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THE EFFECT OF FREE MATERNAL HEALTH CARE SERVICES ON PERCEIVED QUALITY OF SERVICE DELIVERY AT NAKURU PROVINCIAL GENERAL HOSPITAL

BY

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MBA HEALTHCARE MANAGEMENT

MBA-HCM/78988/13

A DISSERTATION SUBMITTED TO THE STRATHMORE UNIVERSITY BUSINESS SCHOOL FOR A DEGREE OF MASTER OF BUSINESS ADMINISTRATION (MBA) IN HEALTHCARE MANAGEMENT AT THE INSTITUTE OF HEALTHCARE MANAGEMENT

2016

DECLARATION

This MBA Dissertation is my original work and has not been submitted at any other university.

Signature…… Date……...

John Mwangi Murima

This Dissertation has been submitted with my approval as the supervisor:

Signature…….. Date…….……

Prof. Gilbert O. Kokwaro

Director, Institute of Healthcare Management

Strathmore University Business School

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VT OMNES VNVM SINT

LIST OF ABBREVIATIONS

ANC	- Antenatal Care
BP	- Blood Pressure
ENT	- Ear Nose and Throat
FHR	- Fetal Heart Rate
FMS	- Free Maternity Services
FSB	- Fresh Still Birth
GDP	- Gross Domestic product
GOK	- Government of Kenya
HB	- Haemoglobin
HP	- Hewlett-Packard
IOM	- Institute of Medicine
IV	- Intra Venous
KDHS	- Kenya Demographic Health Survey
KHSSP	- Kenya Health Sector Strategic and Investment Plan
MCH	- Maternal Child Health
MDG	- Millennium Development Goals
MOH	- Ministry of Health
MMR	-Maternal Mortality Rate
MTP	- Medium Term Plan
NHA	- National Health Accounts
NHSSP	- National Health Sector Strategic Plan
NPGH	- Nakuru Provincial General Hospital
PPH	- Postpartum Hemorrhage
RRI	- Rapid Response Initiatives
RVPGH	– Rift Valley Provincial General Hospital

SBA	- Skilled Birth Attendant
SOPs	- Standard Operating Procedures
SPSS	- Statistical Package of Social Sciences
TBA	- Traditional Birth Attendants
THE	- Total Health Expenditure
UN	- United Nations
UNFPA	– United Nations Population Fund
WHO	- World Health Organization

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Mr Stephen Lelei – A consultant with Delloitte Kenya for his assistance in the statistical analysis of the data

DEDICATION

This book is dedicated to my mother Mrs Rahab Wanjiku Murima for inspiring me to work hard in my studies since i was a young boy. It is also dedicated to my wife Wairimu Mwangi and the children – Lorna, Nick and Bill.

ABSTRACT

The introduction of the free maternal healthcare services by the government of Kenya in all public facilities in June 2013 was geared towards addressing the high burden of maternal mortality currently estimated at 488 deaths per 100,000 live births. This is well above MDG target of 147 per 100,000 live births that was to be achieved by September 2015. The increased access to facility based child birth as a result of free maternity services may compromise the quality of maternal care due to inadequate preparations and investments to handle the large influx of expectant mothers. The study aimed at assessing the effect of the free maternal health care at Nakuru Provincial General Hospital which is a teaching and a regional referral hospital serving a catchment population of 1.6 million people. The study was undertaken between August and September 2015.

This was a quantitative study employing descriptive research design. Questionnaires were administered after signed consent to the respective post-partum mothers upon discharge from the hospital. Administrative data on measures of quality were used against the National Norm and Standards of Maternal Services in Kenya.

A total of 423 post natal mothers participated in the study. The implementation of the free maternal services resulted in a 53% increase in the number of deliveries at Nakuru PGH. Post natal mothers in the age group 20-24 years accounted for the majority 38.5%. Both physical and organizational resources were found to have largely remained the same despite the increased number of pregnant mothers seeking delivery services. However, the healthcare activities (process measures) involved in maternal services were found to be below the minimum National quality standards. In particular, 33.2% of post natal mothers had not signed the medical or surgical consent while 42% of the mothers in labour did not receive the prescribed pain relief medication. However, 97.3% of the post natal mothers had their labour management plotted on partograph. The majority 87% of the post natal mothers had a length of stay of upto two days with 13% of them leaving after one day of admission.

The increased number of deliveries at Nakuru PGH as a result of the implementation of the free maternal services had not negatively affected the perceived quality of maternal care. However, more investment in the physical and organizational resources is needed to sustain or

improve on the gains made in the quality of care offered. Similar studies are needed in other facilities to come up context-specific recommendations to sustain the free maternity services.

CHAPTER 1: INTRODUCTION

1.1 Background

Maternal health refers to the health of a woman during pregnancy, childbirth and postpartum period (WHO, 2014). The key objective of maternal healthcare is not only to ensure no impairment of the health or death of the mother but also to ensure that every pregnancy culminates in the delivery of a healthy baby (Say et al., 2014). Improving maternal health was one of the eight Millennium Development Goals (MDG-5) adapted by the United Nations member states in the year 2000 whereby countries committed themselves to reduce the maternal mortality rates by three quarters (75%) by the year 2015 (Plan, 2008). Globally, an average of 1000 maternal deaths occurs every day from preventable causes and 99% of which occurs in the developing countries. Sub-Saharan Africa accounts for over 50% of these deaths (Filippi et al., 2006).

Kenya has long suffered from high maternal morbidity and mortality rates. The most recent estimates set the maternal mortality rate at 488 deaths per 100,000 live births, well above the MDG target of 147 per 100,000 by 2015(KDHS 2009). For every woman who dies in childbirth in Kenya, it is estimated that another 20-30 women suffer serious injury or disability due to complications during pregnancy or delivery (Bourbonnais, 2013). Approximately 57% of all deliveries in Kenya occur away from the health care facilities largely under the care of traditional birth attendants who are ill-equipped to handle obstetric emergencies (KDHS, 2009).

A key strategy of reducing both materno-foetal morbidity and mortality is to improve and promote a "health facility centered child birth" where expertise of qualified and skilled health providers manage labour and complications plus availability of effective referral systems for specialized care when needed (Filippi et al., 2006). In line with the Vision 2030 and the 2010 constitution, the Kenya health sector has elaborated its Health Policy to guide attainment of the long term health goals. The policy framework has an overarching goal, 'to attain the highest possible standard of health in a responsive manner'. The policy aim to achieve this goal through supporting provision of equitable, affordable, and high-quality health and related services at the highest attainable standards for all Kenyans (KHSSP 2014). However, "perceived" quality of care being provided by traditional birth attendants (TBA's) has been

identified as a major reason why pregnant mothers seek their care during delivery. Politeness, pain relief by massaging mothers in labour and provision of hot beverages after delivery has endured many pregnant mothers to these TBA's. Financial, social, cultural and geographical barriers to accessing care in these health facilities have largely contributed to maternal mortality and morbidity (Kitui, Lewis, & Davey, 2013).

In addition to providing free maternal healthcare services, the public health sector should also focus on quality of care by adopting the Donabedian model's measurement categories – structure, process and outcome which represent different characteristics of healthcare services. Through this the health sector may realize increased health facility deliveries and improved patient outcomes. Measures of structure evaluate the physical and organizational resources available to support healthcare delivery (Spath, 2009). In respect to maternal healthcare, this includes the number, skills, training and development of the health work force, the number of equipment available, functional and in use, the laboratory testing capabilities, availability and stock out of important medical supplies and referral capabilities. Others include equipped operating theatres, intensive care units and medical waste disposal capabilities.

Measures of process looks at whether activities performed during delivery of health care services are delivered satisfactorily (Spath, 2009). In respect of maternal healthcare, these include the available and use of standard clinical guidelines and protocols to manage obstetric complications such as hemorrhage, pre-eclampsia and sepsis. The availability and use of partographs to monitor progress of labour, use of infection prevention protocols and materno-foetal clinical audits are also important process measures.

Measures of outcomes evaluate the results of healthcare services – the effect of structural and process (Spath, 2009). In respect to maternal healthcare, these measures include the maternal death rates, number and types of complications, the average length of inpatient stay and customer satisfaction or patient experience. The recent implementation of the free maternal healthcare services in the Kenyan public health facilities was a top – bottom policy directive. The sudden upsurge of numbers of pregnant women seeking maternal healthcare services may potentially strain the health facilities in terms of physical infrastructure, human resource, and

financial resources, thereby affecting the processes' compliance which may eventually affect the maternal healthcare outcomes.

The aim of this research study was to assess the effect of the free maternal care services on perceived quality of service delivery at Nakuru Provincial General Hospital. These study findings are expected to provide a better understanding of the challenges in delivering quality care and form the basis of developing policies to support and sustain provision of quality free maternal services.

1.2 Problem Statement

Improving maternal health was one of the eight Millennium Development Goals (MDG-5) adopted by the United Nations member states that included Kenya. These countries committed themselves to reducing the maternal mortality by three quarters by the year 2015 (Sambo & Kirigia, 2014). Kenya is one of these countries with the highest burden of maternal deaths with a current maternal mortality ratio of 488 per 100,000 live births (Bourbonnais, 2013). Kenya did not achieve the MDG – 5 target of 147 per 100,000 live births by September 2015. Nakuru County is one of the 15 counties with the highest burden of maternal mortality rates of 374 per 100,000 live births (Summary Report of the Assessment of UNFPA 2014).

Approximately 57% of all maternal deliveries in Kenya occur away from the health care facilities largely under the care of traditional birth attendants (TBAs) who are ill-equipped to diagnose and manage obstetric complications (Macro, 2010). A key strategy of reducing both feto-maternal mortality and morbidity is to improve and promote delivery at health facilities where expertise of qualified and skilled health providers manage labour and complications (Filippi et al., 2006). Approximately 51% of all health facilities in Kenya are owned and run by the government (Muga, et al., 2005). Consequently, an increased access to these health care facilities by pregnant mothers for antenatal care and delivery can greatly lower feto-maternal mortality and morbidity. However, financial barriers tend to impede access to health care services especially among those populations living in low resource settings (WHO., 2013). To address this barrier and increase access to care in the public health facilities, the Kenya Government introduced the free maternal healthcare services on the 1st June 2013 through a presidential directive.

Increased access to the maternal services due to the introduction of the free maternity services (FMS) in the absence of consummerate strengthening of the health system could have resulted in lowered quality of care and inadvertently reduced confidence of the system hence lower utilization. The introduction of the FMS resulted in a 22% increase in the utilization of the maternal services (MOH., 2015). There was minimal input of new physical and organization resources from the government before and after the implementation of the FMS. This could have compromised the quality of the maternal care due to the utilization of the available resources at the hospital level and this could have undermined the MOH health sector strategy of lowering the MMR through increased health facility based deliveries.

1.4 Objectives

1.4.1 General Research Objective

The main objective was to evaluate the effect of free maternal healthcare services on the perceived quality of service delivery at Nakuru Provincial General Hospital.

1.4.1.1 Specific Objectives

1. To determine whether the current physical and organizational resources available at Nakuru Provincial General Hospital are sufficient to sustainably support delivery of quality maternal healthcare services
2. To determine whether the delivery of maternal healthcare services at Nakuru Provincial General Hospital meet the minimum care National Quality Standards.
3. To evaluate the effect of free maternal healthcare services at Nakuru Provincial General Hospital on maternal outcome measures (e.g., the length of stay at the hospital)

These objectives were to help address the following research questions:

1.4.1.2 Research Questions

1. What are the minimum physical and organizational resources needed at Nakuru Provincial General Hospital to sustainably support quality maternal healthcare services?

2. Are the current maternal services delivery at Nakuru Provincial General Hospital complying with the set National quality Standards, and if not, how can they be improved?
3. What are the outcomes measures of free maternal healthcare services at Nakuru Provincial General Hospital since the introduction of the free maternity services, and how can they be improved and sustained?

1.3 Justification

Improving maternal health was one of the eight Millennium Development Goals (MDG 5) adopted by the UN members states in the year 2000 whereby countries committed themselves to reduce the maternal mortality rates by three quarters (75%) by the year 2015 (Plan 2008). Kenya still has unacceptably high maternal morbidity and mortality rates. The most recent estimates set the maternal rate at 488 deaths per 100,000 live births, well above the MDG 5 target of 147 deaths per 100,000 live births by 2015 (KDHS, 2009). Kenya did not achieve MDG-5 target (reduction of maternal mortality by three quarters) by September 2015 and therefore, other innovative ways to achieve this goal are needed. The current maternal mortality rate for Nakuru County is 374 per 100,000 live births (UNFPA, 2014).

Kenya has chosen a key strategy that has been adopted successfully by some countries like Sri Lanka in reducing maternal fetal morbidity and mortality is improving and promoting "health facility centered child birth " where expertise of qualified and skilled health providers manage labour and complications plus availability of an effective referral system for specialized when needed (Filippi et., al. 2006).

However, financial barriers tend to improve access to healthcare services especially among those populations living in low resource settings (WHO, 2013). To address the financial barrier and increase access to care, the Kenya Government introduced and implemented free maternal services in June 2013 which resulted in a 22% increase in the number of deliveries (MOH., 2015). Implementation of free maternal services in absence of commensurate strengthening of health system may have compromised the quality of maternal care and therefore undermining the MOH health sector strategy of lowering the maternal mortality through increased health facility based deliveries.

These study findings are expected to provide a better understanding of the challenges in delivering quality care and form the basis of developing policies to support and sustain provision of quality free maternal services.

CHAPTER 2: LITERATURE REVIEW

2.1 Quality of Healthcare

In its broadest sense, 'quality" is an attribute of a product or service but there is no existing universally accepted definition. However, various definitions share common elements; that quality involves meeting or exceeding customer expectations and that it is dynamic and it can be improved (Spath, 2009). However, most definitions of quality care contain two components that are important to people seeking health care services. The first component is providing care of high technical quality which implies that a patient receives only the procedures, tests or services for which the desired health outcomes exceed the health risks and that they are performed in a technically excellent manner. The second component of quality care demands that all patients wish to be treated in a humane and culturally appropriate manner and be allowed to participate fully in deciding about their therapy (Brook, et al., 2000).

In the health setting, the consumers, providers and payers (mainly insurance and employers) may define healthcare quality from the perspective of their interests. To healthcare consumers, quality care may imply the provision of right treatments and procedures that are safe and guarantees good outcomes in a friendly, clean and pleasant environment. Healthcare payers view quality in terms of cost-effectiveness implying their interests in the value of return for their health care expenditures. For healthcare providers in addition to the consumer safety and better outcomes at cost-effective environment, they are also concerned by potential threats of legal liabilities (Spath, 2009).

In the United States, the institute of Medicine (IOM) has defined quality of care as the degree to which health services for individuals and populations increase the likelihood of desired health outcomes that are consistent with current professional knowledge (Medicine, 1990). It is imperative that this definition of quality care encompasses the interests of the healthcare consumers, providers and payers. Although all healthcare professionals uphold the principle "first, do no harm," patients are occasionally harmed by caregivers' actions or inaction.

In the United States, the institute of medicine estimates that about 100,000 Americans die each year as a result of preventable medical errors (Kohn, Corrigan, & Donaldson, 2000). One of the

main objectives of every healthcare organization is to reduce risk of patient harm occurring during the delivery of care.

Historically, medical error prevention was essentially entrusted to individual healthcare workers who were expected to do the "right thing–correctly–every time". Therefore healthcare organizations emphasized on training and hiring competent personnel believing that they will make no or minimal mistakes and this was fundamentally a flawed concept. While recognizing the importance of competent workforce in preventing medical errors, the truth is that most medical errors occurs due to faulty work systems' design and processes. Patients and caregivers' safety is a key pillar of quality care and therefore work systems' designs and processes must be examined to identify changes that can reduce the chances of medical errors. These include medical waste segregation and safe disposal, availability and use of various clinical guidelines and protocols. Where medical errors have occurred, a corrective action should be taken to minimize the degree of harm and review of the processes done to prevent the recurrence of the same in the future (Spath, 2009).

2.2 Measurement of Quality Healthcare

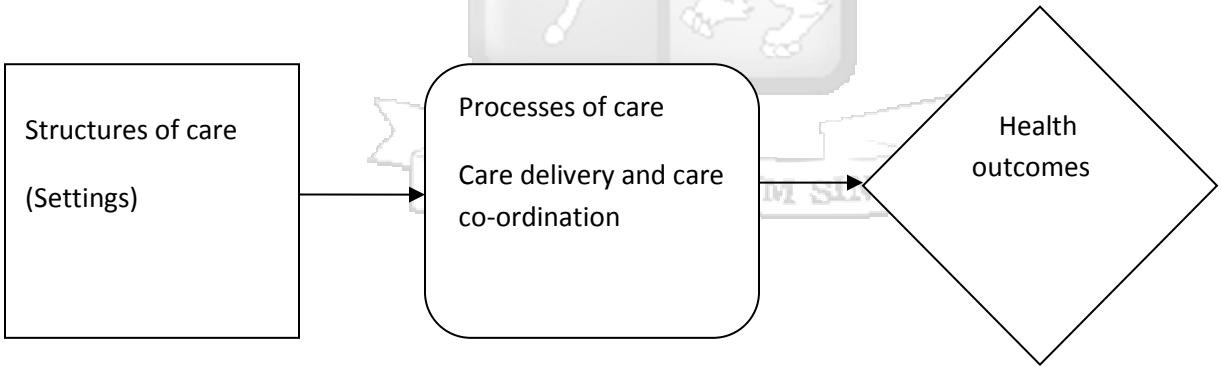


Figure 2.1: Donabedian quality framework (Donabedian, 1982)

The Donabedian quality framework for assessing the quality of care involves the three measurement categories; the structures, processes and health outcomes (Donabedian, 1982)

Quality does not develop on its own. For quality to be achieved, a systematic evaluation and process improvement must be implemented. Measurement, assessment and improvement are three primary quality management activities. The Healthcare organizations track

performance through various measurement activities to gather information about the quality of patient care and support functions. The results are then evaluated in the assessment step and compared with the expected performance. If performance is acceptable, then continuous measurement is advocated to avoid deterioration and if not acceptable appropriate action is undertaken and then continuously measured to detect any improvement or none.

Measures of structure evaluate the physical and organizational resources available to support healthcare delivery and therefore indirectly measures performance. The health workforce is a key component of the organizational resources. The health workforce is defined as the stock of all people engaged in actions whose primary intent is to enhance health (KHSSP, 2014). The rate of maternal mortality and morbidity is a measure of quality maternal care.

Sri Lanka, a non-industrialized country with limited resources, has largely succeeded in reducing maternal mortality and morbidity. Key to this success was the strategy of free access to maternal healthcare services and promoting facility deliveries under supervision of skilled birth attendants. More than 98% of deliveries occur in health facilities and under skilled birth attendants (Haththotuwa et., al, 2012). The Kenya government is currently pursuing a similar strategy with free maternal health services in all public health facilities. However, for this strategy to succeed in Kenya, the government requires to address the availability of appropriate and equitability distribution of health workers, attraction and retention of healthcare providers, improving institutional and health workers' performance, and capacity building (KHSSP, 2014).

The promotion of facility based deliveries under skilled birth attendants also requires major investment in the physical infrastructure. Availability of operating theatres, wards to avoid bed sharing and general clean environment will improve the quality of care. Quality of maternal healthcare services also requires availability of functional equipment. These include radiological obstetric ultrasounds, Doppler scans and laboratory testing capabilities including blood transfusion. Quality of maternal healthcare services require an effective and efficient referral system with necessary logistical support provision such as mechanically sound and equipped ambulances, drivers, fuel and communication channels.

A case study on assessing the trauma care at two Kenyan hospitals (Naivasha and Thika District Hospitals) found that despite high volume of trauma cases, these hospitals did not have adequate physical and organizational capabilities to handle the cases (Wesson et al., 2013). These included lack of adequate theatre facilities, intensive care units, no mechanical ventilators outside theatres and functional radiological equipment.

Measures of structure involve the measurement and assessment of the availability of equipment, operating theatre, adequate space to ensure patient privacy, availability of adequate numbers of functional and in use equipment that are easily accessed. Availability of adequate essential supplies to support quality patient care is paramount. Laboratory tests support to make diagnosis and patient progress including the availability of blood and blood products especially in emergency situations. Health workers are a key component of structural measures that includes the training and development, skill mix, adequate numbers, for example nurse to patient ratio. A de-motivated and overworked healthcare workforce will definitely affect the quality of care. The availability of all these resources must be evaluated against the expected standards.

Governments through the relevant ministry responsible for healthcare or/and the medical professional organizations have developed clinical practice guidelines and protocols. These clinical guidelines and protocols are defined as systematically developed statements to assist practitioners and patient decisions about appropriate healthcare for specific clinical circumstances (Institute of Medicine, 1990). Guidelines and protocols are important to health care quality improvement because they can reduce variations in practice and change physician behavior to promote use of interventions supported by the best evidence available based on current medical research and professional consensus (Spath, 2009). Adherence to these clinical guidelines and protocols is an important process measure of quality of care.

In Kenya, national clinical guidelines and protocols are developed and published by the ministry of health through a participatory process that includes professional bodies, universities and private sector players. In maternal healthcare services, there are national clinical guidelines on management of postpartum hemorrhage, eclampsia and puerperal sepsis which are major cause of maternal mortality and morbidity. Patient management require

documentation of patient history (complains), physical examination findings, investigations ordered and results, treatments given or procedures performed, and any complications encountered. Measurement of processes involves evaluating the quality of this documentation (completeness) including the compliance of signed patient informed consent forms and use of partograph (graphical labour charting). Compliance to these clinical guidelines and protocols by care givers is an important measure of quality care.

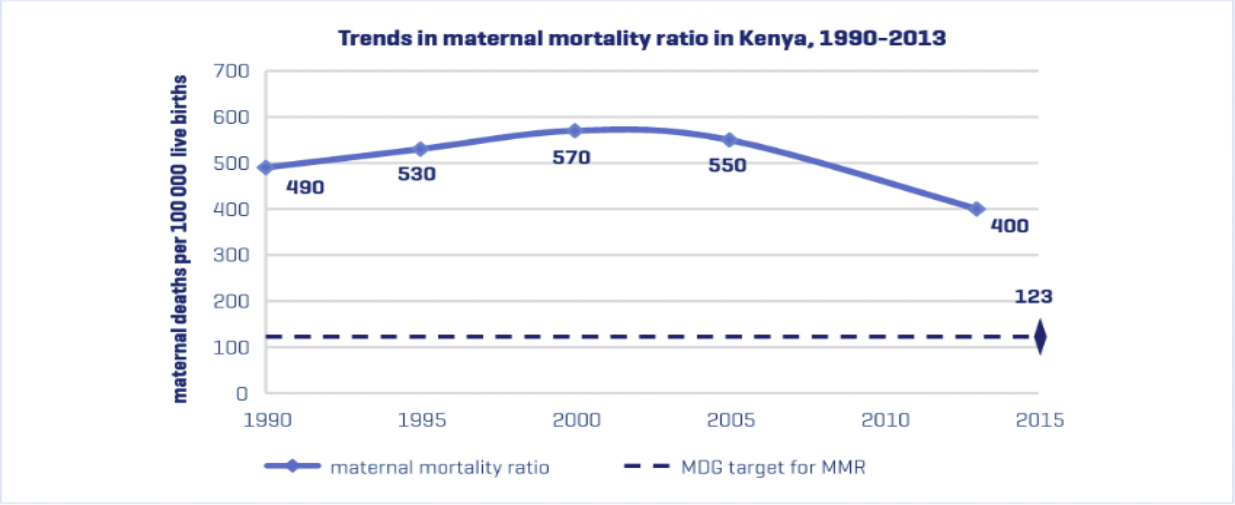
Measures of outcome evaluate the results of healthcare services – the effects of structure and process. These include patient mortality (deaths) and complications (morbidity) rates to identify opportunities for improvement. Outcome measures are also used to evaluate the utilization of healthcare services. These include the average length of hospital stay and even the average cost of treatment. Increase attention to the patient-centered healthcare has placed greater emphasis on measuring a wide range of patient experiences. This is the framework that was used to undertake the first national assessment of the FMS in Kenya in September 2014 (MOH., 2015).

2.3 Maternal Healthcare

Maternal healthcare refers to the health of women during pregnancy, childbirth and the postpartum period which are believed to be the most dangerous days of her lifetime – particularly for those women in the developing countries (WHO, 2013). Globally, an average of 1000 women die from preventable causes every day of which 99% occur in the developing countries with sub-Sahara Africa accounting for 50% of these deaths (Filippi et al., 2006). Maternal mortality and morbidity is higher among women living in low resource settings particularly the young adolescents who face a higher risk of complications (WHO, 2013).

Improving maternal health was one of the eight Millennium Development Goals (MDG–5) adopted by the United Nations Member States in the year 2000 when these countries committed themselves to reduce maternal mortality by three quarters (75%) by the year 2015 (Filippi et al., 2006). The 2013 UN Millennium Development Goals (MDGs) progress report showed that many regions of the world had made progress on the fifth goal of improving maternal health. However, the region of Sub – Saharan Africa is still lagging behind and did not meet the agreed targets of reducing by three quarters the maternal mortality ratio between

1990 and 2015 (Ononokpono, et al., 2013). The huge discrepancy in the number of maternal deaths between various countries or regions reflects the inequities of access to quality health services and highlights the gap between the poor and the rich.



Source: WHO, UNICEF, UNFPA, World Bank, United Nations Population Division. Trends in Maternal Mortality: 1990 to 2013. Geneva: World Health Organization; 2014.

Figure 2.2: Trends in maternal mortality ratio in Kenya, 1990-2013 (WHO, 2014)

Kenya is one of these countries with the highest burden of maternal deaths. However, the most recent maternal mortality data from the health sector indicates a declining rate of 488/100,000 live births but which is still high and well below the MDG 5 target of 147/100,00 live births by 2015 (Bourbonnais, 2013). Financial, social-cultural and geographical barriers have been identified as an impediment to accessing healthcare in Kenya where approximately 46% of the populations live below the poverty line (KDHS, 2009). Approximately 57% of all deliveries in Kenya occur away from the health facilities largely under the Traditional Birth Attendants (TBAs) who are ill equipped to diagnose and manage obstetric complications (Macro, 2010). To address the barrier of the high burden of the healthcare costs on households, high poverty index and the significance of financial barrier as an impediment to promoting the "health facility based deliveries" strategy, the Kenya government has implemented the free maternal healthcare in all public facilities since 1st June 2013.

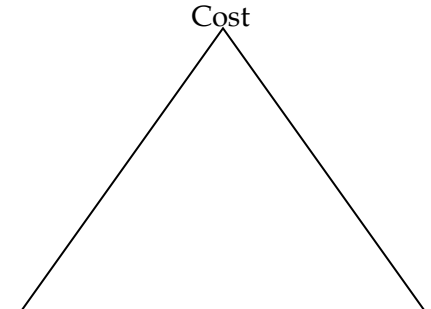


Figure 2.3: The iron triangle of health care (Ginsburg & Lesser, 2002)

However, removal of financial barriers as a means of increasing access to health care services may have negative effect on quality of care. The relationship between cost, quality and access is summarized in the iron triangle concept (Figure 2.3). Iron triangle concept has widely been used to evaluate the dynamic relationships among access, cost and the quality of care within the health industry. A change in one will affect the dynamism of the others. Consequently, the quality of care may be negatively affected by the reduction of costs and increased access to healthcare services. To sustain improved access (facility based deliveries), more focus should be emphasized on the quality of care otherwise poor quality will eventually erode the gains made by improved access to care.

The implementation of free maternal health care services in Kenya was mainly a top-bottom policy initiative and probably these health facilities were ill-prepared and not ready to handle an expected large influx of patients. An increased influx of pregnant mothers seeking healthcare services in this hospital may have a negative impact on the physical and organizational resources available to support the healthcare delivery**.** The first evaluation of the "Status of the Implementation of the Free Maternity Services (FMS)" was undertaken by the Ministry of Health in September 2014; 15 months after its implementation (MOH., 2015). This was probably too early to assess the impact of the programme. In addition some major facilities like Nakuru Provincial General Hospital (NPGH) were not covered in the assessment.

2.4 Maternal Healthcare Financing

In sub-Saharan African countries, the greatest challenge facing governments and other development partners is in the finding the best way to finance and provide healthcare especially for the rural poor (Marwa, et al., 2013). In the year 2000 African head of states committed themselves, under Abuja declaration, to set a target of allocating at least 15% of their nation budget to the improvement of the health sector (Sambo & Kirigia, 2014). In Ghana, the

government introduced the exemption policy in 2004 in both the private and public facilities for child birth costs. This led to increased access and utilization of health services without deterioration of the quality of maternal care. However, Ghana allocates an average of 5% the GDP to the health sector (Bosu, et al., 2007). In comparison, Kenya health sector allocations over the last two decades have averaged 1.4 to 1.6% of the GDP (NHA, 2010).

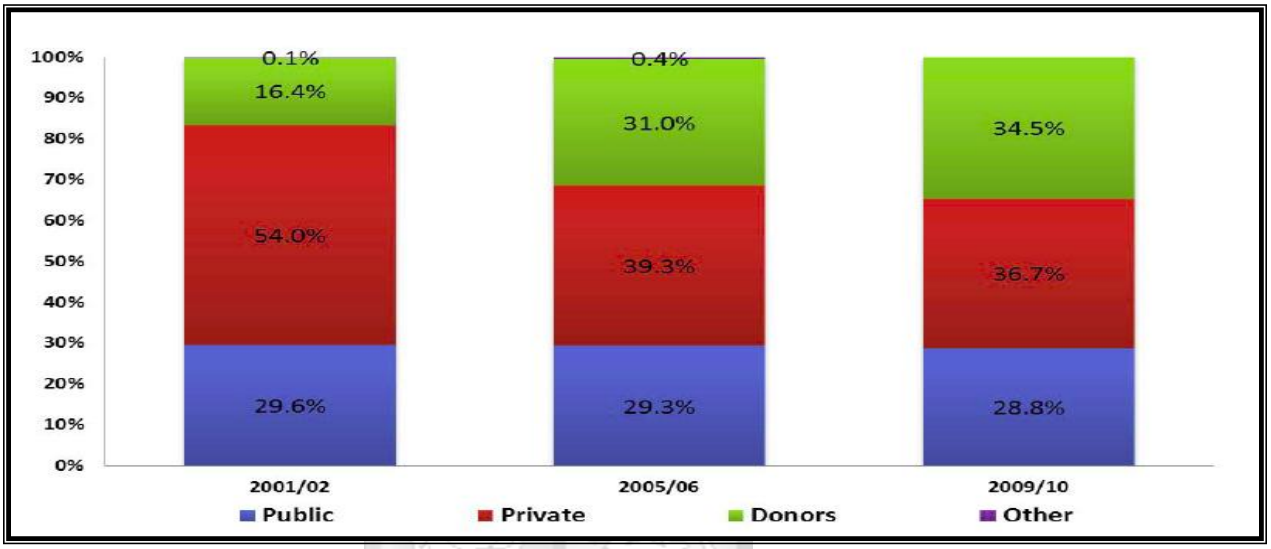


Figure 2.4: Healthcare Financing: Who pays in Kenya? (NHA,2010)

The total government health expenditure as a percentage of total government expenditures continue to decline; from a high of 8.6% in 2001/02 to 4.6% in 2009/10. This is despite the Government commitment to increase allocation for health to 15% of its budgets in line with the Abuja declaration (NHA., 2010).

The private sector (household or out of pocket) remains the single largest source of financing for the health sector. However, private sector's contribution to total health expenditure (THE) has been declining over the years partly because of the increased donor funds inflows into the health sector. The public sector (government) contribution to the total health expenditure has fairly remained constant despite increased demand for healthcare (NHA., 2010). It is estimated that 45.2% of the Kenyan population lives below the poverty line, - less than one dollar a day and hence the financial barrier has been identified as an impediment to access to health facility deliveries in Kenya (Macro, 2010). In cognizant of the burden of healthcare cost on households, the high poverty index and the significance of financial barrier

as an impediment to access health facility deliveries, the Kenya government introduced free maternity services effective 1st June, 2013 in all public health facilities.

The government of Bangladesh has a free maternity care policy in the public owned healthcare facilities. However in their study findings, Nahar and Costello, were able to demonstrate the presences of considerable hidden costs which were found to be a major contributor to low utilization of 'free' maternity services especially among the low income populations in Dhaka City, Bangladesh (Nahar & Costello, 1998).

Similarly, the possibility of hidden costs incurred by pregnant mothers seeking free maternal care in the Kenyan public health facilities can be a barrier to a successful implementation of this policy initiative. In the first comprehensive report by the MoH on the status of implementation of free maternity services, 28% of pregnant mothers seeking delivery services had reported to have paid some fees to access care (MOH., 2015).

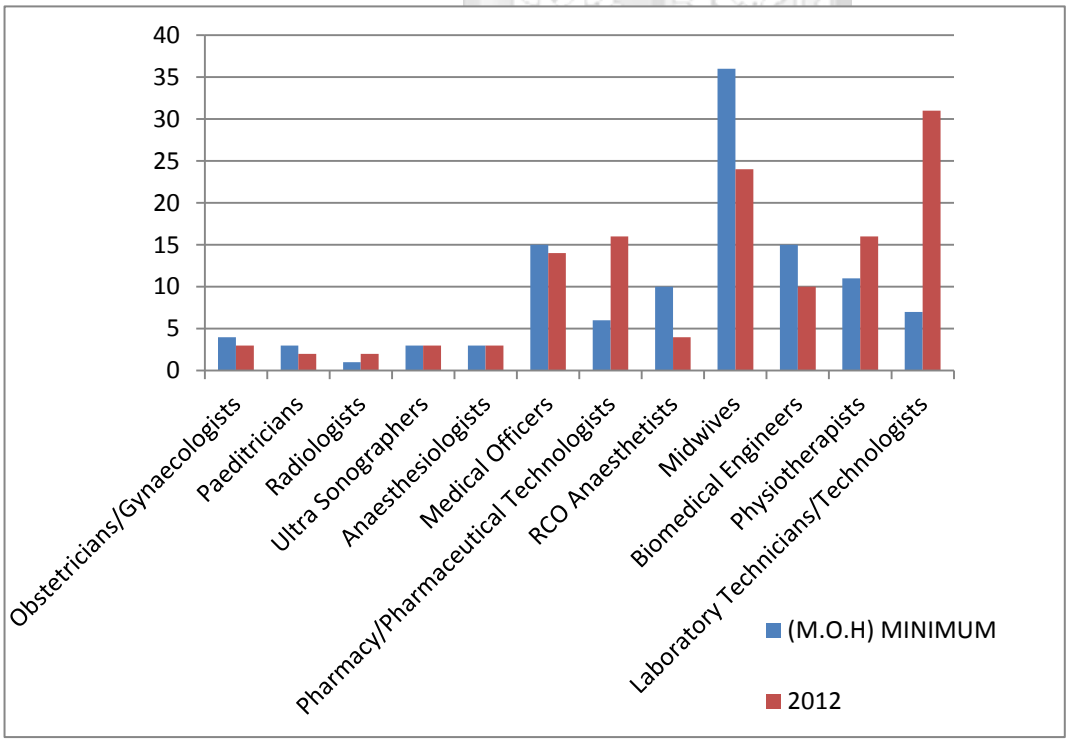


Figure 2.5: Service Delivery; Key Human Resources (MOH 2006) and (RVPGH,. 2014)

Healthcare professionals are central to the delivery of high quality healthcare services. Adequate numbers of healthcare professionals with extensive training, education and skills are

essential to meeting society's needs for quality healthcare (Fried and Foller,. 2011). The Kenyan healthcare system faces a variety of human resource problems primarily an overall lack of personnel in key areas which is worsened by a large number leaving to work overseas. This situation is worsened by inequitable distribution of health personnel between the urban and rural areas (Ndetei, et al., 2008).

In response to this, the Kenyan Government has developed new standards to improve working conditions in the health sector and retention of staff (Ndetei, et al., 2008). At NPGH there is a clear shortage of key human resource available for maternal health services compared against minimum standards of ministry of health for a level five hospital (MOH 2006 and RVPGH, 2014). The Kenya government is currently pursuing the strategy of promoting facility based deliveries through its policy of free maternal health services in the public facilities. However, for this strategy to succeed the Kenya government needs to address the availability of appropriate and equitable distribution of health personnel.

2.5 Conceptual Framework

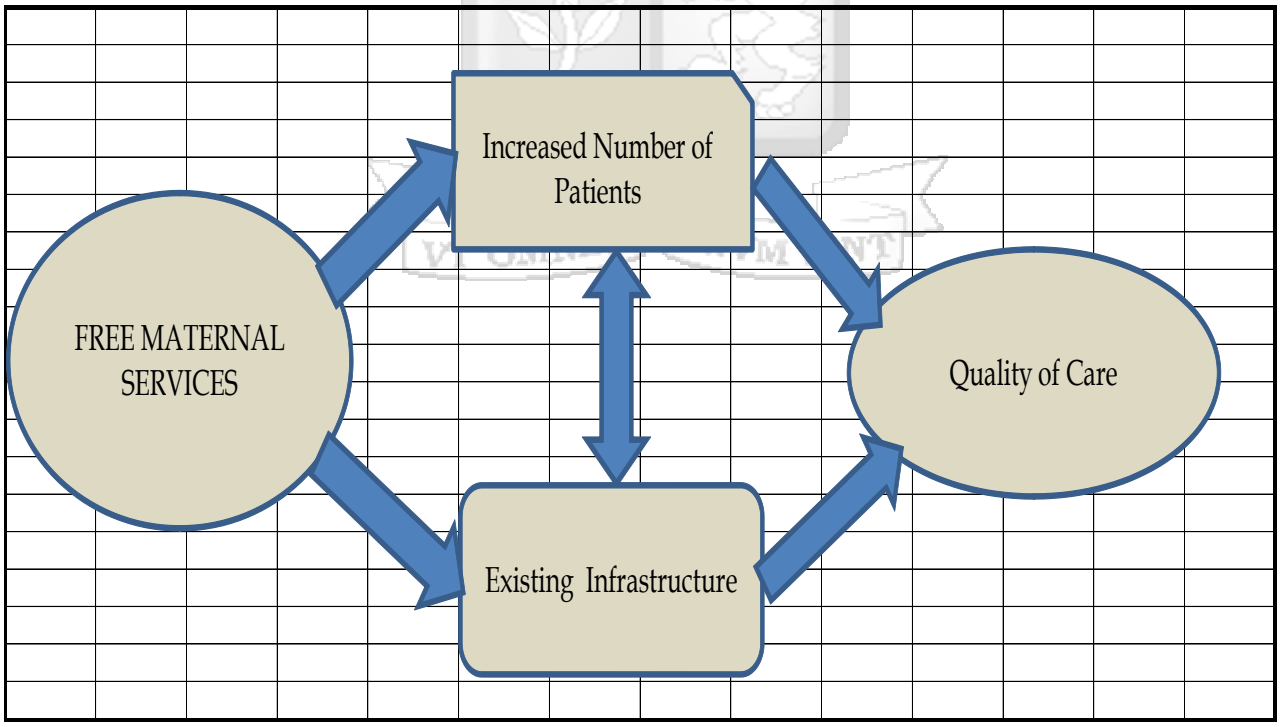


Figure 2.6: The conceptual framework

The implementation of the free maternal services led to the increased number of pregnant mothers seeking delivery services at public health facilities. This increased access

could have led to the straining of the existing infrastructure due to increased utilization. The introduction of the free maternity services was a top-bottom policy directive by the government which was meant to be implemented immediately. However, there was no immediate or prior corresponding investment in both physical and organization resources by the government. Consequently, the increased patient numbers and strained physical and organization resources may have had an effect on the quality of maternal services being offered.

CHAPTER 3: STUDY METHODOLOGY

3.1 Study Site

This study was conducted at Nakuru Provincial General Hospital (NPGH) which a teaching and referral hospital serving a primary catchment population of 1.6 million people. It is a level five hospital and therefore a secondary referral facility. The maternal mortality rate in Nakuru County is estimated at 374 per 100,000 live births (UNFPA,2014).

3.2 Study Design

This study was a quantitative research design whereby a questionnaire was administered to the respective respondents. The respondents included pregnant mothers visiting the hospital for delivery.

3.3 Sample Size Calculation

A representative sample/proportion of the large number of pregnant mothers seeking delivery services at NPGH was calculated using the Cochran formulae.

$$n = \frac{Z^2 pq}{e^2}$$

Where;

n = sample size

Z^2 = z – value for 95% confidence interval

e = is the desired level of precision (sampling error)

p = an attribute of the study population

q =1-P

$$= \frac{(1.96)^2 (0.502) (1-0.502)}{(0.05)^2} = 384$$

Where P = is the percentage of mothers delivering through skilled birth attendants. The use of this attribute to maternal health is because of its relevance to the subject of study.

Documented value of the number of women in Kenya who utilize health facilities for delivery currently stands at 50.2% (Liambila & Kuria, 2014).

The minimum sample size calculated was 384 patients at the point of discharge.

The study was a prospective study that used systematic sampling where samples were picked on the K^{th} patient (5^{th} patient) from the admission numbers at the point of discharge. From the recent administrative data, an average of 1,100 deliveries per month was conducted at NPGH. To achieve the representative sample and also due to the time constraint in the study, the 5th patient was chosen to represent the K^{th} patient from the admission numbers at the point of discharge. This approach only captured data on patient management processes and outcome category of measures. It is imperative to note that the inpatient file numbering is computer generated since the patient records were part of the electronic medical records. Data on key human resource working and supporting the maternity services for year 2015 was the administrative data as reported to the ministry of health. Data on key infrastructure resources supporting the maternity services for the same years was also retrieved from the hospital inventory.

3.4 Inclusion Criteria

3.4.1 Post natal mothers who had just delivered at the NPGH.

3.4.2 Post natal mothers who had agreed to give informed consent (annex 1)

3.5 Exclusion Criteria

3.4.3 Post natal mothers who had delivered elsewhere before coming to NPGH

3.4.4 Post natal mothers with mental incapacitation.

3.4.5 Post natal mothers who had declined to give informed consent (annex 1)

The study was undertaken between the months August and September of the year 2015

3.6 Data Collection and Analysis

Following informed consent (annex 1), the questionnaires (annex 2) were administered to the 5^{th} patient at the point of discharge after a careful selection of the number from the computer generated admission numbers by the research assistants. The questionnaires were administered by the research assistants. Due to the technicalities of certain information of which

the patient could not provide during the data collection, for example use of partographs for labour management, the information was extracted from individual patient file. Once the data had been collected the filled questionnaires were stored safely awaiting analysis. Structural and process measures captured were compared against the National norms and standards of maternal health care services (F. Health & Delivery, 2006) (annex 3).

The data analysis was done using SPSS and the data collected displayed using tables, pie-charts and graphs. The data was quantitatively analyzed using descriptive statistics.

3.7 Ethical consideration

The research was approved by Strathmore University Ethical Review Committee (Annex 4). The patients participating in the study signed an informed consent before participating in the study which clearly stipulated and outlined the benefits and challenges of the study.

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CHAPTER 4: RESEARCH FINDINGS

The study was undertaken between August and September 2015. During this period a total of 2,115 deliveries were conducted at Nakuru PGH. For the purposes of this study, 423 post natal mothers were enrolled into the study and interviewed.

4.1 Social-Demographic Characteristics

Table 4.1: Age Distribution of mothers delivering at NPGH

Age Group	Frequency	Percentage
15 - 19	61	14.4%
20 - 24	163	38.5%
25 - 29	103	24.3%
30 - 34	60	14.1%
35 - 39	30	7.1%
40 - 44	6	1.4%
TOTAL	**423**	**100.0%**

Postnatal mothers within the age set 20 – 24 years constituted the highest proportion of mothers (38.5%) enrolled in the study.

Table 4.2: Educational level of mothers delivering at NPGH

Education Level	Frequency	Percentage
No Education	9	2.1%
Primary	184	43.4%
Secondary	186	44.1%
College/University	44	10.4%
TOTAL	**423**	**100.0%**

Postnatal mothers who had attained at least the primary level of education of constituted 43.4% and those with secondary level of education and above constituted 54.5% of mothers delivering at NPGH.

Table 4.3: Employment Status of mothers delivering at NPGH

Employment	Frequency	Percentage
Employed	49	11.6%
Self Employed	157	37.1%
Unemployed	59	14.1%
Housewife	157	37.0%
Others	1	0.2%
TOTAL	**420**	**100.0%**

The employed (self and formal) postnatal mothers constituted of 48.8% while the unemployed and the housewives constituted the 51.2% of mothers delivering at NPGH.

4.2 Physical and Organizational Resources

Table 4.4: Satisfaction with the availability of Beds and Linen

Measure	Frequency	Percentage
Fully Satisfied	349	82.5%
Satisfied	21	5.0%
Somewhat dissatisfied	7	1.7%
Dissatisfied	46	10.8%
TOTAL	**417**	**100.00%**

A majority (87.5%) of the mothers were satisfied with the availability of beds and linen in the maternity unit.

Table 4.5: Satisfaction with sanitary facilities in the ward

Measure	Frequency	Percentage
Fully Satisfied	383	91.5%
Satisfied	22	5.2%
Somewhat dissatisfied	5	1.2%
Dissatisfied	9	2.1%
TOTAL	**419**	**100.0%**

A majority (96.7%) of the post natal mothers were satisfied with the sanitary facilities at Nakuru PGH.

Table 4.6: Satisfaction with privacy and confidentiality

Measure	Frequency	Percentage
Fully Satisfied	392	93.3%
Satisfied	20	4.8%
Somewhat dissatisfied	3	0.7%
Dissatisfied	5	1.2%
TOTAL	**420**	**100.0%**

A majority (98.1%) of the post natal mothers felt that the hospital provided the much needed privacy and confidentiality during the process of delivery.

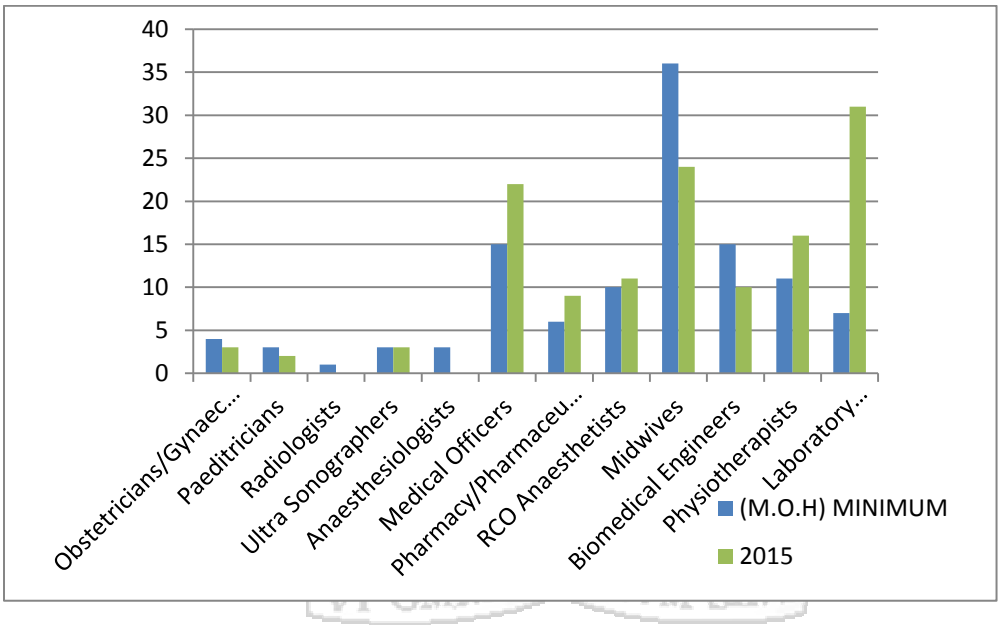

Figure 4.1: Service delivery; Key Human Resource

In figure 4 above, shows the available key human resource involved in maternity services in NPGH against the minimum staffing levels for a level five hospital. Midwives, clinical officer anesthetists and obstetricians were below the minimum MOH standards. There were no specialist radiologists and anesthetists. However, the number of medical officers, physiotherapists and laboratory staff were above the minimum MOH requirement.

Table 4.7: Organizational Resources

	AVAILABLE RESOURCES	2015
1	BP MACHINES	
	-Digital	1
	-Mercury	1
2	Stethoscopes	1
3	Thermometer	1
4	Weighing Scale (Adult)	2
5	Weighing Scale (Infant)	2
6	Faetoscope	4
7	Beds	10
8	Delivery Beds	7
9	Episiotomy /Delivery sets	15
10	Incubator	-
11	Radiant Warmer(Resuscitaire)	3
12	Oxygen Concentrator	1
13	Oxygen Cylinder	1
14	Suction Machines	1
15	Macerator	1
16	Refrigerators	1
17	Anaesthetic Giving set	1
18	Telephone Landline	3
19	Mobile Phones	4
20	Ambulances	3
21	Emergency Drug Tray	1
22	Toilets	7
23	Washrooms	4
24	Running water (water points)	13
25	Theatre	4
26	Functional Ultrasonography	3
27	Functional Laboratory	1
28	ICU	1
29	HDU	1

Table 4.7 represented the available physical resources to support the maternity services at Nakuru Provincial General Hospital

4.3 Process Compliance

Figures 4.2 – 4.4 are signed medical or surgical consent, pain relief medication prescribed, and the availability of partograph respectively. Tables 9 and 10 are summaries of completeness of physical examination and availability of Rapid Response Initiative (RRI) sheets respectively.

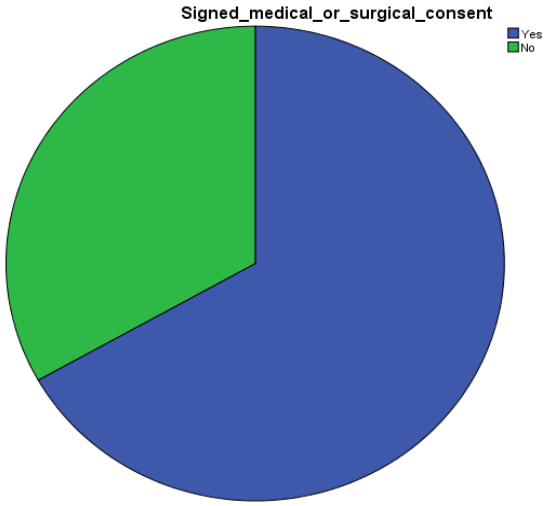

Figure 4.2: Signed Medical or Surgical Consent

A third of the admitted post natal mothers did not sign any consent form during their maternity stay while the remaining two thirds signed which indicated non compliance of 33% against the required 100%.

Table 4.8: Physical Examination Complete

Availability	**Frequency**	**Percentage**
Yes	101	23.9%
No	309	73.1%
Missing	13	3.1%
TOTAL	**423**	**100.0%**

Only 23.9% of the post natal mothers had their physical examination complete compared to 73% whose physical examination were incomplete which indicated a compliance of the same percentage against the required 100%.

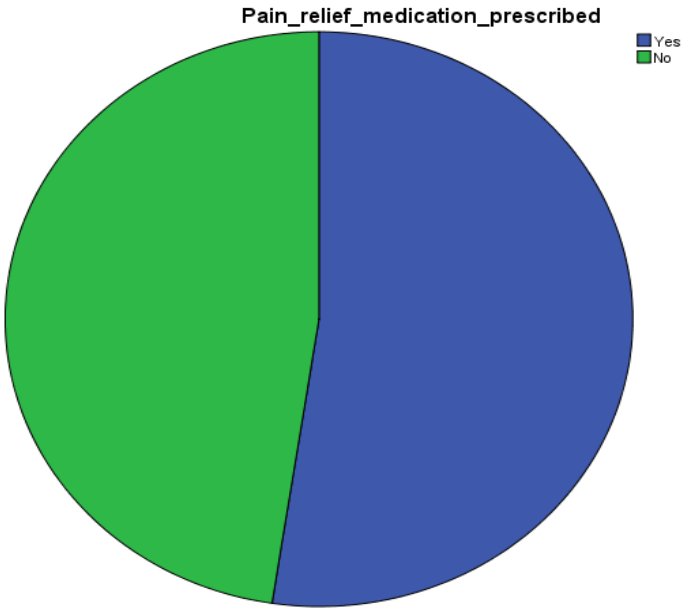

Figure 4.3: Pain Relief Medication Prescribed

Approximately half (46.6%) of the postnatal mothers admitted had pain relief medications prescribed and given while 42.3% did not receive any pain relieving medication with the latter representing the level of non-compliance against the required 100% compliance

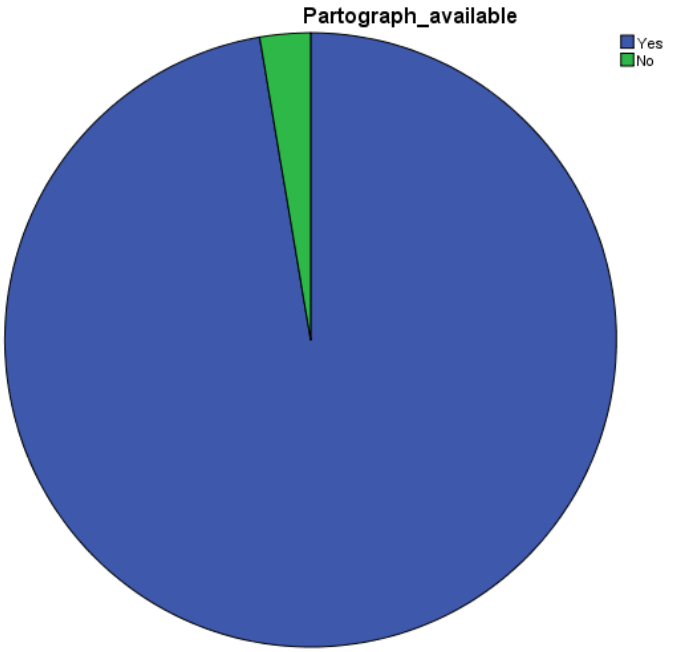

Figure 4.4: Partograph

Majority (97.3%) of the partographs was available and labour charted while only 2.7% were not charted which represented the percentage of non-compliance of labour charting.

Table 4.9: RRI Theatre Sheet and in Use

	Frequency	**Percentage**
Availability and in Use	125	29.6%
Availability and in Use	285	67.4%
Not Available	13	3.0%
TOTAL	**423**	**100.0%**

Only about 30% percent of the Rapid Response Initiative sheets were available and in use within the maternity unit, while 3% of the RRI sheets were not available at all.

4.4 Outcomes of the Free Maternity Services

Tables 4.10 - 4.12 represent the length of stay, opinion on recommendation of facility to others and opinion on future use of facility respectively. Figure 9 represents proportion of patients who paid for the services or commodities.

Table 4.10: Length of Stay (LOS) at the Health facility

Number of Days	**Frequency**	**Percentage**
1	58	13.7%
2	312	73.8%
3	29	6.9%
4	7	1.7%
5	1	0.2%
6	2	0.5%
7	1	0.2%
8	2	0.5%
>9	11	2.6%
TOTAL	**423**	**100.0%**

Majority of the post natal mothers spent up to 2 days in the health facility after delivery which accounted for 87.5% of the total deliveries.

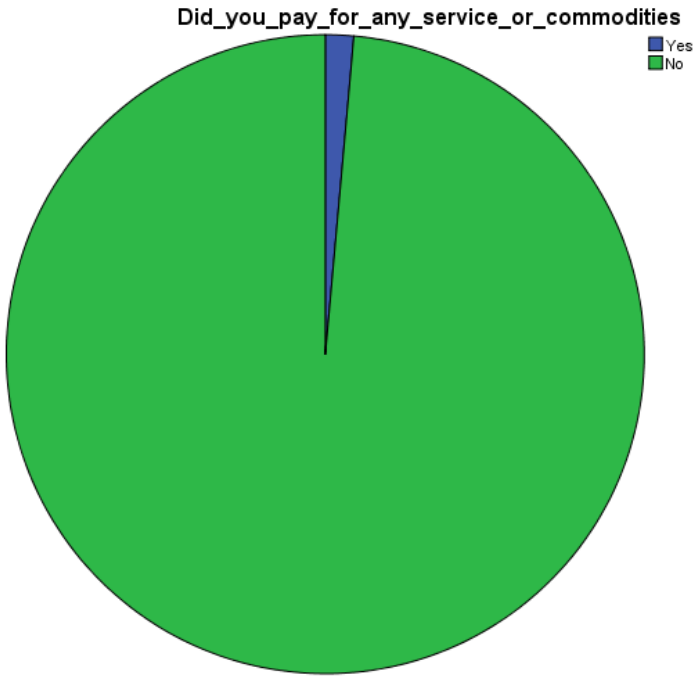

Figure 4.5: Proportion of patients paying for services or commodities.

Majority (98.6%) of the post natal mothers did not pay for any services or commodity in the facility.

Table 4.11: Recommendation of facility by the postnatal mothers

Recommend	**Frequency**	**Percentage**
Yes	413	97.6%
No	10	2.4%
TOTAL	**423**	**100.0%**

Majority (97.6%) of the post natal mothers said that they would recommend and refer the facility to someone else.

Table 4.12: Repeat facility use

Repeated Use	**Frequency**	**Percentage**
Completely Disagree	3	0.7%
Disagree	4	1.0%
Agree	283	66.9%
Completely Agree	132	31.2%
Do not Know	1	0.2%
TOTAL	**423**	**100.0%**

Only 1.7% of the post natal mothers said that they would not use the facility for the next delivery while 98.1% would definitely come back for further services.

CHAPTER 5: DISCUSSION

5.1 Social Demographic Characteristics of Mothers delivering at NPGH

A total 2,115 pregnant mothers delivered at Nakuru PGH in the months of August and September 2015 compared to 1,380 deliveries in the same period in 2012, reflecting a 53% increase. A total of 423 mothers were interviewed for the same period for the purpose of this study. Post natal mothers within the age set of 20 – 24 years comprised the majority (38.5%) while those between 40 – 44 years comprised the least (1.42%).

These results are relatively comparable to those of the ministry of health while evaluating the status of implementation of the free maternity services by the Government of Kenya. It reported that 20 – 24 years age set comprised the majority (32.6%) and 40 – 44 years had the least (1%) (MOH., 2015). In Kenya, women in the 20 – 24 years age set accounts for the majority (20.2%) of all women within the reproductive age (15 – 49 years) (KDHS 2009). The findings of this study are relatively comparable to those of the general demographic age distribution.

An estimated 45.2% of the Kenyan population lives below the poverty line – less than one dollar a day (KDHS, 2009). It is also important to note that house hold (out of pocket) has over the last decade been the single largest (36.7% - 39.3%) source of healthcare financing in Kenya (NHA, 2010). In a comprehensive assessment report on status of implementation of free maternity services by the ministry of health, majority (42%) of post natal mothers had only attained primary level of education (MOH., 2015). In this study majority (45.5%) of post natal mothers had attained up to primary level of education while the largest proportion (51.2%) were either unemployed or house wives. These findings corroborated the comprehensive report by the MoH and therefore indicate how critical the FMS is among those pregnant mothers seeking delivery services at NPGH.

5.2 Physical and organizational resources to support the FMS

Healthcare workers are a key component of organizational resources that support service delivery and are an indirect measure of health system performance. The Kenya government is currently pursuing a strategy of promoting facility based deliveries through the policy of free maternity services in all public health facilities.

This study showed that except for laboratory and physiotherapy, key human resource involved in the maternal service delivery before the implementation of the free maternal services were below the minimum requirements. In particular, Nakuru PGH does not have key human resources such as specialist radiologists and anaesthesiologists who are critical in the delivery of quality care in the hospital including maternal care. The numbers of midwives have remained constant despite the 53% increase in the number of deliveries and are far below the minimum standard of the Ministry of Health for a level 5 health facility (MOH 2006). For the strategy of promoting facility based deliveries to succeed, the government requires to address the availability of appropriate numbers of key human resources, their equitable distribution, attraction and retention, improving individual work performance and capacity building.

With regard to physical resources, a majority (87.8%) of post natal mothers were satisfied with the availability of patients' beds and linen in the maternity unit. According to a majority of the mothers the sanitary facilities in the maternity unit were clean and adequate. Majority of post natal mothers felt that the hospital provided the much needed privacy and confidentiality during delivery. Despite the increase in the numbers of pregnant mothers seeking delivery services at NPGH, the facilities and infrastructure were found to be adequate and supportive of the Free Maternity Services. The study findings were consistent with those from the comprehensive assessment reports on the status of implementation of free maternity services where 89% of facilities had available beds in the maternity units while toilets and of bathrooms were functional and adequate (MOH., 2015). The promotion of facility-based deliveries under skilled birth attendants also requires major investment in the physical infrastructure. Quality of maternal healthcare services also requires availability of functional equipment. These include radiological obstetric ultrasounds, Doppler scans and laboratory testing capabilities

including testing of blood for transfusion. Availability of operating theatres, wards to avoid bed sharing and general clean environment will improve the quality of care.

The findings from this study, there was inadequate equipment required for a level five facility. The available equipment were far below the minimum requirement according to the norms and standards of the ministry of health. These findings were consistent with those in the comprehensive report on the status of implementation of free maternity services (MOH., 2015).

Quality of maternal healthcare services require an effective and efficient referral system with necessary logistical support provision such as mechanically sound and equipped ambulances, drivers, fuel and communication channels. From this study, the hospital had 3 ambulances and mobile phones available to the key personnel involved in maternity services. These resources can empower the referral system from both peripheral and tertiary hospitals, and enhance consultations with medical specialists.

5.3 Process Compliance

Historically, medical error prevention was essentially entrusted to individual healthcare workers who were expected to do the "right thing–correctly–every time". While recognizing the importance of competent workforce in preventing medical errors, the truth is that most medical errors occurs due to faulty work systems' design and processes (Spath, 2009). Patients and caregivers' safety is a key pillar of quality care and therefore work systems' designs and processes must be examined to identify changes that can reduce the chances of medical errors.

In this study, the majority (73.1%) of post natal mothers had incomplete physical examination while a third (33.2%) had not signed medical or surgical consent. A significant proportion (42%) of the pregnant mothers in labour did not receive the prescribed pain relief medication. In contrast, 97.3% of the post natal mothers had their labour management plotted on partographs. Patient management requires documentation of patient history (complains) physical examination findings, treatments given or procedures performed, and any complications encountered.

The study findings on partograph availability and use in the management of labour were consistent with finding with the comprehensive assessment report on status of implementation of free maternity services (MOH., 2015).

Although all healthcare professionals espouse the principle "first, do no harm", patients are occasional harmed by caregiver's action or inaction. Despite the continued efforts by healthcare organizations to improve patient safety, potentially avoidable safety problems still exist. One of the broad quality improvement aims of every healthcare organization must be to make care safer by reducing harm caused during the delivery of care (Spath, 2009). One of the requirements of the National Quality Standards of healthcare delivery in Kenya is the use of Rapid Response Initiative (RRI) template to fast track the patient movement and care points in order to identify and mitigate care points and processes that require immediate attention and improvement in the process of care delivery.

From this study, the RRI theatre sheet use, only 30.5% of the RRI sheets were available and in use in the maternity unit. Therefore, there is a huge gap (69.5%) in complying with the National Quality Standards on use of RRI sheet which might compromise the quality of maternal care provided.

5.4 Main Outcomes of the FMS at NPGH

From this study, 87% of the postnatal mothers had a length of stay of upto two days, with 13% of them leaving after one day of admission. Before the implementation of the free maternity services the average length of stay was 6 days (RVPGH,. 2014). According to the Health Sector Annual report 2009 by the Ministry of Health reported an average length of stay of 5.4 days for rift valley province where NPGH is situated against a national average of 6.8 days (DHIS, 2010). Most postnatal mothers remained in the maternity wards after the delivery and discharge or awaiting settlement of the medical bills. It is therefore apparent that implementation of the free maternity services has significantly contributed to the reduction of the average length of stay.

From a study findings in Bangladesh considerable hidden costs which were found to be a major contributor to low utilization of 'free' maternity services especially among the low income populations in Dhaka City, Bangladesh (Nahar & Costello, 1998). From the findings of

this study 98.5% of the post natal mothers reported to not having paid for any service or commodity while in the facility. However 1.4% of the post natal mothers reported to have paid for either a service or a commodity. A comprehensive assessment report by the ministry of Health on status of implementation of free maternal services 28% of the postnatal mothers reported to have paid for a service or commodity (MOH., 2015).

A majority (97.8%) of the postnatal mothers reported that they would recommend this facility to somebody else seeking maternity and delivery services. A majority (98.1%) of post natal mothers reported that they would use this facility for future deliveries. From this study, the post natal mothers who delivered at NPGH derived value from the maternity services offered. Value is defined as the quality of services against the costs incurred for the services, Therefore, the fact that over 98% of the post natal mothers would themselves use the facility again for future deliveries and also recommend others for the same services means that they received good quality of care met or surpassed their expectations.

5.5 Study Limitations

Despite the possibility of introduction of bias by being a staff at the Nakuru Provincial General Hospital, i recruited research assistants to collect the study data hence minimizing the possibility of bias.

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CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

From the perspective of the postnatal mothers at the NPGH, the perceived quality of service delivery was not affected by the implementation of the free maternal health care services. However, this state of affairs may not be sustained unless the recommendations listed below are acted upon

6.2 Recommendations

Based on the key conclusion of this study, the following are the key recommendations to address the gaps identified:

1) The national quality standards of care that were last updated in 2006 need to be revised and updated as a matter of urgency.
2) The County government needs to consider recruiting more health care workers involved in the delivery of maternal care. There is a need to also invest in skills and capacity building for the health care workers to improve on the processes performance in the delivery of maternal care such as consent signing, providing prescribed medications
3) The County government needs to prioritize investment in equipment to efficiently and effectively improve the provision of high quality maternal health care.
4) The County government of Nakuru needs to continuously safe guard and build on the quality care gains and positive outcomes already realized from the implementation of the free maternity services.

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Annex 1: Participant Information and Consent From

Impact of free maternity health care services on perceived quality of service delivery at Nakuru Provincial General Hospital

SECTION 1: INFORMATION SHEET–HEALTH PERSONNEL

Investigator: Dr. John Mwangi Murima

Institutional affiliation: Nakuru Provincial General Hospital

SECTION 2: INFORMATION SHEET–THE STUDY

2.1: Why is this study being carried out?

Information from this study will help us improve maternity healthcare services at Nakuru Provincial General Hospital (NPGH) and similar facilities.

2.2: Do I have to take part?

Taking part in this study is entirely optional and the decision rests only with you. If you decide to take part, you will be asked to complete a questionnaire to get information on the current quality of services at the NPGH. If you are not able to answer all the questions successfully the first time, you may be asked to sit through another informational session after which you may be asked to answer the questions a second time. You are free to decline to take part in the study from this study at anytime without giving any reasons.

2.3: Who is eligible to take part in this study?

- Post natal mothers who have just delivered at the NPGH
- Post natal mothers who have signed a written informed consent

2.4: Who is not eligible to take part in this study?

- Post natal mothers who have delivered elsewhere (not at NPGH)
- Post natal mothers who have delivered at the NPGH but have declined to give informed consent

2.5: What will taking part in this study involve for me?

You will be approached at the point of discharge and requested to take part in the study. If you are satisfied that you fully understand the goals behind this study, you will be asked to sign the informed consent form (this form) and then taken through a questionnaire to complete.

2.6: Are there any risks or dangers in taking part in this study?

There are no risks in taking part in this study. All the information you provide will be treated as confidential and will not be used in any way to penalize or victimize you.

2.7: Are there any benefits of taking part in this study?

The information will be used to improve maternal health services at NPGH that may benefit you and other mothers in future.

2.8: What will happen to me if I refuse to take part in this study?

Participation in this study is entirely voluntary. Even if you decide to take part at first but later change your mind, you are free to withdraw at any time without explanation.

2.9: Who will have access to my information during this research?

All research records will be stored in securely locked cabinets. That information may be transcribed into our database but this will be sufficiently encrypted and password protected. Only the people who are closely concerned with this study will have access to your information. All your information will be kept confidential.

2.10: Who can I contact in case I have further questions?

You can contact me, Dr. John Mwangi Murima, at the NPGH, or by e-mail (jmwmurima@yahoo.com), or by phone (0722295178). You can also contact my supervisor, Professor Gilbert Kokwaro, at the Strathmore Business School, Nairobi, or by e-mail (gkokwaro@strathmore.edu) or by phone (0722323651

I, _____, have had the study explained to me. I have understood all that I have read and have had explained to me and had my questions answered satisfactorily. I understand that I can change my mind at any stage.

Please tick the boxes that apply to you;

Participation in the research study

☐ I AGREE to take part in this research

☐ NOT AGREE to take part in this research

Storage of information on the completed questionnaire

☐ I AGREE to have my completed questionnaire stored for future data analysis

☐ NOT AGREE to have my completed questionnaire stored for future data analysis

Participant's Signature:
_____

Date: _____/_____/_____
DD / MM / YEAR

Participant's Name:
_____
(Please print name)

Time: _____/_____
HR / MN

I, _____ (Name of NPGH person taking consent) certify that I have followed the SOP for this study and have explained the study information to the study participant named above, and that she has understood the nature and the purpose of the study and consents to the participation in the study. She has been given opportunity to ask questions which have been answered satisfactorily.

Investigator's Signature:
_____

Date: _____/_____/_____
DD / MM / YEAR

Investigator's Name:
_____
(Please print name)

Time: _____/_____
HR / MN

Annex 2: Questionnaire

A) **Socio demographic and past obstetric history**

1. Age (completed years) ☐
2. Home area/Residence ☐
3. Married ☐
   Single ☐
   Divorced/separated ☐
   Widowed ☐
4. Level of education
   None ☐
   Primary ☐
   Secondary ☐
   College/university ☐
5. Employment status
   Employed ☐
   Self employed ☐
   Unemployed ☐
   Housewife ☐
   Others ☐
6. Parity ☐
7. ANC attendance for current pregnancy
   Yes ☐ No ☐
8. Were you referred? Yes ☐ No ☐
   If yes from
   Dispensary ☐
   Health Centre ☐
   Hospital ☐

Reason for referral

9. Previous delivery
   a) Site: Home ☐
   Health facility ☐

Others (Specify) ☐

b) Outcome

Baby – FSB ☐

– SB ☐

Alive with complications ☐

Alive and normal ☐

Mother – alive with complications ☐

Normal ☐

B) **Current pregnancy**

10. **Outcome measures**

a) Mother

Died Yes ☐ No ☐

Cause of death ☐

Complication Yes ☐ No ☐

If yes what complication(s)

Length of hospital stay (in days) ☐

b) Baby

Died Yes ☐ No ☐

Cause of death ☐

Alive with complications Yes ☐ No ☐

If yes what complication(s) ☐

Lengths of hospital stay (in days) ☐

11. Patient Satisfaction

How would you rate the reception at the admission desk? Respondents will express their opinion or experience on a four point Likert scale (1-4) where fully satisfied (4), Satisfied (3), somewhat dissatisfied (2) and Dissatisfied (1). For each aspect please tick the appropriate box on the right.

Rating	Fully Satisfied	Satisfied	Somewhat Dissatisfied	Dissatisfied
Initial Directions Given				
Replies to Queries/Doubts				
Courtesy of Healthcare Worker				

How long did it take to be attended in the admission desk?

Rating	0 - 10 min	11- 20 min	21 - 30 min	Over 30 min
Nurse				
Doctor				

How do would you rate the service in the labour ward?

Rating	Fully Satisfied	Satisfied	Somewhat Dissatisfied	Dissatisfied
During Labour				
During Delivery				
After Delivery				

Physical Environment

Rating	Fully Satisfied	Satisfied	Somewhat Dissatisfied	Dissatisfied
Cleanliness of the Ward				
Availability of beds and linen				
State of the sanitary facilities in the ward				
Privacy				
Confidentiality				

12. **Process measures**

- Signed medical/surgical consent Yes ☐ No ☐
- Physical examination
  - Complete Yes ☐ No ☐
  - Incomplete Yes ☐ No ☐
  - None Yes ☐ No ☐
- Clinical guidelines for obstetric
  - Emergencies present Yes ☐ No ☐
- Pain relief medication prescribed Yes ☐ No ☐
  - If yes; medication given Yes ☐ No ☐
- Partograph available Yes ☐ No ☐
  - If yes:
  - Complete Yes ☐ No ☐
  - Incomplete Yes ☐ No ☐
- Nursing care plans present Yes ☐ No ☐
- RRI theatre sheet available Yes ☐ No ☐
  - Is it in use Yes ☐ No ☐
- Post delivery observation chart present Yes ☐ No ☐
- If yes ☐ ☐

Complete	Yes		No	
Incomplete	Yes		No	
▪ Basic laboratory tests done	Yes		No	
▪ Basic ultra sound done	Yes		No	

Did you pay for any service or commodities? Yes ☐ No ☐

Did you buy a drug or a commodity (gloves, needles, bandage etc?)

Yes ☐ No ☐

In future would you recommend this facility to somebody else?

Yes ☐ ☐

Annex 3: Facility Norms and Standards of Maternal Care delivery

Process Measures

	Actual 2012	Benchmarks (MoH)	Actual 2015
Triaging System			
Signed Informed Consent			
Clinical Guidelines and Protocols (PPH, Eclampsia, Puerperal sepsis) displayed			
Quality of patient monitoring • Monitoring by partograph (FHR, Liqour, Dilatation, contractions, BP, RRIs, and temperature) • Monitoring of haemorrhage (input/output, vital signs charting)			
Response to Obstetric Emergencies • RRI Documentation including times			
Maternal deaths audits • Meetings			
Continuous Medical Education • Weekly			

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Structural Measures

	Actual 2012	Benchmarks (MoH)	Actual 2015
Equipment: • Thermometers • Blood pressure machines • stethoscopes • Foeto-scopes • Equipment to measure/estimate haemoglobin concentration • Equipment for testing blood – VDRL HIV & LFTS Blood group Blood sugars Uric acid • Manual Vacuum Aspiration • Vaginal speculums (cuscos/sims) • Vaginal examination packs • Delivery packs • Suture packs • Infection prevention equipment (buckets with lids) • Emergency tray (complete) • Oxygen cylinder and flowmeter • Ambu bag and mask • Vacuum extractor set • Ultra sound equipment • Doppler sonographic equipment • Anaesthetic machines • Operating tables • Delivery beds			

Minimum Human Resources	2012	Benchmark (MoH)	2015
Service delivery staff			
Anesthesiologist		**2**	
Nursing staff		60	
In-charge		1	
Specialized outpatient clinics		8	
Wards		30	
Theatre		10	
Nursery		3	
Radiographer		1	
Dental technologists		1	
Laboratory technologist		1	
Clinical officers (outpatient filtering)		4	
Nursing staff		22	
General outpatients		10	
Delivery/MCH activities		12	
Laboratory Technicians		4	
Pharmaceutical technologist		4	
Medical officers		15	
Outpatients		4	
Wards		8	
Maternity		2	
Management		1	
Dentists		2	
Pharmacists		2	
Specialized clinical officers		12	
Anesthesiologists RCO		4	
Paediatric clinical officer		1	
Psychiatrist clinical officer		2	
Dermatology clinical officer		1	
ENT clinical officer		1	
Ophthalmology clinical officer		3	
Nursing staff		178	
Management		4	
Specialized outpatient clinics		10	
Wards		120	
Theatre		40	
Nursery		4	
Radiographers		3	
Dental technologist		4	
Laboratory technologists		3	
Medical specialists		24	
Physicians		3	
Obstetricians/Gynecologists		4	
Paedatricians		3	

Surgeons		3	
Psychiatrists		1	
Ophthalmologists		2	
ENT Specialist		1	
Dermatologist		1	
Anesthetist		3	
Pathologist		1	
Radiologist		1	
Orthopedic surgeon		1	
Rehabilitative therapists		4	
Physiotherapist		1	
Occupational therapists		1	
Orthopedic technologist		1	
Social worker		1	
Medical officers (intensive care unit)		1	
Nursing staff (intensive care unit)		12	
Clinical pharmacist		1	

Physical structure	**2012**	**Benchmark (MoH)**	**2015**
Waiting room		1	
Consultation rooms		6	
Registration room		1	
Injection rooms		2	
Plaster room		1	
Minor theatre		1	
Dental unit room		1	
ENT service room		1	
Laboratory room		1	
Immunization service room		1	
FP coordination room		1	
Antenatal coordination room		1	
Maternity ward for 6 deliveries		1	
High dependency unit with 6 cots		1	
Beds for male inpatients		200	
Beds for female and children inpatients		200	
Operating theatre beds		4	
Gynae emergencies		1	
Cold case		1	
General emergencies		1	
Ophthalmic		1	
Pharmacy		1	
Drug dispensing room		1	
Cash office		1	
Stores		4	
Administration offices		2	

Room for health records		1	
Community service room		1	
X-Ray room		1	
USS room		1	
Ambulance		1	
Support Vehicle		1	
Ultrasound for obstetric and other abdominal investigations			

Annex 4: Ethical Approval

Strathmore UNIVERSITY

21st September 2015

Dr John Mwangi Murima
Institute of Health Care Management
MBA Health Care Management
Email: jmwmurima@yahoo.com

MBA-HCM/78988/13 A

Dear **Dr Murima**,

REF: SU-IRB 0005/15 PROTOCOL "IMPACT OF FREE MATERNAL HEALTH CARE SERVCES ON PERCEIVED QUALITY OF SERVICE DELIVERY AT NAKURU PROVINCIAL GENERAL HOSPITAL"

Thank you for submitting the proposal to the Strathmore University Institutional Review Board.

The committee has reviewed your application for the above referenced proposal. Your study does not pose any serious ethical concerns thus the IRB has granted you approval.

This approval is valid for one year from the date of this letter.

Sincerely,

Amina Salim
Regulatory Affairs Fellow

CC: PROFESSOR GILBERT KOKWARO

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