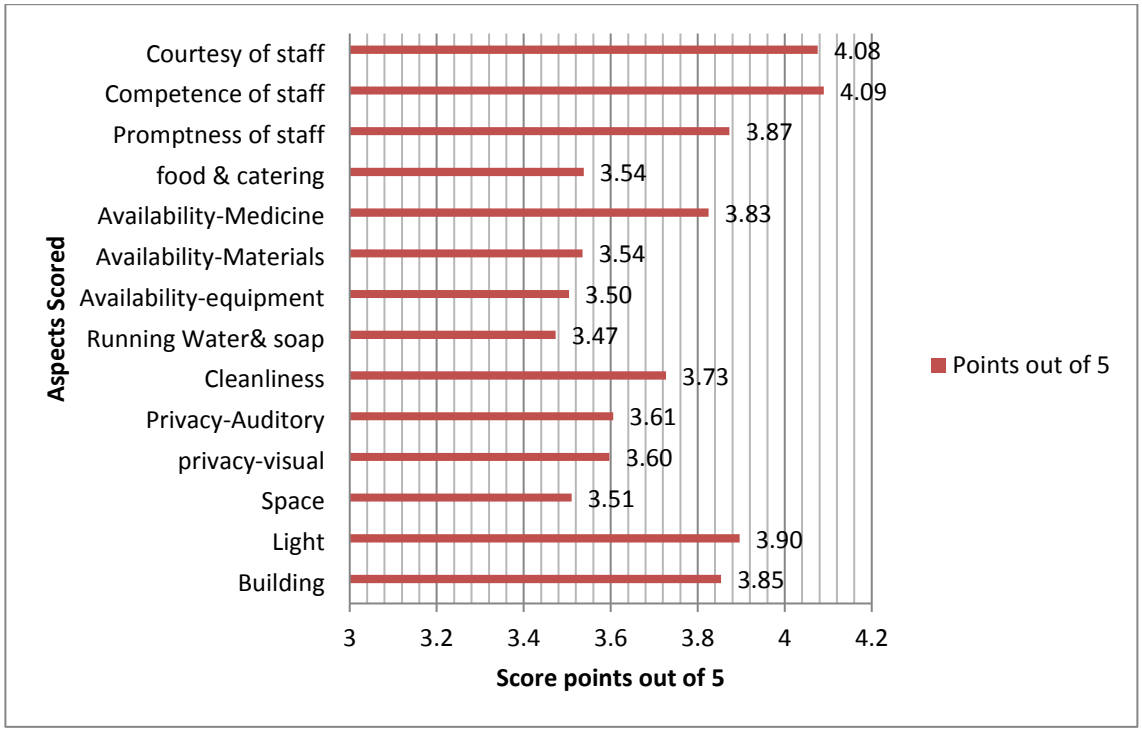

Figure 4.9: Likert scale scoring points on aspects of maternity services' delivery, Baringo County Referral Hospital, Kenya, 2015

4.4.1 Factors associated with satisfaction of maternity services

In this study, factors that were considered for possible association with the 93.7% satisfaction of maternity services at facilities providing FMS were; age of the mother, level of education, marital status, parity, birth plan, decision maker in a family, year of delivery, income per day and reasons for place of delivery being; cost of maternity services

at the facility, distance to the facility, good reputation of facility, place where a mother attended ANC, referral/ expected complications, modern equipment & technology in the facility, courtesy of the staff, desire to have safe delivery, place of previous deliveries, sudden onset of labor, beliefs and traditions, lack of transport to the facility of choice and near TBA.

4.4.1.1 Univariate binary logistic regression for satisfaction of FMS

Univariate binary logistic regression was used to assess the relationship between each covariate with the outcome of interest (Satisfaction of maternity services). Most of the covariates were found to have no relationship with satisfaction of maternity services except for four covariates. These were; marital status of those separated (P-Value < 0.01, Odds Ratio =0.458 (CI= (0.300, 0.699)), having a birth plan (P-Value= 0.007, Odds Ratio =4.039 (CI= (1.462, 11.157)), modern equipment & technology as a reason for place of delivery (p-value < 0.01, Odds Ratio =0.052, CI= (0.016, 0.175)) and courtesy of the staff as a reason for place of delivery (P-Value= 0.024, Odds Ratio =0.141 (CI= (0.026, 0.777) (Table 4.2). Details on all covariates are in Appendix VIII, part B

Table 4.2: Univariate binary logistic regression for satisfaction of FMS, Baringo County Referral Hospital, Kenya, 2015

		B	S.E.	Wald	df	Sig.	O R (Exp(B))	95% C.I. -OR Lower	Upper
Step 1[a]	**Birth Plan**	1.396	.518	7.25	1	.007	4.039	1.462	11.16
	Constant	1.642	.446	13.56	1	.000	5.167		
	Marital Status	-.782	.216	13.08	1	.000	.458	.300	.699
	Constant	4.031	.459	77.22	1	.000	56.34		
	Modern equipment / technology	-2.95	.616	22.93	1	.000	.052	.016	.175
	Constant	3.10	.264	138.2	1	.000	22.27		
	Courtesy of Staff	-1.96	.869	5.065	1	.024	.141	.026	.777
	Constant	2.873	.236	148.4	1	.000	17.684		

4.4.1.2 Multivariate binary logistics regression for satisfaction of FMS

Multivariable binary logistic regression was used to assess the combined effect of covariates on the outcome of interest (Satisfaction of maternity services). Apart from birth plan, the other three covariates that were significant at univariate level remained significant at multivariate level. The odds of mothers being satisfied with maternity services accorded was; 0.108 times for those separated (coded as 3) more than the married women, the reference in that group, at p value 0.003. It was 0.041 more for those who indicated modern equipment and technology as reason for place of delivery than those who never indicated at p-value < 0.01 and 0.062 times for those who indicated courteous staff as reason for place of delivery than those who never indicated at p-value < 0.01 (Table 4.3).

Table 4.3: Multivariate binary logistic regression for satisfaction of FMS, Baringo County Referral Hospital, Kenya, 2015

		B	S.E.	Wald	df	Sig.	Odds Ratio (Exp(B))	95% C.I.for EXP(B) Lower	Upper
Step 1[a]	**Marital status**			10.976	3	.012			
	Single (1)	.566	.715	.627	1	.429	1.761	.434	7.145
	Divorced (2)	19.255	15061.803	.000	1	.999	23031579 1.297	.000	.
	Separated (3)	-2.23	.743	8.990	1	.003	.108	.025	.462
	Birth Plan (1)	.986	.699	1.990	1	.158	2.681	.681	10.56
	Modern Equipment (1)	-3.18	.795	16.184	1	.000	.041	.009	.194
	Courtesy of staff (1)	-2.786	.925	9.060	1	.003	.062	.010	.378
	Constant	2.490	.709	12.323	1	.000	12.064		

4.4.2 Condition of mother and baby

The outcome of delivery can be influenced by maternal and hospital factors. This study sought to know, from the perspective of the client how their condition was after delivery. The study showed that 84.4% of the mothers and 93.4% of the babies were in satisfactory

condition, with most of the participants reporting to have been in good condition (60.4%) and very good condition (24%). The babies' condition feedback was even better with 57.5% and 35.9% of them being in good and very good condition respectively. There were minimal cases of poor conditions with indications of 1.5% of mothers and 1.3% of babies, and there were no very poor conditions. The condition of mother and baby after delivery according to respondents' experience and perception was mostly satisfactory (Table 4.4).

Table 4.4: delivery assistant and condition of mother, Baringo County Referral Hospital, Kenya, 2015

Subject	Condition of mother					
	very good	good	fair	poor	very poor	Total
Mother	91	244	38	4	2	379
Child	136	218	20	5	-	379

4.5 Factors associated with uptake of free maternity services

Binomial Logistics regression analysis was used to find out factors associated with uptake of free maternity services where 95.8% participants indicated yes. In this study, twenty factors were considered as possible explanatory variables to uptake of free maternity services (FMS). These factors included; age of the mother, level of education, marital status, parity, birth plan, decision maker on place of delivery, year of delivery, affordability of maternity services at the facility, distance to the facility, good reputation of facility, place of ANC attendance, referral/ expected complications, modern equipment & technology in the facility, courtesy of the staff in the facility, lack of transport to the facility of choice, desire to have safe delivery, place of previous deliveries, sudden onset of labor, near a TBA and beliefs and traditions.

4.5.1 Univariate binary logistic regression on associations FMS' uptake

Univariate binary logistic regression was used to assess the relationship between each covariate with the main outcome of interest (uptake of FMS). Most of the covariates were found to have no relationship with the uptake of FMS except three covariates; Birth plan, modern equipment & technology and referral/ expected complications. Birth Plan was an important factor in explaining uptake of FMS at P-Value= 0.028, Odds Ratio =0.107 CI= (0.015, 0.781), so was modern equipment & technology in the facility at p-value < 0.01, Odds Ratio =0.011, CI= (0.001, 0.109) and referral/ expected complications at p-value < 0.01, Odds Ratio =0.59, CI= (7.085, 439.323) (Table 4.5). Details on all covariates are in Appendix VIII, Part B.

Table 4.5: Univariate binary logistic regression for uptake of FMS, Baringo County Referral Hospital, Kenya, 2015

		B	S.E.	Wald	df	Sig.	Odds Ratio (Exp(B))	95% C.I. for EXP(B)	
								Lower	Upper
Step 1[a]	**Birth plan (1)**	-2.24	1.016	4.854	1	0.028	0.107	0.015	0.781
	Constant	-2.86	0.72	15.5	1	0.00	0.057		
Step 1[a]	**Modern equipment / technology (1)**	-4.56	1.195	14.544	1	0.00	0.011	0.001	0.109
	Constant	-1.3	0.65	3.979	1	0.046	0.273		
Step 1[a]	**Referral/ expected complications (1)**	4.08	1.08	14.217	1	0.00	0.59	7.085	491.32
	Constant	-5.17	0.72	53.28	1	0.00	0.006		

4.5.2 Multivariate binary logistic regression on associations FMS' uptake

To further asses the combined effects of covariates on uptake of FMS, multivariate binary logistic regression was used to model the uptake of FMS. The three factors that were found to be significant at the univariate level were; birth plan, with women who had no birth plan being coded 0 and those with a birth plan were coded 1. It was found not to be a significant factor in explaining uptake of FMS when adjusted for other covariates (P-value=0.309) unlike in univariate analysis. Modern equipment and technology, coded as 0 for women who did not indicate it as a determinant of their choice of place of delivery and 1 for those who indicated it, was a significant factor in determining uptake of FMS (P-value=0.007, Odds Ratio 43.357 CI= (2.768, 679,085).

The odds of uptake of FMS for women who indicated that modern equipment and technology determined place of delivery was 43.357 times those who did not. Finally, Referral/ expected complications coded as 0 for women who were not referred/ not expected any complications and 1 for those who were referred/ expected complications. It was found to be a significant factor in determining uptake of FMS at P -value=0.018, Odds Ratio= 42.732, CI= (1.897, 962.68). The odds of women who were referred or expected complications being 42.732 times those who were not referred (Table 4.6).

Table 4.6: Multivariate binary logistic regression for uptake of FMS, Baringo County Referral Hospital, Kenya, 2015

							Odds Ratio	95% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	(Exp(B))	Lower	Upper
Step 1[a]	**Birth plan (1)**	-1.50	1.475	1.035	1	.309	.223	.012	4.018
	Referral/ expected complications (1)	3.755	1.589	5.583	1	.018	42.732	1.897	962.680
	Modern Equipment and Technology (1)	3.769	1.404	7.211	1	.007	43.357	2.768	679.085
	Constant	-5.04	1.521	10.977	1	.001	.006		

4.6 Factors associated with FMS as discussed in FGD and key informants' interviews

Responses from FGD and KI interviews gave insights on uptake of FMS, the state of services being offered and its challenges. Their views were given in an open manner, an indication that participants understood the issues raised in the discussions. Focus group discussions' participants stated that their attraction to hospital maternity services was mainly because of good services and proven, modern way of doing things. They added that, hospital maternity services are safe, in hygienic conditions and prevents or addresses problems that can arise during delivery. Furthermore, they stated that with FMS it was even better as there was minimal or no costs at all during delivery. They added that these services come with benefits to both mother and baby, especially continuity of care after delivery, health education and a good start for baby through proper interventions such as prompt immunization.

Some of the reasons that arose that keep women from hospital delivery were; challenging terrain hence accessibility and transport issues, being faraway from hospitals, fear of hospitals and an experience of sudden labor especially for first time mothers who do not understand signs of labor. Problems that are possibly encountered in home/TBA deliveries were discussed to be inadequate assistance in case of complications with major risks, possibility of contracting infections due to unhygienic conditions and complications as a result of mismanagement. Most mothers thought FMS were satisfactory, however some felt services could be much better and needed improvement especially on hygiene, communication, good relation from health workers and improved facilities in terms of space, equipment and materials.

Key informants' interviews on free maternity services revealed an increase of clients with introduction of FMS by about 30%. Frustration on a major challenge of funding of FMS was expressed, mainly that reimbursements for deliveries conducted as per government's commitment was not forthcoming and the last was in July 2014. Therefore, the hospital

had to operate on auto mode, always redirecting resources of other programs to maternity services, causing a lag in some programs. This had affected procurement of materials and equipment necessary to provide adequate services.

They also had a long standing challenge of shortage of staff, even before FMS was introduced, it only got worse. This went on unresolved over the years despite annual request for more staff which was meted with an allegory of high government wage bill. Maternity unit had a capacity of 34 clients but sometimes they could escalate to 50. There were 12 nurses in that unit barely managing 2 nurses per duty. The clinicians covered the whole hospital and the hospital superintendent had to step in to review clients and in handling complicated cases in addition to his administrative role, being the only obstetrics/gynecology specialist. The shortage and lack of adequate funding had dampened the spirits of the staff, however, services were still fair despite the challenges. To ensure quality of FMS was maintained, quarterly meetings were held to check figures and patterns of maternal health indicators. In addition, a meeting was held within 24 hours of an occurrence, to assess the impact and review ways of handling such cases.

Free maternity services included; antenatal care (ANC), admission for delivery and care till discharge, post natal care and management of complications arising from deliveries. There were no restrictions on admitting any mother for delivery in as much as they encouraged at least one ANC visit prior to delivery or a referral note. On benefits of FMS, one respondent indicated that the Kenyan mothers were the biggest winners and that the initiative was good as it promotes access to safe deliveries especially for the financially challenged. Some of the barriers highlighted were; distance in remote areas which still affected many people and required prior planning and effort for a mother in such circumstance to make it on time to a maternity facility. The other barriers mentioned were; traditions and culture, lack of education and presence of TBA'S in the community, hence easily advertise themselves to the mothers. There was great emphasis on importance of hospital delivery as it is safe.

The hospital had no collaborations with TBA's but was doing a lot in the ANC and community outreach programs to encourage SAB. Clients being assisted by TBA were not many and had reduced with FMS. They were mainly accidental or emergency cases and the TBA interviewed was not charging them any money, she considered it a community services to her society. It was observed that most home deliveries were a result of distance, fear of hospital, extreme poverty or sudden labor. In addition, on extreme poverty, some women feared that they will not fit or be accepted at the hospital, or may lack money to buy required materials. An example of one such person was given, she was assisted by a TBA because she was so poor and could hardly afford meals. The lady probably feared appearing in poor clothing or lacking other requirements. A summary of observations made in the FGD and the interviews (Table 4.7).

Table 4.7: Summary of factors associated with uptake of FMS from FGD and KI interviews, Baringo county referral hospital, Kenya, 2015

Attributes	Qualitative Data
Good services	"We are thankful the maternity staff here are good..."(FGD)
Minimal cost	"There was about 30% increase in number of mothers using maternity services after FMS was introduced" (KI) (KI) "FMS has helped a lot, We have no more stress"(FGD)
Prompt assistance	"Hospital delivery is important for there is good help in case of a problem"(KI) "The staff look overwhelmed with work, running here and there, the staff sometimes have to cut short attending to you to rush to another more needy mother" (FGD) "The staff are few and sometimes you have to wait for long before they attend to you" (FGD)
Satisfactory services	"They offer good services, the doctors know their work" (FGD) "We like services offered by the students" (FGD) "Maternity is not like it was before, quality of care is going down, it is even better to pay" (FGD) "Food served to mothers is unpleasant and most us had our food brought by our relatives" (FGD)
Safety & Hygiene	"The ward is not that clean, they need to improve, especially bathrooms and toilets" (FGD)

materials & equipment	"…and necessary items for delivery are available" (FGD) maternity -34 bed capacity, always has more clients up to 50" (KI) "Even if you wanted to deliver elsewhere, there are no other maternity hospitals nearby" (FGD) "We are so many in the ward and sometimes people have to share beds" (FGD) "They quickly discharge you soon after a delivery even before you recover well" (FGD) "Beds and supplies are not enough for the large numbers of mothers we get, sometimes even basic medical materials are insufficient, hence clients assist fill that gap by bringing their own" (KI) "On admission to maternity ward, I have to bring things like; blankets, basin, utensils and toiletries" (FGD)
Hospital staff	"Maternity has 12 nurses barely managing 2 nurses per duty, clients escalate to 50 at times, doctors also attend to; clients in outpatient department/ theatre/ ward and administrative duties"(KI) "Sometimes patients are not managed well, especially about students assisting in delivery, I don't like that, I fear they might do something wrong" (FGD).
TBA	Extreme poverty, reduces the mother's esteem hence not confident on how they are and doubt whether they will be accepted in the hospital. This was the case in a mother I recently assisted to deliver, she was so poor that she could not afford anything, even food. I was called in when she was almost delivering. I think she was ashamed of her state of clothing or lacked materials required for hospital delivery."

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents discussions, conclusions and recommendations that have been made based on the presentation and interpretation of the results of this study. It has been presented according to the objectives of the study and organized in generated themes and with the incorporation of both qualitative and quantitative data. Consideration was put for factors that had significant logistic regression results, departure from expected results as well as proportions.

5.2 Discussion

5.2.1 Socio demographic characteristics

Socio demographic characteristics have been known to play a major role in influencing SAB according to findings from several studies. Some of such factors are; age, level of education, socioeconomic status and occupation. The participants of this study were mainly residents of Kabarnet town and its environs, which is a peri-urban setting. All respondents had their age within the reproductive bracket of 15-49 years, more than three quarter of participants had secondary education and a similar proportion had a parity of less than 6. Most participants (83%) earned above KES 200 per day which is about the international poverty line figure of 1.90 USA dollars per day (World Bank, 2018) and slightly below three quarters (73.1%) were married hence a possibility of better support system.

All these factors having been positively associated with SAB would have likely influenced positive outcomes of the study. However, most maternal factors were not significantly associated with uptake of SAB in this study, probably due to very high proportions of

uptake of FMS (95.8%) and very low proportion of unskilled attendance at birth (UAB) (1%), furthermore there were fewer unfavorable socio demographic factors for SAB hence inadequate comparisons.

5.2.2 Uptake of Free Maternity Services

Uptake of FMS is the utilization of government facilities for deliveries since June 2013 when it was launched. Free maternity services' program was anticipated to draw many women to skilled attendance at birth (SAB) especially those who kept off due to costs. True to this anticipation the study revealed a sterling uptake of maternity services offered by government facilities with 95.8% of the respondents having delivered in these facilities. There was an indication of about 30% increase in the number of deliveries with introduction of FMS in the study area. This corroborates the findings by MOH that showed a 21% increase of live births in the year FMS was introduced compared to the previous year (MOH, 2015). FMS has been associated with an influx of maternity clients in many studies (Jumare *et al*., 2013; Galadanci *et al*., 2010; Hatt *et al*., 2013**).** This indicates that FMS is widely welcomed and has the potential of increasing SAB which if properly sustained could create a positive turnaround in maternal health indicators.

The high proportion of SAB among study participants seems to differ a lot with the National proportion of 62% (KNBS *et al.,* 2015). This is mainly attributed to the huge variations of circumstances for provision and uptake of SAB. Kenya is a heterogeneous country with diverse geographical, socioeconomic and cultural factors as it is the case with other countries in Sub Saharan Africa (SSA) (Alvarez *et al*., 2009**)**. It is not surprising therefore to find that 30 kilometers from Kabarnet town, uptake of FMS might take a totally different profile due to various factors like distance and socio-demographic factors.

It is however a great picture of what the country can achieve despite limited resources. The high uptake of FMS is closer to the findings of Kenya's Demographic Health Survey (KDHS), where the then Central Province had 90% SAB unlike 29% for the then North

Eastern Province (KNBS *et al*, 2015). This varying statistics is demonstrated by previous studies; in the coast region where SAB was as low as 5.4 % (cotter *et al*., 2006) while Malindi had 58.5% home deliveries (Carter, 2010). Nyandarua and Makueni had 48.2% and 43.7% SAB, respectively (Gatimu *et al*., 2015; Wanjira *et al*., 2011). Kenya's urban SAB has been estimated at 82% and this includes the slum areas where it is even lower due to the pressure of high urban population on the few government maternity facilities (KNBS *et al*, 2015; Izugbara *et al.*, 2008).

Such high proportion of SAB is a norm in some countries as reported by World Bank (2016) that Canada, China, Trinidad and Tobago and Chile among others had 100% annual SAB at one point between 2011 and 2014. In the UK most women use public care while Australia and Ireland have public maternity care at no cost but many prefer private care or a combination. In Nepal studies, the urban participants were six times more likely to have SAB (Baral *et al*., 2010) and there were 76% births in public hospitals despite the lower perceived quality on interpersonal aspects and essential facilities (Karkee *et al*., 2014). In Ghana there were consistent results with 86.7% SAB in the urban areas (Amoakoh-Coleman, 2015) and another 79% SAB in East Ga municipality (Esena and Sappor, 2013). It therefore means that each region has to be taken on its own merit to ensure all barriers to SAB are addressed.

5.2.3 Clients' satisfaction of maternity services

According to Hulton *et al*., (2000), measurement of quality of services can be evaluated from the facility according to conventional standards or from clients' satisfaction of services as per their experience. Clients' satisfaction levels give in-depth feedback on their experiences in the maternity facilities however subjective they may be and could further be a valid evaluation of quality of services (Hulton *et al.*, 2000). There were both maternal and hospital factors that were analyzed in the study and some significantly associated with satisfaction of maternity services.

This study found that three quarter of the participants chose place of delivery due to the good reputation of the facility and its services. 'Good' most likely referred to meeting requirements for safe delivery and with established success rates contrary to traditional methods of trial and error, especially in complicated births. This feedback exemplifies acceptance of hospital services and is a clear indication that the women valued the quality of services they received, with implication that it conformed to acceptable standards. Such is the confidence women had in hospital services and a challenge to the government and health professionals to maintain quality of services and thus prevent maternal mortalities. This is similar to Nepal's study that had findings of high utilization of the public hospitals for maternity services due to its reputation (Karkee *et al.,* 2014).

This study revealed that 93.7% of the clients were generally satisfied with the services accorded. This is positive and a measure of affirmation of FMS as most deliveries were in government facilities. This could also mean that services rendered at these facilities were worthwhile despite encountered limitations. The exemplary performance of the maternity facilities could be because the whole community regardless of socioeconomic status depends on them, as was the case in the study area, there was no alternative maternity facility. Therefore, there is not only pressure to perform but also pressure from the many numbers of clients they have to serve, sometimes beyond capacity resulting in overstretched resources. Furthermore, such facilities lack competition and learning opportunities from other providers, their clients too, do not have comparative image hence their expectations might likely be lower. This is the case in many rural and peri-urban areas in Kenya.

In Ghana, findings were close to this study, as there were fewer women with complaints about the hospital staff, (Esena and Sappor, 2013). Likewise, in Ethiopia, Bitew *et al*., (2015) found 81.7% of maternity clients had general satisfaction of maternity services accorded. On the contrary, a study in Nairobi's informal settlements found that government hospitals had the highest dissatisfaction by 24% of participants compared to private facilities in the informal settlements by 14% of participants, a mission hospital

received the highest satisfaction but was more costly and affordable to a few (Bazant and Koenig, 2009). The high dissatisfaction for government hospitals could be due to high population common in such areas, straining hospital's resources beyond the limits (Bazant and Koenig, 2009).

The aspects with the highest satisfactory scores were; staff competence (91.1%), staff courtesy (88.2%) and availability of medicine (78.8 %). Likert five point scores had related findings with staff scoring high, competence and courtesy had 4.09 and 4.08 points respectively (Figure 4.7; 4.8). This may be linked to the fact that clients interact a lot with members of staff hence developing a relationship. It is an indication that human resource is indeed a core asset in service delivery. This corroborates MOH, (2015) findings where staff interpersonal skills' scores, were better than other aspects of service delivery. This is away from negative experiences from hospital staff encountered by women during delivery that has been a common feature in many maternal health studies (Jumare *et al*., 2013; Tsegay, 2013; Hatt *et al*., 2013)**.** However, promptness was slightly lower with 3.87 points, probably due to shortage of staff as raised in the FGD and KI interview. Staff competencies and relational abilities having received positive response, is a sign that medical staff have rewrote the script of ill treating clients and now appreciate relational skills in addition to their technical skills

Some aspects related to maternity structure scored well with Lighting and the building itself having 78% and 77.7% of respondents rating it as satisfactory with 3.9 and 3.85 likert score points respectively. However Space seemed unsatisfactory having low likert score points (3.51). In the same category of poor scores was availability of running water and soap (3.47), equipment (3.5) and materials (3.54) (Figure 4.7). This was not surprising as availability of equipment and materials tied in leading with the most unsatisfactory rating, by each, 15.1% respondents (Figure 4.8). This can be taken to be a challenge with hospital resources and at the root, poor funding for the program. However, it is worth noting that the unsatisfactory rankings were not many and the likert score points were

above the median of 2.5, hence a probability that it was still within acceptable and manageable level.

5.2.3.1 Significant factors on general satisfaction of maternity services

Among maternal factors; having a birth plan, marital status (separated) significantly associated with satisfaction of maternal services. Mothers who had a birth plan were 2.68 times more likely to be satisfied with maternity services accorded than those without. This underlines the importance of preparation and having a birth plan prior to delivery. Preparation gives a psychological readiness and since a mother has chosen a place of delivery she is likely to appreciate the services offered there. Mothers who were separated were 0.108 times likely to the satisfied with maternity services accorded than the married women (Table 4.3). Separated mothers are likely to be having poor support systems or still struggling from the effect of separation hence more appreciative of care given.

Hospital factors that were significantly associated with satisfaction of maternity services were courtesy of the staff and Modern equipment and technology. Courtesy of the staff proved noteworthy as mothers who indicated it as reason for place of delivery were 0.062 times more satisfied with maternity services accorded than those who did not (Table 4.3). It shows that prior confidence in the courtesy of staff aided what clients felt afterwards. It corroborates the finding on satisfactory rating of courtesy of staff. This could be a result of previous experience or the facility's reputation. It therefore emphasizes the need of staff courtesy to clients in our hospitals. The positive outcome can be attributed to the staff having appreciated the importance of relational skills, probably through training on such skills. The clients could also be more empowered on their rights to be treated with dignity hence placing this demand on the staff. Medical students also played a major role in relieving workloads and were likely to be keen on applying the right skills for better grades.

Participants who indicated Modern equipment and technology as reason for place of delivery were 0.041 times more satisfied than those who did not (Table 4.3). Thus the need to equip and modernize hospitals as it enhances mothers satisfaction on services accorded. Conversely, there were challenges with availability of equipment and materials having the highest proportion of respondents (15.1%) rating it as unsatisfactory (Figure 4.7). It implies that clients appreciate that the hospital has materials and equipment that they would not find in a home delivery, however were keen to notice the deficiencies in the maternity facilities.

The outcome of delivery can be influenced by among others, maternal and hospital factors. This study only sought to know from the perspective of the client how their condition was after delivery. The study showed that after delivery most of the participants (84.4%) reported to have been in satisfactory condition and the babies' condition was even better with 93.4% being satisfactory. This positive outcome for maternity care could be mainly due to the high number of SAB. This evaluation could have locked out fatal cases as the mothers won't be there. However, there were minimal cases of poor conditions which cumulatively were at 1.5% and 1.3% for mother and baby respectively and there were no very poor conditions.

5.2.3 Factors associated with uptake of free maternity services

Several factors play significant role in influencing decisions on ANC attendance, preparation for birth and uptake of SAB. According to the study's findings, factors associated or expected to have associated with uptake of FMS are discussed herein.

5.2.4.1 Maternal factors

Among study participants, there was about 97% ANC attendance, 89.4% had a birth plan and slightly over three quarters were involved in deciding place of delivery a sign of some level of empowerment. All respondents were within reproductive age and majority (77%) had secondary education and beyond, hence a high expectation of SAB. Having a birth

plan significantly associated with place of delivery on bivariate logistic regression, however on removing confounding factors it was eliminated. Other maternal factors were not significantly identified to associate with uptake of FMS.

The high proportion of clients with a birth plan could have contributed to high utilization of SBA unlike in a Nyandarua study that had 55.3% of the mothers without a birth plan and 58.4% having their husbands decide for them the place of delivery resulting in less than half SAB (Wanjira *et al.*, 2011). Furthermore birth plan being part of ANC guidance, highlights the importance of ANC. Babalola, (2014) identified a positive link between quality of ANC attendance and SAB then emphasized the need to improve the quality of ANC across the board. In Ghana other maternal factors were identified to be a challenge to ANC and SAB, these were; traditions, culture, influence from family members and religious reasons (Esena and Sappor, 2013.

5.2.4.2 Hospital factors

Hospital environment is significant in ensuring safe deliveries and bear great influence on a mother's choice of delivery place. Controlled hospital environments, hygienic conditions, skilled personnel and the availability of resources to manage possible complications are corner-stones for the achievement of safe motherhood (Mwangome *et al*., 2012). The popular reason for place of delivery as mentioned by about three quarter of participants was good reputation of the maternity facilities and their services. It was followed by proximity and affordability by about half and a quarter of respondents, respectively.

Availability of modern equipment and technology was a significant factor in determining uptake of FMS (P-value=0.007). The odds of uptake of FMS for women who indicated that as a reason for place of delivery was 43.732 times those who did not (Table 4.6). Availability of equipment and materials in hospitals go hand in hand with provision of conventional medical care. There can never be adequate care without their availability

and thus women put such consideration while choosing place of delivery. Similar to this study's finding was a study in Nepal that had women chose public hospitals due to a perceived higher technical quality than birth centers (Karkee *et al.*, 2014).

Overtime, medical care has evolved alongside other technologies. Modern equipment and technology, including evidence based practices make work faster, safer, less burdensome and with better outcomes. However, this kind of furnishing is often out of reach for many health facilities. Presence of these equipment, materials and technology is an attraction to mothers to deliver in the hospitals as it makes the difference from home deliveries (Peter *et al.,* 2009). This is an indication that mothers appreciate the importance of equipment and technology in aiding safe delivery in hospitals. It therefore means that better equipped hospitals will attract more mothers for SAB.

However, according to the one respondent, the hospital had challenges with resources hence the likelihood of limited equipment and technology, yet participants applauded what the hospital had. This is a paradox, but shows the significance of availability of equipment and technology however basic it may be. It implies that mothers are not necessarily after extravagant or big facility equipment but what meets their needs efficiently and according to required standards. Igboanugo and Martin (2011) stated that a health centre with skilled workers cannot prevent maternal or child deaths without an adequate supply of specialized equipment. Providing essential equipment and teaching healthcare professionals how to use them enhances uptake of maternity services.

5.2.4.3 Referrals

Finally, referral/ expected complications was also a significant factor in determining uptake of FMS (P -value=0.018) with the odds of women who were referred or expected complications being 42.732 times those who were not referred (Table 4.6). This could be because referrals are mainly done in cases that complications were anticipated hence a signal of possible danger which is unlikely to be ignored. Mothers have been known to

ignore hospital delivery as they view birth as a natural process. While it is true that it is a natural process and should be maintained as natural as possible, the safety of the mother and baby must be assured (Commissioning board, 2012). The only way for such an assurance is through SAB and availability of all other support systems, like equipment, materials, medicine and viable referral system (Mwangome *et al*, 2012).

Hospital delivery is therefore essential because of the convenience of availability of required skill, materials, equipment and professional care. This is because every pregnancy can get complications at any point, either during labor, delivery or after delivery and may need referral (Starrs, 2006). Home delivery is vulnerable to complications or fatalities especially without adequate emergency evacuation backup and considering home environments in developing countries where accessibility, privacy and hygiene may not be adequate. This study showed that clients are keen to respond to referrals albeit the presence of some level of limitations in the referral systems in Kenya. The Kenya service provision survey 2010 identified deficient communication tools and inadequate transportation system like, lack of fuel or grounded ambulances (NCAPD *et al*., 2011). Referral systems therefore need strengthening, so that well deserving cases get timely and adequate attention whenever necessary (Hulton *et al*., 2000).

5.2.5 Factors in the national strategic plan

The first national objective in the road map to maternal health is to increase the availability, accessibility, acceptability and utilization of skilled attendance during pregnancy, childbirth and the post partum period at all levels of the health care delivery system, (GOK, 2010). Physical and financial accessibility and acceptability of maternity services being in the national agenda, is discussed in this section as departure from expected significant logistic regression.

5.2.5.1 Physical accessibility

Distance did not stand out as a significant factor in logistic regression test but it has significance in the subject of maternal health. Accessibility of maternity facility was not an issue as most participants were mainly residents of Kabarnet town where the hospital is domiciled. Being a fast growing town, with a robust network of transport like taxis and *bodaboda* motorcycles physical accessibility was a nonissue. Moreover most respondents (87.9%) lived within 7 km and another 7.4% within 7 to 20 km to a government maternity facility. Therefore, most of them could walk to the facility. This was a big advantage and could have contributed to the immense utilization of maternity services with 53.3% of respondents attributing place of delivery to that. Kitui *et al*. (2013), had related findings of 88% of mothers in Kenya living within five kilometers from a health facility and no associations of distance to SAB being established after controlling other variables, but 60% of the mothers who delivered at home cited distance and transport as their barrier to SAB. He concluded that access to appropriate transport for mothers in labor is important. Similarly, in this study, 20.5% and 17.9% of respondents choose transport and distance respectively as reasons why women prefer TBA services.

Baringo County referral Hospital is quite iconic with many mothers of the study area having delivered there and most residents having been delivered there. Mothers who choose otherwise have to travel to bigger towns to access other maternity facilities. However, this is costly for majority of them and unrealistic as delivery time is unpredictable and travel while in labor is a big challenge. It is common to have well equipped, functional maternity facilities in peri-urban and urban areas unlike rural areas. This leaves the rural population who have majority of the births (81%) with few or no maternity facilities, a situation that worsens in the vast less populated regions (KNBS *et al.*, 2015). Private maternity facilities are rare in these regions as a big capital is needed to establish one and such regions often have weaker economy hence undermines the possibility of such an investment. This therefore points to a solution of increasing

government maternity facilities in the rural areas with operational referral systems to bigger hospitals if need arises.

Expanding maternity facilities in Kenya is a big possibility as there is wide network of government health centers and dispensaries. There may be need for additional effort towards building the capacity of each dispensary to offer emergency delivery services while for health centers, to offer maternity services on a regular basis. A back up of a good referral system will complete the coverage of maternity services in most regions, while mobile maternity services will be handy in remote places. Availability, accessibility is followed by acceptability of services, this implies that other factors related to quality and uptake of these services has to be addressed as well. This will avoid unutilized facilities as was the case in Gambia, where 97% of the participants lived within five kilometers of the facility yet, only 44% had SAB largely due to poor hospital services, traditions and culture (Jallow, 2007).

In developed countries like Canada, women who lived far from delivery facilities, in remote communities, vast distances away from nearest hospital, had an average higher prevalence of risk factors during pregnancy and poorer overall maternity outcomes (Rowland *et al*., 2012). Moreover, perinatal mortality was highest in communities that were greater than four hours from maternity services (Grzybowski *et al*., 2015). In Nepal, almost all studies on maternal health found distance as a deterring factor in seeking maternity care and that was exacerbated by poor roads and limited availability of transportation vehicles (Karkee, *et al.*, 2013). Furthermore, in Ghana, women living far from the health facilities held little hope about future intention of receiving supervised delivery services and transportation difficulties was identified by 43% of participants as barriers to SAB (Esena and Sappor, 2013).

Nigussie *et al*., (2004) commented that enhancing the establishment of more emergency obstetric care centres within reasonable access is paramount. In the Central African Republic, Malawi and Senegal, for example, SAB among the urban poor was much higher

than among the rural rich, suggesting that availability/accessibility in rural areas was a problem (Houweling *et al*., 2013).

The MOH survey, found that distance to maternity facility was the third with least satisfaction scores at 0.23 out of a possible 1 (MOH, 2015). A study in Makueni found that living within five kilometers from a health facility was associated with SAB (Gatimu *et al*, 2015). Accessibility to maternity facilities is therefore among key solutions in the battle against high MMR as highlighted in the national roadmap to maternal/newborn health.

5.2.5.2 Financial accessibility

Part of accessibility to SAB is the financial component that has been a barrier to many thus the concept of user fee exemptions which was implemented in Kenya as FMS. In this study, however finances did not come out as an outstanding factor in determining uptake of FMS or in consideration of place of delivery by mothers. This could be because maternity services were already free of charge hence expenses were minimal making it a nonissue. It could also be that People place value on good health outcomes over expenses and may go to whatever lengths to get solutions to their health problems and at times, that may lead to financial problems or impoverishment. It is therefore prudent to discuss financial accessibility as it informed the FMS policy for which is the reason for the study.

On expenses during delivery, most respondents (71.5%) spent nothing while the main expense by 18.1% of participants was on hospital related requirements. This implies that, had the hospital been well equipped more would have had no expense. The participants also had some relative economic ability with 83% earning over 200 KES per day, a figure above or about the set international poverty line of 1.9 USA dollars. Many of the participants would have afforded hospital charges as above half earned over KES 500 per day, and especially if that meant better services. Maternity charges were already subsidized prior to fee exemptions, as noted by one participant, normal delivery would

cost about KES 500 while caesarian section would cost KES 3,000, exclusive of bed charges of KES 200 per day, therefore a probability that user fee exemption had minimal impact.

Many mothers indeed appreciate and have benefited from maternity fee exemptions of FMS, especially those who could not afford them. Some of them expressed their relief in the FGD that FMS has been of great help. However, there are those who still struggle with acceptability in hospitals as a result of extreme poverty. They shy off for lack of basic materials like sanitary towels or the attitude and treatment by hospital staff, as well transport costs when inevitable and unaffordable. One respondent gave an example of a very poor woman who opted to deliver at home, and only called for help at the last minute, when about to delivery. The respondent thought that woman feared hospital, because of the probable shame of indecent clothing or lack of required materials. On the other hand others feel like the services could be better if they paid as there would be more resources to cover the lack.

According to Houweling *et al.*, (2013) wealth and maternity care are linked across the entire wealth hierarchy within countries with each progressively poorer group having progressively lower use. Importantly, poor–rich inequalities in SAB are much larger than those in antenatal care. In Benin, Madagascar and Pakistan, SAB among the urban poor was as low as among the rural poor, suggesting that cost played a more important role. In other countries, the rural rich and the urban poor had similar levels of SAB hence an indication that money can overcome access difficulties in rural areas or that the rural rich have found innovative ways to SAB **(**Houweling *et al.,* 2016). Evidence from other countries suggests that poorer women tend to stop using traditional maternity care in contexts where medically trained, accessible, affordable and good-quality professional care becomes available (Koblinsky *et al.,* 1999).

5.2.6 Challenges of free maternity services

5.2.6.1 Inadequate resources

The biggest threats to FMS as identified in this study were those issues that brought dissatisfactions among most clients. They were mainly related to lack of resources and poor infrastructure, this could be linked to inadequate preparation and funding of FMS. Quality of services as it seems, was however earnestly maintained by the hospital staff, who with the little resources managed to offer satisfying services. There was no adequate preparation prior to implementation of FMS. The facility often had to stretch whatever resources it had to accommodate the increasing number of maternity clients. This was compounded when anticipated reimbursements became illusive. Therefore, whenever funds were insufficient, funds for other projects were diverted to keep maternity services afloat. Limited funds lead to inadequate resources to run the facility and forced clients to substitute the deficiencies as well as deal with consequent compromises like poor hygienic conditions of facility and catering services

This is unacceptable in the pursuance of quality and acceptability of maternity services and can be a deterrent to uptake of FMS. Perkins *et al*., (2009) noted that lack of materials in hospitals forced some women to bring items like cotton wool, which can be a barrier to those unable to afford. He added that, women encounter economic barriers in preparation, access and utilization of facility based services, including regularly being directed by health workers to purchase and bring essential medical supplies (Perkins *et al*., 2009). The findings compares well with studies in Nepal and Lao where most common dislikes were; lack of cleanliness as reported by 22% of maternity clients and low satisfaction in sanitary facilities and cleanliness respectively (Karkee *et al*., 2014; Khammany *et al*., 2015). On the contrary, availability of medicine was an exception to this shortage and was rated by 78.8% of participants as the third most satisfactory aspect of services. This could be due to efficient procurement processes for medicine. Ghana had a similar situation of lack of

resources with introduction of FMS, except for availability of medicine (UNICEF *et al*., 2013).

Incidences of bed sharing were raised in FGD and interview as one of the discomforts. This was largely due to congestion in the maternity facility. Space is related to visual privacy which rated the second most unsatisfactory by 7.7 % of respondents, while space was among aspects with low likert scale score points with 3.51. Similar perceptions of lower physical resources (bed, toilet, space) and overcrowded labor rooms in public facilities have been found in several studies. In Nepal, among the most common dislikes by maternity clients was scarcity of beds and bed linen by 21% and lack of privacy by 9% (Karkee *et al*., 2014). This observation was also in agreement with a study by MOH on FMS where cases of mothers sharing beds within maternity wards was evident in 18% of the facilities and adequacy of rooms having the second least satisfaction levels among respondents (MOH, 2015). Despite that, respondents expressed high satisfaction for the hospital structure, lighting and services accorded. This shows that maternity services, basic as they may be, can still be useful in fostering SAB.

5.2.6.2 Shortage of staff

Human resource in this study has been fondly associated with satisfactory rating, however, some respondents noted the glaring shortage. According to one respondent, shortage of staff had been a constant problem even before FMS and despite annual request for more staff nothing was forthcoming. The problem exacerbated with FMS and the hospital survived with the help of medical students on clinical practice and attachments. Human resource is important in the delivery of maternity services and is worth the attention in the quest for improved maternal health services. Several studies have had findings of associating health workers as barriers to SAB or as sources of clients' satisfaction for services accorded ((Bourbonnais, 2013; Galadanci *et al*., 2010; Jumare *et al*., 2013).

Baringo County referral Hospital was under the leadership of the only Obstetrics/ Gynecology doctor who was also the head of maternity services. A team of 12 nurses led by the nurse in charge of the unit covered maternity ward, with an average of two nurses per shift who handled clients, often more than the capacity of ward (34). This shows how overstretched the staff were, with a nurse patient ratio way beyond the recommended 1:6 nurse patient ratio for wards and 1:2 for labor room (Rakuom *et al*., 2010). The doctors assisted in difficult cases and came in to review clients, they had other extra duties of reviewing patients in the admission wards, at the outpatient clinics and theatre. This shortage of staff is consistent with the MOH study (2015) that found, an increase of clients with a shortage of staff, it further found that such a situation was associated with increased mortality and poor rating by clients.

Shortage of staff has been exposed in many studies in Africa but is not a reserve for developing countries only and definitely dents the efforts towards safe motherhood. In Canada, there was a shortage of nurses in the remote areas that lead to closure of maternity units hence reduced accessibility and poor maternal outcomes for mothers living in those areas **(**Grzybowski *et al.*, 2015). Shortage of staff could also be linked to maternity staff hostility, mistreatment and abuse of clients as was the case in Ghana (Galadanci *et al*., 2010). Likewise, the UK Parliamentary Accounts Committee (2014) noted that high workload and expectations on maternity staff exerted pressure on them, hence affecting their mood, relational abilities, productivity and resulted in low morale and moreover, clients did not get quality services. This was similar to the expressions of study participants in Nigeria where they perceived that; large caseloads and few staff encroached on individual time as the obstetricians were in such high demand that they could hardly settle to focus (Igboanugo and Martin, 2011).

It was apparent that deliveries were mainly conducted by nurses/ midwives and the doctors handled complicated cases. In this study, 43% of the deliveries were assisted by nurses, 30.9% by students, under the supervision of nurses and doctors assisted 17.7%. This low proportion correlates to the findings of a study in Ghana where doctors conducted only

9% of all the deliveries (Amoakoh-Coleman, 2015). Kenya's Demographic Health Survey (2014) found that nurses and midwives assisted 64% of deliveries countrywide while doctors assisted 31% (KNBS *et al.*, 2015). This included private and referral hospitals where doctors conduct more deliveries. The role of nurses and midwives as identified is immense and as major players in enhancing maternal health services they need to be empowered to handle their tasks well.

In Netherlands and England nurses/ midwives are authorized and autonomous primary care givers in maternity services while referring complicated cases. This has made maternal health care more accessible, affordable and with fewer chances of medical interventions. Moreover, in England each mother is assigned a nurse who follows them up, even if they are referred (Rowland *et al.*, 2012; Commissioning board, 2012). This ensures that no mother slips through any gaps in the healthcare system. Schneider and Gilson (1999) in South Africa observed that nurses as SBA had their hands tied when the administration of a life saving drug to a mother was urgently required, they had no authority and thus it became a stumbling block to prompt interventions. Such challenges can be navigated by endowing nurses more and clear responsibilities. Most successes in maternal health services have been achieved at the grass root level and implemented by hands-on health workers. Nurses /midwives are most available at the grassroots level, offering primary care right from ANC while referring complex cases to doctors or obstetricians.

5.3 Limitations of the Study

The study relied on the participants to give information hence prone to recall and social desirability biases. Recall bias was minimized by asking the participants about their last delivery and was limited to deliveries conducted in the last three years prior to the study. Social desirability bias occurs when participants give responses that are perceived as acceptable while diplomacy bias occurs when participants do not want to give offensive responses. Effort was put to minimize these by encouraging openness among participants,

that there was no right or wrong answers and only their genuine independent responses were required. In addition, the risk/benefits of participating in the study were expounded to them.

5.4 Conclusions

It is evident from the findings that there was a high uptake and satisfaction of FMS offered in public hospitals, implying it was accepted. Therefore, FMS policy is a great avenue for mothers to have SAB in Kenya and thus an opportunity to reduce maternal mortalities. In the study there were no alarming maternal or hospital deterrents to SAB, good maternity services was the main reason by majority of the respondents for place of delivery followed by proximity and affordability. The findings of this study demonstrate that uptake of maternity services can reach required targets when adverse deterrents are addressed and even with limited but maximized resources.

An outstanding factor to both uptake of FMS and satisfaction of maternity services accorded was presence of modern equipment and technology in the health facilities. Equipping and modernizing health facilities is paramount as it makes the difference from home deliveries. In addition to this was having a birth plan, it also associated with both uptake of SAB and satisfaction of services mothers but eliminated on removing confounding factors. Birth plan prepares the mother for delivery and is a product of ANC attendance putting emphasis on its services. Having a referral significantly associated with uptake of SAB just like courtesy of staff associated with satisfaction of services.

The biggest threats to FMS as identified in this study were those issues that brought dissatisfactions among most clients, mainly related to lack of resources and poor infrastructure. This could be linked to inadequate preparation and poor funding of FMS, quality of services as it seems, was earnestly maintained with the little resources hence affording satisfactory services. This shows that maternity services, basic as they may be, are useful in fostering SAB. It was noted that respondents had very limited choices of

maternity facilities, with no private maternity facility within the town and environs, Baringo County referral hospital was their only choice for SAB.

Majority of respondents expressed general high satisfaction on maternity services obtained during delivery with staff competence and courtesy leading in satisfaction ratings. It is clear then that clients appreciate the professional abilities and relational skills of healthcare providers. The positive feedback on staff is a sign that healthcare providers have rewrote the old script of hostility to clients and now appreciate relational skills in addition to the technical skills as part of service delivery package.

5.5 Recommendations

Based on the findings discussed above, this study makes the following recommendations;

1. That FMS should continue as it is a great avenue for mothers to have SAB in Kenya and thus an opportunity to reduce maternal mortalities.
2. Primary maternity services should be physically accessible to all Kenyans by ensuring a ceiling of five kilometers radius to every household of a health facility with ability to offer at least emergency delivery services. This can be best achieved by ensuring every government health facility can offer such services and enhancing more initiatives towards physical accessibility like mobile clinics in remote areas.
3. Maternity facilities should be well equipped and functional, with basic equipment, materials, infrastructure and staff. Public hospitals should strive to ensure enhanced availability and use of modern equipment and technology in their facilities.
4. Relational skills should be enhanced in health workers through training and professional development programs which will make them relate better with clients hence better uptake of services

5. The referral system should be strengthened with clear protocol laid out on when to refer clients and ensuring availability of communication and transportation services.
6. More studies on maternity services should be conducted, such as those that give clearer causal effect relationship on outcome of deliveries and those that interrogate quality of maternity services as per conventional standards.

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APPENDICES

Appendix I: Consent form

My name is Emily Chesumei. I am a master's student in Public Health from JKUAT. You are invited to take part in research about free maternity services. You are a potential participant because you are a woman attending MCH clinic and with a recent birth. We ask that you read this form before agreeing to be in the research. If you cannot read, you can request the researcher or a member of hospital staff to read it to you.

Purpose

The purpose of the research is to find out factors associated with utilization of free maternity services in Kabarnet district hospital.

Procedures

If you agree to be in this research, and sign this consent form, I or my assistant will describe the questions you will be asked including their purpose. The questions should take only 20 - 30 minutes of your time.

Risks and Benefits

There are no direct benefits to you from the study except general improvements in the facility that may result from your responses. The risk level of this research is considered to be less than minimal. Participating in this study will not affect the services you receive in this facility.

Confidentiality

Anything you tell us will remain confidential. In any sort of report of the study, we will not include any information that will make it possible to identify you. We are not asking

for your name, address, or phone number. Your name and other identifying information will not be kept with this survey. The records of this study will be kept privately and locked; only the researchers for this study will have access to the records.

Voluntary nature of study

Your decision whether or not to participate will not prejudice your future relations with Baringo County Referral Hospital, Kenya Medical Research Institute, Jomo Kenyatta University of Agriculture and Technology and staff helping with this study. If you do not wish to take part or you do not want to answer some of the questions, you do not have to give us a reason. Even if you sign the consent form, you are free to stop at any time. You do not need to complete it if you feel uncomfortable doing it.

Consent

I have read the consent information and understand that this survey is voluntary and I may stop at any time. I consent to participate in the study.

_____ _____

Signature of participant Date

_____ _____

Signature of researcher/ research assistant Date

Contact

The researchers conducting this study are Emily Chesumei and her assistants. You may contact the researchers at any time. Questions regarding the rights of research subjects may be directed at the Ethical Committee at the Kenya Medical Research Institute.

In case of any queries or concerns, please contact the Principal investigator or KEMRI on:

Emily Chesumei,
P.O. Box 8657-00200; Nairobi
Cell phone Number: +254 722 973 984
Email: ebungeik@gmail.com

OR

The Director;
Institute of Tropical Medicine and Infectious Diseases,
Jomo Kenyatta University of Agriculture and Technology
P.O. Box 62200-00200; Nairobi
Tel: 067-52711
Email: itromid@kemri.org

OR

The Chairperson;
KEMRI National Ethical Review Committee
P.O. Box 54840-00200; Nairobi
Tel: 2722541-2713349- 0722-205901

Appendix II: Questionnaire

Questionnaire no:___

Baringo County referral Hospital MCH clinic attendees

Section A- Socio-demographic Factors

1) How old are you?

i. 15-20 ☐
ii. 21-25 ☐
iii. 26-30 ☐
iv. 31-35 ☐
v. 36-40 ☐ other _____

2) Education level;

i. Lower primary school ☐
ii. Upper primary school ☐
iii. Secondary school ☐
iv. Tertiary ☐

3) Marital status;

i. Married ☐
ii. Single ☐
iii. Divorced ☐
iv. Separated ☐ other _____

4) How many deliveries have you had? _____

Section B; Delivery particulars

5) Did you have a birth plan in your last pregnancy?

Yes ☐
No ☐

6) Who decides where you will deliver? _____

7) Do you have the support of your husband during the delivery process?

Yes ☐

No ☐

How is it?

_____

8) What is the distance from your home to nearest government delivery facility?

a) Less than 2 KM ☐

b) 2 to 7 KM ☐

c) 8 to 20 KM ☐

d) More than 20 KM ☐

Specify_____

9) About your last delivery; rate outcome and general experience in following categories; (**1** –very good, **2** - good, **3** -fair, **4** -poor, **5** -very poor). Briefly explain reason for score

Description	**Rate/ indicate**	**Remarks**
Year of delivery		
Place of delivery		
Attendant at birth		
Outcome / Condition of mother		
Outcome / Condition of baby		
General experience of care given		

10) What was the reason for the place of your last delivery?

_____

11) If applicable, in your last delivery, what kept you from having a hospital delivery? (Tick all most relevant to you)

a) Lack of birth preparedness ☐

b) Costs ☐

c) Lack of transport to health facilities ☐
d) Distance ☐
e) Inadequate services ☐
f) Unfriendly staff ☐
g) Fear of episiotomy ☐
h) Fear of operations ☐
i) Mandatory HIV diagnosis ☐
j) Newborn theft ☐
k) Traditional or cultural practices ☐
l) Better services by TBA ☐
m) Hospital delivery not necessary ☐
n) Male staff ☐
Any other _____

12) If applicable, in your last delivery what attracted you to deliver in that hospital? (Tick all most appropriate)

a) Affordable ☐
b) Facility is near ☐
c) Good reputation of facility ☐
d) Good services during ANC ☐
e) Attended ANC there ☐
f) Referral due to expected complication ☐
g) Previous complicated delivery ☐

Other_____

Section C: Hospital Experience

13) In your last delivery, if you delivered in a hospital; score below listed aspects, in a score of 1 to 5 being; (1 -very good, 2- good, 3- fair, 4- poor and 5- very poor)

	DESCRIPTION	**Score**	**Remarks**

1. 1.	Building structure condition		
2.	Building Lighting		
3.	Facility's Space		
4.	Delivery room visual privacy		
5.	Delivery room audio privacy		
6.	Facility's cleanliness		
7.	Running water and soap / hand gel		
8.	Equipment availability		
9.	Materials / supplies availability		
10.	medicine availability		
11.	Food and catering services		
12.	Promptness of attention by staff		
13.	Staff competence		
14.	Staff courtesy		

14) Are you satisfied with delivery services you have received

Yes ☐

No ☐ other explanation _____

Section D: TBA

15) Did you consult a traditional birth attendant (TBA) before, during or after delivery?

Yes ☐

No ☐ If yes specify when? _____

16) Do you use any type of traditional medicine or therapy in pregnancy?

Yes ☐

No ☐

17) In your view is delivery services offered in the hospital similar to that offered by TBAs?

Yes ☐

No ☐

18) What encourages you or other women you know to give birth at home or with a TBA?

_____

19) What makes some women hesitant to go to hospital for delivery? _____

Section F: Importance of Hospital delivery and ANC particulars

20) Given the choice, where would you want to give birth to your next baby?

_____ Why? _____

21) Is there any need to deliver in a hospital?

Yes ☐

No ☐

If yes, what is the need for a hospital delivery? _____

22) Did you attend antenatal clinic (ANC) in your last pregnancy?

Yes ☐

No ☐

23) At what month of pregnancy did you begin ANC? _____

Section G: Economic Factors

24) If any, what kind of costs did you incur to afford a hospital delivery since June 2013?_____

How much? _____

25) What are the sources of income for your household? _____

26) What is the approximate income of your household in K. SH? Per Month or tick approximate range per day

a) KES 50 -200 ☐

b) KES 201-500 ☐

c) KES 501-1000 ☐

d) KES 1001-2000 ☐

e) Above KES 2000 ☐

Appendix III: Guide for Focused Group Discussion

Instructions: (The PI will moderate the interviews including probing for more information while a research assistant takes the notes.)

i. What attracts women to deliver in government hospitals with free maternity services?_____

ii. What makes women to deliver at home or with a TBA?

_____

iii. What are some of the barriers women encounter while seeking a hospital delivery?_____

iv. Illustrate any probable problems that maybe encountered in a delivery away from a hospital, with the assistance of an unskilled person?

_____

v. If any, describe benefits of a hospital delivery with the assistance of a skilled person?_____

vi. Are you satisfied with delivery services you have receive at government facilities with free maternity services? Elaborate;

_____

vii. What can be done to ensure women deliver in hospitals?

_____

Appendix IV: Guide for Key informant's one (Head of maternity services), interview

Instructions: (The PI will moderate the interviews including probing for more information while a research assistant takes the notes.)

1. Has the number of women delivering here changed since introduction of free maternity services?

   _____

   How is that?

   _____

2. Are there challenges regarding the capacity of the maternity unit in handling clients with FMS?
   Describe,_____
3. Is it over or underutilized? How?

   _____

4. How is the financial support towards free maternity services from the national and county governments in comparison with before free maternity services?_____
5. If any, describe challenges regarding provision of required, materials, equipment and structures to cater for free maternity services?

   _____

6. Are there challenges regarding the staff working at the maternity unit with introduction of free maternity services by the government?

   _____

   If any,
   expound,_____
7. Highlight the positive and negative factors that influence uptake of free maternity services in your view, _____

8. Describe the scope of free maternity services offered in terms of; type of services offered and the personnel and clients' response to them

   _____

9. Are there barriers regarding uptake of free maternity services offered? Elaborate

   _____

10. Are there barriers regarding admission of mothers to maternity ward? Describe the process for admission of mothers to maternity ward, Are walk-in/unregistered mothers admitted?

    _____

11. Do you have contacts with TBAs in the area? If any, what kind of associations do you have with them?

    _____

12. Why do you believe some women still chose to give birth at home or with TBA rather than in a health facility even with free maternity services?

    _____

13. Do you have ways of ensuring that staff offers maternal health services which are up to required standards? Elaborate

    _____

Appendix V: Guide for Key informant's two (TBA) interview

Instructions: (The PI will moderate the interviews including probing for more information while a research assistant takes the notes.)

1. How long have you been a midwife?

   _____

2. How many women have you assisted to give birth in the last three years?

   _____

3. How much do you charge for your services?

   _____

4. How has free maternity services affected your services?

   _____

5. Has the number of women you attend to changed due to free maternity services? How is that? _____
6. What do you think are the challenges of mothers in utilizing free maternity services?

   _____

7. Why would mothers still chose your services rather than go to the hospital even with free maternity services? _____
8. What do you think prevents women from going to hospital for delivery?

   _____

9. Are there any benefits in a hospital delivery compared to a home delivery?

   _____

10. What do you do in case of an emergency while assisting a mother to deliver?

_____

11. If more women started using healthcare facilities for deliveries would it have a negative effect on your income? _____
12. Do you have any collaboration or support from Baringo County Referral Hospital? _____

Appendix VI: Ethical Approval

UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
(254-020) 2726300 Ext 44355

KNH/UON-ERC
Email: uonknh_erc@uonbi.ac.ke
Website: www.uonbi.ac.ke

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/60

12th February, 2015

Emily Jebungei Chesumei
TM310-1150/2011
JKUAT

Dear Emly

Research Proposal: Factors associated with uptake of free maternity services at Kabarnet District Hospital (P588/9/2014)

This is to inform you that the KNH/UoN-Ethics & Research Committee (KNH/UoN-ERC) has reviewed and **approved** your above proposal. The approval periods are 12th February 2015 to 11th February 2016.

This approval is subject to compliance with the following requirements:

a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b) All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH/UoN ERC before implementation.
c) Death and life threatening problems and severe adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH/UoN ERC within 72 hours of notification.
d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH/UoN ERC within 72 hours.
e) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
f) Clearance for export of biological specimens must be obtained from KNH/UoN-Ethics & Research Committee for each batch of shipment.
g) Submission of an *executive summary* report within 90 days upon completion of the study This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/or plagiarism.

For more details consult the KNH/UoN ERC website **www.erc.uonbi.ac.ke**

Protect to discover

Yours sincerely

PROF. M. L. CHINDIA
SECRETARY, KNH/UON-ERC

c.c. The Principal, College of Health Sciences, UoN
The Deputy Director CS, KNH
The Assistant Director, Health Information, KNH
The Chairperson, KNH/UON-ERC
Supervisors: Dr. Beatrice N. Kiage, Dr. Joseph Mutai

Appendix VII: Summary of published manuscripts

Factors associated with uptake of free maternity services at Kabarnet County Hospital

Chesumei E. J. [1], Kiage B. N. [2], Mutai J.[3]

1. Institute of Tropical Medicine and Infectious Diseases, Jomo Kenyatta University of Agriculture and Technology, Nairobi Kenya.
2. College of Health Sciences, Jomo Kenyatta University of Agriculture and Technology.
3. Centre for Public Health Research, Kenya Medical Research Institute (KEMRI).

Corresponding Author: Emily Chesumei; MSc. Public Health student, Institute of Tropical Medicine and Infectious Diseases, Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya. Email: ebungeik@gmail.com

SUMMARY

Introduction: High maternal mortality is a global issue now apparent with unattained Millennium Development Goal five. World Health Organization 2015, reported developing countries especially those in sub-Saharan Africa as most affected with a Maternal Mortality Rate of 546 while Kenya at 510 was among those highlighted. A skilled assisted delivery is known to reduce maternal mortality hence the Government of Kenya implemented free maternity services in June 2013 to remove financial barriers to it. The study sought to determine factors associated with uptake of free maternity services.

Methodology: It was a cross sectional study, conducted at Kabarnet County Hospital among women attending maternal child health clinic who had a birth three years prior to study. A sample size of 379 was obtained using Cochran's formula and systematic sampling was applied. Ethical consideration was obtained from Kenyatta National Hospital/ University of Nairobi ethical review committee. Data was collected through structured questionnaires and analyzed using binary logistic regression.

Findings: Majority of participants exemplified socio demographic factors identified from previous studies to promote skilled assisted deliveries. Of the 379 women interviewed; 70.4% were between 21 to 30 years, about three quarter (75.7%) had education beyond primary school, 89.7% lived within 7km from government maternity facility and 89.4 % had a birth plan. Most of the deliveries (95.8%) took place at government hospitals while 3.2% were in private hospitals and 0.5% away from hospital. Three quarter of participants stated good services as their reason for choosing place of delivery. Presence of modern equipment/technology and referrals were significantly associated with hospital deliveries with 0.001 and 0.016 p values respectively.

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SATISFACTION LEVELS OF FREE MATERNITY SERVICES AT KABARNET COUNTY HOSPITAL

[1*]Emily Chesumei
[1]Corresponding Author's Email: ebungeik@gmail.com
[*]Box 8657 -00200, Nairobi, Kenya

[2]Dr. Joseph Mutai
Kenya Medical Research Institute
Email : joemutai@yahoo.com
Box-54840-00200, Nairobi, Kenya

[3]Dr. Beatrice N. Kiage
Jomo Kenyatta University of Agriculture and Technology
P.O BOX 62,000 -00200, Nairobi, Kenya

Abstract

Purpose: The study sought to determine satisfaction levels of mothers regarding maternity services accorded to them.

Methods: This was a cross sectional study conducted at Kabarnet County Hospital among women attending maternal child health clinic who had a birth within three years from the time of the study. A sample size of 379 was obtained using Cochran's formula and systematic random sampling. Ethical approval was obtained from Kenyatta National Hospital/ University of Nairobi ethical review committee. Data was collected through structured questionnaires and analyzed using SPSS version 20. Chi square tests were done to determine associations between various variables in the study. Results are presented in form of tables, charts and percentage.

Findings: Majority of participants had socio demographic factors which promote skilled assisted deliveries. Staff competency was noted to be the most satisfactory factor rated at 91.1% while insufficient materials and equipment was the most unsatisfactory by 30.2% cumulatively. Significant differences on the condition of mother and baby depending on delivery assistant was noted with Chi-Square test of 38.7 and 32.4, P value 0.029 and 0.020, respectively.

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Recommendations: Maternity facilities should be more functional with sufficient equipment, materials, infrastructure and competent staff. Nurse/midwifery role in maternal services requires recognition hence training and capacity building.

Keywords: *Maternal mortality rate, skilled assisted deliveries, free maternity services*

Appendix VIII: Insignificant Data

Part A: Aggregate Scores for satisfaction scores of various aspects of care

Factors	V.good-WS	Good - WS	fair-WS	Poor-WS	V.poor-WS	Total WS
Building	0.803	2.400	0.634	0.017	0.000	**3.854**
Light	1.042	2.208	0.617	0.028	0.000	**3.896**
Space	0.465	1.814	1.099	0.129	.006	**3. 513**
privacy-visual	0.859	1.577	1.023	0.124	0.014	**3.597**
Privacy-Auditory	0.676	1.792	1.023	0.113	0.003	**3.606**
Cleanliness	0.817	2.017	0.811	0.073	0.008	**3.727**
Running Water& soap	0.549	1.544	1.259	0.113	0.008	**3.473**
Availability-equipment	0.789	1.656	0.752	0.299	0.008	**3.504**
Availability-Materials	0.789	1.735	0.710	0.293	0.008	**3.535**
Availability-Medicine	1.056	2.231	0.406	0.124	0.008	**3.825**
food & catering	0.437	2.073	0.913	0.096	0.020	**3.538**
Promptness of staff	1.113	2.130	0.549	0.079	0.003	**3.873**
competence of staff	1.465	2.377	0.220	0.023	0.006	**4.090**
Courtesy of staff	1.451	2.299	0.313	0.006	0.008	**4.076**
				Key:	**V.-Very S- Score W-Weighted**	

Part B: Logistic regression results, factors associated with satisfaction of maternity services

Step 1- Factors	B	S.E.	Wald	df	Sig.	Odds Ratio (Exp(B))	95% C.I. for EXP(B) Lower	Upper
Age	.274	.234	1.36	1	.243	1.32	.830	2.082
Constant	2.057	.647	10.11	1	.001	7.8		
Education	-.375	.304	1.52	1	.218	.69	.379	1.248
Constant	3.969	1.021	15.11	1	.000	52.93		
Marital Status	-.782	.216	13.08	1	.000	.46	.300	.699
Constant	4.031	.459	77.22	1	.000	56.34		
Parity	-.279	.199	1.95	1	.163	.76	.512	1.119
Constant	3.298	.474	48.5	1	.000	27.06		
Birth plan(1)	1.396	.518	7.25	1	.007	4.04	1.462	11.157
Constant	1.642	.446	13.56	1	.000	5.17		
Desicion Maker	-.270	.196	1.898	1	.168	.76	.519	1.121
Constant	3.317	.459	52.22	1	.000	27.59		
Year of Delivery	-.128	.277	.212	1	.645	.88	.511	1.515
Constant	3.320	1.168	8.07	1	.004	27.65		
Cost of marternity services	.167	.527	.101	1	.750	1.18	.421	3.319
Constant	2.745	.258	113.3	1	.000	15.56		
Distance to the facility	.278	.450	.38	1	.537	1.32	.546	3.190
Constant	2.646	.312	71.89	1	.000	14.09		
Good reputation of the facilty	.697	.467	2.23	1	.136	2.01	.804	5.016
Constant	2.303	.371	38.56	1	.000	10.0		
Attended ANC here	.020	.572	.001	1	.972	1.02	.332	3.132
Constant	2.784	.250	124.1	1	.000	16.18		
Refferal/ complications	-1.027	1.104	.86	1	.353	.36	.041	3.120
Constant	2.818	.230	149.92	1	.000	16.75		

Courtesy of staff(1)	-1.956	.869	5.07	1	.024	.14	.026	.777
Constant	2.873	.236	148.4	1	.000	17.68		
To have safe delivery	18.418	40192.969	.000	1	1.000	99779328.53	0.000	
Constant	2.784	.225	153.3	1	.000	16.19		
Previous deliveries were here	-24.039	40192.970	.000	1	1.000	.000	0.000	
Constant	2.836	.230	152.0	1	.000	17.05		
Sudden onset of labour	18.418	40192.969	.000	1	1.000	99779328.53	0.000	
Constant	2.784	.225	153.3	1	.000	16.19		
Income per day	.038	.152	.06	1	.800	1.039	.771	1.400
Constant	2.644	.510	26.9	1	.000	14.064		
Modern Equipment(1)	-2.949	.616	22.9	1	.000	.052	.016	.175
Constant	3.103	.264	138.2	1	.000	22.267		

Part C: Logistic regression results, factors associated with uptake of FMS

Factors	**B**	**S.E.**	**Wald**	**df**	**Sig.**	**Odds Ratio (Exp(B))**	**95% C.I. for EXP(B)** lower	upper
Birth plan (1)	-2.24	1.016	4.85	1	0.028	0.107	0.015	0.781
Constant	-2.86	0.727	15.50	1	0	0.057		
Modern equipment technology (1)	-4.56	1.195	14.54	1	0	0.011	0.001	0.109
Constant	-1.3	0.651	3.98	1	0.046	0.273		
Referral/ expected complications (1)	4.08	1.081	14.22	1	0.00	59	7.085	491.323
Constant	-5.18	0.709	53.28	1	0.00	0.006		
Age	-.341	.530	.415	1	.519	.711	.252	2.008

Constant	-3.60	1.419	6.44	1	.011	.027		
Education	-1.91	.688	7.73	1	.005	.148	.038	.569
Constant	.106	1.339	.006	1	.937	1.112		
Marital status	.242	.594	.166	1	.684	1.274	.398	4.080
Constant	-4.85	1.022	22.55	1	.000	.008		
Parity	-.789	.803	.97	1	.326	.454	.094	2.191
Constant	-3.14	1.308	5.75	1	.016	.043		
Decision Maker	.752	.380	3.92	1	.048	2.122	1.008	4.469
Constant	-6.47	1.263	26.25	1	.000	.002		
Year of Delivery	.817	.796	1.05	1	.305	2.263	.476	10.766
Constant	-8.02	3.613	4.93	1	.026	.000		
Affordability of the health facility	-.087	1.161	.006	1	.940	.917	.094	8.919
Constant	-4.48	.581	59.46	1	.000	.011		
Distance to the health facility	-17.5	2870.9	.000	1	.995	.000	0.000	
Constant	-3.71	.506	53.85	1	.000	.024		
Good reputation of the health facility	-2.24	1.161	3.73	1	.054	.106	.011	1.034
Constant	-3.37	.587	32.88	1	.000	.034		
Place where a mother attended ANC	-16.9	4803.9	.000	1	.997	.000	0.000	
Constant	-4.28	.503	72.4	1	.000	.014		
Courtesy of Staff	-16.7	15191.515	.000	1	.999	.000	0.000	
Constant	-4.48	.503	79.39	1	.000	.011		
Desire to have safe delivery	-16.8	40192.970	.000	1	1.000	.000	0.000	
Constant	-4.5	.503	80.0	1	.000	.011		

Place of Previous deliveries	26.4	28420.721	.000	1	.999	290785471713.204	0.000
Constant	-5.19	.709	53.64	1	.000	.006	
sudden onset of Labour	-16.7	40192.970	.000	1	1.000	.000	0.000
Constant	-4.5	.503	80.00	1	.000	.011	
Near a TBA	25.99	40192.969	.000	1	.999	193856981142.14	0.000
Constant	-4.79	.580	68.19	1	.000	.008	
Traditions & Beliefs	25.99	40192.969	.000	1	.999	193318489527.85	0.000
Constant	-4.78	.580	68.11	1	.000	.008	