EFFECTS OF FREE MATERNAL HEALTH POLICY ON SELECTED ON SELECTED MATERNAL AND NEWBORN HEALTH INDICATORS IN GEM SUB-COUNTY, SIAYA COUNTY, KENYA

BY

CHARLES MURUKA

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DECLARATION

DECLARATION BY THE CANDIDATE

I declare that this thesis is my original work and has not been presented to any university for the award of any degree.

Charles Muruka

Registration Number: EL/ESM/00404/2013

Signature: _____Date: _____

DECLARATION BY THE UNIVERSITY SUPERVISORS

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

1. Dr. Japheths Ogendi, PhD

   Department of Public Health

   School of Public Health and Community Development

   Maseno Univerity

   Signature: _____ Date: _____

2. Dr. Patrick Onyango, PhD

   Department of Zoology

   School of Physical and Biological Sciences

   Maseno University

   Signature: _____ Date: _____

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DEDICATION

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ABSTRACT

In Kenya, the maternal mortality ratio was 400/100,000 in 2013, about twice as high as the global maternal mortality ratio of 210/100,000. In Gem Sub-County, maternal mortality ratio is twice as high as the national maternal mortality burden.GemSub-County is also located in a region with a high burden of neonatal deaths. It has been documented that making maternal health services free can improve maternal and newborn health. The Government of Kenya introduced free maternal health policy in June 2013 with the aim of improving maternal health. However, the public health benefits of such interventions should never be assumed. In Kenya and specifically Gem Sub-County, there has been no assessment of the effect of free maternal health servicesin terms of certain indicators. The main study objective was to investigate the effect of the free maternal health policy on selected maternal and newborn health indicators in Gem Sub-County. The indicators that were assessed in this study were based on World Health Organization indicators. The specific objectives were: (1) to determine differences in uptake of 4^{th} antenatal care visits two years pre-and-post intervention;(2) to determine differences in uptake of facility deliveries two years pre-and-post intervention; (3) to determine differences in uptake of uptake of post-abortion care two years pre-and-post intervention; (4) to determine differences in occurrence of facility-based maternal and neonatal deaths two years pre-and-post intervention; (5) to assess women's perceptions of the quality of free maternity services and, (6) to examine the perspectives of healthcare workers on the free maternityservices.This was a mixed methods research utilizing interrupted time-series design, cross-sectional survey design and qualitative design. Secondary data were extracted from the District Health Information Software 2 (DHIS2). Segmented linear regression analysis was used to compare differences in the outcomes of interest pre-and-post intervention, with the significance level set at 0.05. In the post-intervention period:(1) 4^{th} antenatal care visits decreased by 0.6% ($p = 0.839$); (2) facility deliveries decreased by 1.6% ($p = 0.616$); (3) post-abortion care uptake increased by 54.4% ($p<0.001$); (4) maternal deaths increased by 10.1% ($p = 0.192$) whereas neonatal deaths decreased by 0.1% ($p = 0.466$); (5) two-thirdsof womendelivered at government health facilitieswithin two years post-intervention with one-third being dissatisfied with the quality of services; one-third also reported being charged for services that were officially free; and about one-third of pregnant women did not intend to deliver at government health facilities; and (6) healthcare workers reported long delays ranging from six to 18 months before refunds were disbursed to health facilities. The free maternal health policy had a significant influence on uptake of post-abortion care only. This study recommends that interventions targeting behaviour change should be implemented to influence early ANC attendance and supply side challenges inhibiting uptake of ANC and facility deliveries be addressed. Healthcare workers should also be trained on life-saving skills to handle maternal and newborn complications and their numbers increased to match service demand. The financing mechanism should also be reviewed and improved to ensure uninterrupted supply of resources for policy implementation. The results of this study may be used to trigger policy dialogues at the national level with a view to making improvements on the free maternal health policy.

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LIST OF ABBREVIATIONS

ANC	Antenatal Care
CEmONC	Comprehensive Emergency Obstetric and Newborn Care
CHW	Community Health Worker
DHIS	District Health Information Software
FDCP	Free Delivery and Caesarean Policy (Senegal)
GoK	Government of Kenya
HEF	Health Equity Funds (Cambodia)
HIPC	Highly Indebted Poor Country
HMSF	Health Management Services Fund (Kenya)
HRH	Human Resources for Health
HSSF	Health Sector Services Fund (Kenya)
KDHS	Kenya Demographic and Health Survey
KNBS	Kenya National Bureau of Statistics
LFMC	Law for the Provision of Free Maternity and Child Care (Ecuador)
MDG	Millennium Development Goal
MMR	Maternal Mortality Ratio
MOH	Ministry of Health
MVA	Manual Vacuum Aspiration
NHIS	National Health Insurance Scheme (Ghana)
PAC	Post-Abortion Care

PNC	Postnatal Care
RMNH	Reproductive Maternal and Newborn Health
SDIP	Safe Delivery Incentives Programme (Nepal)
TBA	Traditional Birth Attendant
UHC	Universal Health Coverage
UNFPA	United Nations Population Fund
UNICEF	United Nations Children Fund

OPERATIONAL DEFINITIONS

Home delivery: Childbirth that occurs in a home setting. Mothers can deliver at home by themselves, be assisted by relatives or traditional birth attendants.

Facility delivery: Childbirth that occurs in a health facility. Facility delivery is usually used as a proxy for skilled delivery.

Skilled delivery: Childbirth that occurs in a health facility and is attended to by a skilled birth attendant. It is also called supervised delivery, professional delivery or skilled birth attendance in published literature.

Maternal death: The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. Termination of pregnancy usually refers to induced abortion. Examples of accidental causes might include falls, motor vehicle crashes, etc. Incidental causes are those that are not related to pregnancy e.g. tuberculosis, meningitis, poisoning, cholera, etc.

Facility-based maternal death: Maternal death that occurs inside a health facility.

Maternal Mortality Ratio (MMR): The ratio of the number of maternal deaths during a given time-period per 100,000 live births during the same time-period.

Perinatal death: Fetal death (stillbirth) or an early neonatal death occurring within the first 7 days of life.

Neonatal death: A neonatal death is defined as a death during the first 28 days of life (0-27 days).

Neonatal mortality rate (NMR): The number of deaths during the first 28 days of life during a given time-period per 1,000 live births during the same time-period.

Post-abortion care: Refers to comprehensive abortion care and the clinical management of incomplete and unsafe abortion and complications.

Free maternity services: Refers to maternal healthcare services introduced by the government of Kenya in June 2013 to promote facility deliveries. Its stated aim is to prevent and reduce maternal deaths. The free maternity healthcare package includes treatment of complications of childbirth and post-abortion care; see Appendix 1, 2 and 3.

Postnatalmother: A mother with a child born within the first two years of implementation of free maternal health services in Gem Sub-County

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CHAPTER ONE

INTRODUCTION

1.1 Background Information

The World Health Organization (WHO) defines maternal death as 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 (from direct or indirect obstetric death), but not from accidental or incidental causes (WHO, 2011). It is estimated that each year 289,000 women die from complications related to pregnancy and childbirth globally (WHO, 2014). Low- and middle-income countries account for 99% of these maternal deaths (Ng'anjo Phiri et al., 2014). The sub-Saharan Africa region has the highest maternal mortality ratio (MMR) (500/100,000) (Chinkhumba, De Allegri, Muula, & Robberstad, 2014). This is about 42 times higher than the MMR in high income countries which is 12/100,000 (WHO, 2015). In Sub-Saharan Africa, neonatal mortality rate is 29/1,000, one-and-a-half times the global neonatal mortality rate of 19/1,000 (WHO, 2016). From 1990 to 2013, although there was a 0.1% annual decline in maternal deaths globally (WHO, 2014), in Kenya there as an 18% increase in the MMR from 414/100,000 in 1990 to 488/100,000 in 2008 (Wanjira, Mwangi, Mathenge, Mbugua, & Ng'ang'a, 2011).

The increase in MMR has been attributed to insufficient coverage levels of key interventions due to the tough economic conditions that Kenya was facing, insufficient number of health facilities and a grossly inadequate health workforce. The situation was further exacerbated by severe HIV&AIDS crisis that itself had a devastating effect on maternal health (Keats et al., 2017). In low and middle income countries, neonatal mortality is a major health burden and accounts for

approximately 45% of under-five deaths (WHO, 2016). In 2015, Kenya recorded 34,000 newborn deaths, translating into a neonatal mortality rate of 22/1,000 (UNICEF, 2015).

Gem Sub-County is one of the six sub-counties in Siaya County in western Kenya. The MMR in the sub-county was estimated most recently at 740/100,000 between 2003 and 2008 (Desai et al., 2013). This MMR is two times higher than the MMR for Kenya. Although no published data were found on the neonatal mortality rate for the same sub-county, it is located within Siaya County whose neonatal mortality rate is twice as high as the national rate of 22/1,000 (UNICEF, 2015). Though previously neglected for decades, maternal and newborn health has been an area of key concern in global health policy since the launch of the Safe Motherhood Initiative in 1987 (Maine & Rosenfield, 1999). The Millennium Development Goals (MDGs) 4 (child health) and 5 (maternal health), and their corresponding targets in 2000 were an attempt to focus and track progress on maternal and child health (UN, n.d.). In 2015, new goals and targets on maternal and newborn health were incorporated in the Sustainable Development Goals (SDGs) (UN, n.d.). The WHO has listed 11 indicators for evaluating maternal and newborn health, namely (WHO, 2012): maternal mortality ratio; under-five child mortality, with the proportion of newborn deaths; children under five who are stunted; proportion of demand for family planning satisfied (met need for contraception); antenatal care coverage (at least four times during pregnancy); antiretroviral prophylaxis among HIV positive pregnant women to prevent HIV transmission and for mother's own health; skilled attendant at birth; postnatal care for mothers and babies within two days of birth; exclusive breastfeeding for six months (0–5 months); three doses of combined diphtheria-tetanus pertussis (DTP3) immunization coverage (12–23 months); and antibiotic treatment for suspected pneumonia.

The abolition of user fees for maternity care and the provision of financial incentives have been identified as some of the promising strategies to avert maternal deaths by increasing skilled deliveries (Chinkhumba et al., 2014). In June 2013, a free maternal health policy aimed at preventing and reducing maternal deaths by removing cost as a barrier to accessing maternity services was introduced by the government of Kenya through a presidential directive (Pyone, Smith, & van den Broek, 2017). According to the directive, the following services were to be offered without any charges in all public health facilities (Pyone et al., 2017): antenatal care visits; maternity services; delivery (including caesarean sections); post-abortion care and post-delivery care, including all complications related to delivery.With the exceprion of post-abortion care, these specific services covered under the free maternity policy are a mirror reflection of thefour out of eleven WHO indicators for evaluating maternal and newborn health. Therefore, the measureable variables of the free maternity policy are tied to the utilization of each of the specific services covered: uptake of antenatal care visits; uptake of facility skilled delievery, uptake of post-abortion care; and occurrence of facility-based maternal deaths and neonatal deaths. Public health facilities were to be reimbursed at specified rates every quarter based on the volume of deliveries conducted in the quarter (Pyone et al., 2017).

The success of the free maternity policy in meeting its objectives is dependent on other factors including women's demand for services and the commitment of healthcare workers as policy implementers. Quality of care is an important but often neglected issue in safe motherhood programmes (Karkee, Lee, & Pokharel, 2014). Women's perceptions of the quality of care influence their levels of satisfaction with maternity services which in turn has an influence on intended future utilization(Haddad, Fournier, Machouf, & Yatara, 1998). Healthcare workers' experiences with policy implementation influence their perspectives which in turn influence their

dedication and commitment to achieving policy objectives (Wamalwa, 2015).Currently, women's perceptions and healthcare perspectives on free maternity services in specific Kenyan counties and sub-counties are unknown.

The effect of free maternal healthcare services on the uptake of antenatal care and facility deliveries are known to vary by region and automatic increase in service utilization are not always guaranteed (Hatt, Makinen, Madhavan, & Conlon, 2013). Facility-based maternal and neonatal deaths have been observed to decrease (Bosu, Bell, Armar-Klemesu, & Tornui, 2007). The introduction of free maternal services has also been noted to increase healthcare worker workload and compromise quality of care amidst increased demand and poor supply of resources (Hatt et al., 2013; Perkins et al., 2009; Uzochukwu, Chinenye, Ogochukwu, & Obinna, 2015)(Afsana & Rashid, 2001; Gebrehiwot, Goicolea, Edin, & Sebastian, 2012; Oyerinde, Amara, & Harding, 2012).

So far, there have been no studies conducted in specific sub-counties to assess the effect of the free maternal health policy on selected maternal and newborn health indicators. This study was conducted in Gem Sub-County due to its very high burden of maternal mortality and its location in Siaya County which has a high burden of neonatal deaths. The sub-county therefore offers a rich environment for conducting an assessment of the effect of the free maternity services on selected indicators.

The main aim of this study was to investigate the effect of the free maternity services on selected maternal and newborn health indicators in Gem Sub-County. The specific objectives were: (1) to determine differences in uptake of 4^{th} antenatal care visits two years pre-and-post intervention; (2) to determine differences in uptake of facility deliveries two years pre-and-post intervention;

(3) to determine differences in uptake of uptake of post-abortion care two years pre-and-post intervention; (4) to determine differences in occurrence of facility-based maternal and neonatal deaths two years pre-and-post intervention; (5) to assess women's perceptions of the quality of free maternity services and, (6) to examine the perspectives of healthcare workers on implementation of free maternal health services.

1.2 Statement of the Problem

It has been observed that in certain geographical and socio-cultural contexts, the introduction of free maternity servicess does not necessarily result into increased utilization of maternity services as desired by policy makers. Programme evaluation studies are therefore necessary to determine the performance, identify and address pertinent issues, including if need be, policy revisions. Since the introduction of the free maternity services in Kenya, its effects on selected maternal and newborn care indicators i.e. antenatal care visits, facility deliveries and post-abortion care have not been studied in high burden sub-counties such as Gem which has an MMR of 740/100,000 and is located within Siaya County in which the neonatal mortality rate is one-and-a-half times higher than the national rate of 22/1,000.

There is also no data on how the new programme has impacted on the occurrence of facility-based maternal and newborn deaths, which of course, is an indicator of the quality of services being provided and which can influence positive or negative perceptions in the community. Women's perceptions of the quality of services under the free maternity services have also not been studied in Gem Sub-County, yet this does not only impact on utilization of services but can also provide invaluable user feedback on programme quality and enhance accountability in service delivery. Healthcare workers are key stakeholders in the implementation of the free maternity services, yet their perspectives have not been systematically documented in Gem Sub-

County. Such perspectives are inherently influenced by individual experiences, attitudes, beliefs, political inclinations and perceptions of healthcare worker roles in policy implementation.

This study sought to investigate the effect of the free maternity services on maternal and newborn health in Gem Sub-County by examining the pre-and-post intervention uptake of 4th antenatal care (ANC) visits, facility deliveries and post-abortion care. It also examined the occurrence of facility-based maternal and neonatal deaths pre-and-post intervention. Women's perceptions of the quality of free maternity services were also assessed. Finally, the study examined the perspectives of healthcare workers on the implementation of free maternity services.

1.3 Significance of the Study

This study sought to assess the effect of the free maternal health serviceson selected maternal and newborn health indicators in Gem Sub-County in Siaya County. In addition to women's perceptions and healthcare worker perspectives, the assessment relied on selected WHO indicators for measuring maternal and newborn health. The findings of this study supplement the body of evidence on free maternal health policies and further providean empirical evidence base on the success or failure in addition to strengths and weaknesses of the free maternal healthpolicy in a high burden environment. The availability of such evidence to stakeholders including policy makers and programme implementers is important for informed policy dialogues, policy revisions and evidence-based decision-making on programme re-design. Due to the not so impressive performance of the free maternal health policy in Gem Sub-County, the findings may trigger policy dialogues at the national level with a view to making improvements on policy implementation.

1.4 Study Objectives

1.4.1 Main Objective

The main study objective was to investigate the effect of the free maternity health policy on selected maternal and newborn health indicators in Gem Sub-County.

1.4.2 Specific Objectives

1) To determine differences in uptake of 4th antenatal care visits two years pre-and-post intervention in Gem Sub-County.
2) To determine differences in uptake of facility deliveries two years pre-and-post intervention in Gem Sub-County.
3) To determine differences in uptake of post-abortion care two years pre-and-post intervention in Gem Sub-County.
4) To determine differences in occurrence of facility-based maternal and neonatal dealths two years pre-and-post intervention in Gem Sub-County.
5) To assess women's perceptions of the quality of free maternity healthcare services introduced in June 2013 in Gem Sub-County.
6) To examine perspectives of healthcare service providers on the free maternity services in Gem Sub-County.

1.5 Research Questions

This study sought test the following hypotheses and answer research questions:

1) What is the effect of the free maternity services policy on uptake of 4th ANC visits?
2) What is the effect of the free maternity services policy on uptake of facility deliveries?

3) What is the effect of the free maternity services policy on uptake of post-abortion care?
4) What is the effect of the free maternity services policy on the occurrence of facility-based maternal and neonatal deaths?
5) What are the perceptions of women on the quality of free maternity services?
6) What are the perspectives of healthcare workers on the free maternity services?

CHAPTER TWO

LITERATURE REVIEW

2.1 Burden of Maternal and Neonatal Deaths

In Kenya the maternal mortality ratio was 400/100,000 in 2013. This is about twice as high as the global maternal mortality ratio of 210/100,000 (WHO, 2015). Compared with other countries in the East African Community (EAC), Rwanda (320/100,000), Uganda (360/100,000), Eritrea (380/100,000), Kenya is not doing well on maternal mortality (National Council for Population and Development, 2015). Despite the many efforts that have been made, the maternal mortality ratio largely remained unchanged between 1988 and 2008(National Council for Population and Development, 2015). For instance, out of the 32,021 women of reproductive age who were reported to have died in 2013, 21% (6,632) died of pregnancy-related causes (National Council for Population and Development, 2015). Siaya County ranks position one in western Kenya and position six nationally in terms of maternal mortality. The neonatal mortality rate in Kenya increased from 32/1,000 in 2011 to 39/1,000 in 2013. In Gem Sub-County, maternal mortality ratio is 740/100,000 which is twice as high as the national maternal mortality burden.

The global neonatal mortality rate (NMR) stood at 19/1,000 live births in 2015(UNICEF, 2015). During the same period, the NMR was 24.5/1,000 live births in east and southern Africa, 22.6/1,000 live births in Kenya (UNICEF, 2015). Siaya County in which Gem Sub-County is located has a high burden of neonatal deaths, with the NMR increasing from 32/1,000 in 2011 (Kenya National Bureau of Statistics (KNBS) & UNICEF, 2013) to 39/1,000 in 2013 (GOK, 2013).

The abolition of user fee is one of the strategies for improving access to essential maternal and child health services and improving health outcomes(Campbell & Graham, 2006).

2.2 The Introduction of user Fee and the Case For its Abolition

In the mid-1980s, many low- and middle-income countries were encouraged to introduce user fees as a response to declining national health budgets and an increased demand for healthcare services (McPake et al., 2013; Meessen et al., 2011). User fees were presented as a means of cost recovery of public health expenditure as well as enhancing efficiency and equity (Collins, Quick, Musau, & Kraushaar, 1996; James et al., 2006; Lagarde & Palmer, 2008). The Bamako Initiative, put into action by African Ministers of Health, followed on closely in 1987 (McPake et al., 2013). It included user fees among its instruments amid assertions that user fees would produce quality improvements in services through the local retention of generated revenue.

After more than two decades of global user-fee experience, the objectives of introducing user fees have been rigorously critiqued (James et al., 2006; McPake et al., 2013). The current evidence suggests that the introduction of user fees was not beneficial as it did not raise adequate resources for quality healthcare services as intended(McPake, Brikci, Cometto, Schmidt, & Araujo, 2011). User fees also erected a major barrier to healthcare access among the poor (James et al., 2006). Facility fees, including informal fees, reduce the number of deliveries in medical facilities in several developing countries, particularly among the poor (James et al., 2006; Kruk, Mbaruku, Rockers, & Galea, 2008; McPake et al., 2013).

The slow progress in reducing the high levels of maternal and neonatal deaths in low income countries has led to a renewed commitment to improve provision and access to reproductive, maternal and newborn health services. At least three quarters of neonatal deaths and a similar

proportion of maternal deaths occur outside hospital (McPake et al., 2013). As a result, in recent years, several agencies including WHO, the World Bank and UNICEF have changed their policy positions to support user fees abolition(McPake et al., 2011). In 2007, universal access to reproductive health was included among the Millennium Development Goals (MDG, goal 5b), which were unanimously agreed by all UN member states as part of the Millennium Declaration. A UN resolution was passed by the UN General Assembly in December 2012, urging governments to ensure whole population access to affordable, quality, health services. Consequently, reproductive, maternal, newborn and child health (RMNCH) services have often been the first priority of the universal health coverage (UHC) policies of the different countries (McPake et al., 2013).

Although user fee abolition has been identified as a major barrier to healthcare access among the poor, it is not the only one. Understaffed and understocked health facilities which are common in many low-income countries and rural areas would still compromise on the quality and access to healthcare services even if user fee were removed. Recent reviews of the growing trend to abolish or suspend user fees suggests that for these policies to be effective, careful planning of the supply-side response to the stimulated demand has to take place (McPake et al., 2013).

2.3 Introduction of Free Maternity Services

Before 2000, only Tanzania, Malawi and South Africa delivered healthcare services free at the point of delivery (McPake et al., 2011). Since the beginning of the new millennium, other Sub-Saharan African countries have followed suit, beginning with Uganda (2001), Ghana (2003), Kenya (2004, 2010, 2013), Senegal (2005, 2006), Burundi (2006), Zambia (2006), Niger (2007), Liberia (2007), Sudan (2008), Sierra Leone (2010), Lesotho, Benin, Burkina Faso, Cameroon, and Ethiopia (Asante, Chikwama, Daniels, & Armar-Klemesu, 2007; McPake et al., 2013, 2011;

Steinhardt et al., 2011; Wanjira et al., 2011). The abolition of user fees was mostly confined to some maternal and child health services(McPake et al., 2011).

2.4 The Effects of user Fees Abolition

A review of 16 studies on user fee exemptions and maternal health services discovered that removing or reducing user fees increased the utilization of curative services and perhaps preventive services as well, but may have negatively impacted service quality(Lagarde & Palmer, 2008). When fees were either introduced or removed, the impact was immediate and abrupt. However, the studies reviewed did not adequately show whether such increase or decrease in utilization of maternity services was sustained.

In another review of 19 peer-reviewed articles on the effects of user fee exemptions on maternal health service utilization, service provision and outcomes, it was found that the grade of evidence was relatively weak, mainly from short-term non-controlled studies. From the evidence, the introduction of user fee exemptions appears to have resulted in increased rates of facility-based deliveries and caesarean sections in some contexts(Hatt et al., 2013). Impacts on maternal and neonatal mortality have not been conclusively demonstrated; exemptions for delivery care may contribute to modest reductions in institutional maternal mortality but the evidence is very weak. The extent to which user fee revenue lost by facilities is replaced can directly affect service provision and may have unintended consequences for provider motivation. Some studies have concluded that the elimination of user fees does not always trigger an immediate increase in use of professional maternity care(Hatt et al., 2013; Perkins et al., 2009). The elimination of user fees can result in gaps in the availability of drugs and supplies, overworked and demoralized staff, and poorer overall quality of care.

Generally, studies conducted in Uganda, Bolivia, Ecuador, Senegal, Nepal, Cambodia, and Bangladesh generally demonstrate increased healthcare utilization after the abolition or exemption of user fees. However, mixed results have also been found in Ghana, Sierra Leone and Afghanistan.

2.4.1 Effect on Antenatal care Visits

In Bolivia, a social insurance scheme that provides free care for pregnant women and under-fives has increased utilization, especially by the poor (McPake et al., 2013). In Ecuador, primary healthcare services utilization outcomes significantly improved following the implementation of the Law for the Provision of Free Maternity and Child Care (LFMC) (Chiriboga, 2009).

2.4.2 Effect on Facility Deliveries

The early evidence of the effects of the free delivery policy in Nepal indicates that utilization of services continued to rise, with caesarean deliveries proportionate to the general growth in deliveries (Witter, Khadka, Nath, & Tiwari, 2011). According to analysis of selected health facilities, complications and caesarean sections have grown in line with overall deliveries which is reassuring given the concerns that the policy might encourage over-medicalization (Witter et al., 2011). The overall increase for normal deliveries was 19%, for complications 15.5%, and for caesarean sections 18%, making an overall increase of 19% in institutional deliveries, but with particular growth in district hospitals (especially those not previously benefiting from the SDIP, such as some of the mission hospitals). The free delivery programme has contributed to this increase, alongside many other policies including the training of skilled birth attendants (SBAs) and community factors, such as increased female education. However, the overall coverage remains low, compared with other countries.

An operations research project to test the feasibility and effectiveness of introducing financial support (voucher scheme) for poor rural women to improve utilization delivery from trained service providers found that institutional deliveries have increased from 2% to 18% (Rob, Rahman, & Bellows, 2010).

Vouchers and healthy equity funds (HEFs) schemes in Cambodia led to a sharp increase in facility deliveries from 16.3% of the expected number of births in 2006 to 44.9% in 2008, not only for voucher and HEF beneficiaries, but also for self-paid deliveries (Ir, Horemans, Souk, & Van Damme, 2010). The increase was much more substantial than in comparable districts lacking voucher and HEF schemes. The study concluded that vouchers plus HEFs, if carefully designed and implemented, have a strong potential for reducing financial barriers and hence improving access to skilled birth attendants for poor women (Ir et al., 2010). In Afghanistan, it was found that facility deliveries did not increase following user fee removal (Steinhardt *et al*. 2013).

An evaluation of the Free Delivery and Caesarean Policy (FDCP) in Senegal found significant implementation difficulties, especially related to the allocation of funds and kits and the adequacy of their contents (Witter, Dieng, Mbengue, Moreira, & De Brouwere, 2010). Despite these challenges, significant increases in utilization in normal deliveries (from 40% to 44% of expected deliveries in free delivery and caesarean policy (FDCP) areas over 2004–5) and in caesarean rates (rising from 4.2% to 5.6% in FDCP areas) were recorded. National data suggested that these trends were not found in non-FDCP regions (Witter et al., 2010).

Four out of six studies conducted in Ghana arrived at unexpected results. One study reported that after fee exemption implementation the likelihood of delivering in a health facility increased

significantly in Central and Volta regions when accounting for the mothers' education and poverty levels and other factors (S. Penfold, Harrison, Bell, & Fitzmaurice, 2007). Results from Central Region showed increases in facility deliveries mainly occurred in health centres (from 13.7% to 22.3% of deliveries), and were attended by midwives (from 49.0% to 59.7%). There was evidence that after implementation some inequalities in the uptake of facility deliveries decreased. The greatest increase in the proportion of deliveries taking place in facilities occurred among women with the lowest levels of education (Central Region) and wealth (Volta Region). The proportion of deliveries in health facilities increased in both regions. Although changes cannot be directly attributed to delivery fee exemption, results demonstrating that the greatest increases in facility-based deliveries occurred among the poorest and least educated women are consistent with the expectation that the policy would particularly benefit women with the greatest financial barrier to health care and at the greatest risk of maternal mortality (S. Penfold et al., 2007).

Another study also noted that the delivery exemption policy in Ghana appeared to be effective in raising utilization with some modest equity gains (McPake et al., 2013). They cite a study that compared baseline data in two districts, before the NHIS (in 2004) and after (in 2007) whose findings suggest that there was an increase in access to formal care amongst members, as well as a significant decrease in out-of-pocket expenditure. However, there was no difference in use of maternal care (antenatal care, deliveries or caesarean sections) between the intervention and control group (McPake et al., 2013).

Similarly, yet another study found marginal increases in accessibility to and utilization of skilled antenatal, delivery and postnatal care services following the policy implementation, beginning with free delivery care in 2003 and its replacement of free healthcare for all pregnant women

through the National Health Insurance Scheme in 2008 (Ganle, Parker, Fitzpatrick, & Otupiri, 2014). However, large gradients of inequities exist between geographic regions, urban and rural areas, and different socio-demographic, religious and ethnic groupings. More urban women (40%) than rural, 53% more women in the highest wealth quintile than women in the lowest, 38% more women in the best performing region (Central Region) than the worst (Upper East Region), and 48% more women with at least secondary education than those with no formal education, accessed and used all components of skilled maternal health services in the five years preceding the survey. The study findings raise questions about the potential equity and distributional benefits of Ghana's user-fee exemption policy, and the role of non-financial barriers or considerations (Ganle et al., 2014).

Contrary to expectations, home or traditional birth attendant (TBA) deliveries decreased from 42.7% to 40.3%, normal facility deliveries decreased from 47.8% to 45.3% whereas caesarean sections increased from 9.6% to 14.5% following the fee exemption policy in Ghana (Asante et al., 2007). As expected home/TBA deliveries fell during the same period. Normal deliveries at health facilities also fell after the exemption policy but this was not expected as we expect more mothers to take advantage of the policy (Asante et al., 2007).

According to an independent review carried out in 2007, the proportion of deliveries attended by skilled health personnel in Ghana declined from 54% to 35% between 2005 and 2007(Witter, Adjei, Armar-Klemesu, & Graham, 2009). This decline in skilled attendance at delivery may be linked to the under-funding and then abolition of the exemptions policy for delivery fees, which was introduced in 2004, as well as the health worker strike of 2007. In parallel, institutional mortality rates and the proportion of births attended by traditional birth attendants were reported to be increasing. Later, it was concluded that maternal utilization and health indicators improved

over time, though skilled delivery remained relatively low and hard to shift (Witter, Garshong, & Ridde, 2013). Despite the termination of cost-sharing and introduction of the 10/20 policy in Kenya in 2004 and the reported reduction in out-of-pocket costs at government facilities, there was only a small increase overall in the percentage of women who delivered at facilities, from 29% in 2003 to 33% in 2006 in two Kenyan districts studied (Perkins et al., 2009).

2.4.3 Effect on Post-abortion Care

Unsafe abortion and inadequate post-abortion care are significant contributors to maternal mortality (Benson, Andersen, & Samandari, 2011). Annually, an estimated 8.5 million women suffer from complications of unsafe induced abortions, resulting in 47,000 maternal deaths globally (Ziraba et al., 2015). The majority of unsafe abortions occur in the developing countries with the most severe morbidity and mortality occurring in sub-Saharan Africa (Ziraba et al., 2015). It was estimated that 465,000 induced abortions occurred in Kenya in 2012 (48 per 1000 women of reproductive age) (Ziraba et al., 2015). The contribution of unsafe abortions to maternal deaths in Western Kenya stood at 7% in 2008 (Desai et al., 2013). The western region comes second after the Rift Valley region in the prevalence of induced abortions. Nationally, 70% of women who have induced abortions receive post-abortion care from healthcare facilities (Ministry of Health Kenya, 2013).

No literature was found on the effect of free maternity services on the utilization of post-abortion care. This is likely because the package of services offered in free maternity services has not always included post-abortion care.

2.4.4 Effect on Occurrence of Facility-based Maternal and Neonatal Deaths

There was 10% to 34% reduction in facility-based (institutional) maternal deaths after one year of implementation of free delivery care in Ghana, although the decreases were not statistically significant(Bosu et al., 2007). The institutional delivery-related MMR decreased from 445/100,000 to 381/100,000 in the Central Region and from 648/100,000 to 391/100,000 in the Volta Region following the implementation of the policy(Bosu et al., 2007).

The rates of post-caesarean maternal and neonatal deaths declined after the free caesarean policy was implemented in Mali(El-Khoury, Hatt, & Gandaho, 2012). In Ecuador, neonatal mortality also decreased post-LFMC(Chiriboga, 2009).

2.4.5 Dimensions of Women's Perceptions of Quality of Maternal Healthcare Services

It has been demonstrated through research that quality of care is often a concern for many lay health-seekers(Kambala et al., 2017). Whilst lay people such as village women with little or no education may not always articulate quality care using expert and scientific languages, their healthcare-seeking decisions including facility delivery are nevertheless often influenced by a concern for quality(Haddad et al., 1998; Wiegers, 2009). These women's lay language may define quality as 'good','better'or 'excellent' maternity care.

Women's perceived quality of maternal care exists in five dimensions, namely technical care (i.e. technical aspects of maternal care), quality of amenities, and interpersonal relations between individual healthcare workers and patients, accessibility of services (both financial and physical) and effectiveness of care (Haddad et al., 1998; Kambala et al., 2017; Wilde, Starrin, Larsson, & Larsson, 1993). Perceptions of technical aspects of maternal care include aspects such as having trust in the competence of the healthcare worker to provide care, efficiency in service delivery

and good coordination in provision of care. Perceptions of the quality of amenities include aspects such as availability and adequacy of medical equipment and supplies, adequacy of space and cleanliness in delivery rooms. Perceptions of interpersonal aspects of received care include healthcare workers being sensitive and concerned about the patient's wellbeing, being gentle and caring, listening, paying attention and being respectful (Kambala et al., 2017). Taken together, women'sexperiences influence their perceptions of quality which in turn influences the levels of satisfaction which eventually influence intended future utilization of maternal care services (Karkee et al., 2014; Mekonnen, Yalew, & Anteneh, 2015).Women's perceptions of quality of free maternity services in Gem Sub-County are unknown.

2.4.6 Women's Perceptions of Quality of Free Maternity Healthcare Services

Women's perceptions of the quality of maternity services are influenced by women's personal experiences or social interactions with other women. Such perceptions can either be positive or negative, with those with positive perceptions more likely to utilize maternity services than those with negative perceptions (Karkee et al., 2014). Policy makers and implementers therefore need to be aware of women's perceptions and address any concerns, if any. In a meta-analysis, it was found that women who viewed facilities as the safest and most respectable location for a delivery, believing that facilities were able to ensure positive outcomes were more likely to deliver at health facilities. Similarly, women who respected the competence of formal health workers and viewed them as "well-trained, competent, and compassionate" "experts" who provided "effective management of emergencies" were likely to overcome various barriers to deliver in facilities(Bohren et al., 2014).

However, women reporting negative interactions at facilities and lacking confidence in the health workers' abilities, who they considered undertrained, incompetent, and inexperienced, were less

inclined to desire facility deliveries(Bohren et al., 2014). Examples of negative interactions at facility would be encounters with healthcare workers perceived to be verbally and physically abusive, rude, bossy, and disrespectful, insulting, easily angered, having poor attitudes and lacking compassion. Inadequate facility infrastructure and staffing contribute to an overall perception of low quality of care and many women have complained of overcrowded wards without dedicated labor and delivery areas (Afsana & Rashid, 2001; Gebrehiwot et al., 2012; Oyerinde et al., 2012).

2.4.7 Healthcare Workers' Perspectives on Free Maternal Healthcare Services

The elimination of user fees and introduction of free maternity services can result in gaps in the availability of drugs and supplies, overworked and demoralized healthcare workers, and poorer overall quality of care(Hatt et al., 2013; Perkins et al., 2009; Uzochukwu et al., 2015). The effect of attitudes and behavior of healthcare workers on patient care is a phenomenon recognized a long time ago(Holmes & Goldstein, 2012). Healthcare workers in Malindi Sub-County perceive challenges such as delayed reimbursement of free maternity funds by the national government to the facilities, stock-outs of essential commodities to facilitate service provision, increased workload amidst staff shortage and lack of consultation and sensitization of key stakeholders as barriers to effective implementation of the policy(Lang'at & Mwanri, 2015). Such healthcare workers are likely to have negative attitudes towards the free maternity services and this can negatively affect its implementation.

The effects of the free maternity policy on utilization of specific services covered by the policy in Gem Sub-County are unknown. Secondly, women's perceptions of the quality of free maternity services in Gem Sub-County are unknown. Finally, the perspectives of women and healthcare workers on the free maternity services in Gem Sub-County remain unknown.

2.5 Conceptual Framework

The package of services in the free maternity services rolled out by the Government of Kenya in June 2013 includes antenatal care, skilled delivery, post-abortion care and treatment of childbirth complications. The stated objectives of the free maternity services are to prevent and reduce maternal deaths by promoting the uptake of skilled deliveries and post-abortion care. In an enabling environment, the free maternity services policy is expected to meet its objectives through increased skilled deliveries and increased uptake of post-abortion care. Consequently, facility-based maternal and neonatal deaths are expected to decrease due to the increased uptake of skilled delivery care (including treatment of childbirth complications) and newborn care being provided at health facility.

The uptake of antenatal care, skilled delivery and post-abortion care is influenced by women's perceptions of the quality of free maternity services. Women's perceived quality of maternal care exists in five dimensions, namely technical care, quality of amenities, interpersonal relations, accessibility of services and effectiveness of care (Haddad et al., 1998; Kambala et al., 2017; Wilde et al., 1993) – these are described in section 2.4.5. Postnatal mothers' experiences with free maternity services have an influence on their perceptions. Similarly, pregnant women also have their own perceptions based on either previous personal experiences or social interactions with other women in the community. If women's perceptions are positive, there would be an increased likelihood of future utilization of maternal care services and vice versa.

Healthcare workers as service providers are key stakeholders in the implementation of the free maternity services policy, therefore, the policy is more likely to meet its objectives if they support and remain committed in its implementation. But this is only if they have positive perspectives based on their individual and collective experiences with policy implementation.

The perspectives of healthcare workers are influenced by their own individual and collective experiences in policy implementation. Examples of dimensions of their perspectives include perceptions of increased workload due an expected increased utilization of free maternity services, compensation for increased workload, staff morale, clients' (women's) satisfaction, availability and adequacy of requisite medical and human resources, and challenges in effective policy implementation. There are eleven WHO indicators for assessing maternal and newborn health (WHO, 2012). Four of these indicators are relevant for the purposes of this study and have been chosen to assess the effect of the free maternity services on maternal and newborn health. The selected indicators are antenatal care attendance, specifically the 4^{th} ANC visits since the first ANC visits are always high at over 95% (Kenya National Bureau of Statistics (KNBS), 2014), skilled attendance at birth, occurrence of maternal deaths and occurrence of newborn deaths. With the exception of increased uptake of post-abortion care, the expected outcomes of the free maternity services correspond to the four selected WHO indicators for assessing maternal and newborn health. Since unsafe abortion contributes a significant proportion of maternal deaths, it should be noted that increased uptake of post-abortion care would contribute to the stated objectives of the free maternity services, i.e. prevention and reduction of maternal deaths. The conceptual framework for the study is summarized in Figure 2.1.

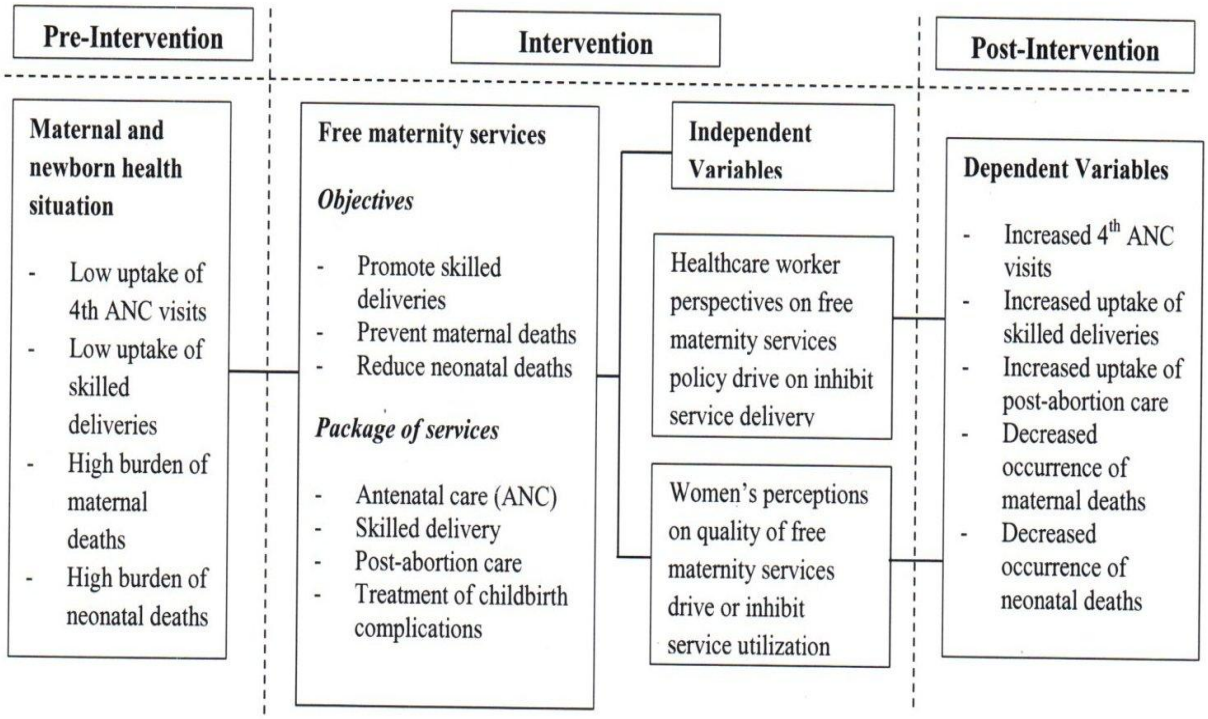

Figure 2.1. Conceptual framework

CHAPTER THREE

METHODOLOGY

3.1 Study Site

The study was conducted in Gem Sub-County which covers an area of 405 km^2 and lies between latitudes 00° 03' South and 00° 05' North and longitudes 34° 22' – 34° 33' East, at an average altitude of 1,400m above the sea level, see Appendix 10 Figure 10.1. Administratively, Gem Sub-County is divided into six administrative regions known as wards, which are further sub-divided into 39 sub-locations (GOK, 2013). These sub-locations are further sub-divided into villages, which the form the lowest administrative units. By 2013, the population of Gem Sub-County was projected to be 174,756 (GOK, 2013), with children aged under one year estimated at 6,068. The women of reproductive age were projected to be 40,511, and 7,139 were estimated to be pregnant annually. The estimated number of deliveries per year was 7,139, of which about 714 (10%) resulted into emergency obstetric complications (GOK, 2013).

The Sub-County has 28 public health facilities which comprise one Sub-County Hospital, nine Health Centres and 18 Dispensaries. It was assumed that all these facilities began providing free maternity services in June 2013 as directed by the government policy.

The MMR in Gem Sub-County was estimated at 740/100,000. However, there is no published data on the neonatal mortality rate for the sub-county (Desai et al., 2013).

3.2 Study Design

This was a mixed methods research utilizing three study designs, namely interrupted time series design; cross-sectional survey design and qualitative design. The interrupted time series (ITS) study design is a type of quasi-experimental study design (Lagarde, 2012). This study design uses routine data collected at equally spaced intervals of time before and after an intervention,

and does not necessarily require a control site, which makes it a much more practical option in many cases (Lagarde, 2012). The ITS design can provide a robust method of measuring the effect of an intervention when randomization or identification of a control group are 'impractical' (Taljaard, McKenzie, Ramsay, & Grimshaw, 2014).This approach has been used to assess the consequences of a variety of policy issues in various fields, but is new in health (Lagarde, 2012).This study analyzed secondary data which had been routinely collected at monthly intervals from June 2011 to May 2015 which was extracted from the web-based national health information system known as the District Health Information Software 2 (DHIS2).

A cross-sectional survey study design was used at household level to assess women's perceptions of the quality of maternity services and attitudes towards the free maternity programme. This study design was used because it is suitable for determining the prevalence of outcomes or exposure in a population. In this study, pregnant women and postnatal mothers resident in Gem Sub-County were exposed to free maternity services and their perceptions of the quality of services could be considered as the outcomes of the exposure.

In the qualitative study design, key informant interviews were used to obtain information from selected healthcare workers and managers on their perspectives about the free maternity programme. Qualitative studies are used to answer questions about experience, meaning and perspective, most often from the standpoint of the participant. Figure 3.1 below depicts the study designs.

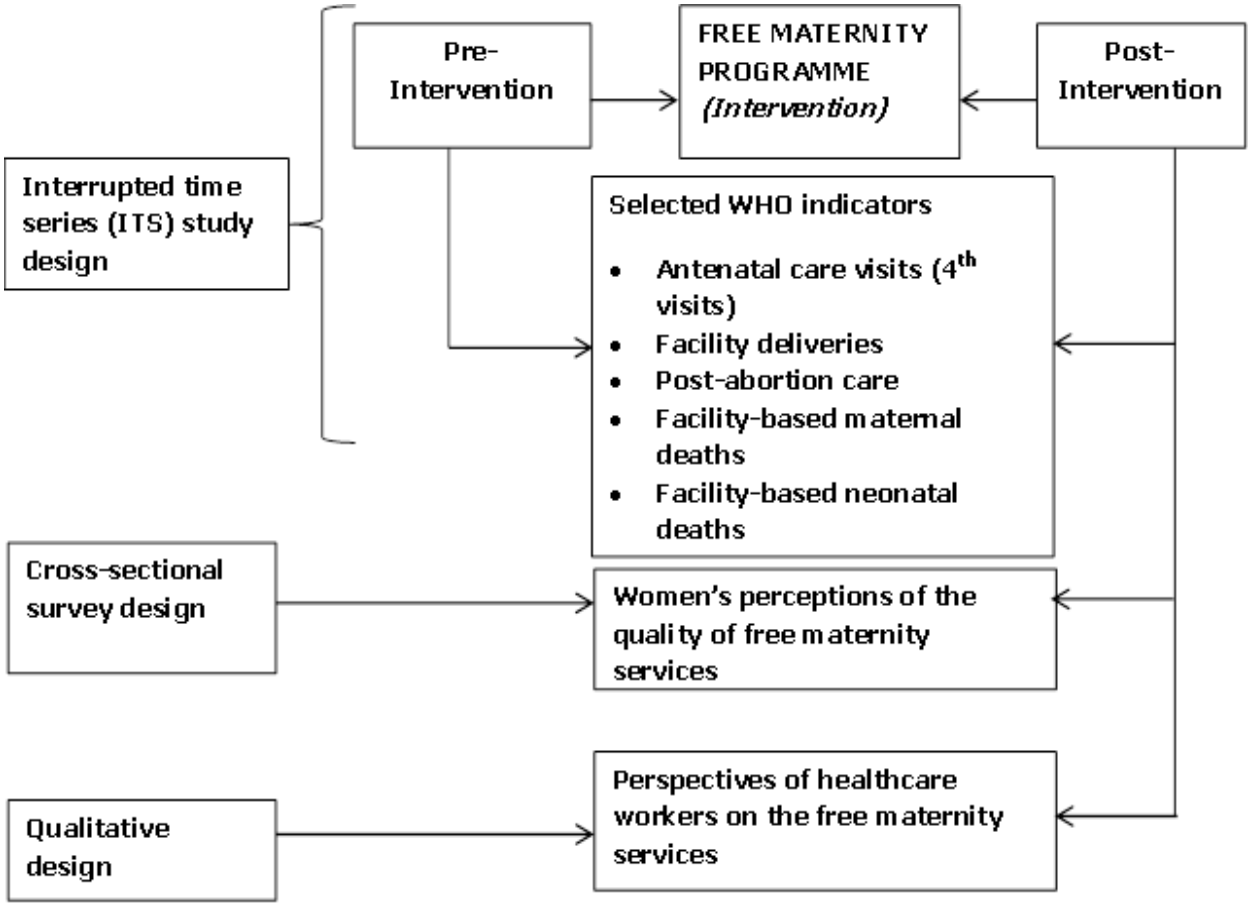

Figure 3. 1. Study designs

3.3 Study Population

Pre-and-post intervention data to determine the effect of free maternity services on selected maternal and newborn health indicators in Gem Sub-County was obtained from the District Health Information Software (DHIS2). These indicators and how the data was extracted are described in section 3.9.2 (Secondary data). The study population for the cross-sectional survey to assess women's perceptionson quality of free maternity services was all pregnant and postnatal mothers in Gem Sub-County. The target population for the key informant interviews to examine the perspective of healthcare workers on free maternity services was all health facility managers in Gem Sub-County.

3.4 Inclusion Criteria

In the collection of primary data, all pregnant women and mothers with infants born between June 2013 and May 2015 were eligible for inclusion in the study since this period coincides with the two years post-intervention period. Being resident in the study area during the past six consecutive months was also considered in the eligibility for inclusion. Postnatal mothers with infants born before June 2013 and June 2015 were excluded from the study. Pregnant women and postnatal mothers who had been resident in the study site for the less than six consecutive months were also excluded.

3.5 Exclusion Criteria

Postnatal mothers with infants born before June 2013 and June 2015 were excluded from the study. Pregnant women and postnatal mothers who had been resident in the study site for the less than six consecutive months were also excluded.

3.6 Sample Size Determination

Pregnant and postnatal women were sampled to respond to interviewer-administered questions on their attitudes and perceptions on the quality of free maternity services. The sample size was calculated using the Cochran formula (Israel, 2003):

$$n_0 = \frac{z^2 pq}{e^2}$$

Where,

n_0 = sample size

z^2 = confidence level of 95% (1.96)

p = variability (50%) = 0.5

q = 1-p = 0.5

e = precision at 5% (0.05)

Therefore,

$$\frac{(1.96 \times 1.96)\ (0.5 * 05)}{0.05 * 0.05} = 384$$

Therefore, the required sample size was 384.

3.7 Sampling Method

The sampling frame for the collection of primary data in the cross-sectional survey consisted of all clusters (sub-locations), all sub-clusters (villages) and all households within the study area. Also included in the sampling frame were all pregnant mothers and postnatal women in Gem Sub-County. The multi-stage cluster sampling technique was adopted to select samples with probability proportionate to size (PPS). This sampling technique is recommended for cross-sectional surveys covering a large area, such as a district or sub-county(Bennett, Woods, & Liyanage, 1991). Sampling was conducted at three stages, i.e. cluster, sub-cluster and household. The basic sampling unit was individuals (study participants). The participants were mothers in any gestation of pregnancy and postnatal mothers with infants delivered between June 2013 and May 2015 (two years post-intervention) in Gem Sub-County. These individuals were targeted at the household level. It is recommended that in segmented linear regression analysis (used for analysis of secondary data in this study), there should be at least 48 observations (Lagarde, 2012). This recommendation informs the restriction of this study to the first 24 months pre-

intervention (i.e. 24 monthly observations) and the subsequent 24 months post-intervention (i.e. another 24 monthly observations).

For the purposes of this study, each of the 39 sub-locations constituted a single cluster (Table 3.2).

3.7.1 Selection of Clusters

In consideration of the limited resources available and for purposes of logistical convenience, three (3) clusters were selected. The selection of the clusters followed Bennet's and Wood's (1991) method described below.

a) Get the total population in the study area.

The total population in the study area is 174,756 (GOK, 2013).

b) Divide total population by number of clusters to be selected to get the sampling interval, i.e.

174,756 ÷ 3 = 58,252

c) Choose a random number between 1 and 58,252. Suppose the number chosen is 30,000.

Fit this random number into the list in Table 3.1 to identify the first cluster in the sample. Since 30,000 lies between 28,829 and 32,959, the Asayi cluster is chosen.

d) Add the sampling interval to the initial random number, i.e.

58,252 + 30,000 = 88,252, hence the Kagilo cluster is chosen.

e) Add the sampling interval again to the total obtained in (d) above, i.e.

88,252 + 58,252 = 146,504, hence the Kambare cluster is chosen.

Together, the clusters chosen were Asayi, Kagilo and Kambare sub-locations, Table 3.1.

Table 3.1. Selection of clusters using the probability proportionat to size (PPS) technique

Cluster	Projected 2015 population	Cumulative population size	Remarks
North Gem Ward			
Malanga	7,071	7,071	
Got Regea	4,358	11,429	
Ndere	3,807	15,236	
Nyabeda	2,201	17,437	
Lundha	4,835	22,272	
Maliera	6,556	28,828	
Asayi	4,131	32,959	Selected cluster
Sirembe	4,986	37,945	
West Gem Ward		37,945	
Ulamba	4,377	42,322	
Malunga West	3,179	45,501	
Malunga Central	2,086	47,587	
Malunga East	1,785	49,372	
Wagai West	2,027	51,399	
Wagai East	2,347	53,746	
Uriri	2,526	56,272	
Dienya West	2,597	58,869	
Dienya East	3,242	62,111	
Nguge	1,287	63,398	
Central Gem Ward		63,398	
Gongo	4,283	67,681	
Nyandiwa	5,484	73,165	
Nyawara	3,977	77,142	
Siriwo	4,735	81,877	
Kagilo	7,379	89,256	Selected cluster
Yala Township Ward		89,256	
Anyiko	4,716	93,972	
Sauri	6,174	100,146	
Nyamninia	8,372	108,518	
Jina	5,833	114,351	
East Gem Ward	-	114,351	
Marenyo	8,596	122,947	
Uranga	4,749	127,696	
Lihanda	6,083	133,779	
Ramula	7,416	141,195	
South Gem Ward		141,195	
Rera	3,842	145,037	
Kambare	5,232	150,269	Selected cluster
Ndori	5,922	156,191	
Kanyadet	4,515	160,706	
Kaudha East	4,147	164,853	
Kaudha West	2,470	167,323	
Onyinyore	3,384	170,707	
Gombe	4,049	174,756	
Total	**174,756**		

3.7.2 Selection of Sub-clusters

Every village in each of the three sampled clusters constituted a sub-cluster. The selection of sub-clusters followed the same procedure as described above in the selection of clusters. In each cluster (sub-location), five (5) sub-clusters (villages) were selected. See Figure 3.2 and Annex 8 on sub-clusters selected.

3.7.3 Selection of Households

It is recommended that the number of respondents to be selected in each cluster be constant (Bennett et al., 1991). Therefore, the number of respondents to be selected in each sub-cluster is equal to the sample size as determined in section 3.6 (Sample size determination)divided by the number of five selected sub-clusters (villages). Subsequently, 128 respondents were sampled per cluster. In each sub-cluster, 25-26 respondents were sampled.

The selection of each household to sample postnatal mothers was done according to the procedure for the selection of households described by Bennett and Woods (1991). In order to ensure the random sampling of households, a central starting point was determined in each selected sub-cluster. A pencil/pen was then toasted into the air. On landing to the ground, the direction pointed by its sharp tip was taken. All households in that direction were considered eligible for selection. Starting from the first household, systematic random sampling was used whereby every 5^{th} household was selected. If a household was selected but it did not have eligible study participants, it was skipped and the next household sampled.

Due to the low numbers of pregnant mothers in the study area, all were included in the sample, hence a census.

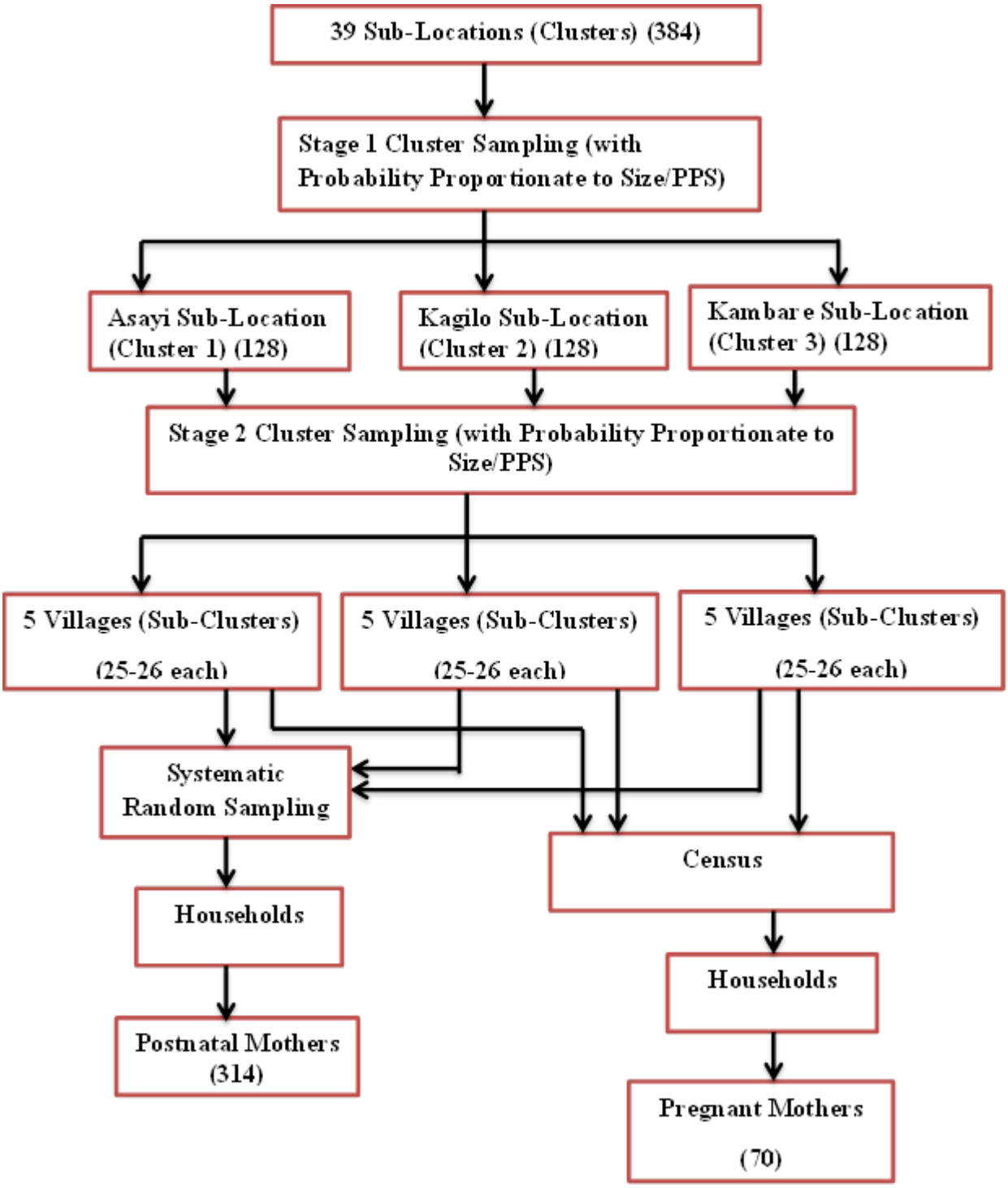

Figure 3. 2. Sampling design for cross-sectional survey

3.7.4 Selection of Key Informants

Purposive sampling was used to select healthcare workers who were interviewed as key informants. Medical superintendents, nursing officers in charge of maternity departments and nursing officers or clinical officers in charge of health centres or dispensaries were selected for key informant interviews. One key informant was targeted in each selected health facility. A fifth of the 28 health facilities were targeted as a representative sample for the selection of key informants, hence six key informants were purposively selected from six health facilities in the study area. All the 28 public health facilities in the study area were ranked in terms of the volume of deliveries recorded for the year 2015. Subsequently, 3 healthcare workers were selected from the top 3 facilities. The remaining 3 healthcare workers were selected from the bottom 3 health facilities. The researcher settled on six facilities on the basis of convenience in conducting the key informant interviews.

3.8 Construction of Research Instruments

An interviewer administered structured questionnaire was constructed based on specific objective 5 and the corresponding research question to be addressed in the study. The questionnaire was translated into Luo language which is the mother tongue of residents in the study area. A key informant interview guide was also constructed based on specific objective 6 and corresponding research question for collection of qualitative data on healthcare workers perspectives on free maternity services. The research questionnaire and key informant interview guide are found in Annex 4 and Annex 6 respectively.

3.8.1 Pretesting of Research Instruments

In order to test the study instruments ability to collect the required information on various variables in the study, the study questionnaire was pretested by interviewing three eligible respondents in Owila Village in Kagilo Sub-Location. The key informant interview guide was

also pretested through two interviews with two key informants at Owila Dispensary and Nyagondo Health Centre. The study instruments were then refined for clarity of both questions and responses.

3.8.2 Validity

Face validity was assured by presenting the data collection instruments for critique by public health experts in the School of Public Health and Community Development, Maseno University. The critique led to minimal changes in phrasing and wording of specific questions and responses. In addition, the construct validity of the study instruments was established during the pretest by examining the raw data in collected in the questionnaires and key informant interviews to detect errors and omissions to ensure accuracy, consistency and uniformity during data analysis.This process also led to minimal changes in the phrasing and wording of specific questions and responses.

3.8.3 Reliability

The raw data collected in the questionnaires during the pretest was entered in sofastats statistical software and Cronbach's alpha test of reliability performed. The test returned a score of $\alpha>0.9$ implying that the internal consistency of the questionnaire was excellent(Sijtsma, 2009) and the study questionnaire was reliable.

3.9 Data Collection

Data on selected maternal and newborn health indicators was obtained by downloading in Ms Excel format from the District Health Information System Software 2 (DHIS2) and from interviews with women to assess their perceptions of the quality of maternity services and attitudes towards the free maternity services. Key informant interviews were used to obtain information from selected healthcare workers and managers on their perspectives about the free

maternity services. On the other hand, key informant interviews were used to obtain information from selected healthcare managers on their perspectives about the free maternity services.

3.9.1Primary Data

Primary data was collected to address study specific objectives 5 and 6 of the study. Study objective 5 sought to assess women's perceptions of the quality of free maternity healthcare services introduced in June 2013. The assessment of women's perceptions was conducted through the use of an interviewer-administered questionnaire, Appendix 5. The study participants were recruited from eligible participants in households in Gem Sub-County. Research assistants in each cluster underwent one-day training on research ethics, interviewing techniques and administration of the questionnaire. The minimum academic qualification of a research assistant was diploma level.

The variables obtained from household respondents were socio-demographic characteristics, the five dimensions of perceptions of quality of maternal care(Haddad et al., 1998) mentioned in section 2.4.5.1 (Dimensions of women's perceptions of quality of maternity services), and previous or intended future utilization of free maternity services, especially skilled delivery; Appendix 5. The pre-and-post intervention comparisons did not apply to these variables on women's perceptions.

Study objective 6 sought to examine the perspectives of healthcare workers on the free maternity services and data was collected through key informant interviews from selected key informants. These perspectives are based on the healthcare worker's experiences with implementation of the free maternity policy. The themes examined in the key informant interviews were perceptions on: workload and compensation; staff morale; uptake of post-abortion care; level of mothers'

satisfaction; availability of commodities, equipment and human resoures; and challenges and suggestions for improvement. A key informant interview guide was used, Appendix 6.

The results of primary data analysis provided the context for understanding the results of secondary data analysis.

3.9.2 Secondary Data

In order to address study specific objectives 1-4, secondary data was obtained by downloading from the Ministry of Health (MOH) 711 (Integrated Reproductive Health, HIV&AIDS, Malaria, Tuberculosis, and Nutrition) dataset available online in the DHIS2 hosted at the Kenya Health Information System website ("Kenya Health Information System," n.d.). The MOH collects health facility data on a routine basis and all data collected by specific MOH monthly summary forms are available on the DHIS2. Data were extracted from the following data subsets in MOH 711: 4^{th} antenatal care visits, safe delivery (which includes data elements on neonatal deaths occurring within 7 days of delivery and facility-based maternal deaths) and post-abortion care services. Monthly data on 4^{th} antenatal care visits, deliveries (i.e. normal deliveries, caesarean sections, breech deliveries, and assisted vaginal deliveries), post-abortion care, maternal and neonatal deaths were downloaded into MS Excel format. The data extraction was restricted to two time periods i.e. June 2011 to May 2013 (two years pre-intervention) and June 2013 to May 2015 (two years post-intervention).

The MOH conducts routine data quality assessments (RDQA) in which DHIS2 data are reviewed and cleaned every quarter by Sub-County Health Records and Information Officers (SCHRIOs). Since the DHIS2 data used dated back to previous quarters, it was assumed that the data was clean. Secondly, no out of the range data was detected by a physical inspection of the downloaded Ms Excel reports.

3.10 Data Analysis

3.10.1 Segmented Linear Regression

Segmented regression is the most popular statistical method for analyzing time series data of healthcare interventions(R. Penfold & Zhang, 2013; Taljaard et al., 2014).This statistical analysis is suitable for longitudinal data collected at regular intervals before and after an intervention occurred. It controls for secular trends and can also adjust for potential serial correlation of time series data (Lagarde, 2012).

In a basic segmented linear regression analysis, the time period is divided into pre- and post-intervention segments, and separate intercepts and slopes are estimated in each segment. Statistical tests of changes in intercepts and slopes pre- to post-intervention are carried out. By making a few simple changes to the data set-up and model specification, segmented regression analysis can easily be implemented in standard statistical software packages. An additional adjustment is usually required to account for serial autocorrelation, which arises because observations taken over time are usually correlated(Taljaard et al., 2014).

The segmented linear regression equation is:

$$Y_t = \beta_0 + \beta_1 * \text{time} + \beta_2 * \text{time} + \beta_3 * \text{postslope} + \epsilon_t \text{ (Lagarde, 2012)}$$

Where Y_t is the outcome variable at time t; time is a continuous variable indicating time from the start of the study up to the end of the period of observation; intervention is coded 0 for pre-intervention time points and 1 for post-intervention time points and postslope is coded 0 up to the last point before the intervention phase and coded sequentially from 1 thereafter.

In this equation, β_0 captures the baseline level of the outcome at time 0 (beginning of the period); β_1 estimates the structural trend or growth rate in utilization, independently from the

intervention; β_2 estimates the immediate impact of the intervention or the change in level in the outcome of interest after the intervention; and β_3 reflects the change in trend, or growth rate in outcome, after the intervention. ϵ_t is the standard error (Lagarde, 2012).

After raw data was entered into the statistical software, it generated statistical output tables with estimates of the rate of change in the outcome at the pre-intervention period, the intercept (breakpoint) and post-intervention period.

By applying the segmented linear regression equation $Y_t = \beta_0 + \beta_1$*time + β_2*time + β_3*postslope + ϵ, the results (outcomes) were calculated at each time-point, i.e. pre-intervention time-points (each month starting from June 2011 to May 2013), intercept (June 2013) and post-intervention time-points (each month starting from June 2013 to May 2015).

3.10.2 Data Analysis on Effect of Free Maternity Services on Selected Indicators

Longitudinal monthly data on 4th ANC visits, facility deliveries, post-abortion care, maternal and neonatal deaths were analyzed in STATA 13.1 by StataCorp LP(StataCorp, 2013) using segmented linear regression analysis as described in section 3.9.1 above. The significance level was set at 0.05.

3.10.3 Data Analysis on Women's Perceptionsof Free Maternity Services

Quantitative data were analyzed in sofastats which is freely available statistical software(Paton-Simpson & Associates Ltd, n.d.). Descriptive statistics of independent and dependent variables were analyzed using frequencies and cross-tabulations whereas inferential statistics to evaluate the relationships between independent and dependent variables were analyzed using Pearson's chi-squared test.

3.10.4 Data Analysis on Perspectives of Healthcare Providers on Free Maternity Services

Qualitative data was manually analyzed thematically so as to identify dominant themes and derive interpretations.

3.11 Logistical and Ethical Considerations

For the purposes of logistical convenience and in consideration of limted resources, the cross-sectional arm of this study was conducted in three clusters within Gem Sub-County.

Ethics permission to conduct the study was obtained from the Maseno University Ethics Review Committee (MUERC), Appendix 7. Other administrative approvals at the field level were obtained from the Siaya County Director of Health, Area Assistant Chiefs and Village Elders recognized by the public administration, Appendix 8.

Informed consent was obtained in writing from study respondents, Appendix 5. Study respondents were informed of the right to decline to participate or withdraw their consent to participate at any stage of the data collection process and assured that there would be no penalties for respondents who declined to participate in the study. The ethical principles of research i.e. autonomy, privacy, confidentiality and risks and benefits were explained study respondents, Appendix 7.

Permission to extract data from the DHIS2 was obtained from the MOH. The data stored in DHIS2 is aggregate and do not have personal identifiers hence did not violate any ethical issues as well.

CHAPTER FOUR

RESULTS

This chapter presents the results for each study objective. The analysis results on the effects of free maternity services on selected maternal and newborn health indicators (covered by study objectives 1-4) is presented in the format described by Lagarde (2012) for presentation of results of analysis on time-series data.

4.1 Effect of Free Maternity Services on4th Antenatal Care Visits

In Table 4.1, the results indicate that at the beginning of the period of observation, there were on average 211.79 4th ANC visits in the sub-county. Immediately after the intervention was introduced in June 2013, 4th ANC visits decreased by 13.3% or 26.499 visits per month (p = 0.398) (Table 4.1). This effect was sustained in the two-year post-intervention period in which 4th ANC visits decreased by 0.6% or 0.585 visits per month (p = 0.839); Table 4.1.

Table 4.1. Results of segmented linear regression on 4th ANC visits

Independent Variables	Estimates	Standard Error	P-Value
Constant, β0	211.787	35.490	<0.001
Time, β1	1.860	2.196	0.397
Intervention, β2	-26.499	31.369	0.398
Postslope, β3	0.586	2.887	0.839

4.2 Effect of Free Maternity Services on Facility Delivery

In Table 4.2, the results indicate that there were on average 232.32 facility deliveries at the beginning of the period of observation. Immediately after the intervention was introduced, facility deliveries increased by 0.4% or 3.82 facility deliveries per month (p = 0.836) (Table 4.2).

However, facility deliveries decreased by 1.6% or 0.765 per month in the two-year post-intervention period (p = 0.616); Table 4.2.

Table 4.2. Results of segmented linear regression on facility deliveries

Independent Variables	Estimates	Standard Error	P-Value
Constant, β0	232.324	18.974	<0.001
Time, β1	2.902	1.209	0.016
Intervention, β2	3.822	18.463	0.836
Postslope, β3	-0.765	1.527	0.616

4.3 Effect of Free Maternity Services on Post-abortion Careuptake

In Table 4.3, there were on average 1.03 women seeking post-abortion care services at the beginning of the observation period. When the intervention was introduced in June 2013, there was an immediate increase of 808% or 10.7 women per month seeking post-abortion care services (p<0.001) (Table 4.3). However, the initial very high increase was not sustained in the two-year post-intervention and there is a decreasing trend, although the uptake of post-abortion care is still significantly higher by 54.4% than in the pre-intervention period (p<0.001); Table 4.3.

Table 4.3. Results of segmented linear regression on post-abortion care uptake

Independent Variables	Estimates	Standard Error	P-Value
Constant, β_0	1.028	3.653	0.778
Time, β_1	0.264	0.197	0.180
Intervention, β_2	10.707	1.772	<0.001
Postslope, β_3	0.966	0.206	<0.001

4.4 Effect of Free Maternity Services on Facility-based Maternal and Neonatal Deaths

4.4.1 Facility-based Maternal Deaths

The results in Table 4.4 indicate that there were on average 0.588 maternal deaths at the beginning of the period of observation. There was an increase of 40.1% or 0.198 maternal deaths per month immediately after the intervention was introduced (p = 0.532) (Table 4.4). In the two-year post-intervention period, maternal deaths increased at a lower rate of 10.1% or 0.03 per month (p = 0.192); Table 4.4.

Table 4.4. Results of segmented linear regression on facility-based maternal deaths

Independent Variables	Estimates	Standard Error	P-Value
Constant, β0	0.588	0.249	0.018
Time, β1	-0.027	0.015	0.069
Intervention, β2	0.198	0.317	0.532
Postslope, β3	0.030	0.023	0.192

4.4.2 Facility-based Neonatal Deaths

In Table 4.5, the results indicate that there were on average 3.45 neonatal deaths at the beginning of the period of observation. Immediately after the intervention was introduced, neonatal deaths decreased by 9.3% or 0.4 neonatal deaths per month (p = 0.849) (Table 4.5). In the two-year post-intervention period, neonatal deaths continued to decrease at a lower rate of 0.1% or 0.086 neonatal deaths per month (p = 0.466)

Table 4.5. Results of segmented linear regression on facility-based neonatal deaths

Independent Variables	Estimates	Standard Error	P-Value
Constant, β0	3.451	0.760	<0.001
Time, β1	-0.089	0.064	0.165
Intervention, β2	-0.401	2.107	0.849
Postslope, β3	-0.086	0.118	0.466

4.5 Women's Perceptions on Quality of Free Maternity Services

A total of 384 were interviewed (response rate of 100%). The mean age of postnatal respondents' was 27.9years. The age range among postnatal respondents was 30years. Among pregnant respondents, the mean age was 26.67years. They had two modal ages i.e. 20years and 21years. Their age range was 28years. In the postnatal and pregnant category, the meanage was 25.14yearswhereas their age range was 20yrs.

Postnatal women who delivered children between June 2013 and May 2015 were 81.8%; those who were pregnant were 12.8% while those both postnatal and pregnant were (5.5%). The rest of the respondents' characteristics are shown in Table 4.6.

Table 4.6. Socio-demographic characteristics

		Number	Frequency %
Area of residence	Central Gem	128	33.4%
	South Gem	128	33.4%
	North West Gem	128	33.45
	Total	384	100.0%
Respondent current status	Postnatal	314	81.8%
	Pregnant	49	12.8%
	Postnatal and pregnant	21	5.5%
	Total	384	100.0%
Current marital status	Married	320	83.3%
	Never married (single)	37	9.6%
	Remarried	11	2.9%
	Separated	9	2.3%
	Divorced	5	1.3%
	Widowed	2	0.5%
	Total	384	100.0%
Religious affiliation	Mainstream protestant	169	44.0%
	Independent African Spiritual Church	155	40.4%
	Catholic	57	14.8%
	No religion	3	0.8%
	Total	384	100.0%
Number of children ever born	Two (2)	91	29.7%
	Three (3)	81	26.5%
	One (1)	56	18.3%
	Four (4)	50	16.3%
	Five or more (≥5)	28	9.2%
	Total	305	100.0%
Level of education	Complete primary	164	42.7%
	Incomplete primary	127	33.1%
	Incomplete secondary	54	14.1%
	Complete secondary	28	7.3%
	Polytechnic/college	6	1.6%
	University	5	1.3%
	Total	384	100.0%
Employment status	Self-employed	220	57.3%
	Unemployed	154	40.1%
	Employed (salaried)	10	2.6%
	Total	**384**	**100.0%**

Two-thirds of postnatal women (with some currently pregnant) (65.7%) delivered in a government health facility such as a dispensary, health centre, sub-county hospital or county

referral hospital. Almost one third (27.7%) of postnatal mothers who had who delivered at government health facilitiespaid charges/fees for maternity services. Most mothers (72.3%) who delivered at government health facilities were fully satisfied with the quality of maternity services received. Among the mothers who were dissatisfied, the majority (74.2%) were dissatisfied because of rude, abusive or cruel treatment or neglect by healthcare workers. See Table 4.7.

Other health-related characteristics and experiences of postnatal mothers are also shown in Table 4.7.

Table 4.7. Postnatal mothers' health-related characteristics and experiences of free maternal health services

		Number	Frequency %
Attended ANC	Yes	328	97.9%
	No	7	2.1%
	Total	335	100.0%
Number of times attended ANC	Four (4)	130	39.6%
	Five or more (≥5)	105	32.0%
	Three (3)	48	14.6%
	Two (2)	26	7.9%
	Don't know	14	4.3%
	One (1)	5	1.5%
	Total	328	100.0%
Complications during pregnancy	No	210	62.7%
	Yes	125	37.3%
	Total	335	100.0%
Exact complication during pregnancy	Severe headaches	57	45.6%
	Swollen legs	40	32.0%
	Bleeding	21	16.8%
	High blood pressure	4	3.2%
	Don't know	3	2.4%
	Total	125	100.0%
Place of delivery	Government health facility	220	65.7%
	Home	47	14.0%
	Private health facility	40	11.9%
	Traditional birth attendant	28	8.4%
	Total	335	100.0%
Expenses at government health facility during delivery	None	153	69.9%
	Less than Kshs 500/-	44	20.1%
	Kshs 500/- to Kshs 1000/-	9	4.1%
	More than Kshs 1500/-	8	3.7%
	Kshs 1000/- to Kshs 1500/-	5	2.3%
	Total	219	100.0%
Information given on charges/fees levied	Yes	38	55.9%
	No	29	42.6%
	Total	67	100.0%
Level of satisfaction with free maternity services during delivery	Fully satisfied	159	72.3%
	Partially satisfied	41	18.6%
	Dissatisfied	19	8.6%
	Neither satisfied nor dissatisfied	1	0.5%
	Total	220	100.0%
Reasons for dissatisfaction	Rude, abusive or cruel treatment or neglect by healthcare workers	42	72.4%
	Charges/fees levied	8	13.8%
	Congestion of maternity patients in the facility	3	5.2%
	Lack of hot water for shower	2	3.4%
	Unclean environment for delivery or post-delivery care	2	3.4%
	Poor quality meals provided the facility	1	1.7%
	Total	58	100.0%

Almost a half of women (47.8%) who were pregnant were in their third pregnant trimester and about a third (29.9%) was in their second trimester. More than a half of pregnant women (61.2%) had started attending the ANC clinic; with a majority (87.5%) being in the third trimester. See Table 4.8.

Table 4.8. Gestational age of current pregnancy and ANC attendance

Gestational age of current pregnancy	**ANC attendance during current pregnancy**					
	Yes		No		Total	
	Number	Frequency %	Number	Frequency %	Number	Frequency %
Third trimester	28	87.5%	4	12.5%	32	100.0%
Second trimester	11	55.0%	9	45.0%	20	100.0%
First trimester	1	10.0%	9	90.0%	10	100.0%
Don't know	1	20.0%	4	80.0%	5	100.0%
Total	41	61.2%	26	38.8%	67	100.0%

Two-thirds of pregnant mothers (62.9%) intended to deliver at a government health facility. See Table 4.9.

Table 4.9. Place of delivery and intended place of delivery

		Number	Frequency %
Place of delivery (postnatal)	Government health facility	220	65.7%
	Home	47	14.0%
	Private health facility	40	11.9%
	Traditional birth attendant (TBA)	28	8.4%
	Total	335	100.0%
Intended place of delivery (pregnant)	Government health facility	44	62.9%
	Private health facility	16	22.9%
	Not yet decided	9	12.9%
	Traditional birth attendant (TBA)	1	1.4%
	Total	70	100.0%

Distance to health facility was the most commonly cited reason for either delivering at home (48%) or at a private health facility (47.5%). In contrast, slightly over half (56.3%) of pregnant women cited poor quality of free maternity services as the main barrier. This attitude among pregnant women might be due to frequent healthcare worker strikes, hence lack of services at government health facility. Alternatively, it could be a pointer to perceived deterioration of the quality of free maternity services over time, Table 4.10.

Among women delivering at a private health facility, 22.5% cited poor quality of free maternity services, 20% cited lack of services due to healthcare worker strikes and 10% cited negative attitudes of healthcare workers. See Table 4.10.

Table 4.10. Reasons for not utilizing government health facility for delivery

		Number	Frequency %
Reasons for delivering at home	Distance to facility too far	36	48.0%
	Lack of transport	25	33.3%
	Received TBA services	7	9.3%
	Negative healthcare worker attitudes	4	5.3%
	Poor quality health facility services	3	4.0%
	Total	75	100.0%
Reasons for delivery at private health facility	Distance to government health facility too far	19	47.5%
	Poor quality of services at government health facility	9	22.5%
	Lack of services at government health facility due to industrial strikes	8	20.0%
	Negative healthcare worker attitudes	4	10.0%
	Total	40	100.0%
Reasons for not intending to deliver at a government health facility	Poor quality of services at government health facility	9	56.3%
	Distance to government health facility too far	2	12.5%
	Lack of transport	2	12.5%
	Negative healthcare worker attitudes	2	12.5%
	Received/receiving TBA services	1	6.3%
	Total	16	100.0%

4.6 Perspectives of Healthcare Workers on Free Maternal Healthcare Services

A representatve sample of in-charges of one-fifth (21%) of government health facilities were targeted for key informant interviews. The in-charges were selected by ranking health facilities based on the volume of deliveries attendedin 2015. The top three and the bottom three facilities were selected. The top three facilities were identified as Yala Sub-County Hospital, Malanga

Health Centre and Akala Health Centre whereas the bottom three were identified as Gongo Dispensary, Uriri Dispensaryand Kambare Dispensary. The in-charge of Kambare Dispensary did not give consent and no interview was conducted.

4.6.1 Perspectives on Utilization of Facility Delivery

In Malangaand Gongo health centres, facility deliveries remained constant at 38-40 and about five (5) per month respectively even after the introduction of free maternity services. The Gongo facility in-charge explained that three factors made the facility inaccessible: it is not centrally located, the terrain is rugged and the access roads and paths leading to the facility are stony, making it difficult to access especially by motorcycle taxi (*boda boda*) which is the commonest means of transport in the area. However, she still believed that most deliveries occur in other more accessible facilities rather than at home. In Malanga, the reason was quite different. The in-charge believes that the rate of deliveries remained constant since it was already a high volume facility even before the introduction of free maternity services.

> *'Our health facility is not centrally located and the conditions of the roads are so bad, mostly stony, hence hindering accessibility, even by boda boda*' Facility In-Charge 1

In both Uriri dispensary and Akala health centre, the in-charges believed that facility deliveries had greatly increased. There were previously no deliveries at Uriri dispensary but currently it conducts an average of six deliveries monthly. There was sixfold increase in facility deliveries from 10-15 monthly to about 60 monthly at Akala health centre.

4.6.2 Perspectives on Post-abortion Care

The in-charges of Gongo, Akala and Malanga health facilities believed that the rate of uptake of post-abortion care services remained constant. Gongo serves only about three cases annually

because ‘abortion cases are too few in the community’ whereas Akala serves 3-5 women per month. The in-charge Malanga believes the rate remained constant since the area is rural and most women do not terminate their pregnancies unlike in urban areas where ‘the practice is more common’. There have been no women coming for post-abortion care services at Uriri dispensary although the in-charge believes that young girls in the catchment community do procure abortions but are afraid to come for post-abortion care services at the facility.

> *‘The uptake of post-abortion care has remained constant. I think young girls, especially those who are school-going are having abortions, but because they are afraid, they never come to the facility’Facility In-Charge 2*

4.6.3 Perspectives on Staff Morale

The free maternity servicespolicy has improved staff morale at both Akala health centre and Uriri dispensary but the reasons are divergent. Akala is a high volume facility which currently conducts an average of 60 deliveries per month, up from 10-15 before launch of the free maternity services, hence a substantial amount of free maternity funds being reimbursed. According to the in-charge, these funds are used to supplement what the government has not provided for the free maternity services and healthcare workers are happy that they have adequate maternity equipment and supplies. However, in Uriri dispensary, staff morale is said to have increased due to the utilization of maternity services, hence affording healthcare workers the opportunity to practice childbirth skills which they feel would be gradually lost if there were not conducting any deliveries.

In Malanga health centre, staff morale decreased, not because of increased workload because the volume of deliveries remained unchanged, but because of frustrations with delays in receiving free maternity reimbursements and thereby being unable to procure maternity commodities like cotton wool, gauze and drugs and being forced to request mothers to buy.

In Gongo, the free maternity services had no impact on staff morale since the number of facility deliveries is low (five per month) and hence no increase on staff workload that might have impacted on morale.

> *'Staff morale has really gone down because of frustrations. There are delays in receiving free maternity refunds and essential commodities are not available, hence we have to askmothers to buy yet they come knowing that the services are free'*Facility In-Charge 3

4.6.4 Perspectives on Clients' (women's) Satisfaction

Healthcare workers generally believe that mothers are highly satisfied with free maternity services offered in their facilities except Malanga health centre where mothers are not wholly satisfied because they are made to buy commodities and drugs due to long delays in reimbursement of free maternity funds. In Gongo, Uriri and Akala, the in-charges believe that mothers are highly satisfied because 'they receive the best quality services' or are 'attended to well', mothers provide feedback during individual interactions with healthcare workers, there have been no complaints lodged by mothers about maternity services, there have been increased referrals for facility delivery and maternity commodities are always available.

> *'Mothers are satisfied with our services they receive the best quality services and are attended to well. They do give us positive feedback'*Maternal and Child Health (MCH) In-Charge 4

4.6.5 Perspectives on Availability of Resources for Free Maternal Healthcare Services

Gongo, Uriri and Akala health centres reported that commodities for maternity care are usually available and are rarely stocked out. Maternity equipment is also available. However, this was not the case at Malanga health centre, a high volume facility which often experienced stock-outs of maternity care commodities especially due to delayed reimbursements of maternity funds. However, all the in-charges at the four (4) facilities felt that staff were inadequate and could therefore not cope well with the demands of the free maternity services.

> *'We always have stock-outs of essential commodities and this has a negative impact on the quality of maternity services that our facility provides'*Facility In-Charge 5

4.6.6 Suggestions for Improvement of Free Maternal Healthcare Services

Healthcare workers were all in agreement that the efficiency of disbursement of free maternity reimbursements needs to be improved. It was noted that there have been delays ranging from six to 18 months. They also recommended that the amount of free maternity reimbursements should be commensurate with the actual number of deliveries conducted, at present, this is not case. A trend had been noted that amount of reimbursements were consistently less than number of deliveries conducted.

In order to ensure that 24hr maternity services are available, there is need to boost staffing levels to cope with the demands of free maternity services. The amount of reimbursement per delivery needs to be increased to ensure that there are enough funds to motivate mothers to come for facility deliveries. Such motivation would include maternity gifts such as newborn baby clothes, bath basins, etc. The initial reimbursement should be flat rate amount rather than being pegged on the number of deliveries conducted. This will ensure that there are enough startup funds to plan for implementation of the free maternity services. Communities should also be sensitized on the free maternity services to encourage access and utilization.

> *'We have not received free maternity refunds for the last 18 months, yet we always submit our returns promptly*'Facility In-Charge 2

CHAPTER FIVE

DISCUSSION

5.1 Effect of Free Maternity Services on Uptake of 4th ANC Visits

This study found that although 4th ANC visits decreased by 13.3% immediately after the introduction of free maternity services and thereafter by 0.6% in the two-year post-intervention period, this was insignificant. The immediate decrease in 4th ANC visits observed might be due pregnant women feeling less pressure to complete antenatal care because of self-asurance that they would not be turned away by healthcare workers during delivery since the government had made the services free and 'mandatory'. This finding is consistent with those of a study in South Africa which reported a sustained insignificant decline in total antenatal care visits after user fee removal(Wilkinson, Gouws, Sach, & Karim, 2001), but in contrast to those of a study in Afghanistan which found that there was a sustained significant decrease in ANC visits following user fee removal(Steinhardt et al., 2011).

A likely explanation for the decrease is that rapid implementation may have led to inadequate stakeholder engagement and confusion about the free maternity policy(Tama, Molynuex, Waweru, Tsofa, & Chuma, 2017). While the free maternity policy was meant to cover antenatal care visits, deliveries, and post-delivery care, it was observed that in practice the policy only covered deliveries (Tama et al., 2017). This might explain why the intervention did not have a significant influence on 4th ANC visits due to poor public engagement by policy makers and implementers. In addition, most women generally begin their first ANC visit late in the second or third trimester, making it impossible to complete the recommended four visits before childbirth (Pell et al., 2013).

5.2 Effect of Free Maternity Services on Uptake of Facility Delivery

This study found that facility deliveries decreased by 1.6% in the post-intervention period. Similar observations have been reported in other studies in which the uptake of facility deliveries either remained the same or declined after free maternity policies were introduced. For example, a study in Machakos County reported that there was no increase in facility deliveries in a seven months post-intervention period (Tomedi, Stroud, Maya, Plaman, & Mwanthi, 2015). Other studies conducted in Ghana reported that there was no difference in the utilization of skilled delivery between intervention and control groups in two districts (Bosu et al., 2007)and normal facility deliveries decreased by 2.5% following the fee exemption policy in the country (Asante et al., 2007). In contrast, other studies have reported increases in facility deliveries following the introduction of free maternal healthcare services, with the magnitude of change ranging from 2%-29% depending on the region (Gitobu, Gichangi, & Mwanda, 2017; Ir et al., 2010; Perkins et al., 2009; Rob et al., 2010; Witter et al., 2013, 2011).

Challenges affecting the implementation of the free maternity services policy e.g. inadequate staffing were identified in one referral hospital in another county(Wamalwa, 2015). In this study, the majority of health facilities studied were dispensaries which are mostly manned by one or two nurses who work full day throughout weekdays i.e. Monday to Friday. Since these dispensaries remain closed at night, it implies that deliveries that occur at night would rarely be attended to at the dispensary. This is also true of deliveries that occur on weekends. In addition, due to the high levels of social interactions in the study site, women who attend health facilities for delivery but encounter perceived negative experiences also quickly pass word to other women around the community and this can be a disincentive to utilize skilled delivery. These

behavioural factors might explain why facility deliveries declined in the two-year post-intervention period.

5.3 Effect of Free Maternity Services on Uptake of Post-abortion Care

In 2012, about half of all pregnancies in Kenya were unintended and an estimated 462,000 (41%) of these ended in abortion, translating into an abortion rate of 48 per 1,000 women aged 15–49, and an abortion ratio of 30 per 100 live births, (Mohamed et al., 2015) which is high. This study found an increase of 808% in the first month following the intervention. Although there is a declining trend in the two-year post-intervention period, the uptake of post-abortion care increased significantly by a margin of 54.4%.

It is important to note that the average cost of a typical treatment for unsafe abortion complication stands at Kenya Shillings 4,943 or 58 US dollars (US$) with a range from Kenya Shillings 3,264 (US$39) for mild complications and Kenya Shillings 4,362 (US$52) for moderate complications to Kenya Shillings 9,133 (US$108) for severe complications. (Mohamed et al., 2015) In a country in which 46% of the population lives below the poverty line (UNICEF, n.d.), this cost is undoubtedly high. The increase in uptake of post-abortion care can therefore be attributed to the elimination of financial barriers by the free maternity services, making it more accessible to women with unintended pregnancies. Furthermore, the inclusion of misoprostol (the drug of choice in post-abortion care) in the essential medicines list that are routinely supplied to all public health facilities by the Kenya Medical Supplies Agency also contributed to increased availability of post-abortion care services.

5.4 Effect of Free Maternity Services on Occurrence of Facility-based Maternal and Neonatal Deaths

Our study found a non-significant increase of 10.1% in facility-based maternal deaths in the two-year post-intervention period. This finding is a pointer to the quality of childbirth care being provided. Indeed, a confidential inquiry by the Ministry of Health found that 9 out of 10 maternal deaths were due to sub-standard quality of medical care (Ministry of Health Kenya, 2017). Since the free maternity policy was implemented rapidly (Tama et al., 2017), the skills and competencies of health care workers were not upgraded prior to the intervention; hence majority of them would be less competent in handling life-threatening childbirth complications that can result in maternal deaths. Similarly, if the requisite medical supplies, equipment, and facilities for managing childbirth complications were inadequate or non-existent in the study site, as has been reported in one county referral hospital outside the study area (Wamalwa, 2015), the risk of maternal deaths would be high. Among the health facilities studied, there was only one comprehensive emergency obstetric and newborn care facility and coupled with a poor referral network, there would be an increased risk of maternal deaths in the event of obstetric emergencies.

The increase in maternal deaths in the study site is inconsistent with findings from other 14 Kenyan counties, Mali and Ghana, where facility-based maternal deaths decreased, though not significantly, after the introduction of the free delivery policy (Bosu et al., 2007; El-Khoury et al., 2012; Gitobu et al., 2017). There was a decline of 10%-34% in maternal deaths in the Central and Volta regions of Ghana (Bosu et al., 2007).

Despite gains in child health in Kenya especially due to a new era of policymaking with a strong focus on children under five and a specific interest by donors on this group in the past 15yrs

(Keats et al., 2017, 2018), facility-based neonatal deaths marginally decreased by 0.1% in the two-year post-intervention period. This study speculates that there was no improvement in the quality of newborn care in the post-intervention period due to factors such as acute shortage of health care workers, under-resourced government health facilities and inadequate training of healthcare workers on life-saving skills such as newborn resuscitation. This finding is consistent with those of another study which also observed a non-significant decline in neonatal deaths in other 14 Kenyan counties (Gitobu et al., 2017). Farther in West Africa and South America, declines in neonatal deaths were reported in Mali and Ecuador following the introduction of free maternal healthcare services (Chiriboga, 2009; El-Khoury et al., 2012).

This study has found mixed results on the success or failure of the free maternity policy on increasing utilization of specific maternal health care services and reducing facility-based maternal and neonatal deaths. These findings are consistent with the observation that interventions aimed at improving the health of communities do not always result into the desired changes (Friis & Sellers, 2014).

5.5 Women's Perceptionsof the Free Maternity Services Programme

5.5.1 Uptake of Facility Delivery

In its first two years of its implementation, two-thirds (65.7%) of mothers in Gem Sub-County utilized free maternity services. This observation is similar to other observations during the same period when facility deliveries increased from 44% in 2008 to 61%, 64.8% and 69.6% in Kenya, Nyanza region and Siaya County respectively (Kenya National Bureau of Statistics (KNBS), 2014). Similarly, two-thirds (62.9%) of women who were pregnant in the study area also intended to utilize free maternity services for childbirth.

Distance to government health facility was the most commonly cited reason for either delivering at home (48%) or at a private health facility (47.5%). The reason cited for delivering at home was long distance. The same reason was cited in Kilifi County(Moindi, Ngari, Nyambati, & Mbakaya, 2016). In contrast, slightly over half (56.3%) of pregnant women cited poor quality of free maternity services as the main barrier. This attitude among pregnant women might be due to frequent healthcare worker strikes, hence lack of services at government health facility. Alternatively, it could be a pointer to perceived deterioration of the quality of free maternity services over time. The proportions citing negative healthcare attitudes are almost similar among women who delivered at private health facility (10%) and pregnant women not intending to deliver at a government health facility (12.5%). The proportion of pregnant women who do not intend to deliver a government health facility is two times higher than reported in an Ethiopian study (25.7%) (Bayu, Adefris, Amano, & Abuhay, 2015).

More women who delivered at private health facility than those who delivered at home cited poor quality of free maternity services (22.5% vs 4%) and negative healthcare worker attitudes (10% vs 5.3%). This perception might be linked to the ability to pay for private healthcare services. However, despite maternity services being officially free at government health facilities, almost one third (29.1%) of mothers were charged fees ranging from Kshs ≤500/= to Kshs >1,500/= during the two years post-intervention in Gem Sub-County. About half (55.9%) of these mothers were informed about what expenses they were paying for, which included commodities and drugs for maternity care (47%), 'professional fees' for the healthcare worker (26.3%) and incentives for the healthcare worker (23.7%). In Tanzania, 73.3% of mothers made of out of pocket payments for free delivery services, including transport costs to health facility which this current study did not consider(Kruk et al., 2008). Similar to this study, 26.6% of the

Tanzanian women paid for healthcare provider fees (Kruk et al., 2008). The average cost paid for free delivery services by the Tanzanian women was USD 5 (currently equivalent to Kshs 500/=) (Kruk et al., 2008).

The majority of mothers (72.3%) who delivered at government health facilities were fully satisfied with the quality of free maternity services. In contrast, another study found fewer mothers (54%) were satisfied with free maternity services (Gitobu, Gichangi, & Mwanda, 2018). In this study, dissatisfied mothers complained of rude, abusive or cruel treatment or neglect by healthcare providers (74.2%), charges or fees being levied for maternity services which were officially free (12.9%), congestion of mothers at health facility (4.8%), lack of hot water for bath or lack of bath water altogether (3.2%) and unclean environment for delivery or post-delivery care (1.6%). These reasons are similar to those reported in other studies (Gitobu et al., 2018).

5.6 Perspectives of Healthcare Workers on Free Maternity Services

5.6.1 Healthcare Worker Perceptions of Workload and Compensation

This study found that healthcare workers had mixed perceptions on the uptake of skilled deliveries after the launch of free maternity services. Increased facility deliveries imply increased workload. Whereas skilled deliveries were perceived to have increased in both low and high volume facilities, there was also an exact opposite perception in both types of facilities, and this was attributed to barriers such as rugged geographical terrain, peripheral rather central location of health facilities and poor conditions of access roads. Being a high volume facility was also perceived as a factor responsible for non-increase in skilled deliveries. However, this perception is likely to be a defensive mechanism and perhaps associated with guilt that the free maternity servicespolicy has not improved access to skilled deliveries as intended in a particular health facility. In Vihiga, Kilifi and Kajiado counties, free maternal healthcare service provision was

perceived to boost skilled care utilisation during pregnancy and delivery, leading to an increased workload amidst staff shortages(Tama et al., 2017).

In contrast to the mixed healthcare perceptions on workload identified in this study, 76% of healthcare workers in Enugu State, South East Nigeria claimed that their workload had greatly increased because of free maternal and child health services introduced in the state, however, this was without a commensurate financial compensation (Uzochukwu et al., 2015). Similarly, Kenyan healthcare workers have also complained of overwhelming workload (89%) and lack of motivation (62%) (Wamalwa, 2015). Mothers might have unpleasant experiences at the hands of such disgruntled healthcare workers, since a perception of such burden without any benefits would lower staff morale.

5.6.2 Perceptions of Uptake of Post-abortion Care

Healthcare workers perceived that removal of user fees did not increase uptake of post-abortion care services. This would be believable for low volume facilities like dispensaries situated in villages but not high volume facilities situated in built up settlements and small towns due to the relatively smaller catchment populations of dispensaries. The perception of non-increase in uptake of post-abortion care in high volume facilities might be due to the emotive nature of abortion and perhaps point to a sense denial since data showed that uptake had greatly increased in all top three high volume facilities sampled but not the bottom three low volume facilities.

> *'The uptake of post-abortion care has remained constant. I think young girls, especially those who are school-going are having abortions, but because they are afraid, they never come to the facility'* Facility In-Charge

5.6.3 Perceptions of Effect on Staff Morale

This study found that there was perceived increase in staff morale due to satisfaction with increased availability of medical supplies and equipment for maternity care and opportunities to practice childbirth skills which would otherwise fade off if no mothers were coming to deliver at the facility, especially the low volume dispensaries. However, healthcare workers reporting stock-outs of medical supplies for maternity care had low morale since it is a contradiction and demoralizing to keep requesting mothers to buy these; yet maternity services are officially free. In Uganda, 66.7% of healthcare workers felt that they had a more negative attitude towards their work after the cost-sharing policy was discontinued, especially due to loss of personal benefits from the cost-sharing funds (Burnham, Pariyo, Galiwango, & Wabwire-Mangen, 2004). When user fees were removed in South Africa in 1996, nurses working in urban primary health care centres felt that financial and human resources were not insufficiently incorporated into the policy implementation process, implying that although their workload increased. human resources were not increased, which led to feelings of bitterness (Walker & Gilson, 2004).

> *'Staff morale has really gone down because of frustrations. There are delays in receiving free maternity refunds and essential commodities are not available, hence we have to ask mothers to buy yet they come knowing that the services are free'* Facility In-Charge

5.6.4 Perceptions of Clients' (Women's) Satisfaction

Perceived dissatisfaction of mothers with maternity services was associated with reported inadequate or stock-outs of commodities for maternity care due to erratic or long delays in reimbursements of free maternity funds. However, the majority of healthcare workers believed that mothers receiving free maternity services were highly satisfied. This belief may be motivated by the fact that admission of dissatisfaction would amount to self-indictment. The absence of complaints by dissatisfied mothers as cited by healthcare workers might also be an

unreliable indicator for mothers' satisfaction, especially if a complaints handling mechanism, such as a suggestion box is not availed and considering that the majority of mothers possess only basic education and may therefore be ignorant about their rights as patients. Indeed the suggestion box is a very rare phenomenon in Kenyan tier two health facilities i.e. dispensaries and health centres.

> *'Mothers are satisfied with our services they receive the best quality services and are attended to well. They do give us positive feedback'* Maternal and Child Health (MCH) In-Charge

5.6.5 Availability of Medical Commodities, Equipment & Human Resources for Maternity Care

Healthcare workers were unanimous that human resources (healthcare workers) were not commensurate for the demands of the free maternity services. However, three key informants (out of five) believed that medical commodities and equipment for maternity care was more often available. In Uganda, 23.6% of healthcare workers felt that drug supply had improved, 37% also felt that there was lack of supplementary funds to buy essential drugs or supplement support/subordinate staff (Burnham et al., 2004).

5.6.6 Challenges and Suggestions for Improvement of Free Maternity Services

It is clear that the reimbursement of free maternity funds did not work well. Long delays ranging from six months to one-and-a-half years and consistently incommensurate amount of refunds were repeatedly cited by all healthcare workers. It has also been similarly reported that free maternity refunds were not disbursed in time in Kilifi, Kajiado and Vihiga counties (Tama et al., 2017). Notably, an improvement in the reimbursement mechanism was recommended by all healthcare workers. Recruitment of adequate staff was also recommended by all key informants.

These findings resonate with the major implementation challenges identified by other studies (Wamalwa, 2015) as staff shortage (92%), overwhelming workload (89%), inadequate supplies (86%), lack of motivation among health workers (62%) and inadequate funding (38%). Despite being a highly publicized national government agenda, healthcare workers still felt a need for community sensitization on the free maternity services. This may be a pointer to a probable disconnect between the healthcare workers and the community as envisaged in Kenya's community health strategy. If indeed such linkages were strong, such a recommendation would not arise. In Malindi Sub-County, healthcare workers cited challenges including; delays in the reimbursement of funds by the government to the facilities, stock outs of essential commodities in the facilities to facilitate service provision, increased workload amidst staff shortage and lack of consultation and sensitisation of key stakeholders were perceived as barriers to effective implementation of this policy (Lang'at & Mwanri, 2015).

> *'We have not received free maternity refunds for the last 18 months, yet we always submit our returns promptly'* Facility In-Charge

5.7 Limitations of Study

A number of limitations that might affect the validity of the findings of this study have been identified. Secondary data on the uptake of free maternity services was abstracted from the DHIS2 (a web-based national healthcare information system). Kenya adopted the use of the DHIS2 in 2010 and by the September 2011, the system was in use countrywide. Data on paper-based reports generated from every health facility in the country is uploaded by authorized personnel onto the DHIS2 on a monthly basis. It is probable that human errors may occur during data capture or data entry and thus render inaccurate the data entered into the DHIS2. It is also probable that some health facilities may not consistently prepare the monthly paper-based reports for uploading into the DHIS2. Consequently, the data in the DHIS2 may not be wholly complete

or accurate. The free maternity services policy was simultaneously implemented in all counties and sub-counties in Kenya. This made it impossible to have a control group for comparison. In addition, the interrupted time series study design cannot account for the possibility that some other factor occurred at the same time as the intervention, for example, there was countrywide nurses' strike lasting two weeks December 2013.Although there was a 100% response rate, the cross-sectional survey study design is also prone to non-response bias if participants who consent to take part in the study differ from those who do not, resulting in a sample that is not representative of the population. In the interpretation of statistical analysis, only an association, and not causation, can be inferred from a cross sectional study.

With regard to the quality of primary data to be collected from key informants and at households, study respondents provided self-reported data, which may be difficult to independently verify. The self-reported data might be inaccurate if the respondents deliberately choose to be dishonest in their responses. Due to interviewer bias, study participants might also misunderstand some questions and respond inappropriately or be influenced by the interviewers to respond in a particular way. The study questionnaire will be pretested to identify areas of potential interviewer bias and make the necessary adjustments. All study interviewers (research assistants) will also be trained prior to commencement of data collection.

CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSIONS & RECOMMENDATIONS

This chapter presents the conclusions and recommendations drawn from the findings of this study.

6.1 Summary of Findings

The key findings of this study were:

1) The free maternity policy did not have a significant effect on uptake of 4th antenatal care visits.
2) The free maternity policy did not have a significant effect on uptake of facility deliveries.
3) The free maternity policy had a significant effect on uptake of uptake of post-abortion care.
4) The free maternity policy did not have a significant effect on occurrence of facility-based maternal and newborn deaths.
5) About one-third of postnatal mothers were not satisfied with free maternal healthcare services whereas 37% of pregnant women did not intend to deliver in a government health facility.
6) Healthcare workers cited long delays in receiving free maternity refunds, leading to compromised quality of care.

6.2 Conclusions

This study draws the following conclusions:

1) The free maternity services policy did not increase 4th antenatal care visits. A majority of Kenyan women begin their first antenatal care visits in the second and third trimester and this makes it impossible to complete at least four focused antenatal visits before delivery.
2) The intervention did not increase facility deliveries as desired. This implies that were specific challenges affecting service utilization that needed to have been identified and addressed by policymakers and implementers, but this was not done.
3) The intervention significantly increased the uptake of post-abortion care. Since unsafe abortions increase the risk of maternal deaths, the increased access to post-abortion care services would contribute to a reduction in maternal deaths over time. The inclusion of post-abortion care services in the free maternity services was therefore a well thought out idea.
4) The intervention did not reduce the occurrence of facility-based maternal and neonatal deaths. Healthcare workers require medicines, equipment, knowledge and technical skills to manage maternal and neonatal complications that might arise during childbirth or within hours and days of childbirth. For serious complications, referral facilities (e.g. equipped ambulances) should be readily available.This study concludes that lack of proper skills and knowledge among healthcare workers and an unreliable referral system led to the non-reduction in facility-based maternal and neonatal deaths.
5) Two-thirds of women utilized free maternity services within the first two years of its implementation. A similar proportion of women who were pregnant also intended to utilize free maternity services at the time of childbirth. These suboptimal rates of

previous or intended future utilization of free maternity services for childbirth point to the fact that it did not eliminate all barriers to facility delivery, such as women's negative attitudes and dissatisfaction with quality of services and perceived long distances to health facility.

6) From the perspectives of healthcare workers, it is apparent that free maternity services were introduced without due regard to appropriate levels of staffing requirements in government health facilities, hence the persistent feeling that workloads have increased, especiallyin high volume facilities. It is important to note that overworked healthcare workers would definitely have low morale and negative attitudes which in turn would undermine the quality of free maternity services. This study concludes that the implications of human resources for health were not considered before the start of implementation of the free maternity services policy. The financing mechanism i.e. reimbursements to health facilities on a quarterly basis based on the volume of deliveries conducted also failed and contributed to one-third of pregnant women being charged for maternity services that were officially free.

6. 3 Recommendations From current Study

This study therefore recommends as follows:

1) There should be interventions targeting behavior change to influence women to begin their first antenatal care visits within the first trimester as recommended by the World Health Organization. Starting on time will allow adequate time to complete at least four visits as recommended.

2) Supply side (facility) challenges affecting utilization of facility delivery should be identified and addressed by the Siaya County Department of Health and the respective managers of individual health facilities.
3) The most significant positive effect of the free maternity servicespolicy was on the uptake of post-abortion care. Although post-abortion care is emotive in nature, it should be retained in the free maternity services package due to its contribution to lowering the risk of maternal deaths.
4) Healthcare workers should receive regular training on life-savings skills such as emergency obstetric and newborn care to enhance their competencies in handling life-threatening maternal and neonatal complications. The necessary medical equipment for handling maternal and newborn complications should also be provided and maintained in good working conditions. A reliable referral system should also be established (if not yet in existence) and maintained to facilitate referrals of serious complications.
5) The reasons for women's dissatisfaction identified by this study should be addressed by the Siaya County Department of Health and the respective managers of individual health facilities.
6) Human resources for health need to be strengthened to ensure that adequate numbers of healthcare workers are available to cope with increased demand for free maternity services. The financing mechanism also needs to be reviewed and inherent challenges addressed to ensure that the free maternity policy is adequately financed without anyfunding pipeline breakdowns.

6. 4 Recommendations for Future Studies

This study recommends the following areas for future studies:

1) Future studies with the same research objectives should focus on the whole of Siaya County.
2) Challenges affecting effective implementation of the free maternity policy in Gem Sub-County.

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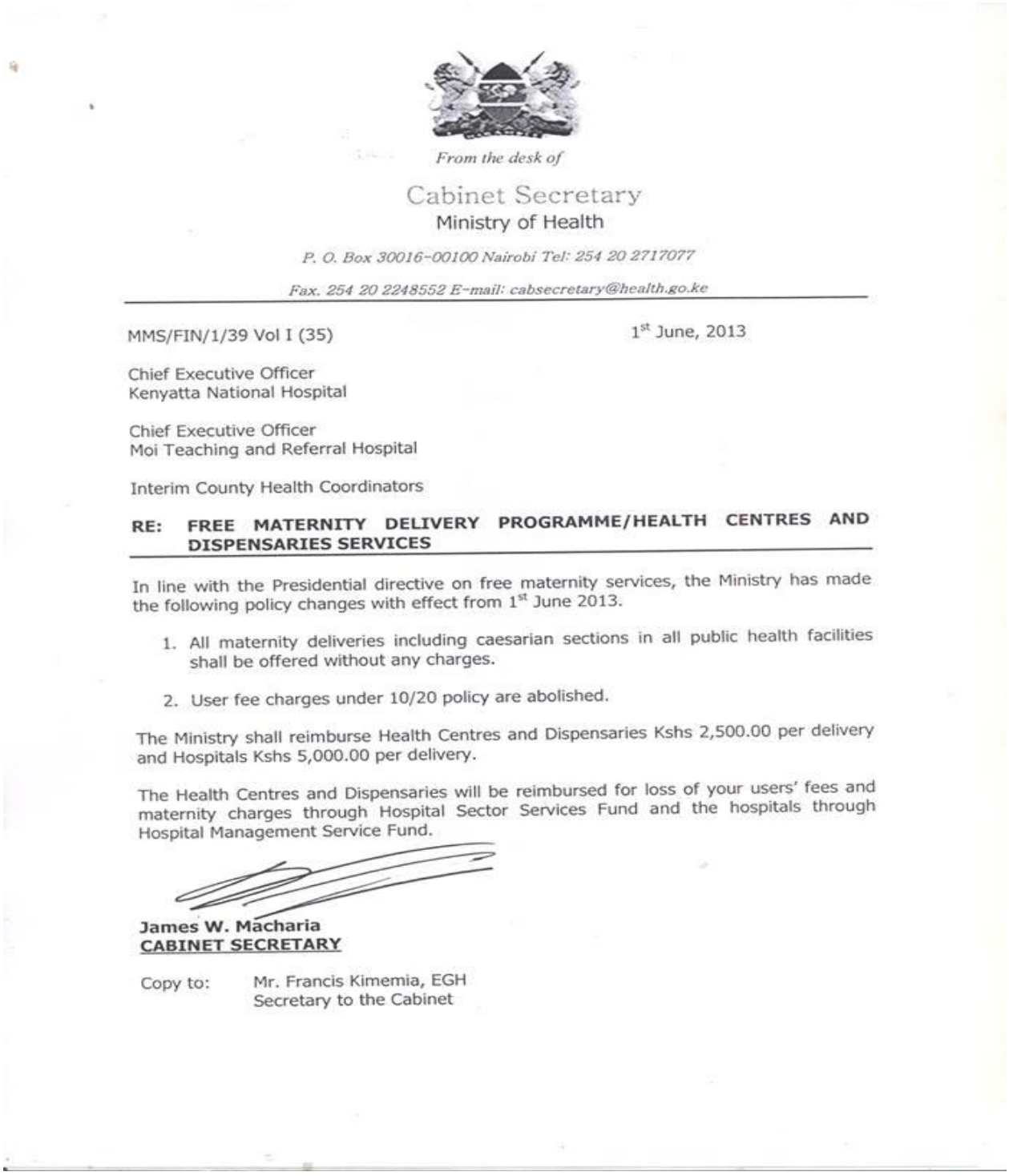
APPENDICES

APPENDIX 1: Cabinet secretary memo on free maternalhealth policy



From the desk of

Cabinet Secretary
Ministry of Health

P. O. Box 30016-00100 Nairobi Tel: 254 20 2717077

Fax. 254 20 2248552 E-mail: cabsecretary@health.go.ke

MMS/FIN/1/39 Vol I (35) 1st June, 2013

Chief Executive Officer
Kenyatta National Hospital

Chief Executive Officer
Moi Teaching and Referral Hospital

Interim County Health Coordinators

RE: FREE MATERNITY DELIVERY PROGRAMME/HEALTH CENTRES AND DISPENSARIES SERVICES

In line with the Presidential directive on free maternity services, the Ministry has made the following policy changes with effect from 1st June 2013.

1. All maternity deliveries including caesarian sections in all public health facilities shall be offered without any charges.
2. User fee charges under 10/20 policy are abolished.

The Ministry shall reimburse Health Centres and Dispensaries Kshs 2,500.00 per delivery and Hospitals Kshs 5,000.00 per delivery.

The Health Centres and Dispensaries will be reimbursed for loss of your users' fees and maternity charges through Hospital Sector Services Fund and the hospitals through Hospital Management Service Fund.

James W. Macharia
CABINET SECRETARY

Copy to: Mr. Francis Kimemia, EGH
Secretary to the Cabinet

APPENDIX 2: Director of Medical Services memo on free maternal healthpolicy guidelines

OFFICE OF THE DIRECTORS OF MEDICAL SERVICES AND PUBLIC HEALTH AND SANITATION

Telegrams: "MINIHEALTH"
Nairobi
Telephone Nairobi 0202717077
Email: psph@health.go.ke
When replying please quote

AFYA HOUSE
CATHEDRAL ROAD
P O Box 30016
NAIROBI

Ref No.MOPHS/ADM/2/30 Vol.VIII/6/7

7th June, 2013

Chief Executive Officer
Kenyatta National Hospital

Chief Executive Officer
Moi Teaching & Referral Hospital

All Interim County Health Coordinators

RE: IMPLEMENTATION OF POLICY ON MATERNITY DELIVERY PROGRAM/HEALTH CENTRES AND DISPENSARIES SERVICES

The Cabinet Secretary issued a Circular ref No.MMS/IGN/1/39 Vol.1(35) dated 1st June 2013 on the implementation of Presidential Directive on maternity care.

We wish to give further clarifications on the implementation of the policy

1) All children under five years will continue to receive free services as per previous directive. There should not be any direct or indirect payment for children.

2) Post arbotal care is an integral part of maternity service and should be treated as such, so should be charged as delivery.

3) The policy targets mothers who were meeting service fees through cash payments. Those mothers with Insurance cover, will still have to make use of their insurance instruments to pay for the services.

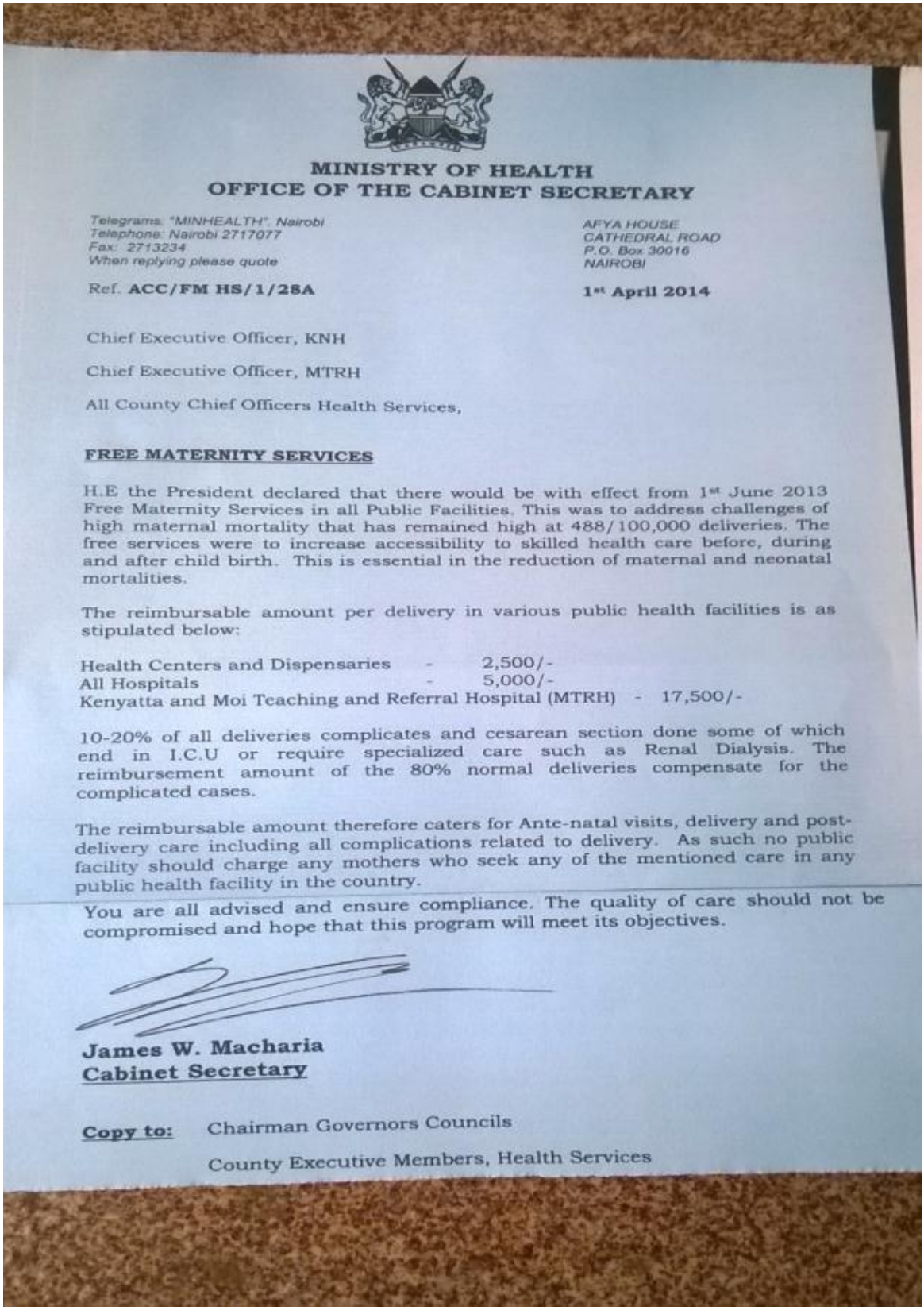
4) The 10/20 rule for Dispensaries and Health Centres covered outpatient services but not in-patient services. The scrapping of the same means all outpatient services at the health centres and dispensaries must not attract any charges.

   In patient services especially at health centres would continue being offered within the Framework that obtained prior to the policy change.

Dr. Francis Kimani
Director of Medical Services

Dr. S. K. Sharif
Director of Public Health and Sanitation

APPENDIX 3: Director of Medical Services memo on reimbursement rates



MINISTRY OF HEALTH
OFFICE OF THE CABINET SECRETARY

Telegrams: "MINHEALTH", Nairobi
Telephone: Nairobi 2717077
Fax: 2713234
When replying please quote

AFYA HOUSE
CATHEDRAL ROAD
P.O. Box 30016
NAIROBI

Ref. **ACC/FM HS/1/28A**

1st April 2014

Chief Executive Officer, KNH

Chief Executive Officer, MTRH

All County Chief Officers Health Services,

FREE MATERNITY SERVICES

H.E the President declared that there would be with effect from 1st June 2013 Free Maternity Services in all Public Facilities. This was to address challenges of high maternal mortality that has remained high at 488/100,000 deliveries. The free services were to increase accessibility to skilled health care before, during and after child birth. This is essential in the reduction of maternal and neonatal mortalities.

The reimbursable amount per delivery in various public health facilities is as stipulated below:

Health Centers and Dispensaries - 2,500/-
All Hospitals - 5,000/-
Kenyatta and Moi Teaching and Referral Hospital (MTRH) - 17,500/-

10-20% of all deliveries complicates and cesarean section done some of which end in I.C.U or require specialized care such as Renal Dialysis. The reimbursement amount of the 80% normal deliveries compensate for the complicated cases.

The reimbursable amount therefore caters for Ante-natal visits, delivery and post-delivery care including all complications related to delivery. As such no public facility should charge any mothers who seek any of the mentioned care in any public health facility in the country.

You are all advised and ensure compliance. The quality of care should not be compromised and hope that this program will meet its objectives.

James W. Macharia
Cabinet Secretary

Copy to: Chairman Governors Councils

County Executive Members, Health Services

APPENDIX 4: Study questionnaire

STUDY QUESTIONNAIRE *(RAPIM MA ITIMOGO NONRO)*

Questionnaire Serial Number _____

Date of Interview _____

Name of Interviewer_____

Village Name_____

Sub-location Name_____

Location Name_____

INTRODUCTION

My name is (*state name*), a trained Research Assistant hired by Charles Muruka, who is a student studying for the degree of master of public health degree at Maseno University. In fulfilment of the requirements of the training, Charles Muruka is conducting a research to assess the effect of the free maternity services on maternal and newborn health in Gem Sub-County, Siaya County. This study has been authorized by Maseno University and other relevant government authorities. A standardized interviewer-administered questionnaire will be used to collect the data. The target study participants are postnatal mothers/girls and pregnant women/girls. The interview should take approximately 30-40 minutes.

FWENYRUOK

*Nyinga en (**ful nyingine duto**). An jakony mar Charles Muruka etimo nonro mare kaluwore gi weche sombe e Mbalariany mar Maseno. Jalno ma iluongo ni Charles Muruka timo nonro mar neno kaka chenro mar nyuol maonge chudo e osibtal osekonyo ngima mine kod nyithindo mayom mae konyuol. Nonroni ne osepuodhi gi Mbalariany mar Maseno kendo migepe moko mag sirkal kaka migawo mar thieth ei Siaya kaonti. E timo nonroni, nitiere rapim ma oting'o penjo mabiro kawo thuolo madirom dakika piero adek kata piero ang'wen. Jogo ma onego odwok penjogi gin mine kata nyiri mayach (mapek) kod man gi nyithindo matindo.*

Filter Questions (to the Household Head)

1. Has any woman or girl given birth in your household between June 2013 and May 2015? *Bende nitiere mama kata nyako ei odi kae mane onyuolo nyathi e kind dwe mar auchiel 2013 gi dwe mar abich 2015?* ☐

2. Do you a have pregnant woman or a pregnant girl in your household who has been resident in this area for the past six months? *Bende nitiere mama kata nyako mayach (mapek) ei odi kae ma osedak kae kuom ndalo mar dweche auchiel mosekalo?* ☐

3. If yes in either 1 or 2 above, may I speak with her? If permission is granted by household head, administer informed consent to the study participant. *Akwayi ni mondo imiya thuolo mar loso kod mama/mine gi nyako/nyiri mayach kata man gi nyithindo ei odi kae.*

SECTION 1: SOCIO-DEMOGRAPHIC INFORMATION (*The socio-demographic information collected in this section might have an influence on attitudes and perceptions of free maternity services).*

Interviewer: Please take the respondent through the Informed Consent Form. If she consents/agrees to participate, continue with the interview. If not, end the interview.

Jakony ja nonro: *Ler weche duto mag nonro ni ng'ato ka ng'ato monego openj penjo mag nonro ka itiyo kod fom man gi weche duto ewi nonroni (Informed Consent Form). Ka jadwok penjo oyie ni mondo openje penjo mag nonro, dhi mbele kendo chak penjo. Ka otamore to kik ipenje penjo mag nonro.*

1. Do you have a child born between June 2013 and May 2015 or are you currently pregnant? *Bende nitiere nyathi mane inyuolo e kind dwe mar auchiel 2013 gi dwe mar abich 2015 kose dibed ni sani iyach (ipek)?*

1. Postnatal *(Nitiere nyathi mane onyuol e kind dwe mar auchiel 2013 gi dwe mar abich 2015) – (**complete this section and skip to section 2.1**)(**dhi mbele kod penjogi mag sekson 1 basto idum nyaka sekson 2.1**)* ☐
2. Pregnant *(oyach/opek) – (**complete this section and skip to section 2.2)(dhi mbele kod penjogi mag sekson 1 basto idum nyaka sekson 2.2)*** ☐
3. Postnatal and pregnant *(Nitiere nyathi mane onyuol e kind dwe mar auchiel 2013 gi dwe mar abich 2015 to oyach/opek bende) – **(complete all sections in the questionnaire)(penj penjo kuom seksonde duto mag nonroni)*** ☐

2. Which year were you born? *Nene onyuoli higa mane?*

4. Year/*Higa* (_____)

3. What is current your religion? State current religion *(choose one)Ilemo e din mane?(yier achiel)*

5. Catholic *(katholik)* ☐

6. Mainstream Protestant (Anglican, Pentecostal, Evangelical) *(Angili, Pende, Evanjelisti)* ☐

7. Independent African spiritual church (Legio Maria, Nomiya, Roho, Dini Ya Msambwa, etc.) *(Lejo, Nomiya, Roho)* ☐

8. Muslim *(ja salam)* ☐

9. Hindu *(dind wahinde)* ☐

10. None (does not belong to any) *(ja kafiri)* ☐

4. What is current your marital status? *(choose one)(Kend mari chal nade?)(yier achiel)*

11. Married *(antiere gi jaoda) (***Go to question 5***) (**dhi e penjo namba 5**)* ☐

12. Remarried *(antiere gi jaoda kata jater to ok en mana ohango kenda) (**Skip question 5**) (**kik ipenj penjo namba 5**)* ☐

13. Divorced *(ne wawere gi dichuo chuth) (***Skip question 5** *) (**kik ipenj penjo namba 5)*** ☐

14. Widowed *(an chi liel modak kende) (***Skip question 5***) (**kik ipenj penjo namba 5)*** ☐

15. Separated *(ne wawere gi jaoda to pod wanyalo duogre) (***Skip question 5***) (**kik ipenj penjo namba 5)*** ☐

17. Single (not yet married) *(pok adhi tedo) (***Skip question 5** *) (**kik ipenj penjo namba 5)*** ☐

5. If married, state the type of marriage *(choose one)Ka okendi (yier achiel)*

18. Monogamy *(in dhako achiel kende e dichwo)* ☐

19. Polygamy *(in e kend mar doho)* ☐

6. How many children have you given birth to, whether they are alive or have died? *(choose one) Isenyuolo nyithindo adi nyaka ne ichak nyuol?(yier achiel)*

20. None (0) *Onge* ☐

21. One (1) *Achiel* ☐

22. Two (2) *Ariyo* ☐

23. Three (3) *Adek* ☐

24. Four (4) *Ang'wen* ☐

25. Five (5) *Abich* ☐

26. More than five (>5) *Ma okalo abich* ☐

7. What is your highest level of education? (choose one) *Isomo ma rom nade? (Yier achiel)*

27. Incomplete primary *(ne adhi e praimari to ok atieko)* ☐

28. Complete primary (KCPE) *(ne atieko praimari)* ☐

29. Incomplete secondary *(ne adhi e sekondari to ok atieko)* ☐

30. Complete secondary (KCSE) *(ne atieko sekondari)* ☐

31. Polytechnic/College *(ne atieko politeknik kata kolej)* ☐

32. University *(ne atieko mbalariany)* ☐

8. What is your employment status? *(Choose one). Itiyo tich mane ma ipidhorigo?(yier achiel)*

33. Employed *(Ondika msara)* ☐

34. Self-employed ***(Skip to Question 10)*** *Andikra kenda (****Dum nyaka penjo namba 10)*** ☐

35. Unemployed ***(Skip to section 2)*** *Aonge tich* ***(Dum nyaka sekson 2)*** ☐

9. If employed, what is your occupation? *Ka ondiki to itiyo tich mane?* ☐

36. State the profession *(tich ma otiyo)*

_____

10. If self-employed, what is your occupation? *Ka indikori kendi to itimo tich mane?*

37. State occupation *(ndik tich ma otimo)*

_____

SECTION 2: QUESTIONS ON MATERNAL HEALTHCARE SERVICES

2.1: Postnatal Mothers *(Mine man gi nyithindo matindo)*

11. When you were pregnant, did you attend antenatal care services? *E kinde mane iyach, bende ne idhi e klinik?*

38. Yes *(Ne adhi)*. ☐

39. No ***(Skip to Question 15)*** *Ne ok adhi* ***(Dum nyaka penjo namba 15)***. ☐

12. If yes, how many times did you attend clinic during pregnancy? (*Choose one*). *Nene idhi e klinik ndalo adi?(yier achiel)*

40. One (1) visit *(Ndalo achiel)* ☐

41. Two (2) visits *(ndalo ariyo)*. ☐

42. Three (3) visits *(ndalo adek)* ☐

43. Four (4) visits *(ndalo ang'wen)* ☐

44. Five (5) or more visits *(ndalo abich kata mokalo abich)* ☐

45. Don't know *(akia)* ☐

13. If yes in **Question 11** above, what type of health facility did you visit? *(Choose one).Nene idhi e osibtal mar kiwango mane? (yier achiel)*

46. Dispensary *(osibtal mar dispensari)* ☐

47. Health centre *(osibtal mar helth senta)* ☐

48. Sub-district hospital *(osibtal mar sab distrikt)* ☐

49. District hospital *(osibtal mar distrikt)* ☐

50. County referral hospital *(osibtal mar kaonti Siaya)* ☐

51. Mission hospital *(osibtal mar misen)* ☐

52. Private clinic *(klinik mar praivet)* ☐

53. Private hospital *(osibtal mar praivet)* ☐

14. How long does it usually take you to visit the nearest government health facility? *(Choose one).Kaponi idhi e osibtal mar sirkal mantiere machiegni kodi to ikawo dakika madirom adi?(yier achiel)*

54. Less than 30mins *(matin ni dakika piero adek)* ☐

55. 30mins to 1hr *(kind dakika piero adek gi saa achiel)* ☐

56. 1hr to 1.5hrs *(kind saa achiel gi saa achiel gi nus)* ☐

57. 1.5hrs to 2hrs *(kind saa achiel gi nus gi seche ariyo)* ☐

58. More than 2hrs *(mohingo seche ariyo)* ☐

15. If you did not attend antenatal care, what was the reason why? (*Choose one). Ka ne ok idhi e klinik, ang'o mane otami dhi e klinik? (yier achiel)*

59. Distance to facility too far *(osibtal bor)* ☐

60. Lack of transport *(ne aonge pesa mar transpot)* ☐

61. Religious beliefs *(din mara odagi)* ☐

62. Received TBA services *(ne adhi ka nyamrerwa).* ☐

63. Negative facility staff attitudes *(jo osibtal nigi chuny marach)* ☐

64. Poor quality of facility services *(osibtal okti maber kaka dwaror)* ☐

16. Were there any complications during your pregnancy? *(Complications during pregnancy might influence the utilization of maternity healthcare services at facility). Mane iyach, bende ne intiere gi ich ma keloni shida? Mfano en kaka ich machwer, tiende makuot, wich mabero saidi kod mamoko.* ☐

65. Yes *(Ne an gi ich makelona shida)*

66. No ***(Skip to Question 18)*** *(Ne aonge ich makelona shida) (**Dum nyaka penjo namba 18**)* ☐

17. If yes, what was the complication during your pregnancy? (*Choose one). Nene in gi shida mane e kinde mane iyach? (yier achiel)*

67. Severe headaches *(wich mabero saidi)* ☐

68. Swollen legs *(tiende makuot)* ☐

69. Bleeding *(ich machwer)* ☐

70. High blood pressure *(adundo magwecho matek)* ☐

71. Don't know *(akia)* ☐

18. Where did you deliver your baby? *(Choose one). Nene inyuol kanye? (yier achiel)*

72. Government health facility *(osibtal mar sirkal)* ☐

73. Private health facility ***(Skip to Question 26)*** *(osibtal kata klinik mar praivet) (**Dum nyaka penjo namba 26**)* ☐

74. Home ***(Skip to Question 26)*** *(Ne anyuol e dala) (**Dum nyaka penjo namba 26**)* ☐

75. Traditional birth attendant (TBA) ***(Skip to Question 26)*** *(Ne anyuol ka nyamrerwa) (**Dum nyaka penjo namba 26**)* ☐

19. If you delivered in a government health facility, were you satisfied with the quality of maternity/delivery care services? *(Choose one). Kaponi ne inyuol e osibtal mar sirkal, bende ne imor gi huduma mane gimiyi? (Yier achiel)*

76. Fully satisfied ***(Skip to Question 21)*** *(Ne amor ahinya) (**Dum nyaka penjo namba 21**)* ☐

77. Partially satisfied ***(Skip to Question 21)*** *(Ne amor moromo) (**Dum nyaka penjo namba 21**)* ☐

78. Neither satisfied nor dissatisfied *(okne amor kata asin kodgi)* ☐

79. Dissatisfied *(Ne ok amor kodgi)* ☐

20. If you were dissatisfied or partially satisfied in **Question 19** above, what were the reasons for your dissatisfaction? (Choose one i.e. most significant reason). *Kaponi ne ok imor kata ne imor moromo gi huduma mane iyudo, ang'o momiyo ne ok imor? (Yier achiel)*

80. Rude, abusive or cruel treatment or neglect by facility staff *(Jo osibtal ne gin gi achaye, kata ne giyenyo, kata ne giger kodi, kata ne gijwang'i)* ☐

81. Charges/fees levied *(Jo osibtal nochuni bi ichulo pesa)* ☐

82. Unclean environment for delivery or post-delivery care (e.g. beds, linen, floor, bathroom, latrine/toilet) *(Osibtal kar nyuol kata wod ne ok ler)* ☐

83. Congestion of patients in the facility *(Ne mine ma obiro nyuol opong'o osibtal)* ☐

84. Poor meals provided by the facility *(Chiemb osibtal ne ok beyo)* ☐

85. Lack of hot water for shower *(Ne onge pi maliet mar luok)* ☐

86. Medical commodities and drugs not available *(Yedhe kata gige nyuol ne onge)* ☐

21. If you delivered in a government health facility and was asked to pay some charges, how much did you pay? *(Choose one). Kaponi ne inyuol e osibtal mar sirkal to ne ochagi pesni moko, ne ichulo pesa adi?(yier achiel)*

87. <500/= shillings *(Matin ni siling' mia abich).* ☐

88. 500/= to 1,000/= shillings *(kind siling' mia abich kod siling' aluf achiel).* ☐

89. 1,000/= to 1,500/= shillings *(kind siling' aluf achiel kod siling' aluf achiel gi mia abich)* ☐

90. >1,500/= shillings *(Mohingo siling' aluf achiel gi mia abich).* ☐

22. If you paid some charges during delivery (in **Question 21** above), were you told what charges you were paying for? *(This question seeks to find out whether the charges paid were informal, because ideally, no charges should be paid under the free maternity services programme)(Kaponi ne ichulo pesa kane idhi nyuol, bende ne onyisi ni ichulo pesa mar ang'o?*

91. Yes *(Ne onyisa)* ☐

92. No ***(Skip to Question 24)*** *(Ne ok onyisa)* (***Dum nyaka penjo namba 24***) ☐

23. If you were told what charges you were paying for in **Question 22** above, what was it? *(Choose one). Pesa mane ichulo ne en mar ang'o? (yier achiel)*

93. Professional fees for healthcare provider *(chudo mar daktari kata sista mane okonya nyuol)* ☐

94. Commodities or drugs for maternity/delivery care *(chudo mar yedhe kata gige nyuol moko)* ☐

95. Incentive for healthcare provider *(chudo mar goyo erokamano ni daktari kata sista mane okonya nyuol)* ☐

96. Cannot remember *(ok anyal paro)* ☐

24. If you delivered in a health facility (*any type whether government or private or mission*), who made that decision for you? *(Choose one). (Eseche mane idwa dhi nyuol, ng'ano mane owacho ni mondo idhi nyuol e osibtal?) (yier achiel)* ☐

97. Self *(an ema ne adwaro kamano)*

98. Husband/sexual partner *(jaoda kata wuon nyathi).* ☐

99. Friend(s) *(osiepena)* ☐

100. Mother-in-law *(wuon odwa)* ☐

101. Community Health Volunteer (CHV) *(Nyamrerwa ma en CHV)* ☐

102. Other (specify) *(Moro amora ma ok ondik kae)* _____

25. If you delivered in a government health facility, were you assisted or attended to by a trained healthcare worker (nurse, midwife, clinical officer, doctor) during delivery? *(Probe further to eliminate the possibility of involvement of subordinate staff in the delivery) (Choose one). Kane idhi nyuol e osibtal mar sirkal, bende ne nitiere daktari kata sista mane okonyi nyuol?*

103. Yes *(Ne nitiere)* ☐

104. No *(Ne onge)* ☐

105. Don't know *(akia)* ☐

26. If you did not deliver in a government health facility, what was the reason why? *(Choose one). Kaponi ne ok inyuol e osibtal mar sirkal, ang'o ma omiyo? (yier achiel)*

106. Distance to facility too far *(Osibtal ne bor)* ☐

107. Lack of transport *(ne aonge transpot)* ☐

108. Religious beliefs *(din mara ok oyiego)* ☐

109. Received TBA services *(ne adhi ka nyamrerwa)* ☐

110. Negative facility staff attitudes *(jo osibtal chuny gi richo)* ☐

111. Poor quality of health facility services *(huduma mar osibtal ok beyo)*. ☐

112. Fear of caesarean section *(ne aluoro pala)* ☐

113. Fear of HIV testing *(ne aluor ni obiro pima tuo mar ayaki)*. ☐

2.2: Pregnant Women/Girls *(Mine kata nyiri mayach)*

27. If currently pregnant, what is the gestational age for the pregnancy? *(Choose one). In gi ich mar dweche adi?(yier achiel)*

114. First trimester (0-16 weeks) or <3 months *(matin ni dweche adek)* ☐

115. Second trimester (17-28 weeks) or 4-6 months *(kind dweche ang'wen gi dweche auchiel)* ☐

116. Third trimester (29-40 weeks) or 7-9 months *(kind dweche abiriyo gi dweche ochiko)* ☐

117. Don't know *(akia)* ☐

28. If currently pregnant, are you attending antenatal care services at a health facility? *Bende isechako dhi e klinik mar mine mayach?*

118. Yes *(Ee asechako)* ☐

119. No *(Podi)* ☐

29. If currently pregnant, where do you intend to deliver? *(In gi chenro mar nyuol kanye?)*

120. Government health facility ***(End the interview)*** *Osibtal mar sirkal (**Penjo orumo kae**)* ☐

121. Private health facility ***(Continue to Question 30)*** *Osibtal mar praivet (**Dhi e penjo namba 30**)* ☐

122. Home ***(Continue to Question 30)*** *Dala (**Dhi e penjo namba 30**)* ☐

123. TBA ***(Continue to Question 30)*** *Nyamrerwa **(Dhi e penjo namba 30)*** ☐

124. Not yet decided ***(End the interview)*** *Pok abedo gi chenro kama abiro nyuolye (**Nonro orumo kae**).* ☐

30. If you do not intend to deliver in a government health facility, what are the reasons why? *(Choose one only). Ang'o ma omiyo ok ichan nyuol e osibtal mar sirkal? (yier achiel)*

125. Distance to government health facility too far *(Osibtal mar sirkal bor)* ☐

126. Lack of transport *(Pesa mar transpot ni malo kata ng'eny)* ☐

127. Religious beliefs *(Din mara ok oyiego)* ☐

128. Received/receiving TBA services *(Adhiga kata abiro dhi ka nyamrerwa)* ☐

129. Negative facility staff attitudes *(Jo osibtal chuny gi richo)* ☐

130. Poor quality of health facility services *(Huduma mag osibtal ok beyo)* ☐

131. Fear of caesarean section *(Aluor ni jo osibtal nyalo yang'a ka igolo nyathi)* ☐

132. Fear of HIV testing *(Aluor ni jo osibtal biro pima tuo mar ayaki)* ☐

APPNDIX 5: Informed consent form

INFORMED CONSENT FORM *(FOM MAR KWAYO THUOLO KUOM JODWOK PENJO MAG NONRO)*

Study title	**The Effect of the Free maternity services on Maternal and Newborn Health in Gem Sub-County, Kenya**
Nonro	***Nonro Mar Neno Kaka Chenro Mar Nyuol Nono E Osibtende Sirkal Osekonyo Ngima Mar Mine Kod Nyithindo Mayom Mae Konyuol Ei Gem, Kenya***
Student Investigator (Researcher)	Charles Muruka School of Public Health and Community Development Maseno University
Janonro	*Charles Muruka* *Migawo mar Rito Ngima mar Oganda Gi Dongruok Mar Jopiny Mbalariany mar Maseno*
University Supervisors	1. Dr. Japheths Ogendi Department of Public Health Maseno University 2. Dr. Patrick Onyango Department of Zoology Maseno University
Jo Mbalariany Ma Gin Nyapara Mag Janonro	*1. Laktar Japheths Ogendi* *Migawo Mar Rito Ngima Mar Oganda* *Mbalariany Mar Maseno* *2. Laktar Patrick Onyango* *Migawo mar Somo Mag Zuolojia* *Mbalariany mar Maseno*
Study sponsor(s)	Charles Muruka (Self)
Jomage Ma Ogolo Pesa Mar Timo Nonroni	*Charles Muruka*
Collaborators	None
Jomage Ma Bende Tudore Gi Nonroni	*Onge*

Why is this Project Important? ***Ere Gima Omiyo Itimo Nonroni?***

The government of Kenya introduced free maternity healthcare in June 2013 to prevent and reduce maternal deaths. However, research evidence from low and middle-income countries across the world has shown that utilization of free maternity healthcare services does not usually automatically increase as expected due to women's perceptions and concerns on quality amongst other reasons. This study seeks to assess the effect of the free maternity services on the utilization of free maternity services and the occurrence of facility-based maternal and neonatal deaths in Gem Sub-County. The results will inform public health programme managers on the performance of the free maternity services in the sub-county. The results will also provide evidence for informed decision making on the management of the free programme in the sub-county.

Sirkal mar Kenya ne okelo chenro mar nyuol maonge chudo e osibtende mag sirkal chakore dwe mar auchiel 2013 mondo ogeng' kendo odwok piny thoye mag mine sama ginyuol. To kata kamano, nonro mane osetim e pinje moko man gi yuto matin kata ma buora wacho ni chenro mag nyuol maonge chudo machalo kamano seche moko okmiga mine duto mayach dhi nyuol e osibtal kaka dwarore. Nonroni dwaro neon kaka chenro mar nyuol maonge chudo e osibtende mag sirkal osekonyo ngima mine kod nyithindo mayom mae konyuol. Dwoko mar nonroni biro konyo jotelo mag migawo mar thieth e kaonti ma Siaya monde ong'e gi adieri ni chenrono osekonyo kata pok okonyo, to kapok okonyo to mondo gipar kendo nyadiriyo ewi chenrono.

Who Can Participate? ***Jomage Ma Onego Odwok Penjo Mag Nonro?***

Eligible study participants are pregnant women and girls and mothers with infants born between 1st June 2013 and 1st May 2015 and who have been resident in Gem Sub-County during the past six months.

Jogo ma onego odwok penjo mag nonroni gin mine kata nyiri mayach kata man gi nyithindo mane onyuol kind dwe mar auchiel 2013 kod dwe mar abich 2015. Mar ariyo, onego bedi ni gisedak ei gem kae kuom dwe auchiel mosekalo.

Participation is Your Choice *Dwoko Penjo Mag Nonroni En Hero-ni*

Your participation in this research is completely voluntary. You will make the choice about whether you will participate or not. If you choose not to take part, you will not suffer any consequences or punishment of any kind, now or in the future.

Kaluwore gi chike matayo nonrono machal kamae e piny mangima, dwoko penjo mag nonroni en hero mari kendo ok nyal chunigo. In iwuon ema onego ine ka idwaro dwoko penjo kata ok idwa. Ka ineno ka ok idwa dwoko penjo mag nonroni, onge kum moro amora ma ibiro yudo e sechegi kata e ndalo mabiro.

What Is Involved in this Project? *Ere Gik ma Biro Timore Ei Nonroni?*

A trained Research Assistant will ask you questions from a standardized questionnaire. The interview will last approximately 30-40 minutes. The research assistant will record your responses onto the questionnaire.

Jakony janonroni ma osetiegi biro penji penjo mag nonroni ka otiyo gi rapim mar nonroni. Penjogi biro kawo thuolo madirom dakika piero adek kata piero ang'wen. Jakony janonroni biro ndiko dwoko magi e rapim mar nonro.

What are the Risks? *Ere Hinyruok Ma Nonroni Nyalo Keloni?*

There are no risks that you will be exposed to if you accept to participate in this study.

Onge hinyruok moro amora ma nonroni nyalo keloni kabed ni iyie dwoko penjo mag nonroni.

What are the Benefits? *Ere Ber Mag Nonroni?*

It is not expected that you may benefit directly by participating in this study. However, the results of this study will provide evidence on women's perceptions of free maternity healthcare services. The findings will be important to public health programme managers for informed decision making on the implementation of the free maternity services in Gem sub-county.

Onge ber ma ibiro yudo achiel ka achiel kowuok kuom nonroni. To kata kamano, dwoko mar nonroni biro nyiso gi adieri pach mine ma Gem kuom chenro mar nyuol maonge chudo e osibtende mag sirkal. Dwokogo biro konyo jotelo ma ochung' ni migawo mar thieth e kaonti ma

Siaya neno kaka huduma mag chenro mar nyuol maonge chudo inyalo med losi mondo odhi e yo makare ma moro mine.

How will we Protect your Information and Confidentiality? ***Ere Kaka Weche Ma Imiyowa E Nonroni Ibiro Riti Mondo Siri Meki Kik Ng'ere?***

We will not be sharing any information about you to anyone outside of the research team. The information that we collect from this research project will be kept private and confidential. Any information about you will have a number on it instead of your name. The information that you provide on the questionnaire will therefore remain anonymous. The completed questionnaires will be destroyed once the researcher has successfully defended the research report before a panel at Maseno University.

Weche ma imiyowa ok wabi nyiso kata ang'ata mopogore gi janroni kod jokony mage. Weche duto ma imiyowa ibiro kan e yor siri. Nyingi ok bi ndiki kamora amora e rapim mar nonro (questionnaire), kuom mano, ok nyal fwenyore ni ng'ano ma owacho weche mage ei nonroni. Ka janonro osetieko nonroni kendo ondiko ripot, rapim duto mag nonro ibiro wang'.

Can I Refuse to Participate or Withdraw from the Study? ***Bende Anyalo Tamora Dwoko Penjo Nonroni Kata Loko Pacha Weyo Nonroni?***

You do not have to take part in this research if you do not wish to do so. If you choose not to participate, there will be no punishment or consequences to you. If you wish to stop participating in the study after you begin, you can stop at any time by telling the Research Assistant interviewing you. If you choose to stop taking part, there will also be no punishment or consequences to you.

Kaluwore gi chike matayo nonro machal kama e piny mangima, ok ochuno ni nyaka iyie dwoko penjo nonroni nikech en hero-ni. Onge kum moro amora ma inyalo miyi ka itamori dwoko penjo mag nonro. To kata kabed ni iyie dwoko penjo to iloko pachi ka penje tee pok openji, chike nonro oyieni mondo itim kamano, nyis mana jakony janonro ni iloko pachi basto obiro weyo penji. Onge kum moro amora ma inyalo miyi kaponi ni iloko pachi ka penjo pok orumo.

Who Can I Contact? ***Ere Ng'atma Anyalo Tudoroga Ka An Gi Wach Moro Amora Kuom Nonroni?***

If you have any questions now, you can ask the Research Assistant interviewing you. If you have questions later, you may contact the Investigator (Researcher), Charles Muruka on email cmuruka@gmail.com or telephone number 0720 839 813.

Ka in gi penjo moro amora e sechegi to inyalo penjo jakony janonroni. To ka in gi penjo bang'e to inyalo penjo janonro ma en Charles Muruka e yor barua mar mbuyi e adrese ma en cmuruka@gmail.com kata inyalo goyone sim e namba 0720 839 813.

Do you have any questions at this time? ***Bende In Gi Penjo Moro Amora E Sechegi?***

(Interviewer: Please record any questions asked). *(Jakony janrono: Ndik penjo duto ma openji).*

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Do you consent to participate in this study? (Yes/No) ***(Tick) Bende Iyie Dwoko Penjo Mag Nonroni?***

Participant's Name *(Nying Jadwok Penjo):* _____

Participant's Signature *(Sei Mar Jadwok Penjo):* _____

Date *(Tarik):* _____

Informed consent form administered by: *Jadwok Penjo Okwa Thuolo Kod:*

Research Assistant Name (*Nying Jakony Ja Nonro*): _____

Date (*Tarik*): _____

Signature (*Sei*): _____

APPNDIX 6: Key Informant interview guide for healthcare managers

Introduction

My name is Charles Muruka, a student studying for the degree of master of public health degree at Maseno University. In fulfilment of the requirements of the training, Charles Muruka is conducting a research to assess the effect of the free maternity services on maternal and newborn health in Gem Sub-County, Siaya County. This study has been authorized by Maseno University and the Gem Sub-County Health Management Team and the local public administration. One key informant i.e. a healthcare worker (i.e. medical superintendent, nursing officer in charge of maternity and facility in-charge) is to be interviewed from each of the six (6) selected health facilities. The top three (3) high volume facilities and the bottom three (3) low volume facilities in Gem Sub-County are to be selected for key informant interviews.

A key informant interview guide has been prepared for this exercise. The duration of the interview is approximately 30 minutes.

Do you provide consent to be interviewed? If yes, proceed.

Date of Interview _____
Name of Interviewer_____
Name of Interviewee_____
Health Facility Name_____
Sub-location Name_____

GUIDING QUESTIONS

1. How many skilled birth attendants by category (midwives, nurses, clinical officers and doctors) do you have at your facility?
2. What are the monthly and annual targets for deliveries at your facility? *(The volume of facility deliveries might influence healthcare perspectives on free maternity services)*
3. How many deliveries do you conduct at your facility every month? *(The volume of facility deliveries might influence healthcare perspectives on free maternity services)*
4. In your own opinion, is the community aware of the free maternity services launched by the national government in June 2013? If yes or no, what makes you think so?
5. Since the launch of the free maternity services in June 2013 by the national government, how much free maternity refunds (in Kenya Shillings) has your facility received to date?
    a) In how many installments has the money been disbursed?

b) Is there a specific interval in which the money is disbursed?
c) What are the specific dates of these disbursements?

6. Facility deliveries: In your opinion, has the free maternity services increased the number of deliveries (monthly) ever since it was launched in June 2013? If not or only a small increment observed, what could be the reasons why?
7. Post-abortion care: In your opinion, has the free maternity services increased the number of women seeking post-abortion care services ever since it was launched in June 2013? If yes or no, what could the reasons why?
8. How is the free maternity services being implemented?
    d) How is the disbursement of the refunds triggered? In other words, what are the mechanisms and procedures for disbursing the funds?
    a) What mechanisms exist to ensure that the funds are not diverted to other purposes not intended?
    b) How does the facility account for the funds? What are the mechanisms and procedures for accounting for the funds?
    c) Are the reimbursements remitted promptly to the facility? If not, what could be the reasons why?
9. What is the impact of the free maternity services on staff morale? Why do you think so?
10. What are the satisfaction levels of mothers with the quality of free maternity services? If high, why do you think so? If low, why do you think so?
11. Does the facility have adequate medical commodities (drugs and supplies), equipments and healthcare workers for the free maternity services? (*Explain that adequate means that the medical resources available can effectively satisfy the demand for services*). If not, what could be the reasons why?
    a) What are these medical commodities and equipments?
    b) How are they replenished?
    c) Should there be room for improvements, what do you think needs to be improved in the implementation of the free maternity services? Why does it need improvements? What are your suggestions on how it could be improved?

APPNDIX 7. Letter of ethical approval

MASENO UNIVERSITY ETHICS REVIEW COMMITTEE

Tel: +254 057 351 622 Ext: 3060
Fax: +254 057 351 221

Private Bag – 40105, Maseno, Kenya
Email: muerc-secretariate@maseno.ac.ke

FROM: Secretary - MUERC

DATE: 26th July, 2017

TO: Charles Muruka
EL/ESM/0404/2013
Department of Public Health
School of Public Health and Community Development
Maseno University
P. O. Box, Private Bag, Maseno. Kenya

REF:MSU/DRPI/MUERC/00426/17

RE: Effect of Free Maternity Programme on Maternal and Newborn Health in Gem Sub-County, Kenya. Proposal Reference Number MSU/DRPI/MUERC/00426/17

This is to inform you that the Maseno University Ethics Review Committee (MUERC) determined that the ethics issues raised at the initial review were adequately addressed in the revised proposal. Consequently, the study is granted approval for implementation effective this 26th day of July, 2017 for a period of one (1) year.

Please note that authorization to conduct this study will automatically expire on 25th July, 2018. If you plan to continue with the study beyond this date, please submit an application for continuation approval to the MUERC Secretariat by 15th June, 2018.

Approval for continuation of the study will be subject to successful submission of an annual progress report that is to reach the MUERC Secretariat by 15th June, 2018.

Please note that any unanticipated problems resulting from the conduct of this study must be reported to MUERC. You are required to submit any proposed changes to this study to MUERC for review and approval prior to initiation. Please advice MUERC when the study is completed or discontinued.

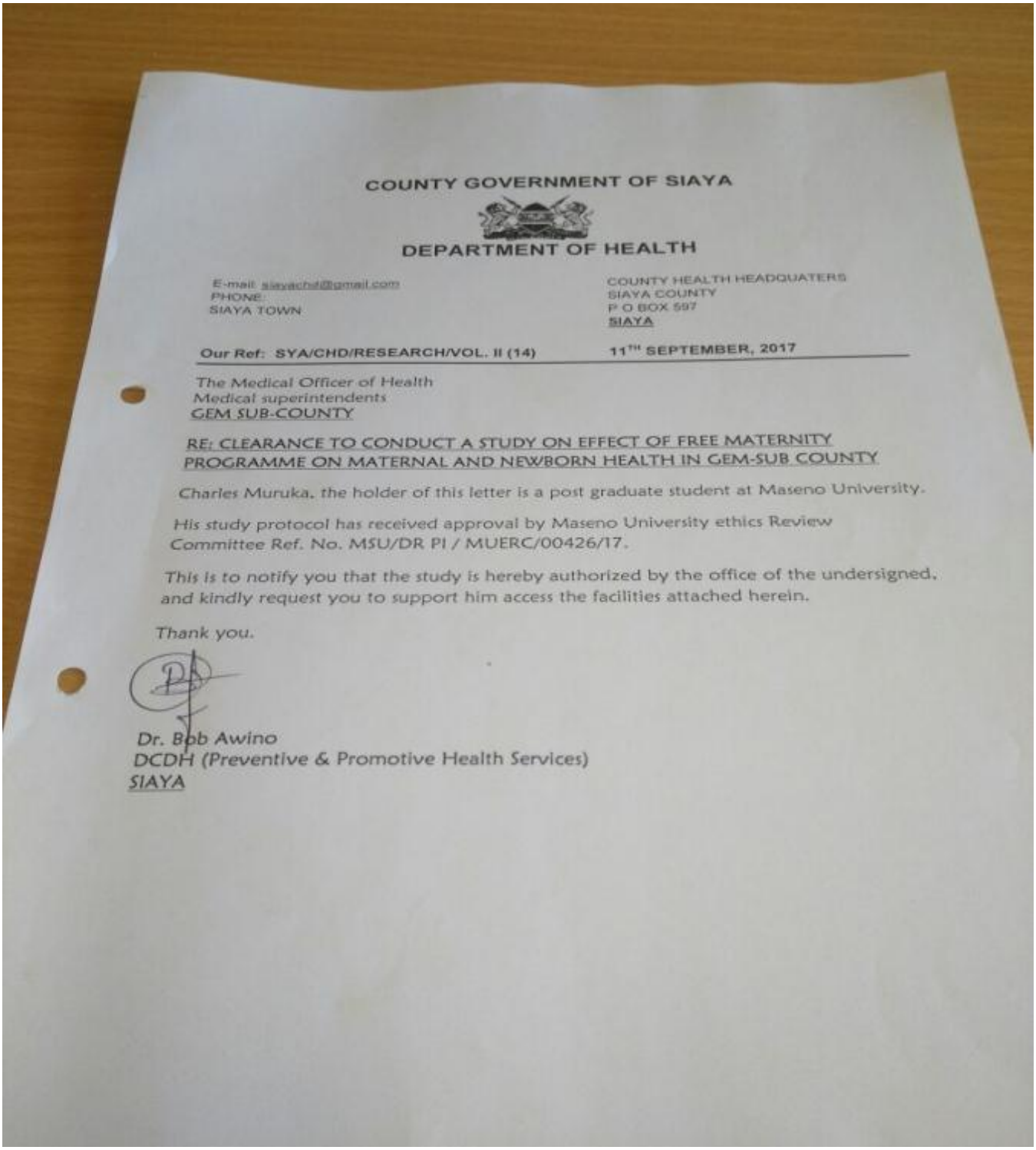
Thank you.

DIRECTORATE OF RESEARCH PUBLICATION & CONSULTANCIES
26 JUL 2017
MASENO UNIVERSITY

Dr. Bonuke Anyona,
Secretary,
Maseno University Ethics Review Committee

Cc: Chairman,
Maseno University Ethics Review Committee.

APPNDIX 8. Study approval by Siaya County Department of Health



COUNTY GOVERNMENT OF SIAYA

DEPARTMENT OF HEALTH

E-mail: siayachd@gmail.com
PHONE:
SIAYA TOWN

COUNTY HEALTH HEADQUATERS
SIAYA COUNTY
P O BOX 597
SIAYA

Our Ref: SYA/CHD/RESEARCH/VOL. II (14) 11TH SEPTEMBER, 2017

The Medical Officer of Health
Medical superintendents
GEM SUB-COUNTY

RE: CLEARANCE TO CONDUCT A STUDY ON EFFECT OF FREE MATERNITY PROGRAMME ON MATERNAL AND NEWBORN HEALTH IN GEM-SUB COUNTY

Charles Muruka, the holder of this letter is a post graduate student at Maseno University.

His study protocol has received approval by Maseno University ethics Review Committee Ref. No. MSU/DR PI / MUERC/00426/17.

This is to notify you that the study is hereby authorized by the office of the undersigned, and kindly request you to support him access the facilities attached herein.

Thank you.

Dr. Bob Awino
DCDH (Preventive & Promotive Health Services)
SIAYA

APPNDIX 9. Sub-cluster selection

KAGILO SUB-LOCATION

Village name (sub-cluster)	Population	Remarks	# Respondents (sample size)	# Pregnant women found	Data collection dates
1. Owila	520				
2. Sirowa	780	Selected	25	6	17th Aug 2017
3. Rabondo	630				
4. Spoklo	744				
5. Mala	560	Selected	25	3	17th Aug 2017
6. Usenge	425				
7. Simenya	499	Selected	26	4	23rd Aug 2017
8. Sinderma	563				
9. Rarieda	645	Selected	26	6	19th Aug 2017
10. Bar Kokong'o A	801				
11. Bar Kokong'o B	644				
12. Olengo	802	Selected	26	3	18th Aug 2017
13. Minyowo	706				
14. Mala-Spoklo	460				
Total	8,779		128	22	

Sampling interval = 8,779/5 = 1,759

Random start = 1,000

KAMBARE SUB-LOCATION

Village name (sub-cluster)	Population	Remarks	# Respondents (sample size)	# Pregnant women found	Data collection dates
1. Nyaolo	548				
2. Ochiago	722	Selected	25	2	22nd Aug 2017
3. Othuthu	420				
4. Upper Kituri	603	Selected	25	5	22nd Aug 2017
5. Yago	397				
6. Obuya	584	Selected	26	5	22nd Aug 2017
7. Osir	700				
8. Langi	400	Selected	26	7	22nd Aug 2017
9. Lower Kituri	492				
10. Nyangore	554	Selected	26	4	22nd Aug 2017
Total			128	23	

Sampling interval = 5,355/5 = 1,069

Random start = 1,000

ASAYI SUB-LOCATION

Village name (sub-cluster)	**Population**	**Remarks**	**# Respondents (sample size)**	**# Pregnant women found**	**Data collection dates**
1. Ndegwe	520				
2. Wariinda-Rabari	886	Selected	25	5	29th Aug 2017
3. Ujimbe-Lwero	1,250	Selected	25	4	29th Aug 2017
4. Sirodha	830				
5. Pundo-Nyambere	460	Selected	26	2	29th Aug 2017
6. Nyang'oma-Nyawita	899	Selected	26	6	29th Aug 2017
7. Sirawa	420				
8. Ahenyo-Uhonya	416	Selected	26	8	29th Aug 2017
Total	5,681		128	25	

Sampling interval = 5,681/5 = 1,136

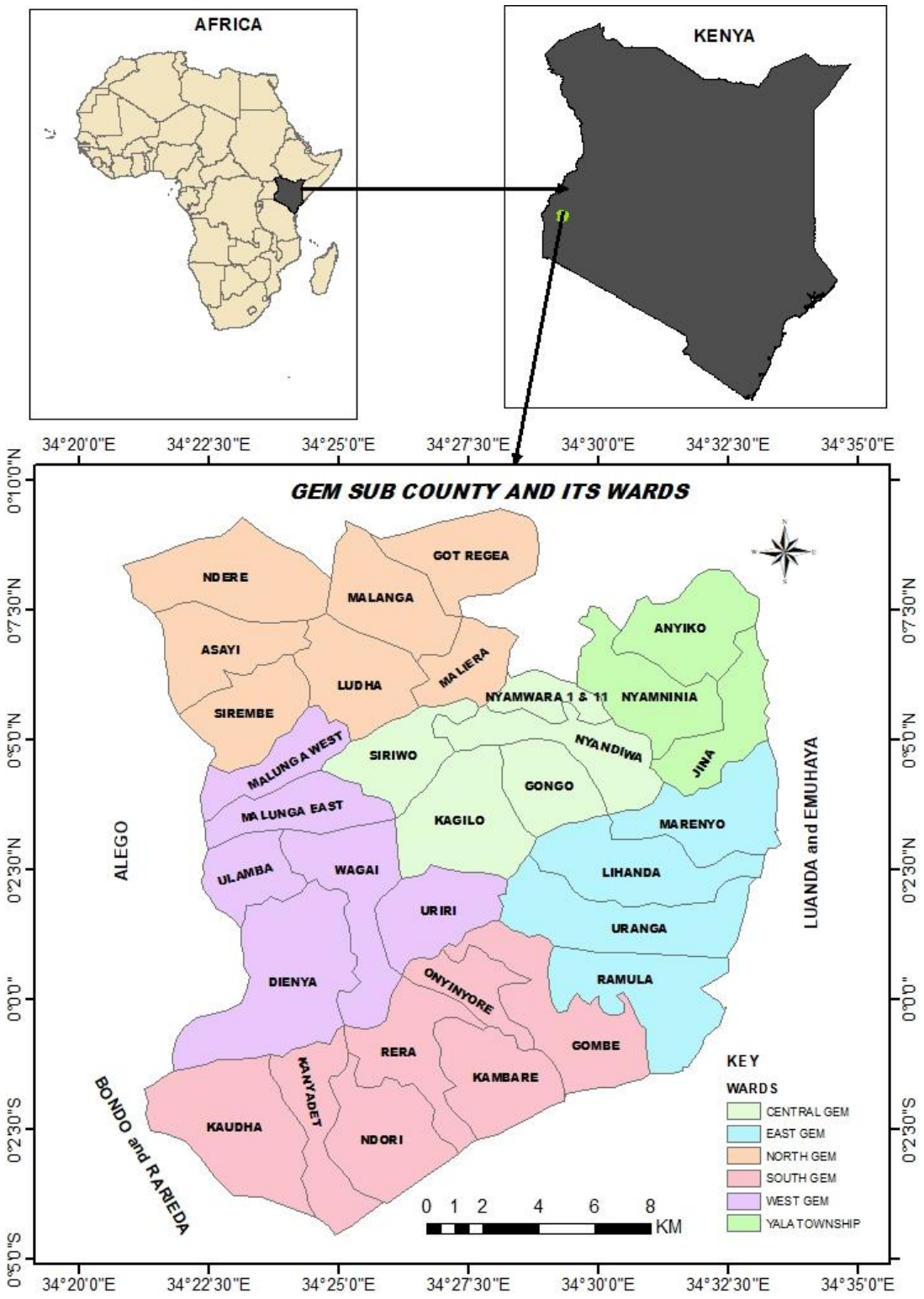
Random start = 1,000

Annex 10. Health facility data on selected maternal and newborn health indicators

Period	Month/Year	4th ANC visits	Facility deliveries	Post-abortion care	Facility-based maternal deaths	Facility-based neonatal deaths
Pre-Intervention	Jun-11	197	240	1	2	0
	Jul-11	213	235	2	1	3
	Aug-11	239	267	2	0	5
	Sep-11	238	262	4	0	4
	Oct-11	240	248	4	0	1
	Nov-11	232	241	3	0	1
	Dec-11	208	230	4	0	3
	Jan-12	235	251	4	1	7
	Feb-12	212	231	3	0	1
	Mar-12	237	234	5	0	1
	Apr-12	264	252	3	0	11
	May-12	260	297	3	0	2
	Jun-12	227	272	4	0	1
	Jul-12	208	298	1	0	2
	Aug-12	254	266	3	0	1
	Sep-12	227	293	1	1	0
	Oct-12	255	308	4	0	1
	Nov-12	238	253	3	0	2
	Dec-12	205	274	5	0	5
	Jan-13	249	303	5	0	2
	Feb-13	233	279	14	1	1
	Mar-13	228	310	12	0	0
	Apr-13	240	274	4	0	0
	May-13	265	328	10	0	2
Post-Intervention	Jun-13	224	332	11	1	0

Period	Month/Year	4th ANC visits	Facility deliveries	Post-abortion care	Facility-based maternal deaths	Facility-based neonatal deaths
	Jul-13	262	288	21	0	1
	Aug-13	275	323	14	1	1
	Sep-13	272	344	11	0	1
	Oct-13	262	344	20	0	1
	Nov-13	223	319	20	0	0
	Dec-13	189	241	10	0	3
	Jan-14	202	288	16	0	0
	Feb-14	216	295	16	0	2
	Mar-14	217	343	8	0	1
	Apr-14	299	339	10	0	2
	May-14	279	335	9	0	0
	Jun-14	311	301	7	0	0
	Jul-14	339	378	16	0	1
	Aug-14	325	341	5	0	1
	Sep-14	320	418	4	0	0
	Oct-14	276	353	3	0	0
	Nov-14	255	339	3	0	0
	Dec-14	243	316	1	0	0
	Jan-15	249	369	3	0	1
	Feb-15	239	305	3	0	6
	Mar-15	238	360	0	0	0
	Apr-15	302	346	6	0	0
	May-15	292	363	6	2	0

Annex 11. Map of Gem Sub-County



Map showing the location of Gem Sub-County in Kenya