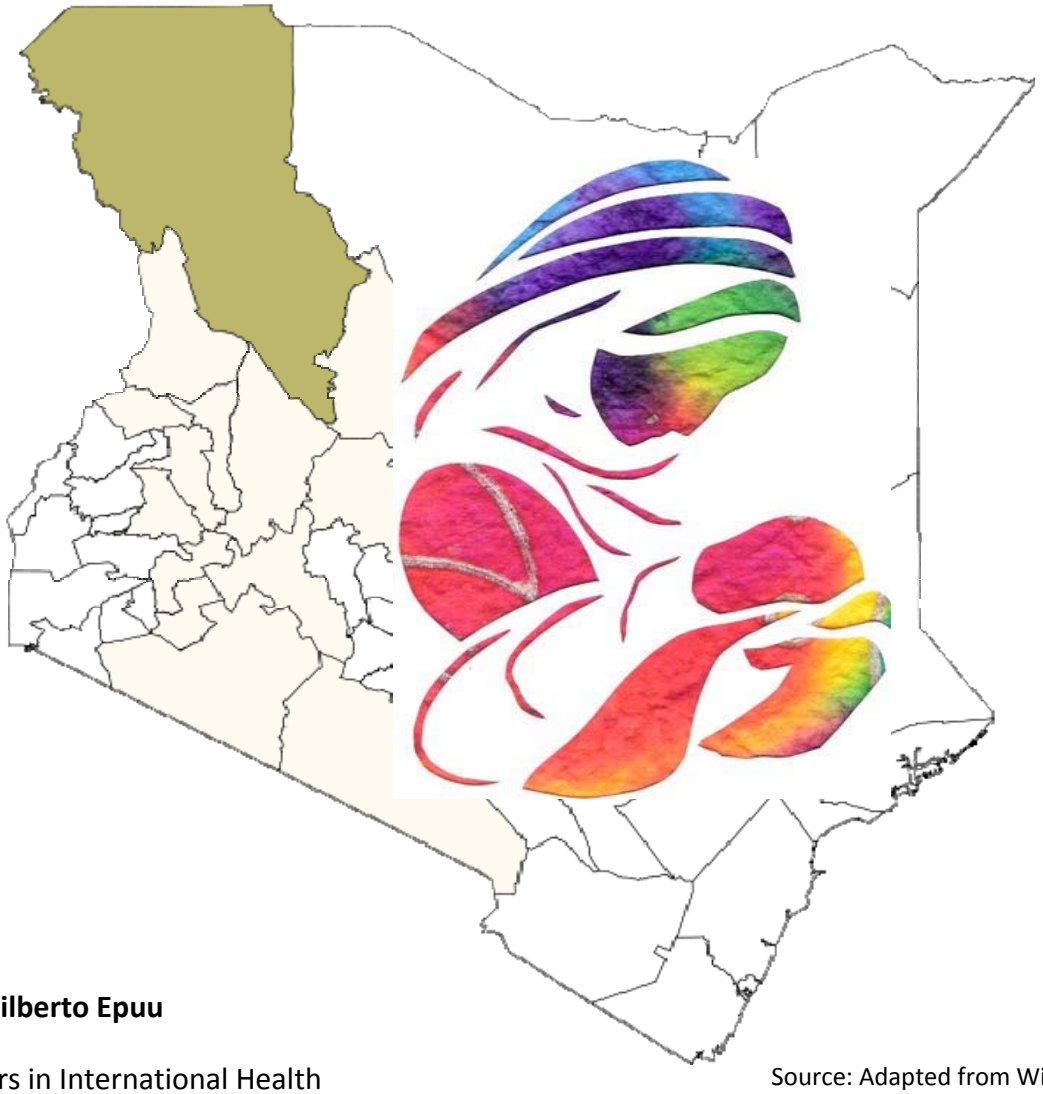
Determinants of Maternal Morbidity and Mortality

Turkana District – Kenya



Source: Adapted from Wikipedia

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Koninklijk Instituut voor de Tropen

Determinants of Maternal Morbidity and Mortality

Turkana District – Kenya

A thesis submitted as partial fulfilment for the award of Master degree in International Health

By

Koki Gilberto Epuu

Kenya

Declaration:

The work of others used for this thesis, either from printed sources, online search engines, databases has been fully acknowledged and reference in accordance with the departmental requirements.

The thesis “Determinants of maternal morbidity and mortality in Turkana District- Kenya” is my own work”.

The Thesis contains 12,795 words

Signature and date:

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Lastly, this thesis is dedicated to my Mum Leah Atiir, whose day to day prayers at distance kept me going.

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Figures and Textbox

Abstract

Introduction: Maternal morbidity and mortality remains a challenge despite several global initiatives in reversing the trend. It is estimated that more than half million maternal deaths occur worldwide. The highest ratio is reported in Sub-Saharan Africa. Kenya is among the countries with high maternal mortality ratios. Its rural districts like Turkana experience the highest challenges and there is a necessity to gain deeper insight in the factors that determine maternal survival. The overall objective of this literature review is to analyze the determinants of maternal morbidity and mortality in Turkana and explore strategies utilized in other settings that could influence these determinants.

Methodology: This study is a literature review consisting out of current up-to-date articles and books. The thesis is using an adjusted conceptual framework from McCarthy et al which identifies three categories of determinants; proximate, intermediate and contextual. It is used to analyze the impact on maternal health outcomes; healthy women and newborns. The main limitation of the study is the unavailability of Turkana specific information; the Turkana specific information is largely based on a reproductive health baseline survey by the Kenya Red Cross Society.

Study Results: The study findings based on the conceptual framework illustrate the interrelation of the various determinants. Proximate determinants are based on the medical causes of maternal deaths, intermediate determinants explore health systems related factors and contextual determinants are at the greatest distance from maternal health outcomes. The following issues emerged as important: lack of timely management of direct causes of maternal deaths, difficulty in accessing quality maternal care attributed to several barriers, cultural and traditional practices around pregnancy at the community level and political commitment to appropriately implement safe motherhood initiatives.

Discussion: Identification of determinants influencing maternal morbidity and mortality will assist in reversing the trend. This necessitates exploration and adoption of what works in what context. Furthermore, establishment of strong health system responsiveness to the population health needs and the stakeholders to appropriately explore innovative solutions will be deemed necessary. Community involvement - particularly those involved in pregnancy management - in poor resource settings with inadequate human resources could assist in timely referral of pregnant women with complications. This could be possible through training of TBA's on dangers signs of pregnancy and onward referral for early management of pregnancy complications thus averting loss of women's life.

Conclusion and Recommendations: Increased focus on identifying and addressing barriers to access will lead to improved access to quality maternal care with better health outcomes. Adoption of approaches such as Focused antenatal care (FANC), basic and comprehensive EMOC services and family planning will assist in improving maternal health. The following recommendations are proposed to several health care stakeholders in Kenya and Turkana district more specific: (i) National level: Improve access to quality maternal care and facility coverage (ii) District level: Improve the already existing health facilities infrastructure and management (iii) Community level: Involvement of the community participation particularly TBA's to improve referrals at the community level.

Keywords: Determinants, Maternal morbidity and mortality, Maternal health, Health system and Reproductive health interventions

List of abbreviations

ANC	Ante Natal Care
ART	Antiretroviral Therapy
BEmOC	Basic Emergency Obstetric Care
CDC	Centre for Disease Control
DFID	Department for International Development
EmOC	Emergency Obstetric Care
FANC	Focused Ante Natal Care
FGM	Female Genital Mutilation
FP	Family planning
GBV	Gender Based Violence
GDP	Growth Domestic product
GOK	Government of Kenya
HIV	Human Immunodeficiency Virus
ICPD	International Conference on Population Development
IEC	Information Education and Communication
KDHS	Kenya Demographic Health Survey
KEMRI	Kenya Medical Research Institute
KMOH	Kenya Ministry of Health
KNBS	Kenya National Bureau of Statistics
KRCS	Kenya Red Cross Society
MCH	Maternal Child Health
MDG	Millennium Developmental Goals
MMR	Maternal Mortality Ratio
MOPH&S	Ministry of Public Health & Sanitation
NGO	Non Governmental Organization
NHSSP II	National Health Sector Strategic Plan
OPD	Outpatient Department
PMTCT	Prevention of Mother-To- Child Transmission
PNC	Post Natal Care
PPH	Postpartum Haemorrhage
RVF	Recto-vaginal fistula
SBA	Skilled Birth Attendants
SMI	Safe Motherhood Initiative
SRH	Sexual Reproductive Health
STI	Sexually Transmitted Infection
TBA	Traditional Birth Attendants
TT	Tetanus Toxoid
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nation Children Education Fund
VVF	Vesico Vaginal fistula
WB	World Bank
WHO	World Health Organization

Chapter 1: Introduction

Maternal survival has been on the centre of attention since the last few decades. The efforts began with the global Safe Motherhood Initiative (SMI) of 1987 launched in Nairobi and the International Conference on Population Development in Cairo (ICPD). The initiatives deliberated on the establishment of reproductive health concepts and set targets for the reduction of maternal mortality. These strategic plans were reaffirmed by the 4th World Conference of women held in Beijing 1995 and finally wrapped up by United Nation (UN) 2000 declaration which entailed Millennium Development Goals (MDG) related to maternal health.

Nevertheless, approximately 536,000 maternal deaths linked to pregnancy complications still occur each year worldwide. Slight progress has been noted in 12 out of 68 countries working towards the achievement of the MDGs according to the report on the Countdown to 2015 Initiative, but the trend stagnates particularly in Sub Saharan Africa and other parts of the developing world (Tantum, 2010).

Approximately 96% of these deaths are reported to be in Sub Saharan Africa which carries the largest burden (fig. 1). The relative risk of death is 1 in 22 in comparison to 1 in 7,300 for women in the developed world (Ziraba et al. 2009). Of those who survive pregnancy and delivery complications, a substantial number of women sustain pregnancy related morbidities; for example Vesico Vaginal fistula (VVF) and Recto Vaginal fistula (RVF), incontinence and infertility (Prata et al., 2009).

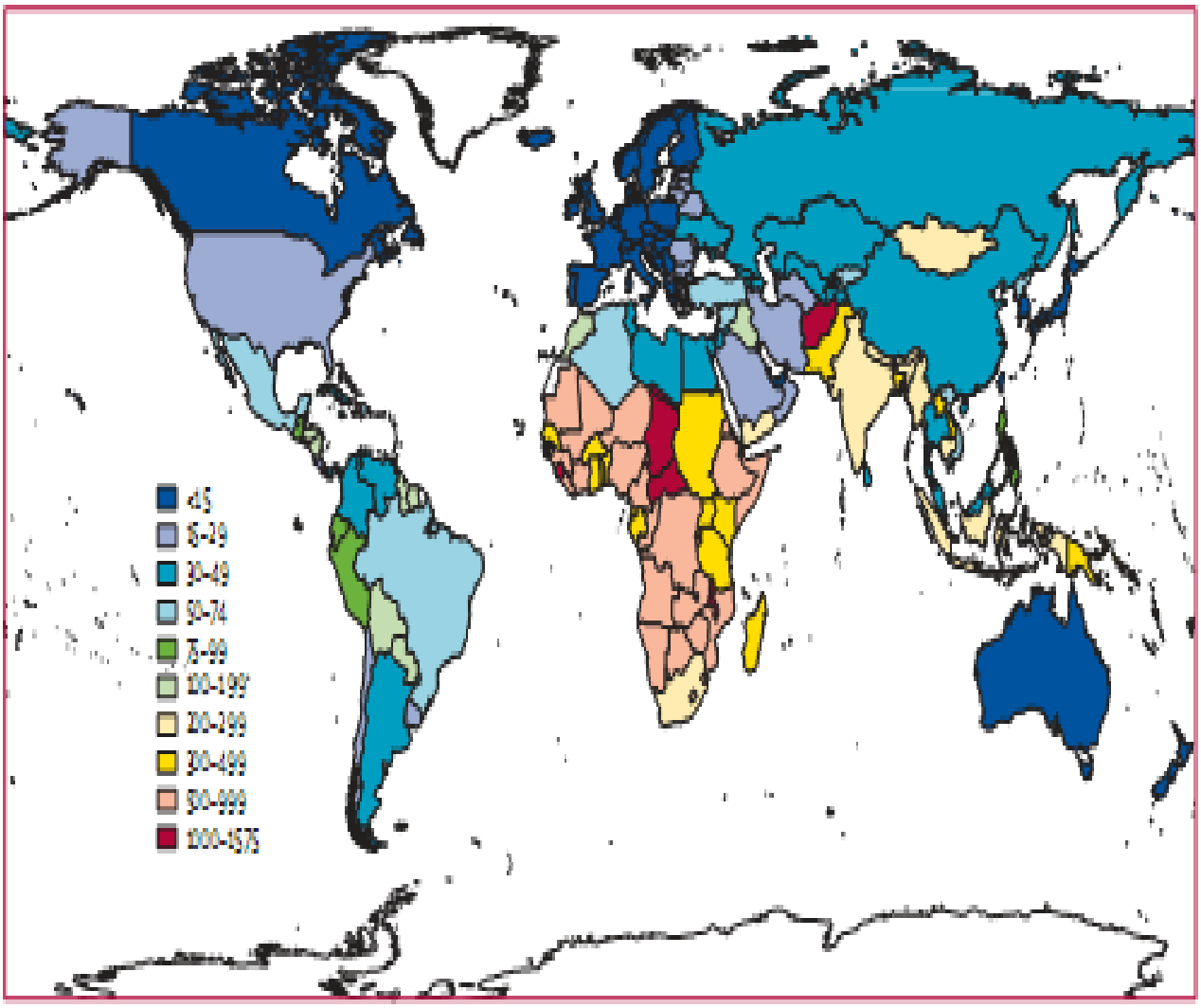
This kind of disparity poses a challenge in achieving the fifth Millennium Development Goal which is meant to reduce maternal mortality by 75% and provide access to universal reproductive health services (Ronsmans et al., 2006). The attainment of the MDGs in relation to reduction of maternal and child mortality remains a challenge in consideration of the time left and targets set (Tantum 2010).

In Kenya, the government is investing efforts to improve maternal survival clearly stipulating it among the health sector objectives. A target of reducing maternal mortality ratio (MMR) from 414 deaths to 147 deaths per 100,000 live births has been set. However, up to date maternal morbidity and mortality level is unacceptably high with the current level estimated to be 414 deaths per 100,000 live births (KNBS, 2003).

This level is not the same across the country; there is a disparity between various districts and communities in Kenya. A study among the Kenyan pastoralist community residents in the district of Marsabit revealed the maternal mortality ratio as high as 599 deaths per 100,000 live births. The lifetime risk of dying during childbirth of women in this community was estimated to be 1 in 30. The lack of progress has been associated with several factors

among them lack of attention to the local context. This local context has similar characteristics to other districts like Turkana. In order to reduce maternal mortality, particularly in these high burden areas, there is a need to assess the situation more in-depth, to understand the contributing factors and make possible recommendation on how to address them.

Figure 1 Maternal mortality per 100,000 live births



Source: Hogan et al 2010

1.1 Background information - Kenya

Kenya is a Sub–Saharan African nation situated in the Eastern part of Africa. It borders Ethiopia in the North, Uganda in the West, Sudan in the Northwest, Somalia in the East and Tanzania in the South. The population is estimated to be approximately 40 million inhabitants, with 61 % of the population living in the rural part of the country. The population growth rate (natural increase) is estimated to be 2.8 % (KNBS 2010, UNDP 2004). For more information see text box 1.

Textbox 1 Statistics

Total population: approximately 40 million

Population Growth rate: 2.8%

Fertility Rate: 4.6%

Gross Domestic product: USD $ 680

Maternal mortality: 414 deaths per 100,000 live birth

Infant mortality: 74 deaths per 1000 live birth

Probability of death: 12 per 1000 population

Life expectancy 51 years

Population per physician: 16 per 100,000

Population per Midwife: 128 per 100,000

Total expenditure on health per capital: $105

Source: KNBS 2009

The fertility rate in Kenya is 4.6% but a lot of disparity has been observed between the rural and urban population. Fertility rate of 5.9 births per woman was observed in rural Kenya in comparison to 2.8 births per woman in urban Kenya. The disparity extends to other components of reproductive health for example Antenatal care (ANC) and maternity care with service discrepancy observed more in the rural Kenya (KNBS 2009).

Maternal mortality is estimated to be 414 per 100,000 live births with a reported infant mortality of 74 deaths per 1000 live birth (KNBS 2009).The maternal mortality ratio varies from regional to district, urban to rural location. There are also notable disparities in terms of the range of services provided across the country in relation to quantity and quality of service. A majority of pregnant mothers approximately 90% consults a health professional during ante natal care services, but only 43% deliver in the facility with assistance of skilled delivery attendants (KNBS 2009).

Kenya is a relatively poor country with GDP per capita US $ 680 and with annual growth of 2.5% established by the World Bank Development indicators (WB 2007). The Kenya Health system suffers from many setbacks commencing from poor budget allocation estimated at 7% of gross domestic product resulting in households paying most of health expenditure out of pocket (Wamai 2009). While poverty levels have slightly declined in the recent years the gap between the rich and poor remains enormous with approximately 46% of the population living below the poverty line (DFID 2008).

1.2 Reproductive Health Care - Kenya

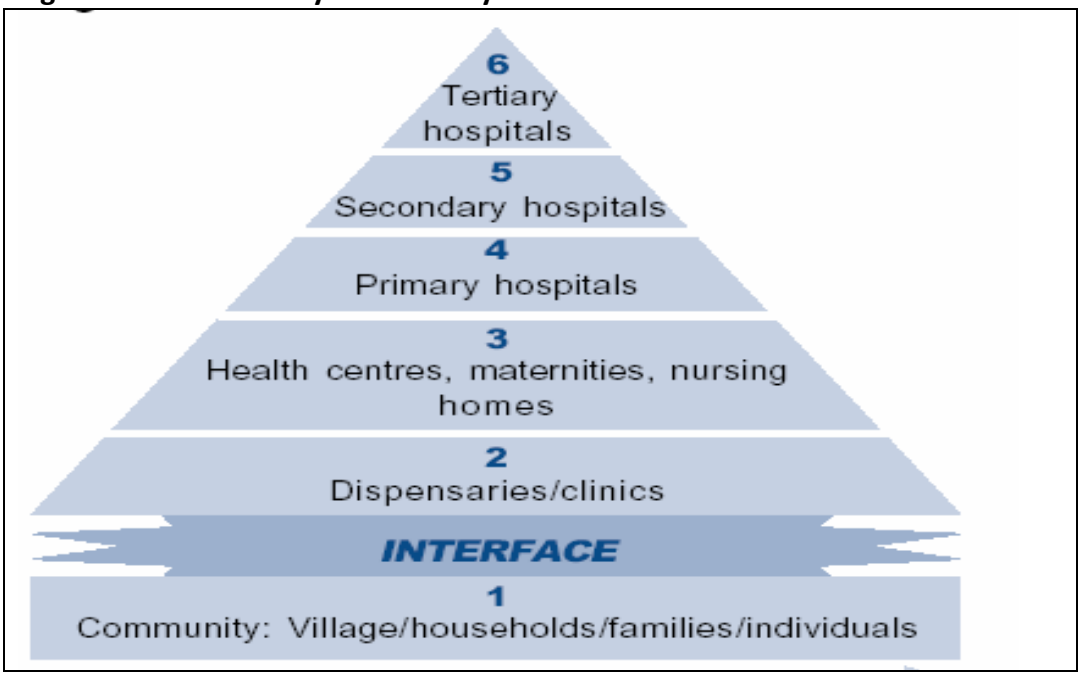
The National Reproductive Health Policy was established in 1996 with a clear overall goal of providing a comprehensive and integrated system of reproductive health care. The formulated policy covers a full range of services provided by several actors for example the government, non - governmental organizations (NGOs), and the private sector. The components of reproductive health package as per MOH (1996) adopted an integrated approach in delivering of reproductive health services. The following services are provided at different levels of the health care pyramid as per Kenya Ministry of Health (1996):

- Safe motherhood comprising of : ANC, safe delivery, and post natal care (PNC), promoting breastfeeding, infant health and women's health
- Family planning services (FP) and contraception
- Prevention and treatment of unsafe abortions and post-abortion care
- Prevention and treatment of reproductive tract infections, including sexually transmitted diseases and HIV/AIDS
- Prevention and treatment of infertility
- Management of cancer, including prevention and management of cervical cancers
- Discouragement of harmful traditional practices that affect the reproductive health of men and women, such as female genital mutilation
- Information and counselling on human sexuality, responsible sexual behaviour, responsible parenthood, preconception care, and sexual health
- Gender and reproductive rights including gender based violence (GBV) and health as a human right

District hospitals are the referral point of health centres and dispensaries at the lower part of the pyramid for both medical and obstetric emergencies. In ideal set up they are supposed to offer a range of services including diagnostic, rehabilitative and therapeutic reinforcing the primary health care centres within a designated population and region. The referral chain is always based on the available health care network in place. Dispensaries refer to the nearest health centres and if the obstetric emergency case cannot be handled at that level then the referral is sent to the district level for further management (Muga et al. 2004).

The district level in an ideal situation is supposed to be equipped with operating theatres, laboratory and blood transfusion services which are not always the case. The dispensary and health centres are tasked with the responsibility of managing minor ailment and provision of routine services for example Immunization services, ANC services, out-patient department (OPD) and conducting normal deliveries. At the community level Public Health technicians in collaboration with community health workers provide preventive and promotive health care (Muga et al. 2004).

Figure 2 Health Care Pyramid - Kenya



Source: MOPH & S-Kenya: NHSSP II 2005-2010

The health care provision in the country consists of several levels (fig .2). The network of facilities ranges from tertiary institutions at national and provincial level to district hospitals, health centres and dispensary at the lower level of the health care pyramid. The secondary and tertiary hospitals are semi-autonomous or private owned. The Government of Kenya owns 71 percent of health facilities compared to 29% of ownership by the Faith Based Organizations (MPH & S 2008).

High level care conforming with global standards and to diverse technological advancement is found at the tertiary level at a cost most of the population cannot afford and are situated in mainly urbanized parts of the country. These facilities provide a range of services including diagnostic, rehabilitative and therapeutic care. The population per physician is 16 per 100,000 and nurses-midwife to be 128 per 100,000 populations (Muga et al., 2004). See text box 1.

1.3 Profile of Turkana District

Turkana district is situated in the north-western part of Kenya in Rift Valley province. It is the largest district in Kenya with 77, 000 square kilometres of land. Due to the nomadic way of life, the population estimates of this district have been very hard to establish. It is estimated to be between 450, 860 – 500,000 people (Census 1999). The district is sub-divided into 17 administrative divisions predominantly rural. An estimated 90% of the population lives in the rural area compared to only a small proportion residing in the emerging small towns in the district. Access to health care in this vastly and less populous district is hampered by both physical and economic factors (MOPH&S 2008).

The district health delivery system in Turkana consists of two functioning hospitals (1 government owned and the other Faith Based organization). The district is covered with 10 health centres and 37 dispensaries respectively either owned by the government, Faith Based Organizations and private for profit clinics. The peripheral facilities are meant to be staffed with Enrolled Nurses with midwifery and diagnosing skills to manage minor ailments (MOPH&S, 2008).This is not always the case as the required staff levels in the facilities are hardly ever maintained.

These facilities at the periphery mostly suffer from severe shortage of medicine and medical supplies. It results in facilities not being able to offer basic emergency obstetric care (BEMOC) leading to referral of cases to the district hospital creating pressure on the already overburdened referral points. Furthermore, lack of ambulances and poor road network complicates referral systems resulting in delay or even loss of life (Maulana, 2008).

In Turkana district, some components of the strategies are being implemented for example ANC, PNC and FP but in a poorly coordinated manner. Maternal morbidity and mortality remains a challenge in such resource constraint environment whereby the national policies and service delivery systems are not able to deliver. The overall determinants contributing to maternal morbidity and mortality in such context have to be well understood. Getting conversant with the factors influencing it will enable the system to tackle the root cause of the problem and enhance rolling out context specific interventions.

1.4 Statement of the problem

Maternal mortality remains a challenge in Kenya; it has been considered to be among the highest in Sub –Saharan Africa. It currently estimated to be 414 deaths per 100,000 live births (KNBS, 2009). Studies have revealed high levels of maternal mortality ratio (MMR) estimated to be 620 deaths per 100,000 live births in rural districts. These areas have poor and inaccessible maternal health services (Okumbe et al., 2009).

Turkana district like most of the Kenyan rural areas has poor health care services. The remoteness and vastness coupled with inadequate health care coverage creates difficulties in utilization of the available health care services including maternal health. The peri-urban centres of Turkana district where services are available are always prone to running out of supplies interrupting service delivery. Also shortages of human resources makes quality of care substandard (Maulana, 2008).

Based on the context of Turkana district there is a necessity to gain further insight on what works in this particular rural set up. This could only be well understood by analyzing factors determining maternal survival and their interaction with health system oriented factors directly or indirectly impacting on maternal health. Being conversant with the underlying determinants will assist the district health planners in identifying the appropriate interventions.

1.5 Study objectives

1.5.1 Overall objective

To analyze the determinants of maternal morbidity and mortality in Turkana and explore strategies utilized in other settings that could influence these determinants.

1.5.2 Specific Objectives

- Explore proximate, intermediate and contextual determinants of maternal health in Turkana
- Discuss strategies that could assist in reducing maternal morbidity and mortality in Turkana district in relation to these determinants
- Recommend interventions to improve maternal health in Turkana

Chapter 2: Methodology

2.1 Literature review

The retrieval of relevant literature was conducted in two stages. The first part of the literature search focused on the key determinants and factors contributing to maternal morbidity and mortality. The second part was searching for key interventions and new approaches for reduction of maternal morbidity and mortality in relation to the determinants identified in the first part.

The thesis comprises of current up to-date literature. Diverse literature studies cutting across developed and developing countries for comparison purposes were explored. Inclusion criteria were (i) maternal morbidity and mortality related articles, (ii) recent publications with year of publications ranging from 2002 – 2010. However, some milestone articles dating back to 1992 were incorporated as they include vital information. Another inclusion criterion was that the research studies used were ethically approved. An exclusion criterion was language; only English literature was explored.

The articles used for this thesis are retrieved from several databases namely PubMed, Scopus, Science Direct and other online search engines (Google scholar).The following search terms were used during retrieval of the literature : Determinants, Maternal morbidity and mortality, Maternal health, Health system and interventions. Other information deemed relevant was retrieved from United Nations web pages for example, WHO, UNICEF and UNDP. Kenya specific country health strategy policy plans are utilized. Reports from the Kenya Demographic Health Survey (KNBS, 2003, 2009) are used to illustrate the relevant indicators for this study.

For Turkana specific information, the thesis largely uses the results of the sexual reproductive health baseline survey (SRH) conducted in Turkana District to further explore the factors that influence maternal health in this specific set up. The information is from an unpublished survey report which was conducted in May 2008 by the Kenya Red Cross Society (KRCS). It is one of the only health reports that specifically touch upon reproductive health issues in Turkana. The study utilized quantitative and qualitative methods; amongst others key informant interviews, exit surveys, a household survey and Focus Group Discussions.

The survey was conducted in three pre-selected divisions: Molo in Nakuru, Sigor in West Pokot and Katilu in Turkana. These areas were selected on the basis of where KRCS is implementing its SRH project. The study population consisted of youth of both sexes aged 15-24 and community members exiting health facilities. Key informants were selected amongst the community leaders, community health workers and traditional birth attendants, health facility supervisors and managers of NGOs within the study sites. The

total number of individual interviews conducted amongst the target group is 266 in each pre-selected site. Focus group discussions were held with married females, unmarried females, married males and unmarried males separately.

2.2 Conceptual Framework

Maternal health care will be defined as all activities in the continuum of care. This is a comprehensive approach that entails an integrated package whereby maternal, newborn and child health is promoted throughout the life cycle (Kerber et al., 2007).

According to Kerber et al the definition of continuum of care is as follows:

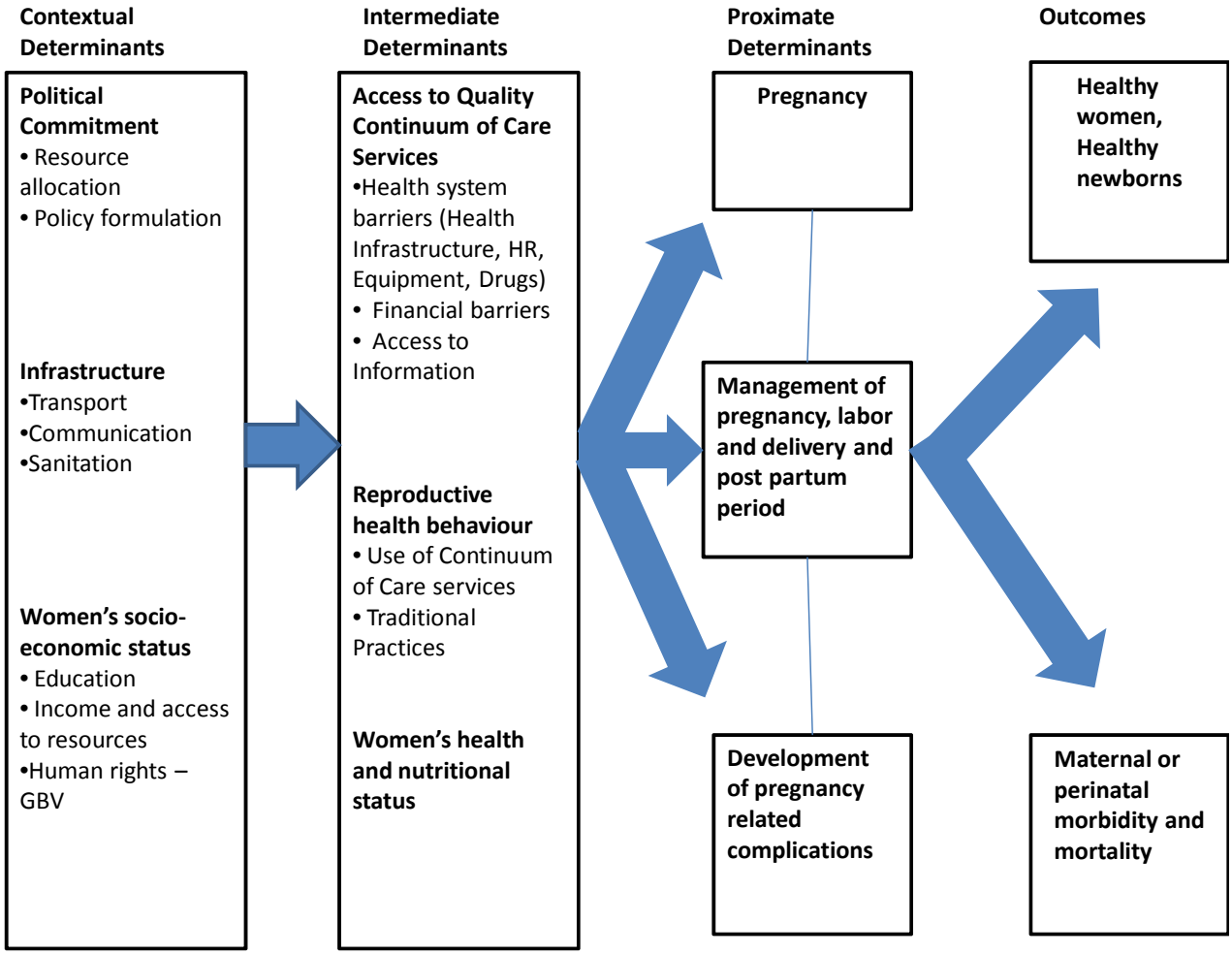
"*The continuum of care for maternal, neonatal and child health requires access to care provided by families and communities, by outpatient and outreach services, and by clinical services throughout the lifecycle, including adolescence, pregnancy, childbirth, the post natal period, and childhood. Saving lives depends on high coverage and quality of integrated services-delivery packages, so that the care provided at each time and place contributes to the effectiveness of all lined packages*" (Kerber et al., 2007)

Using the continuum of care approach in the analysis will therefore include the use of following services: adolescent health, ANC, labour and delivery, PNC, abortion and family planning. Although the aspect of neonatal and child health fall within the concept of continuum of care, for the purpose of this thesis they will be omitted.

This thesis further utilizes the conceptual framework of Maine and McCarthy (1992).The framework was used in the western part of Kenya by the Ministry of Health and adapted to the context of Kenya (fig. 3). Due to this context similarity, the conceptual framework was selected as the basis for this thesis. However, some adjustments were made to appropriately study the context of Turkana.

The framework shows the various levels of determinants of maternal morbidity and mortality. It divides the various determinants into three categories; namely proximate, intermediate, and contextual (Charlotte et al., 2004). The framework can be used to analyze the impact of these determinants on maternal health outcomes; healthy women and newborns or maternal and prenatal morbidity and mortality.

Figure 3 Conceptual framework



Source: Adapted from Charlotte et al., (2004) previously adapted from McCarty et al. (1992)

2.2.1 Proximate determinants

The proximate determinants are the closest components to maternal morbidity and mortality. This group of determinants entails pregnancy, development of a pregnancy complication and management of pregnancy complications during labour, delivery and post partum period (McCarthy et al, 1992 and Charlotte et al., 2004). Pregnancy, development of pregnancy complications and its management are interwoven and will therefore be discussed together (paragraph 3.1).

The difference between the original framework (McCarthy et al., 1992) and the adapted framework (Charlotte et al., 2004) is that 'management of pregnancy complications' has been introduced in the proximate determinants. Management will include the aspect of human resources, medical supplies and the referral system. These are detrimental in the

management of complications; however, it directly links with the intermediate determinant of access to quality maternal care and family planning.

2.2.2 Intermediate determinants

The intermediate determinants will entail access to quality continuum of care services, reproductive and health behaviour, women's health and nutrition status.

Access to **quality continuum of care services** will comprise barriers to care: health system related barriers (health infrastructure, HR, equipment and drugs), financial barriers and information barriers (Charlotte et al., 2004).

Reproductive health behaviour will be explored with focus on health seeking behaviour for the various maternal health interventions in the continuum of care. Labour and delivery is already discussed in proximate determinants and will therefore not be touched upon in this section. Additional analysis will be done on the use of traditional practices throughout the reproductive cycle (Adamu, 2003) as these will directly influence maternal survival.

Women's health and nutrition status will be discussed to illustrate how proxy factors such as poor feeding habits could lead to malnutrition that could influence maternal survival (McCarthy et al, 1992).

2.2.3 Contextual determinants

Contextual determinants are at the greatest distance from maternal health outcomes. However, they still have an influence on its outcomes. These determinants are political commitment, infrastructure and women's status (Charlotte et al., 2004).

The influence of the **political commitment** will be discussed in terms of resource allocation and policy formulation. This will illustrate that with appropriate implementation of formulated policies and adequate resource allocation maternal health outcomes could be improved. It will also explore how some policies/ laws could derail efforts of reducing maternal morbidity and mortality (Mills, 2004).

Infrastructure as a contextual determinant is analyzed based on overall availability of infrastructure, communication and sanitation (Liang, 2010).

Women's socio-economic status comprises of education levels, income and access to resources as well as human rights. Human right is a very large topic and would deserve a discussion on its own. However, based on the realities in Turkana, human rights will be discussed in the light of GBV (UNICEF, 2009 and Maulana, 2008).

2.3 Limitations

One of the main limitations is the unavailability of some specific Turkana related studies. As shown, the sexual reproductive health survey was conducted by KRCS in Turkana within their project operation area. This limited the generalization of the findings as this area is benefitting from the interventions of KRCS. However, many other aspects of the population can be compared and generalized to the whole Turkana population; culture, geographical distribution, livelihood and rural/urban composition. In order to fill the information gap of current up to date literature studies on Turkana, some literature studies from communities with similar characteristics were used to complement the data. It would have been preferable to carry out an additional field study focused mainly on the determinants. However, due to budget constraint and time limitation this could not be realized.

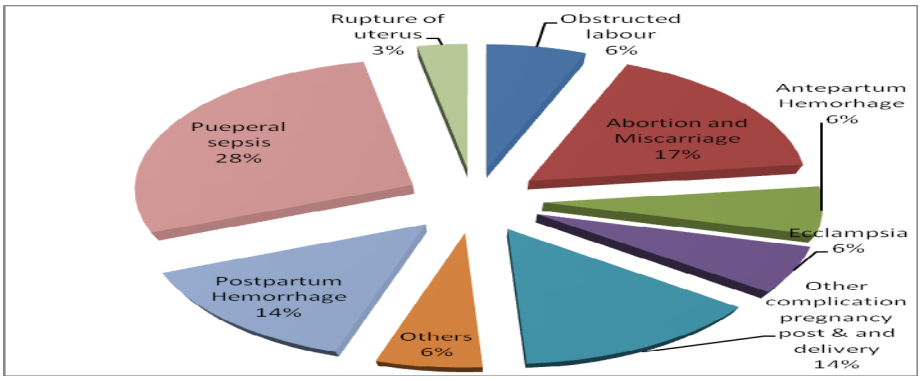
Chapter 3: Study results

This chapter will focus on the three levels of determinants of maternal health as explained in the methodological chapter; proximate, intermediate, and contextual determinants (figure 3).

3.1 Proximate determinants

Globally, estimates of 15 % of all pregnancies worldwide are at risk of developing complications (UNICEF, 2009). Causes of maternal death during pregnancy are classified in three categories namely: direct, indirect and coincidental causes (WHO, 2005). Coincidental causes of maternal death will not be discussed due to non-medical importance attached to them. In Kenya and other parts of the developing world, most maternal deaths have been attributed to direct causes (70%) for example haemorrhage, sepsis, unsafe abortion, hypertensive disorders and obstructed labour in comparison to indirect causes (for example malaria and anaemia) contributing to (20%) of maternal deaths (fig.4) (Ziraba et al., 2009).

Figure 4 Direct causes of maternal mortality Kenya 2003 - 2005



Source: CDC/ KEMRI 2007

Direct causes of maternal death were also attributed to be the leading cause of maternal morbidity and mortality among a Kenyan pastoralist community with similar characteristics of Turkana residents (Mace et al., 1996). Specific estimates of pregnancy related morbidities and mortalities in Turkana district are difficult to account for. The respondents of the baseline survey by the Kenya Red cross Society (2008) mentioned in particular direct causes such as excessive bleeding, retained placenta and obstructed deliveries resulting in maternal related morbidities and mortalities.

A majority of direct causes of maternal death estimated to be 80% could be prevented if timely medical management would be administered (UNICEF, 2009). However, delayed recognition of danger signs and poor management has been linked to increased maternal morbidity and mortality. The challenges in improving management of pregnancy

complications include human resource shortage (inadequate facility staff levels & required skills) and lack of medical supplies (Prata et al., 2010).

Presence of a skilled birth attendant during delivery has been associated with better labour monitoring and delivery outcomes. There is a disparity of the availability of skilled birth attendants in rural areas compared to urban areas in sub – Saharan Africa and south and South East Asia (Koblinsky et al., 2006). Women residing in urban areas are more likely to be assisted by medical personnel than their counterparts residing in the rural (KNBS, 2009).

In Kenya, an overall of 44% of all deliveries are done under the supervision of a skilled birth attendants; mainly by midwives and nurses. However, a substantial number of deliveries 28% are carried out by TBAs. This means that the monitoring of pregnancy complications is at the discretion of the TBA. They mainly lack knowledge, skills and necessary medicines to deal with these obstetric complications (KNBS, 2009).

In reference to the Turkana SRH survey interviews, of the women who reported pregnancy in the past five years only 6% delivered in the facility and remaining 94% had home deliveries assisted by the TBA's or relatives. The survey participants also mentioned services being unfriendly since they are not willing to utilize services rendered by male midwives (Maulana, 2008).

3.2 Intermediate determinants

3.2.1 Access to quality family planning and maternal care

Maternal morbidity and mortality are directly linked to poor technical quality of reproductive health services. The difficulty of access to quality maternal health care can be attributed to various barriers namely; health system related barriers (health infrastructure, HR, equipment, drugs), financial barriers and information barriers (Charlotte et al., 2004).

Health System Barriers

Health System Barriers build further on the proximate determinant of management of pregnancy related complications mentioned in paragraph 3.1.

Appropriate health facility coverage with a functioning referral network in place could assist in physical access to care (UNICEF, 1999). As explained under 1.3 (profile of Turkana district), the nomadic population, the vastness of the district and the distribution of health facilities influence directly physical access. The respondents of the sexual reproductive health survey 67% reported maternal health services were inaccessible in terms of distance. Furthermore, there are inadequate maternity services and no maternity wards in most of the facilities thus provision of maternal service is insufficient (Maulana, 2008).

In Turkana District safe motherhood initiative activities as mentioned earlier in the previous chapters is facing a lack of adequate and competent staff, essential drugs and appropriate equipment for use during delivery for example gloves, delivery beds and a poor referral system. According to the baseline survey findings conducted in Turkana, 94% of the respondents mentioned not using the services due to the quality of care provided in the health facility (Maulana, 2008).

Financial barriers

Financial barriers in maternal care have been associated to impact maternal health outcomes. A program in rural China introduced waiving of inpatient charges of all hospital deliveries resulted to 17% increase of facility based deliveries. It also led to MMR in remote areas reduced by 24% with an annual continues reduction estimates of 5.3% (Liang et al., 2010).

Despite maternal care services being free of charge in Kenya, the cost involved (particularly transport cost) is barring the potential users to access reproductive health services (KNBS, 2009). According to the interviews during the sexual reproductive health survey in Turkana 94% of the respondent reported cost to access the free services as a hindering factor.

Access to information

Information inaccessibility for both service users and providers can result in underutilization and provision of substandard services (McCarthy et al., 1992). In Turkana, access to information is limited due to poor media coverage in the region. The SRH survey respondents mentioned lack of knowledge on dangers signs of pregnancy among the TBAs and the community which resulted in delayed referrals and eventually loss of women's life. The same lack of information also hindered utilization of family planning services in the district (Maulana, 2008).

3.2.2 Reproductive health behaviour

As explained in the methodological chapter, the reproductive health behaviour will be analyzed based on the health interventions identified under the continuum of care; adolescent health, ANC, PNC, Abortion and Family Planning. Furthermore, this determinant will entail traditional practices and cultural beliefs that the communities are engaged in; particularly those practices that endanger reproductive health of women (McCarthy et al., 1992).

Adolescent health

Adolescent engagement in early sexual debut predisposes them to early childhood bearing age in which they are more likely to experience complications during pregnancy. They are more likely to be denied the chances to pursue basic welfare services including reproductive health. A decline in teenage pregnancy in Kenya estimated at 23% (KNBS, 2003) to 18% has

been observed. This is linked to an integrated adolescent programs and reproductive health policy (KNBS, 2009).

However, teenage pregnancy in Turkana according to SRH survey remains frequent. It has been associated to contribute to two thirds of school dropout. The Turkana community tends to have a negative and stigmatizing attitude towards teenage pregnancies. The community stigmatization of teenage pregnancy affects utilization of available antenatal care services by the pregnant teenagers. It excludes them from routine ANC visits and examination posing more risks to the already vulnerable group.

Sexual risky practices especially unprotected sex among the teenagers in Turkana district was reported as per the SRH survey findings. The young people were reported to engage in sex due to curiosity, peer pressure, sex for money and to show a sign of maturity. Access to risk prevention methods for example condoms are limited with only 58% men and 26% women reported to have used condoms. Limited supply of condoms in the health facilities was mentioned exposing the sexual active adolescent to risks of STI and HIV transmission (Maulana, 2008).

ANC

Ante natal care services were traditionally performed with an objective of screening and risk detection to reduce maternal morbidity and mortality. Despite the poor sensitivity and specifity of routine ANC in preventing and diagnosing pregnancy complications, even in the low resource setting an overall estimated 68% of pregnant women have attended at least one ANC- visit (Campbell, 2006).

In Kenya, the ANC attendance in the country varies with residence, education level and income. High utilization rates of 60% attending more than four visits have been observed among the urban women compared to 44% among rural women. The overall percentage of women attending four or more ANC visits is continuously declining from 52% (KDHS, 2003) to 47% (KDHS, 2009) warranting both interventional and programmatic shift (KNBS, 2009). In Kenya the approach of focused ANC (FANC) is being piloted.

The approach advocates for reduction of visits, which does not seem to affect pregnancy outcomes, early detection and treatment of complications, birth preparedness and health promotion to enhance interpersonal skills on nutrition and prevention of mother to child transmission of HIV (PMTCT) (WHO, 2005). Based on the current ANC approach, WHO no longer recommends numerous visits during pregnancy as it overburdens women and the health system.

In Turkana, ANC is particularly underutilized by the women due to both physical and economical inaccessibility. Improvement of facility coverage, availability of medical supplies and human resource which the community hold responsible for not utilizing the service need to be improved (Maulana, 2008).

PNC

Although the risk of death of a woman decreases after 2 days postpartum, there are high chances of physical, social and mental situations that might emerge demonstrating the need to have both preventive and curative services in place (Campbell, 2006).The infection that could lead to puerperal and neonatal sepsis could result to death thus appropriate antibiotic treatment would be deemed necessary (Lawn et al., 2005).

There are wider disparities in the use of post natal services in Kenya. In rural districts especially in the North Eastern provinces it is estimated that 79% of women who are not able to access PNC services compared to 18% in Nairobi province. There are no specific estimates of PNC use among Turkana women but having worked in Turkana district myself, PNC attendance rate is very low. They do not see the importance and need of attending PNC clinics when they are not sick. This illustrates the need to emphasize awareness through key messaging on the benefits of PNC to mother and baby both at the community and health facility level.

Abortion

Some pregnancies end up being unwanted. This aspect of unwanted pregnancy leads to attempts to undertake abortion. This puts women at risk of complications such as sepsis and haemorrhage (Prata et al., 2009).

Global estimates of 13% maternal deaths occur annually due to unsafe abortion practices (Fawcus, 2008). According to the WHO definition “Unsafe abortion is a procedure for terminating an unintended pregnancy either by an individual without the necessary skills or in an environment that’s does not conform to minimum medical standards, or both’’.

Unsafe abortion is preventable but it remains contributing to a significant percentage of maternal deaths particularly in countries with abortion restrictive laws. Inaccessibility to effective comprehensive abortion care services results to clandestine procedures of unsafe abortion induction which could lead to unnecessary loss of life (Shaik et al. 2009).The risk of a woman dying after unsafe abortion is 1 in 250 in Asia and other parts of the developing world compared with 1 in 1900 in Europe (Shaik et al., 2009, Fawcus, 2008).

In Kenya, unwantedness of pregnancy has declined slightly from 17% in 2003 to 16% in 2008 attributed to fertility preference (KNBS, 2009). In Kenya, abortion is illegal. A study in Kenya revealed unsafe abortion had become the leading cause of gynaecological admissions estimated to be up to 60 cases per day and contributing to 33% of mortalities (Rogo et al., 1998, Amissah et al., 2004).

Unwantedness of pregnancies in Turkana according to the SRH survey led to teenagers opting for various measures including abortion, committing suicide and hiding away from the community (Maulana, 2008). In the Turkana community women engage in induced

abortions through taking traditional herbs. Even in areas with health facilities, lack of safe abortion services and stigma involved makes women not able to access the required services (Maulana, 2008).

Family planning

Health benefits in relation to fertility control, population growth and poverty are directly linked to family planning with projected better health outcomes of both mother and the child. Worldwide it is estimated that 90% of abortions and 20% of related morbidities and mortality could have been averted by use of effective contraception. Contraceptive coverage of 61% globally remains too low and unmet needs disparity are 6% in Europe and 23% in sub-Saharan Africa warranting need to improve uptake of contraception (Cleland et al., 2006).

Family planning has also potential health related benefits to a child as it increases survival chances of children attributed to wider birth intervals. Studies have revealed that conception within 18 month after live birth poses a high risk of foetal death, low birth weight and prematurity to the foetus. This has been associated amongst others to nutritional depletion of iron folate deficiency (Cleland et al., 2006, Razzaque et al., 2005).

In Kenya disparity of contraceptive use is evident. A comparison of two provinces (urban & rural) revealed 67% contraceptive uptake in urban areas compared to 4% in predominantly rural provinces (KNBS, 2009).In Turkana district specifically the acceptance of family planning is very low due to cultural intolerance and religious churches such as Catholic which do not promote contraceptive use (Maulana, 2008).

Traditional Practices

Cultural and social norms if not taken into consideration can hamper access to health care services .The community's preference to deliver at home as cultural practice has been associated to worsen maternal morbidity and mortality. The decision of pregnancy and childbirth related aspects being left to traditional birth attendants (TBA's) in some parts of the developing world has also been identified as point of concern. Their decisions during birth remains paramount resulting to delays of referrals to the next level of care which might result to maternal death (Cham et al., 2005 and Sreeramareddy et al., 2006).

In areas like Turkana whereby traditional healers and TBA's are the first contact, their involvement in pregnancy management has been strengthened by the cultural trust and recognition in the community. This has often resulted in delay and maternal death particularly during decision making of when to refer (Maulana, 2008).

Cultural barriers have also been linked to low acceptance rate of contraceptives in Kenya. The utilization rate of contraceptives in Kenya varies with residence characterized by a multicultural influence with uptake estimates of 53% in urban and 43% rural societies (KNBS,

2009). Low contraceptive acceptance in Turkana has been linked to cultural and religious believes. Modern contraceptives which could assist in preventing unintended pregnancy and improve child spacing have a lot of stigma and negative attitude from the community with condoms perceived to encourage prostitution and unfaithfulness to the partners endangering women health in general (Maulana, 2008).

Harmful practices attached to the culture surrounding pregnancy and delivery among the Turkana community has also been linked to poor maternal health outcomes. The culturally prescribed practice for example the use of a knife in cutting umbilical cord during delivery of baby a girl and a spear in the cases of a boy encourages home deliveries. This harmful practice of using unsterilized tools may also result in transmission of other infectious disease for example hepatitis, tetanus and HIV to both mother and the baby. The community also believes in a special way of disposing the placenta in their homesteads thus promoting a home delivery (Maulana, 2008).

Traditional believes in what causes maternal deaths particularly during pregnancy in some indigenous communities' remains another significant problem. The association of eclamptic fits of pregnant woman to being possessed by evil spirit and the profound influences of unknown forces (sorcery/witchcraft) of causing maternal deaths remain elusive. In most cases it leads to a first consultation of a traditional healer delaying referral (Adamu et al., 2003, Cham et al., 2005 and Arps, 2009).

Communities in South Sudan with similar traditional practices like those of Turkana community associated obstructed labour with adultery (seeing someone other than her husband). The woman is asked to confess causing delays of referrals to the next level of care. In most cases the health outcome is either debilitating morbidity or maternal death due to the mother being blamed to be 'hiding the truth' (Pearson et al., 2004).

3.2.3 Women's health and nutritional status

The social disparities in education, poverty and general women status in the society have been attributed to posing a threat to safe motherhood initiative (Arps, 2009). In Kenya, the commonly integrated supplements and other prophylactic treatment in maternal child health clinics (MCH) are haematinics (folic acid + iron), anti-helminthes (albendazole), and intermittent prophylactic therapy for malaria (Sulfadoxine-pyrmethamine- fansidar, iodine and vitamin A (MOH, 2004, UNICEF, 2009).

However, incapability to afford food by the poor directly compromises their nutritional status which negatively influences both the mother and foetus resulting in nutritional deficiencies. Inadequacy of food supply at the household level could also be linked to poverty, food taboos or lack of knowledge on the nutritious components of specific foods. This has been associated to poor health outcomes (UNICEF, 2009). Iron deficiency anaemia in relation to insufficient intake has been attributed to be among the major indirect cause maternal mortality 13 % in Asia and 4% in Africa (WHO, 2006).

A nutritional deficiency of the mother during pregnancy directly influences foetus growth and development resulting to low birth weight babies. An estimated 17% of infants in the developing world are low birth weight due nutritional associated deficiencies and are more likely to die during infancy (UNICEF, 2009).

The nutrition aspect in the Turkana community is dependent on climatic seasonality's, food taboos and resource generational activities that the community is engaged in. Food insecurity remains a major problem affecting the most vulnerable groups namely pregnant, lactating mothers, elderly and under fives. Food scarcity is experienced during the drought seasons fluctuating within 4 months starting from January to April. During this period the quantity of food at the household recedes to insufficient levels with under nutrition reported among the vulnerable groups (Wawire, 2003).

3.3 Contextual determinants

Based on the conceptual frame work utilized in this thesis, the contextual determinants will be categorized into the following groups: political commitment, infrastructure and women status which will include income and access to resources, education and human rights in terms of GBV (MOH, 2004).

3.3.1 Political commitment

Political will to appropriately implement formulated policies could assist in the achievement of better health outcomes. Factors such as political stability, policy environment and governance will influence the outcomes. Although lack of funds has been attributed to the malfunctioning of health systems, availability of funds alone does not guarantee efficiency of a system. Good governance and political commitment are instrumental (Travis et al., 2004, Mills et al., 2004).

In Kenya, considerable political will for maternal health is expressed through the formulation of policies. In terms of funds, 7% of the overall government budget is allocated to the health sector. However, in other areas within maternal health, the political will is lacking. One of the main maternal health related policies that negatively influences the maternal health status of women is the fact that abortion is illegal by law. The legalization of abortion has suffered many setbacks. There has been complacency of drafting laws supporting legalization, with a major opposition from the anti- abortion lobby groups and churches. The restrictive abortion law has led to abortion being induced illegally which has been attributed to an estimated 33% of maternal mortalities and is the leading cause of gynaecological hospital admissions in Kenya (Amissah et. al., 2004).

3.3.2 Infrastructure

The economic levels of low and middle income countries illustrated by high maternal mortality ratio as an economic indicator is directly linked to weak general infrastructure compared to high income countries. The disparity in health infrastructure coverage, unavailability and inaccessibility across regions in low income countries worsens the

situation (Liang et al., 2010). In Kenya, the resource constraints are making it difficult to balance between people's health needs and improvement of general infrastructure (KNBS, 2009).

The general infrastructure (health infrastructure, transport and communication infrastructure and social amenities) is lacking in Turkana district, the district road network is poor characterized by unpaved roads and unreliable public transport. Furthermore, communication networks are nonexistent outside city centres. All these characteristics influence the referral in case of medical emergencies (Maulana, 2008).

Hygiene levels due to water scarcity in Turkana districts especially during periods of drought reaches appalling standards as the water availability reduces due to low ground water table. The boreholes dry up and those functioning are prone to overuse and breakdown. Maintenance and repairs are cost involving which the majority of the population cannot afford .The scarcity of water poses environmental sanitation problems. It is estimated that 70% of Turkana district residents do not access sanitation facilities which results to water related disease outbreaks like dysentery, typhoid and cholera with major disease fatalities reported among pregnant women and children (GOK, 1998).

3.3.3. Women's socio-economic status

Education

Education of girls has been associated to improve their perinatal care, post natal care and childbirth survival rates significantly. Educated girls are more likely to minimize risk of exposure to HIV infection by having safe protective sex, being exploited and with the acquired information they can influence their families and communities on some good health practices. The more educated a woman is the higher the chances of making decisions on her own health (UNICEF, 2005 and Zhao et al., 2009).

A study conducted in Nigeria to verify determinants of use of maternal services among the population showed a steady increase in use of service by post secondary educated women compared to their counterparts with no formal education (Babalola et al., 2009). The use of condoms and delayed sexual debut practice among adolescents in Uganda was more common in school going girls compared to non-school attendants (Ndyanabangi et al., 2004). According to the Kenya demography survey women's level of education was associated with antenatal care coverage. Highly educated women were much more likely to receive antenatal care from a medical professional than those with no education 36 % versus 21% (KNBS, 2009).

Although education attainment in Kenya has improved with slight decrease in proportion of women with no education from 9% 2003 to 5% in 2009 the disparity vary by residence. There are twice as many women in rural areas with no education at all in comparison with their counterparts in urban areas (KNBS, 2009). A high illiteracy level in rural districts like

Turkana contributes to underutilization of safe motherhood services. Vital packages like family planning services are not utilized fully due to low knowledge on contraception coupled by fear of side effects and fear of husband/community hindering women from using contraceptives (Maulana, 2008).

Income and access to resources

A poverty stricken population has high chances of not being able to access the basic human needs for example food, health, safe water, shelter and education which directly translates to poor health outcomes. Due to a low socioeconomic status of woman, the risk of dying compared to their rich counterparts is high. Poor and uneducated women have a high possibility of marrying early, poor child spacing and unlikely to use contraceptive than their rich counterparts. The consequences of poverty have also a direct effect on the newborn that is likely to be malnourished posing a risk of dying due to dietary related disorders and other childhood illnesses (UN, 2008).

Studies in Kenya and Bangladesh reveal that women's socio-economic status can influence the preference and frequency of utilizing health services. This shows better economic status improves access and choice of services not only based on need but on individual economic capability (Anwar et al., 2008, Khawaja et al., 2009, and KNBS, 2009).

Income among the pastoralist community and especially the Turkana people is determined by the number of livestock owned. However, during drought most of the herds are lost leaving the community more vulnerable resulting to high malnutrition rates and not being able to access basic needs like health care. The most affected are pregnant mothers, lactating mothers and under fives (Wawire, 2003).

Men are the head of the family and their decision on the available resources use matters. Although women own animals, they do not have a right to sell or slaughter thus their access to the household income is limited. The economic activities are governed by gender and income generating activities of an individual family. For example female engage in housemaid work and men do herd related activities like buying and selling cows. This income disparity takes from a woman away her right to decide on her own health. It leaves women dependant on men decisions whose preference on income expenditure could be different (Wawire, 2003).

Human rights - Gender Based Violence (GBV)

Violence can be categorized into domestic and conflict related depending on the prevailing situation and circumstances. It could be physical assault causing injuries or sexual abuse via rape. The consequence of domestic violence puts at risk the psychological, sexual and reproductive health of woman. GBV particularly rape has been associated to sexually transmitted infection (STI) including HIV infection and mental disorders (WHO, 2008).

According to the respondents of the SRH survey, GBV was mentioned as hidden practice. It was rarely reported to the authorities among the Turkana people. Various forms of GBV have been perpetrated including forced sex, rape, wife beating, forced marriages and women abduction by bandits and cattle rustlers. Factors that contribute to GBV have been linked to poverty, heavy alcohol consumption, illiteracy, extra-marital affairs and marital conflicts. Men are the main perpetrators although women have been reported to be involved in a certain level of domestic violence but they are the main GBV victims in the community (Maulana, 2008).

Chapter 4: Discussion, Conclusion and Recommendations

4.1 Discussion

Maternal morbidity and mortality are influenced by an array of determinants of different magnitude and impact. They need to be tackled to reverse the trend of preventable maternal infirmity and death. Identification of determinants will enable understanding of the root causes and the kind of influence they exert on the population resulting in ill-health and eventually loss of life. Regarding maternal health specifically in the context of Turkana district, the following determinants namely proximate, Intermediate and contextual were indentified and their influence discussed in details. The discussion will rely upon the study results and gaps in Turkana specific information are bridged with findings of studies of similar contexts.

The limitations as discussed in the methodology chapter should be taken into consideration when reading the discussion. More comprehensive information about maternal health in Turkana would have increased the depth of the thesis discussion. However, this would have required a field study which could not be done due to resource constraints.

The proximate determinants impact on pregnancy, development and management of complications are detrimental to maternal morbidity and mortality. The direct and indirect causes of maternal death can be averted if timely medical management is administered. However, scaling up management of pregnancy related complications in poor resource settings has proven challenging as most of the direct causes require highly skilled health workers.

In Kenya and particularly Turkana district with a shortage of skilled birth attendants to manage pregnancy, labour and pregnancy complications, a shift of skills to low level skilled health workers will be a necessity. However, the shift of skills suggested might not be effective if lack of sufficient medical supplies and equipment are not available to create an enabling environment.

In poor resource settings of the context of Turkana district whereby several factors collude across human resource shortage, poor health infrastructure and limited health facility coverage, culture plays a vital role in pregnancy, delivery and management of complications. Pregnancy management is left at the discretion of TBA's who lack skills in obstetric emergency care, engage in delayed referrals posing risks to the mother and foetus. Teenage pregnancy in the community is stigmatized resulting in young unmarried (future) mothers neither seeking health care in the facility nor from the TBA's.

The intermediate determinants in Turkana district among them access to quality family planning and maternal care, reproductive - health behaviour, women's health and nutrition status are also instrumental in tackling maternal morbidity and mortality.

Improved access both geographical and economic to quality continuum of care services will assist to avert morbidities and mortalities among women in rural and poor resource settings. Access to essential obstetric and gynaecological care remains a barrier in most of poor resource settings in Kenya particularly among the rural population including Turkana district. Quality maternal care improvement entails the need of having integrated continuum of care which has shown to reduce maternal death.

Unmet needs in family planning, which is known to reduce maternal death by reducing the odds of pregnancy, are unacceptably high especially in the rural areas. The fear of side effects and misconceptions on contraceptives by a rural population, lack of access to knowledge on contraceptive use and health benefits attached to family planning is denying them one of the approaches that will support the improvement of maternal health outcomes in general. In some scenarios for example the one of Turkana district whereby the community access to contraception is poor due to negative attitudes towards contraceptives, awareness on the benefits is too low. This illustrates the need to create awareness through key health messaging (information, education and communication- IEC) and discussion forums comprising of men and women in order to lay off misconceptions.

Delays in implementing Focused ANC (FANC) approach which is quality oriented, goal-directed and woman-centred should be taken into consideration too but the slow progress of adopting it is hampering the attainment of quality maternal care. Despite the benefits of focused ANC, In Turkana district and Kenya in general, health facilities are still engaged in the traditional ANC directed risk screening approach which is proving ineffective since it is not feasible to predict most pregnancy and childbirth complications illustrating the need to adopt what works. The approach which is aimed at reducing visits during pregnancy and relieving the overburdened health system can be a step ahead in the improvement of a meaningful ANC utilization rate in rural areas with limited health facility coverage.

Limited access to comprehensive safe abortion services particularly in countries with restrictive laws results in clandestine procedures of unsafe abortion which very often result to premature loss of life. Evidence in Kenya illustrating unsafe abortion being the leading cause of gynaecological admissions and mortalities among women of reproductive age should be an indicator for policy change in the country. Despite all the statistical evidence on the impact of illegal abortion, Kenya judiciary system has not made progress in legalizing abortion to prevent premature loss of women life through criminally induced abortion.

Due to the sensitivity and the controversial manner of the whole issue being handled, ant-abortion lobby groups in the country are making it difficult to formulate a law that will assist in either decriminalizing or legalizing abortion. The factors influencing access to safe abortion have to be looked into particularly the legalization of abortion and availability of comprehensive post abortion services to avert unnecessary loss of women's lives. The restrictive laws governing abortion have to be reviewed since women who engage in unsafe abortion practices require very often subsequent medical care.

Consensus involving key stakeholders and interested parties for example anti-abortion lobby groups, government and health providers (public practitioners, philanthropic organization and private profit or non- profit practitioners) have to come out with an innovative solutions to reverse maternal morbidities and mortalities associated to unsafe abortion.

Reproductive health behaviour practiced among the Turkana community, for example early childhood marriage, pre-arranged marriages and forced marriages poses a potential risk in women health. The practices in many occasions lead to maternal morbidity and mortality either by unsafe induced abortion or obstructed labour among teenagers in Turkana district. The complacency of the judiciary systems to establish laws that abolish and discourage such potential harmful practices contributes to a loss of women's lives and that could have been averted. Community education and creation of awareness on the health dangers following such practices have to be emphasized at the community level.

Cultural practices that surround pregnancy at the community level have to be understood. The role of TBA's in provision of maternal health care need to be integrated in the conventional health care delivery system since they contribute to pregnancy care and home assisted deliveries. The integration which has met some global debates in spite of the TBA's great contribution in maternal care should not only mean creating networks but it should incorporate basic trainings on early detection of pregnancy- delivery related complications. Provision of essential supplies which is not currently happening for example clean delivery packs might create enabling environment during home assisted delivery in poor resource settings like Turkana district whereby women preference to home delivery assisted by TBA's is relatively high.

Traditional practices surrounding women health for example preference to deliver at home for the sake of cultural rituals to be performed in the case of Turkana community are could have health related consequences. This could pose a risk to life of both mother and baby particularly when an obstetric emergency occurs. The unhygienic level of which a delivery is being conducted at home poses even more risk to a child contracting for instance tetanus necessitating distribution of clean delivery kits to the TBA's.

Women's health and nutrition status among intermediate determinants plays a vital role in improving maternal health outcomes in general but social disparities for example poverty leading to poor nutrition and economic inaccessibility to maternal services could worsen the situation. Although most of the maternal care services in Kenya are free in public health facilities the opportunity cost incurred in accessing the services remains a barrier in improving maternal care in low resource rural settings. Better financial mechanism to overcome other indirect cost incurred in accessing free services need to be explored.

Nutrient supplementation provided in most antenatal care clinics is important to boost nutritional status. Nevertheless supplies of such essential nutritional components are prone to unsteady supply thus the supplementary source of nutrition is interrupted. The cultural

norms governing the feeding habit and patterns of an expectant mother in relation to food taboos in the Turkana communities aggravates the situation. Some type of foods which are beneficial to both mother and the development of the foetus are discouraged by the traditions which could lead to nutritional deficiencies. An overall nutrition supplementation and proper hygiene in relation to safe water supply and sanitation will assist in improving the health status in such situations of poor resource setting like Turkana district.

The contextual parameters for example political instability, policy environment and governance are vital in improving maternal health outcomes. Political commitment is not only considered influencing health care system delivery; it poses a greater threat even in places with adequate resources. This necessitates the development of firm mechanisms to hold those providers of services responsible of their action towards people's health.

Although efficiency of a health system does not only require funding for continuity, good governance and political commitment must also exist. This will provide an enabling environment for the system to function well and responsiveness is expected to thrive. However, in situations whereby health budget allocation is minimal and there is absence of political will like in the context of Turkana district, such potential barriers might hamper health system delivery with devastating impact on the most vulnerable group's categories such as mothers and children.

Sound government policies in relation to maternal health care for example provision of free maternal health services in most of the developing world has contributed to improved maternal health outcomes in general. But rural areas for example Turkana district lag also behind due to several other factors among them the geographical accessibility illustrating the need to increase facility coverage in such remote communities.

Together with a good budget allocation and political commitment, a sound functioning health system organization and delivery will assist in reaching desired health goals. Unless a substantial level of human resources, health facilities, medicines and medical supplies are available, transforming of health systems will remain a challenge. In such context of Turkana district with limited facility coverage, ill-equipped in terms of medicines and medical supplies coupled by high staff turnover health system factors plays an important role in influencing maternal health outcomes. Overall strengthening of the health system especially with community involvement will be a great mile stone in working towards maternal health improvement in the district. Identification of challenges, institutional barriers and an integrated vertical approach in reducing maternal mortality ratio linking with health system delivery might assist to overcome health system related constraints.

The socio economic development of an individual and region being a contextual determinant directly influences their health care outcome in general. The economic disparities between the rich and poor affects access to even basic health care among the low income earners and

poor populations. Purchasing power of the low income and the poor in affording health care services has to be subsidized to improve access and utilization of services.

Impoverished populations for example in the context of Turkana district with low economic index and relying on livestock as a source of livelihood, the health status is subject to availability of financing mechanism in place which is not always the case depriving them from essential care especially women of reproductive age and children.

Women status which entails education, income and aspect of GBV in the community plays a great role in determining women health outcome. Education levels and income ownership has shown to have an increased maternal survival rate by women having decisions on their own health seeking behaviour. Where illiteracy levels and poverty among women is high, like in the case of Turkana district, maternal health remains a challenge necessitating interventional change not only comprehensive services but other relevant issues beyond sexual and reproductive health.

Gender based violence perpetrating at household level influences women's health both physically and psychologically. The consequences of GBV ranging from physical assault to unwanted pregnancies are unacceptable and yet the perpetrators are in most cases escape justice due to weakness or absence of laws governing it. However, among communities for example Turkana people whereby GBV is perceived as a normal act as per their cultural perspective, the need to create awareness at the community level to teach the people on the dangers of GBV and bring the perpetrators accountable of their deeds will be a step ahead in working towards better maternal health outcome.

4.2 Conclusion

An overall perspective on all determinants will be beneficial in reversing the trend of maternal morbidity and mortality in Turkana district. The timely management of direct causes of maternal death through presence of qualified personnel and adequate medicines and medical supplies and adequate healthcare facilities could salvage the situation. In areas with human resource constraints to respond to obstetric emergencies, a shift of tasks to lower cadre of staff could even further save unnecessary loss of women's lives. The TBA's who are also engaged in pregnancy care and deliveries in Turkana district need to be integrated into the healthcare delivery system especially in detecting abnormalities and referring women in time for hospital care.

Improved access both geographical and economic access will be of great benefit leading to a better health outcome. Affordable services which include the opportunity cost incurred in accessing health care services could improve utilization rate especially in rural areas like Turkana district. Quality of care accessed is vital and interventions that work need to be adopted for example approaches such as Focused antenatal care (FANC) ,basic and comprehensive EMOC services and finally access to contraception addressing the gaps of the unmet needs of family planning.

Women status, education level and income level in the community has to be improved. Issues of GBV which is frequent and considered a normal act in some communities like the Turkana people has to be mitigated. This could be done through awareness creation on consequences of GBV at the community level. Gender equality could assist in women deciding for their own health without depending entirely on their husband permission in seeking health care.

Political commitment encompassing budget allocation, general improvement of health infrastructure and reinforcement of the health system is a major pillar that has to prevail for the achievement of desired maternal health outcomes. A collective approach that entails effective interventions aimed at tackling all determinants of maternal health especially what works must be adopted to alleviate maternal morbidity and mortality. All this interventions should be carried out with a special focus on the vulnerable groups.

4.3 Recommendations

The following recommendations are deemed necessary to reverse the determinants of maternal morbidity and mortality in Turkana district. They are directed to the three integral levels managing health care delivery namely: National level (MOH), District level (District Medical officers of Health/ District Commissioners) and the Community (local administrative and political leadership).

National level

1) Improve access to quality maternal care and facility coverage by:

- Training and equipping skilled birth attendants with the necessary knowledge and skills to handle emergency obstetric care
- Provision of an adequate human resource and developing mechanisms of staff retention while reducing staff attrition by offering an encouraging welfare package and enabling environment to perform
- Provision of an adequate communication system like radio sets in areas with no reliable communication mobile networks to facilitate emergency referrals
- Provide improved medical technologies for example ultrasound facilities in diagnosing and management of pregnancy to reduce morbidities and mortalities
- Provision of efficient means of transport (ambulances) to reach the next level of care
- Provide affordable services to improve utilization of maternal health services for example issuing of vouchers which has been reported in some countries (Tanzania) to have increased utilization of MCH services.

District level

2) Improve the already existing health facilities infrastructure and management by:

- Construct, rehabilitate and equip maternity wards
- Increase facility coverage by building more accessible health facilities to the population
- Among the nomadic and pastoral community establish mobile and outreach clinics to improve access of such population to vital healthcare services
- Streamline logistics related to medicines and medical supplies to avoid interruption of service delivery to the population
- Provision of clean delivery kits to TBA's for use during home assisted deliveries and safe clean water to maintain hygienic levels during and after procedures
- Plan, coordinate and implement safe motherhood activities with the district steering group committee to keep focus on safe motherhood activities in the district
- Awareness creation on service availability through intensified health education and community health workers
- Support supervision and monitoring of safe motherhood activities among all health actors implementing such programs
- Intersectoral collaboration among relevant sectors to health for example education on sexual reproductive and adolescence health(school health programs), agriculture and livestock on food safety/management, water & sanitation from the water managing authorities

Community level

3) Involve community participation in their own health especially with focus to TBA's to minimize delay and improve referrals at the community level

- Involving community health workers to carry out health education on maternal health through IEC materials and women health clubs
- Training community health workers and TBA´s on detecting, and referring pregnancy complications
- Suggest to the community to develop Community Based Emergency Fund and transport to facilitate referrals at the community level to hospital care
- Introduce labour/ delivery waiting homes to improve access to skilled birth attendants

References

Adamu, M. Sathiakumar, N. Alexander, R.(2003). Maternal mortality in Northern Nigeria: Population- based study. European Journal of Obstetrics & Gynecology and Reproductive Biology: 153- 159.

Amissah,B. Moyo, B. (2004). Abortion law reform in Sub- Saharan Africa: No Turning Back Reproducitve Health Matters: 227- 234.

Anwar, I. Sami, M. Akhtar, N. Chowdury, ME. Salma, U. Rahman, M. Koblinsky, M. (2008). Inequity in maternal health-care services: evidence from home-based skilled-birth-attendant programmes in Bangladesh: 241- 320.

Arps, S.(2009). Threat to safe motherhood in Honduran Miskito communities: Local perceptions of factors that contribute to maternal mortality.Social Science & Medicine: 579 - 586.

Babalola, S. Fatusi, A. (2009).Determinants of use of maternal health services in Nigeria - looking beyond individual and household factors. Biomedical Central pregnancy and childbirth: 9-43.

Campbell, R. Graham, J. (2006). Strategies for reducing maternal mortality:getting on with what works. Maternal survival 2: 1284 - 1298.

Cham, M. Sundby, J. Vangen, S. (2005). Maternal mortality in the rural Gambia, a qualitative study on access to emergency obstetric care. Reproductive Health Journal: 1742- 4755.

Charlotte, W. Wilson, Liambila (2004).Safe motherhood demonstration project Western Province Kenya: Approaches to provide quality maternal care in Kenya. Available at: http://www.popcouncil.org/topics/mnh.asp accessed on 9th February 2010

Cleland, J. Bernstein, S. Ezeh, A. Faundes, A. Glasier, A. Innis, J. (2006). Family planning: the unfinished agenda. Sexual and Reproductive Health3:1810- 1827.

Department for International Development (DFID) (2008).Country Facts - Kenya. Available at: http://www.dfid.gov.uk/where - we- work/ Africa- Eastern- Southern/Kenya1/Key-facts1 accessed on 10 May 2010

Fawcus, R. (2008). Maternal mortality and unsafe abortion. Best practise & Research Clinical Obstetrics and Gynaecology: 533-548.

GOK, Kenya National Bureau of statistics (2010).Country facts sheet and statistics. Available at: http://www.knbs.or.ke/ Accessed 9 June 2010

Hogan, C. Foreman, J. Naghavi, A. Ahn, Y. Wang , M. Makela, M. Lopez, D. Lozano, R. Murray ,L. (2010). Maternal mortality for 181 countries, 1980- 2008: a systemic analysis of progrss towards Millennium Development Goal 5: 1609- 1623.

Kenya National Bureau of Statistics (KNBS) and ICF Macro (2003). Kenya Demographic and Health Survey 2008-09. Calverton, Maryland: KNBS and ICF Macro.

Kenya National Bureau of Statistics (KNBS) and ICF Macro (2010). Kenya Demographic and Health Survey 2008-09. Calverton, Maryland: KNBS and ICF Macro.

Kerber, K. De Graft- Johnson, E. Bhutta, Z. Okong, P. Starrs, A. Lawn, J. (2007).Continuum of care for maternal, newborn and child health: From slogan to service delivery.Thelancet.com volume 370: 891- 900.

Khawaja, M. Choueiry, N. Jurdi, R. (2009).Hospital based caesarean section in the Arab region: Overview, East Meditter Health journal: 458- 469.

Koblinsky, M. Mathews, Z. Hussein, J. Mavalankar, D. Mridha, K. Anwar, I. et al, (2006). Going to scale up with professional skilled care. Maternal survival 3. The Lancet.com voleme 368: 1377- 1386.

Lawn, J. Couse, S. Zupan, J. (2005) Neonatal Survival 1:4 million neonatal deaths: When? Where? Why? .The Lancet.com volume 365(9462): 891- 900.

Liang, J. Zhu, L. Dai, L. Li, M. Wang, Y.(2010). Maternal mortality in China 1996- 2005. International Journal of Gynecology and Obstetrics Volume 110 (2): 93- 96.

Mace, R. Sear, R. (1996).Maternal mortality in Kenya pastoralist population. International Journal of Gynecology and Obstetrics volume 54 (2):137- 141. Available at: http://www.elsevier.com accessed 10 March 2010

Maulana, A. Ngoye, B. Juma, M. (2008). Baseline Survey on Sexual and Reproductive Health in Conflict settings in Kenya by Kenya Red Cross Society (unpublished report)

Miller, M. (2009).AMPATH Expands Focus to obstetrics and Gynaecology, Moi University Kenya.

Mills, A. Bennett, S. Bloom,G. Angel, M. Block,G. (2004). Achieving global health goals: The role of health system research. Geneva: WHO & Global Forum for Health Research.

MOPH & S.2008 - 2012 Strategic plan. Nation Health Sector Strategic plan II available at: http:// www.health.go.ke / available in Hard copy. Kenya Government printer's service

Muga, R. Kizito, P. Mbayah, M. Gakuru, T. (2004).Overview of the Health System in Kenya. Available at: http://www.measuredhs.com/pubs/pdf/SPA8/02 Accessed 23 February 2010

Ndyanabangi, B. Kipp, W. (2004).Reproductive Health Behaviour among in - school and out-of- school Youth in Kabarole District, Uganda. Available at: http://www.ncbi.nlm.nih/pubmed/17348325 accessed 13 April 2010

Okumbe, M. Mukolwe, G. (2009) Environmental Determinants of Maternal Morbidity and Mortality in Bondo Distric-Kenya. Available at: http://www.ku.ac.ke/schools/enviromental_determinant.pdf accessed 9 Jan 2010

Pearson, L. & Shoo, R. (2005). Availability and use of emergency obstetricservices: Kenya, Rwanda, Southern Sudan,and Uganda. International Journal of Gynecology and Obstetrics: 208-215.

Prata, N. Sreenivas, A. Vahidnia, F.Potts, M. (2009). Saving maternal lives in resource - poor settings: Facing reality. Health Policy:131- 148.

Razzaque, A. Da Vanzo, j. Rahman, M.Gausia, K. Hale, L. Khan, M.A. Mustafa, A.H.M. (2005). Pregnancy spacing and maternal morbidity in Matlab, Bangladesh. International Journal of Gynecology & obstetrics: 41- 49.

Rogo, K.Orero,S. Ogutu, M. (1998). Preventing unsafe arbortion in western Kenya: An innovative approach through private physicians. Reproductive health matters:77- 83.

Ronsmans, C. Graham, WJ. (2006). Maternal mortality: Who, When, Where and Why. The lancent.com Volume 368(9542): 1189 – 1200.

Travis, P. Bennet, S. Haine, A. Pang, T. Bhutta, Z. Hyder, A. Pielemeier, R. Mills, A. Evans, T. (2004). Overcoming health – systems constraints to achieve the Millennium Development Goals. Public Health: 900 – 906.

WHO (2008).Department of Reproductive Health and Research: Proportion of births attendants by skilled health workers, 2008. Genève: WHO

WHO (2005). Summary report: WHO multi-country study on women's health and domestic violence against women. Genève: WHO

WHO (2010). World Health statistics 2010. Genève: WHO. Available at http://apps.who.int/ Accessed 12 May 2010

WHO/UNICEF/UNFPA (1999) Women -friendly health services Experiences in maternal care

World Bank (2007).Kenya Growth Domestic Products estimates (GDP). Available at: http://www.kkv.go.ke/index.php Accessed on 10 June 2010

Zhao, Q. Kulane, A. GAO, Yi, Xu (2009). Knowledge and attitude on maternal health care among rural - to- urban migrant's women in shanghai, China. Biomed Central- Women Health: 5- 9.

Ziraba, K.A. Ezeh, A. Kyobutungi, C. Madise, N. Mills, S. (2009). Maternal mortality in the informal settlements of Nairobi city: what do we know? Biomed central- Reproductive Health: 1-8.