ROLE OF QUALITY OBSTETRIC CARE SERVICES ON REDUCING MATERNAL MORTALITY IN MVOMERO DISTRICT, MOROGORO REGION TANZANIA

BY

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ABSTRACT

Mvomero district is among the six districts in Morogoro region. This study was carried out to investigate the role of quality obstetric care services on reducing maternal mortality that affect the performance of health facilities which can reduce maternal mortality in rural areas. The research has show that there has been improvement in accessibility of communication network in quality obstetric care services in the district level, such as to reduce maternal mortality. However, establishment of quality obstetric care services has continued to be done slowly, that lack maintenance of health facilities for better performance. Tools for data collection involved combination of questionnaires for interviewing and checklists, which was used to gather data from key informant interview. Purposive sampling method was used to select two health cascades and health facilities within Mgeta and Melela wards in Mvomero district, Morogoro region Tanzania, in order to identify the role of obstetric care services. The quantitative data were analyzed by using the SPSS computer software. The research findings revealed that the role of quality of obstetric care services in health facilities were not well established and implemented in both health cascades. The study recommends that, special initiative should be done to bring changes on reducing maternal mortality, such as availability of essential investigations, equipments and medicines must be provided, constantly and should be dispensed by skilled health staff who can manage both normal and complicated deliveries that will rescue pregnant women as well as newborn babies. The study calls for more enforcement in providing quality of obstetric care services in maternal health care dynamics especially in rural areas where majority of people in Tanzania reside.

DECLARATION

I, ADELINE JOSEPH KAYOMBO, do hereby declare to the Senate of Sokoine University of Agriculture, that this dissertation is my original work and that it has neither been submitted nor being concurrently submitted for degree award in any other institution.

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DEDICATION

First and foremost this work is dedicated to my Almighty God who led the way throughout my studies (*"Call me I shall answer. I will reveal to you great and mysterious things you have not know." Jeremiah, 33: 3)*. Secondly, this dissertation is also dedicated to my beloved parents Joseph Kayombo and Veronica Aron Mapunda for their inspiration for laying foundation of my education and for their strong encouragement during my academic lifetime.

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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	-	Acquire Immune Deficiency Syndrome
ART	-	Antiretroviral Therapy
CHMT	-	Council Health Management Team
COBET	-	Complementary Basic Education in Tanzania
CSP	-	Community Services Providers
EmOC	-	Emergency Care
DMO	-	District Medical Officer
HIV	-	Human Immune Deficiency Syndrome
HSSP	-	Health Sector Strategies Plan
ICM	-	International Conference of Midwives
ICPD	-	International Conference on Population and Development
IDM	-	International Day of the Midwife
IEC	-	Information Education Communication
IPT	-	Intermittent Preventive treatment
LAM	-	Lactation Amenorrhea Method
MCHA	-	Maternal Child Health Attendant
MDG	-	Millennium Development Goal
MKUKUTA	-	Mkakati wa Kukuza Uchumi na Kupunguza Umaskini Tanzania
MMR	-	Maternal Mortality Rate
MOH	-	Ministry of Health
MSD	-	Medical Stores Department
N/A	-	Not Applicable
NACP	-	National AIDS Control Program
NBS	-	National Bureau of Statistics
NHP	-	National Health Policy
NSGRP	-	National Strategy for Growth and Reduction of Poverty
PEDP	-	Primary Education Development Program
PMTCT	-	Prevention of Mother-to-Child Transmission
SP	-	Sulphadoxine Pyrimethamine
RBA	-	Right Bearing Age
SPSS	-	Statistical Package for Social Sciences
SUA	-	Sokoine University of Agriculture
TBAs	-	Traditional Birth Attendants
TDHS	-	Tanzania Demographic Health Survey
UDHR	-	Universal Development of Human Rights
UMATI	-	Chama Cha Malezi Bora Tanzania
UNICEF	-	United Nations Children's Fund
UNMD	-	United Nations Millennium Declaration
UNO	-	United Nation Originations
UPE	-	Universal Primary Education
URT	-	United Republic of Tanzania
WCBA	-	Women-Child Bearing Age
WDR	-	World Development Report
WEO	-	Ward Executive Officer
WHO	-	World Health Organization

CHAPTER ONE

1.0   INTRODUCTION

1.1   Background

Maternal mortality is a worldwide agenda of very high concern. It is estimated that every

year half a million women die in childbirth and the problem has not changed much since it

was highlighted in 1987 at the Safe Motherhood Conference in Nairobi, Kenya (Fikree *et*

al., 2007). Ziraba *et al*. (2009) point out that successful prevention of maternal deaths

hinges on adequate and quality emergency obstetric care. Besides, the need for a

supportive environment in terms of essential drugs and supplies, equipment and a referral

system are paramount for successful prevention of maternal mortality.

The problem of maternal mortality is so serious in sub-Saharan Africa

countries where maternal mortality remains a challenge with estimates exceeding 1000

maternal deaths per 100 000 live births in some countries (Alexander, 2000). (Fikree *et al*.,

2007). Ziraba *et al*. (2009) detailed that out of 75% of global maternal deaths, 99% of it

occurs in the developing world whereby Africa and Asia together account for 95% of

maternal deaths. Most of these deaths, health problems and injuries are preventable

through improved access to quality obstetric care services, including safe and effective

emergency obstetric care (Krasover and Main, 2005).

Undeniably, reduction of maternal mortality is a high priority agenda which is addressed

by various international, regional and national commitments such as the Millennium

Development Goals. MDG 5 aims to improve maternal health. Progress has been made in

some low- income countries, though challenges remain, particularly in the poorest parts of

the world. Dussault and Franceschini (2004) highlighted three barriers'. These include

financial, physical and functional to one of the key indicators of progress, the use of professional skilled care in childbirth.

Currently, Tanzania also puts the maternal reduction agenda as one of her priorities due to its high mortality rates. Anemia, hemorrhage, eclampsia, malaria and infections cause more than 80% of maternal deaths (McGregor, 2007). The problems of high maternal mortality are mainly found in government health facilities as they are perceived to be very poor because there is no proportional range among staff, services users and equipment available, hence failure to deliver quality care service compared to quality of care provided in the private facilities (Browne, 2009).

The caesarean services in the country are also low indicating that Tanzanian mothers have insufficient access to essential maternal health services and specifically services for complicated deliveries referring to comprehensive obstetric care services (Gill, 2007).

Thus, this study examined the role of quality of obstetric care services on reducing maternal mortality in Mvomero district, Morogoro region. Four key issues were covered which were quality, ability and effectiveness of obstetric care services in reducing maternal mortality; the effect of maternal mortality on household socio-economic conditions and challenges and opportunities to improve the obstetric care services in the study area.

1.2 Problem Statement

Tanzania is one of the countries that are still constrained by poor quality of obstetric care services and this gap lead to escalating maternal mortality. The situation is more pathetic in rural areas where the necessary equipments and skilled staff are limited and the social and economic infrastructures are not well arranged. Consequently, women are dying not

because of diseases we cannot treat, but because the society has yet to make the decision worth saving our mothers' lives (Raises, 2007).

According to Royston and Armstrong (2000), nearly 9 000 women in Tanzania die annually due to preventable or treatable pregnancy related causes. This raised an important question for policy makers and health system in Tanzania, particularly in Mvomero district in Morogoro region where there has been little research on linkage between obstetric care services and maternal mortality (THDS, 2004).

1.3   Problem Justification

Maternal mortality continues to be a serious problem in Tanzania. The country is also characterized by high incidence of infectious diseases such as HIV/AIDS, poverty, illiteracy and poor health services, factors that compound the maternal disease burden (UNO, 2002). It is estimated that close to one third of deaths of women aged 15-49 years in Tanzania are maternal related deaths (Trussell and Raymond, 2007).

Barriers to access quality obstetric care services among women in Tanzania are contributed by factors such as long distance to health facilities, lack of transport and unfriendly care services. The high rates of home deliveries have been attributed to poor geographical access to health facilities, lack of functioning referral system, inadequate capacity at health facilities in terms of space, skilled attendants and commodities (Royston and Shain, 2003).

The Mvomero district mortality records in 2006 were among the peaks in the country and home deliveries were at high rates. For instance, the number of pregnancy mothers who delivered at health facilities in the district was about 5 000 but those attended antenatal clinic were over 10 000 (Rachel and Haws, 2008). Lesson from these figures is that, most

of pregnant mothers are not using health facilities during delivery and this pose a high risk to further maternal mortality. This study therefore examined role of obstetric care services with aim to highlight important areas that calls for improvement.

1.4   Research Objectives

1.4.1   General objective

The overall objective of the study was to assess the role of quality obstetric care services on reducing maternal mortality in rural districts of Tanzania taking a case study of Mvomero district, Morogoro region.

1.4.2   Specific objectives

i)   To assess the role of quality of obstetric care services with respect to maternal mortality

ii)   To establish effect of maternal mortality on household socio-economic conditions

iii)   To identify challenges and opportunities to improve the obstetric care services

1.5   Research Questions

To qualify the general research question, the following specific questions were dealt with:-

i)   What is the existing situation of obstetric care services in health facilities?

ii)   What are the effects of maternal mortality rate (MMR) on household social economic condition?

iii)   What are the challenges and opportunities to the improvement of obstetric care services?

1.6   Conceptual Framework

According to Mayeta (2004), a conceptual framework binds facts together and provides guidance towards collection of appropriate data. The importance of a conceptual frame lies on the fact that it guides a researcher in understanding what data and time that it should be collected (Kajembe, 1994). The conceptual framework underlying this study (Fig.1) include key variables for assessing the effectiveness of quality obstetric care services which were knowledge of maternal health issues, coverage of skilled delivery attendance, the performance of safe motherhood promoters and the impact of intervention in community health system.

Background variables were personal and social characteristics such as sex, age, education of respondents and marital status. Age is a factor which can influence participation of an individual in socio- cultural activities. Sex is a biological being of an individual after birth. Marital status is an adult respondents living together as couples or not. Education tends to broaden horizons beyond habit and traditions of an individual and encouraging participation not only in development activities but also in accessing quality obstetric care services (Levinger and Drahman, 2005).

Whereas independent variable was pregnant mothers who were affected by poor maternal care services due to limited health facilities, which are not in standard. Pregnant mother refers to the physical condition of a woman carrying unborn offspring, waiting for delivery at gestation age of 38 to 40 weeks after development of offspring in the uterus from fertilization to birth (Frederick, 2000).

The dependent variable was distribution of skilled health staff and health facilities according to population size. Skilled obstetric staff as defined by the World Health

Organization refers to an accredited health professional – such as a midwife, doctor or nurse – who has been educated and trained to proficiency in the skills needed to manage normal and complicated pregnancies. Auxiliary nurses and traditional birth attendants whether trained or not have not been included in the category of skilled birth attendants (WHO, 2008). Health facility provides health services in terms of outpatients and inpatients as well as maternal and child health services and laboratory services.
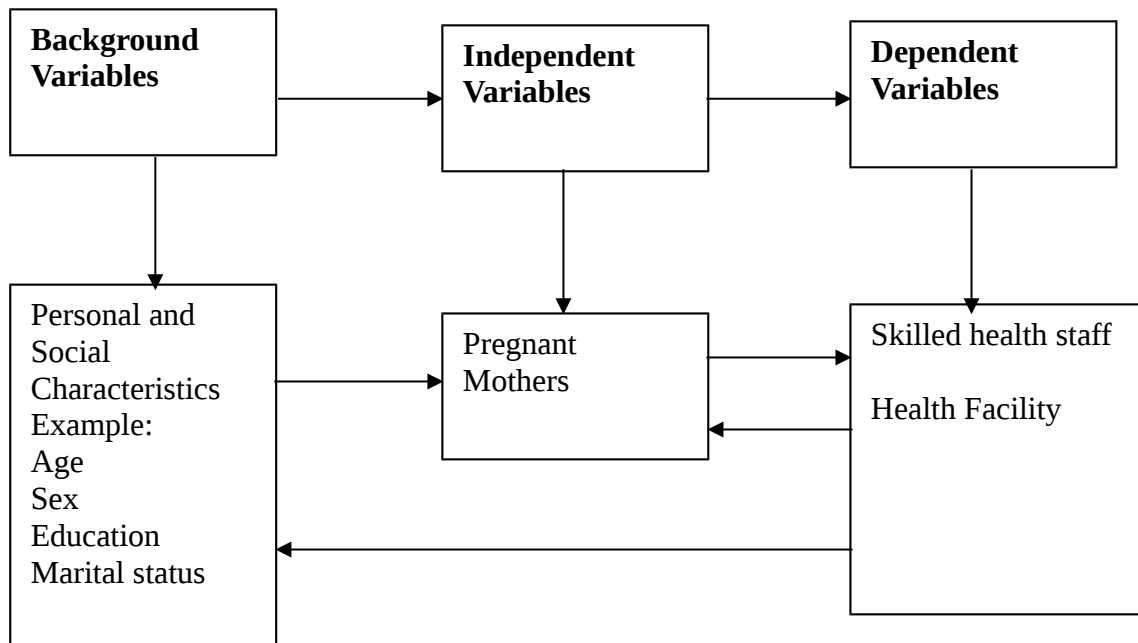
Figure 1: Conceptual Framework

CHAPTER TWO

2.0   LITERATURE REVIEW

2.1   Overview

This chapter gives an overview on how the quality obstetric care service has been an important key factor in reducing maternal mortality especially in rural areas where maternal health care services could be improved in order to reduce maternal mortality through provision of skilled health staff, laboratories investigations, equipments and drugs.

2.2   Maternal Mortality

According to Shi and Singh (2003), provide some important details on maternal mortality as follows. They define it as any death that occurs during pregnancy, childbirth, or within two months after the birth or termination of a pregnancy. They also argue that, a direct obstetric death is the one influenced by complications of pregnancy and occurring during pregnancy, delivery, or within 42 days postpartum including complications of induced abortion. Besides, they explain maternal mortality in three perspectives as True maternal death, which is one resulting from obstetric complications of pregnancy, due to a chain of events resulting from incorrect treatment and management. Indirect obstetric death, are those deaths resulting from previous existing disease or diseases that developed during pregnancy which was associated by pregnancy whereas fortuitous deaths are those occur in pregnancy due to other causes**.** Most of these deaths, health problems and injuries are preventable through improved access to quality obstetric care services, including safe and effective emergency at health facilities.

2.3   Trends of Maternal Mortality Rate

The epidemiology of maternal mortality and morbidity is characterized by huge disparities between developed and developing countries. It is estimated that of 585 000 annual maternal deaths worldwide are due to complications of pregnancy and delivery, of which 99% occur in the developing world**.** This number has not declined substantially over two decades (UNICEF, 2005).

The fact is that most of them remain chronically disabled due to lack of quality obstetric care services, all of which can be treated. Pregnant women in the developed world face maternal mortality ratios of less than 20 deaths per 100 000 live births (Zulfiqar, 2007). According to the WHO (2005c), 55% of maternal deaths occur in Asia, 40% occur in Africa, and only 1% occurs in developed countries. Pregnant women suffer from avoidable illness and disability from pregnancy complications. Maternal mortality remains an important indicator of the status of health care in the modern world.

Deaths due to maternal causes represent the leading cause of death among women of reproductive age in developing countries. The World Health Organization (WHO, 2005b) estimates that in 2005 over 500 000 women died from pregnancy and birth-related causes. A woman in a developing country is 97 times more likely to die as a result of pregnancy than a woman in a developed country. Malyes (2007), point out that, pregnant women in many parts of Africa and Asia have over 1 in 6 chance of dying from problems relating to pregnancy and childbirth. The majority of these deaths occur during and immediately following birth of which 25% are caused by severe bleeding, 15% by infection, 12% by eclampsia (a seizure disorder), and 8% by obstructed labor. The remaining deaths are due to unsafe abortion (13%), other direct causes (8%), and indirect causes such as HIV/AIDS, tuberculosis and malaria which may be aggravated by pregnancy (Osborne, 2006).

Between 1990 and 2005 the proportion of deliveries attended by skilled healthcare personnel in sub-Saharan Africa rose only modestly from 42 % to 45% (Hibbard and Stecklov, 2007). The mortality gap between Africa and other regions widens, with the odds that a sub-Saharan African woman will die from complications of pregnancy and childbirth at 1 in 22, compared to only 1 in 7300 in the developed world (Zeger, 2008).The risk of maternal mortality is estimated to be 50 times higher in sub-Saharan Africa compared to developed countries (Graham, 2006). It is estimated that the highest risks from pregnancy occur in Africa, in particular in Eastern and Western Africa, with ratios over 1000 maternal deaths per 100 000 live births (Villa and Wojdyla, 2005). Africa face weak health systems, lack of accessibility to health facility due to non tarmac roads and unreliable public transport especially during rain season. Unsafe abortion and diseases like, malaria, anemia, and tuberculosis and HIV/AIDS infection continue to delay progress against reduction of maternal mortality (Catania *et al.*, 2006).

According to Campbell and Graham (2006), most maternal deaths seem to occur between the third trimester and the first week after delivery. Maternal deaths arise from the risks attributable to pregnancy and childbirth as well as from the poor quality care from health services and therefore skilled attendance at the time of delivery and access to emergency obstetric care remain the most effective measures to reduce maternal mortality.

Maternal Mortality Rate (MMR) in Tanzania at national level average is (578/1000) (Krasover and Shan, 2000). Maternal mortality is a basic indicator of inequities in the health care of women of reproductive age among countries and among regions within a country. Maternal mortality contributes 2.3% of the total mortality in Tanzania (Hartmann, 2004). The country also has over half of expectant women deliver at home and not at

health facilities and as such may not be attended by skilled personnel or have access to Emergency Care (EmOC).

Data from Tanzania hospitals records reveal causes of maternal mortality are very similar to all hospitals and that maternal mortality situation is worsened in Tanzania (Mbaruku and Bergstorm, 2001). Leading causes of maternal death in developing countries include obstetric hemorrhage and sepsis. As well, in other Tanzania hospital based studies; sepsis is the first cause of maternal death in hospitals. This is associated with the fact that sepsis is found to be high when the level of maternal death is also very high. Progress has been made in improving the proportion of births attended by skilled health personnel (41% in 1999 and 62% in 2007), and births taking place in health facilities (44% in 1999 and 49% in 2004).

The negative trend in maternal mortality in Tanzania is compounded by the impact of the HIV and AIDS epidemic. However, most of the maternal deaths are preventable, hence the need to ensure continuum of care from the community level such as through instituting emergency obstetric care at health facilities or health cascades. Especially for women who are living in rural areas are more at risk than those in urban areas due to lack of accessibility of emergency obstetric care at health facilities which are situated in remote areas.

The MMR is still high for the district of Morogoro (578/1000) and Mvomero (578/1000) compared to other districts and regional average (496/1000), though it is the same as national average (578/1000) (MoHSW, 2006a).This could be due to the fact that Morogoro and Mvomero districts were one district up to 2006. The maternal mortality level provided is twice the Tanzanian government's estimate for the entire Morogoro region. The MMR

for Morogoro region for 1992–1995 was 977 deaths per 100 000 live births (Ijadunola *et al*., 2007).

The MMR reflects the risk of death a woman faces each time when a woman became pregnant. Maternal mortality has a high priority on the global agenda most prominently underlined in the Millennium Development Goals (MDG) 5 to reduce maternal mortality and to improve obstetric health care services. Maternal mortality is expressed through the maternal mortality ratio (MMR) and the lifetime risk of maternal death. The lifetime risk of maternal death is a combined risk expressing the risk of becoming pregnant and that of maternal death faced by a woman over her entire reproductive life span (Mswia *et al*., 2002).

2.4   Major Causes of Maternal Mortality

According to Davis (2000), underlined various causes of maternal mortality by noting that it varies widely, depending on a woman's country or region of origin, her social and religious influences, the availability of health care services, and the overall state of health of her particular community. The instigator also agitates that in past decades, the three leading causes of maternal mortality were hemorrhage, infection, and pre eclampsia (a hypertensive disorder specific to pregnancy). On optimistic side, Claeson (2004) stated that deaths resulting from infection have decreased with the widespread use of antimicrobial drugs and the legalization of abortion in some countries. And the current leading causes of maternal death are pulmonary embolism, complications of hypertensive disorders, hemorrhage, infection, anesthetic complications and cardiomyopathies.

According to Hoyert *et al*. (2004), urge that over 60% of these deaths occur within the first postpartum week. Pulmonary embolism and cardiomyopathies are leading causes of death

occurring more than 42 days postpartum. The three leading causes of death in pregnancies associated with a stillbirth are hemorrhage, complications from hypertensive disease, and infection. More than 90% of deaths in ectopic pregnancies result from hemorrhage caused by rupture of the fallopian tube, and infection and sepsis account for up to 50% of maternal deaths in cases of miscarriage or abortion especially self-induced abortions.

Antepartum deaths which occurring before delivery are most likely to result from hemorrhage caused by placental abruption, infection, and thrombotic or amniotic fluid embolism (Koonin *et al.*, 2000). The majority of these deaths are associated with cesarean, as opposed to vaginal delivery. Contributing risk factors include obesity, presence of hypertensive disease, and emergent cesarean delivery. According to Berg *et al*. (2006), sixteen deaths resulting from anesthesia are nearly seven times higher for African-American women than for American white women. So the problem is also socially constructed.

Cardiomyopathy is a major cause of maternal mortality in most countries. Peripartum cardiomyopathy is a form of dilated cardiomyopathy that has an increased risk of recurring in subsequent pregnancies. Nearly 50% of deaths from cardiomyopathies occur more than 42 days postpartum. Once again, most women from developing countries are at greater risk for dying from cardiomyopathies than in developed countries (Shen and Williamson, 2003).

Physicians caring for women of reproductive age should also be familiar with the major causes of death in non-pregnant women, although how these causes might influence maternal mortality in most cases remains unclear. The leading causes of death in non-pregnant women are

accidents, malignancies, cardiac disease, infectious diseases such as HIV/AIDS, and acts of violence (Stecklov, 2004). Any preexisting condition can increase the risk of death both during pregnancy and in the postpartum period. Conversely, pregnancy itself can lead to more rapid deterioration in certain diseases. Causes of maternal death in developing countries are similar to those recorded in the developed countries, but deaths from illegal abortions, sepsis, infectious diseases, and cardiac conditions are far greater in developing countries than in developed world (Hawkins *et al.,* 2001).

2.5   The Role of Obstetric Care Services in Reducing Maternal Mortality

Essential obstetric care is the term used to describe the elements of obstetric care needed for the management of normal and complicated pregnancy, delivery and the postpartum period. Essential Obstetric Care is defined at two different levels of the health care system namely basic and comprehensive.

Basic essential obstetric care services at the health centre level include at least the following: parenteral antibiotics, parenteral oxytocic drugs, parenteral sedatives for eclampsia, manual removal of placenta and manual removal of retained products. Comprehensive essential obstetric care services at the district hospital level (first referral level) should include all the above plus surgery, anaesthesia and blood transfusion (WHO, 2000a). Certainly, the effectiveness in the provision of quality obstetric care services is influenced by presence but not limited to skilled health staff, state of the art equipments and drugs, transport and communication and laboratory investigations. The following Sub-section elaborates various important amenities so as to reduce maternal mortality.

2.5.1 Skilled health staff in maternal health care services

The first role of skilled health staff is to improve maternal health care services by using modern technology to handle complicated conditions in health care facilities with proper treatment and without delay. Currently, it is estimated that 40% of births in developing countries are assisted by skilled health staff. Still erroneous efforts are needed to reach the target of 90% coverage by 2015 (WHO, 2000b). A crucial need is to have the professional skilled health staff working in health facilities. Although a situation shows that the majority of women still deliver at home. The advisers concerned with maternal mortality reduction concur to promote births in health facilities with professional attendants as the ultimate strategy (Fortney, 2001). One of the initiatives to halve the maternal mortality includes the effective application of the Skilled Care Initiative (Bailey, 2005).

The Skilled Care Initiative aims to ensure that all women have access to high-quality, skilled care so that pregnancy-related problems can be detected and treated before they become fatal. The Initiative works in maternal health care services to strengthen government commitment and policies to increase skilled care during childbirth improve skilled health professionals' performance through training and supervisory support for midwives and other supportive professionals staff, provide essential equipment and drug supplies as well as laboratory services (Hunter, 2004).

In respect to this, a skilled health staff should be able to do the following: manage normal labor and delivery, recognize the early signs of major obstetric complications, perform essential life-saving interventions, appropriate refers, and provide high-quality of maternal health care services, including follow-up and linkages with other services (Berman, 2004). Traditional Birth Attendants (TBAs) are not defined as skilled health staff because they lack the capacity to perform life-saving interventions and are not trained as midwives

(Anne, 2008). Thus, it is better to deliver in a health facility because a woman can get immediate professional attention, especially if there are complications.

Ensuring that all women have access to skilled care is particularly critical because most obstetric complications are difficult to predict, and any woman can suddenly, without warning, develop a life-threatening emergency. WHO advocates for expanded use of skilled health staff to reduce maternal mortality (Bennett and Brown, 2006). A challenge faced by government is how to get and keep the skilled health staff at all levels in health facilities especially in rural areas. Midwives and doctors are not enough compared to the need. Skilled health staff is part and parcel of quality maternal health care services. According to Murray (2007), reports that, a major gap in skilled health staff at delivery also exists between urban areas (79%) and rural areas (34.5%) of Tanzania. In 2006, the number of deliveries in rural areas was 1.3 million outnumbered deliveries in urban areas (300 000) by a factor of more than four.

A recent global analysis of maternal health care concluded that the universal availability of basic emergency obstetric care services alone could "prevent a large proportion of obstetric deaths'' and ''bring maternal mortality below 200 per 100 000 lives births'' (Fofana, 2008).

2.5.2   Equipments and drugs

There is need for a supportive environment in terms of essential drugs and equipment supplies, laboratory services and a referral system. Successful prevention of maternal mortality hinges on adequate equipment and drug supplies which are essential in the provision of quality emergency obstetric care in all levels in health facilities in order to rescue life of pregnant women and new born babies.

According to the WHO (2005a), 15% of maternal deaths are due to infection due to shortage of delivery kits in health facilities. Availability of clean delivery kits hope to reduce infections among mothers delivering in health facility and at home. Prevention of infection can be done by ensuring safe delivery through use of sterilized delivery kits. A delivery kit include such items as soap for washing hands, clean razors for cutting the umbilical cord and cord ties for tying the cord. Power, water and ambulance are among the important items in provisional of maternal health care services. A lack of enough equipments and drugs supplies plagues the quality of obstetric care services in health facilities in the developing countries (Loudon, 2005). New but affordable technologies needed to prevent maternal mortality by using modern equipments and drugs.

2.5.3   Transport and communication

In order to provide the life-saving emergency obstetric care, pregnant women will need a functioning health system. This includes effective transport and communications for referral (RGZ, 2007). Radio call and cell phone will be used for information purposes among the health staff, health facility and district hospital. Emergency transport facilities must be available for all pregnant women with complications. It requires very little time for transport in order to overcome the complications and sometimes death can appear if there is delay in transport. The responsiveness of the available transport will often determine whether a woman lives or dies. In some areas and condition, emergency services tended to respond less hastily in cases of pregnancy crises. It is also important that the ambulances should be appropriately equipped due to distances or the roads being not well surfaced (Vincent, 2008).

Pregnancy and childbirth are dynamic situations and depend on the rapid response in cases of emergency. If the response is not rapid and focused, the life of the pregnant woman

and/or the baby is in jeopardy. In an emergency, one hour is a long time (MoHSW, 2007b). According to the International Telecommunications Union there are more than 3.3 billion mobile subscriptions worldwide (MoHSW, 2007b). Of which, 68 percent of mobile phones subscriptions are in developing countries. Thus, if effectively taped, mobile phones can save as important life-saving to pregnant mothers. Indeed, the explosive spread of mobile phone networks across the developing world has created a unique opportunity to significantly transform the way in which global health challenges and can be tackled and WHO is increasingly supporting and prioritizing strategies that explore such opportunities (Gijs, 2002). Emergency transport, radio call and cell phone response for medical crisis in rural communities can be improved through community communications and health facilities link to improve transport and communication services.

2.5.4 Laboratory investigations

According to WHO (2005b), strongly recommends screening and treatment during pregnancy. In response to this, the government of Tanzania adopted the WHO recommendations through provision of the National Health Policy, as well as National Package of Essential Reproductive and child health interventions. That outlines and states that each pregnant woman has to have laboratory tests during pregnancy for detection of various diseases, in order to make pregnancy safer. Also to improve pregnancy outcomes at the same time will also contribute in HIV/AIDS control during pregnancy. This should be done all over the country (MoHSW, 2004).

Laboratory diagnosis and universal safety precautions should be observed at all times when dealing with persistent procedures such as drawing blood. All body fluids should be considered infectious. All laboratory tests should be performed or supervised by qualified registered laboratory personnel (Debora, 2002). However, in maternal clinic health (MCH),

where qualified laboratory personnel is not available, MCH staff may perform the test after they have successfully undergone a specific training on laboratory tests (Debora, 2002). Precautions are aimed at protecting the health staff and client. All laboratories should be well equipped to handle various investigations concerning pregnancy progress.

2.5.5   Training and development

According to PHSDP (2007), among the most serious human resources for health challenge facing the health sector is the existing low production capacity both quantitatively and qualitatively. There is also limited skills, knowledge and competence gap among health workers to cope with fast technological advancement in health. (Rosemarie, 2008). This is due to the fact that the training and supply of health workers have not kept pace with the needs of health sector both quantitatively and qualitatively. In service training and continuing professional development are essential for updating and maintaining health workers for skills and knowledge ensuring quality services provision. The system and practices need to base on the factors such as changing disease patterns and health services demand.

2.5.6   Health staff profile

According to MoHSW (2007a), staff profile has shown a decline of skilled human resources from 67 000 in 1994 to 49 000 in 2001/ 02. The Ministry of Health and Social Welfare shows an enormous shortage of human resource for the health across all main cadres. It is worse among Clinicians, Nurses, Pharmaceutical Technicians, Laboratory Technicians, and Radiographers. Others include, Therapists, Health Officers and Health Administration cadres. According to Ministry of health staffing level (1999) 46 868 qualified health professionals in the public health facilities are required while the available technical staffs are 15 060 which are equal to 32.1 percent of the requirement. This reveals

a shortage of 31 808 workers equal to 67 percent. The Social Welfare services are also affected whereby the technical staff required is 816 when the available actual strength is 269 that is a deficit of 547 personnel. Appendix iv shows the number of staff by region as was in year 2001. This helps to show the staff profile at various levels in regions so as Ministry of Health and Social Welfare can act to it accordingly. The analysis reflects the situation of the human resources for health crisis at all levels. Other sectors which complement the Ministry in the provision of health services are facing the same problem. The situation in the Faith Based Organizations and private sector is becoming worse due to staff movement trends to public facilities.

2.6   Spread of Obstetric Care Services

Obstetric care service is described as the ability of service provider in providing client or patient satisfaction related to other alternatives available at health facility. It is what the client /patient believes would be offered at health facility but when it is not available. It is also known as the gap between the patient perceptions of service and level of expectations, the outcome of this process is known as negative disconfirmation (Paxton and Freedman, 2005).

Providing health care which assures the maximum possible well being of woman depends on the health care system, the health care providers who work in it and the women themselves (Rochat and Jabeen, 2007). Any modification in the roles of each of these can have impact on quality of care, and promote or impede client /patient rights at a higher level of care. To those who need it while obtaining the possible medical outcome, care that satisfies women and their families. Care-providers, managerial, financial performance and developing existing services in order to raise the standards of care provided to all clients.

2.7   The Rights of Clients/Pregnant Mothers

According to MoHSW and UNICEF (2000), the right of the clients should be viewed in the context of the rights of clients to receiving health services. Respecting those rights contributes to improved quality of care. The fulfillment of their rights should be a goal to achieve by health services providers. The authors also assert that the goal to the rights of clients is directly related to the availability and quality of information and service as it explained that, the rights of dignity the client have a right to be treated with courtesy, consideration, attentiveness and with full respect of their dignity. Regardless of their level of education, social status or any other characteristics which would single them out or make vulnerable to abuse.

Similarly, the clients have a right to safety in the practice of maternal health services. The clients have the right to comfortable services, the right of which is intimately related to adequacy of service facilities and quality of services. On client has a right to do this in an environment in which feels confident that their conversation with the counselor or service provider will not be listened to by other people. When a client/patient undergoing a physical examination, it should be carried out in an environment which client's/patient right to bodily privacy is respected (Murray, 2007).

The right to information, all members of the community has a right to information on the benefit of care for themselves and their families. They also have a right to know where and how to obtain more information on health matters and services for planning or caring for their families. The right to access all members of the community has a right to receive health services regardless of their social status, economical situation, political belief, ethnic origin, marital status or geographical location. Access includes freedom from barriers such as policies, standard and practices which are not scientifically justifiable (Hartmann, 2004).

Individuals and couples have the right to make informed choices on family planning and freedom to choose which method of contraceptive or reproductive health service to use. The right to confidentiality, the client should be assured that any information she/he provides or any details of the service received will not be communicated to third parties without his consent. The right to continuity the client/patient has a right to receive services and supply of drugs and other services for as long as they need them. The right of opinion; the clients have a right to express their view on the services they receive (Hodnett, 2000).

2.8   Quality Service

It can be helpful in defining and measuring the quality of care to be achieved for a particular group of clients or by a particular section of the service and that include the three "As" and three "Es", Three "As" are Availability, Acceptability, Appropriateness whereas three "Es" are Effectiveness, Efficiency and Equity (Grimes, 2006).

According to Maxwell (2007), affirms that access to health care includes the availability of a service, its accessibility and promptness of response. Services are not compromised by undue limits of time or distance. Acceptability this dimension is described as a service which meets the reasonable expectations of patient, providers and the community. It is concerned with the way care is provided and includes all the aspects of courtesy, communication, comfort, confidentiality and preserving the dignity and self-esteem of the client. Appropriateness and relevant to need, that means, the service or procedure is what the population or an individual actually needs (Maine and Deborah, 2002). Meeting this dimension will require providing specialist service, applying relevant research and questioning practice and beliefs about treatment or care processes.

Effectiveness implies the service achieves the intended benefit for the individual and for the community. This dimension describes the degree to which the interaction between the client and the service procedure which is desired result and finding ways of overcoming problems in doing so, being effective will mean making sure that practice is research – based wherever possible (Shaw, 2001).

Efficiency means the desired result without unnecessary expenditure of resources, effective means competent, skilled and productive. Efficiency and effectiveness are closely linked and it could be argued that although it is possible to be effective without being efficient. It is not possible to be efficient without being effective. Service which does not consider time, skills and resources upon unnecessary and ineffective activities cannot be described as being of the best quality. Equity means the available resources are fairly distributed among all who have need of them. Resources are not wasted on one service or client/patient. Also can be described as fairness in providing care, example making sure that less vocal or less assertive clients do not receive less support than others and that there is consistency in the quality of care achieved for different clients/ pregnant mothers (Sleep, 2003).

2.9   Safe Motherhood

Safe motherhood is any action that might improve women reproductive health with focus on reduction of maternal death (Cook and Dickens, 2006). The subsequent subsections present different aspects of safe motherhood.

2.9.1   The safe motherhood initiative

The initiative began in Nairobi, Kenya in 1987 and had its target to halving maternal mortality by year 2000. Intentionally was to save life for women in reproductive age.

Midwives activities play important part in supporting the initiative through the International conference of Midwives (ICM) network and establishment of an International Day of the Midwife (IDM) so as to create awareness throughout the world. For the first time IDM was celebrated in 1991 and declared to improve the quality care for women in order to reduce the maternal mortality in the world. It is worldwide effort that aims to increase attention in maternal health and reduce maternal mortality since the safe motherhood is not an option or an ideal but must be a devoted policy by all communities (Horton, 2007).

It become clear in these initiatives that in order to act effectively to prevent maternal deaths, the countries need more information than maternal mortality ratios or death certificate data, rather than knowing about which women are dying or why they die, or what can be done to prevent such deaths in future. Making Pregnancy Safer promotes the commitment of governments and partner agencies to safe motherhood to making technical support available and ensuring that mother and child is a priority in both national policies and budget so that can be used as a national evidence based guidelines. Clinical audit is most suitable in facilities or situations where evidence based clinical guidelines are used, so that the care women received can be measured against the implementers (WHO, 2007).

2.9.2 Integrating HIV/AIDS and safe motherhood initiatives

According to TACAIDS (2006), contends that each year, there are over half a million maternal deaths, mainly in low and middle income countries. Mother and newborn morbidity and mortality are closely linked. Pregnancy itself increases the chance of HIV infection and AIDS accelerate the risk of maternal mortality with subsequent serious impact on the child and wider family. This additional maternal mortality stems from the impact of HIV, on direct obstetric causes of death and its exacerbation of malaria and

tuberculosis (TB) during pregnancy. It should be noted that any TB patient should be screened for HIV/AIDS as well as HIV/AIDS patient should be screened for tuberculosis.

Tanzania is among many African countries which have prioritized Prevention of Mother-to-Child Transmission (PMTCT) programme as a major area of HIV/AIDS campaign to save the life of unborn child as it aimed at reducing the number of children acquiring HIV infection during pregnancy. It is estimated that 9.6% of pregnant women attending antenatal clinics are living with HIV Also about 72 000 babies are infected with HIV each year and the chance of survival for a child who acquires HIV infection is very narrow, the majority of them die early in their infancy period. Without any intervention it is estimated that about 25 to 40% of the infected pregnant woman will transmit HIV virus to their babies during pregnancy labor and delivery also through breast feeding (NACP, 2005).

There is a need to have PMTCT in health facilities in order to maintain health, pregnancy and save children for all, to amplify demand for greater investment in maternal health and ensuring systemic changes to give every woman access to quality health services. On that regard, PMTCT remains central in an effort to reduce the impact of HIV on maternal and child health (TACAIDS, 2005).

2.10 The Millennium Development Goal (MDG) Strategies on Maternal Health

The fifth Millennium Development Goal set for 2015 aims to improve maternal health through a reduction of the maternal mortality ratio by three quarters and presents us with a key to public health challenge. The Millennium Development Goal (MGD 5) means to improve maternal health and its target is to reduce maternal mortality ratio by three – quarters, between 1990 and 2015. The main issues on MDG 5 were women's right to

survive pregnancy outcome, right to safe delivery (prevention and control of bleeding and infection), right to timely and skilled maternal services including treatment (intervening at right time with right skills), three – (3) delays, at home, on transfer to facility and at facility, right to post natal services (42days post delivery) and right to birth spacing and access to family Planning (UN, 2005). MDG 5, States that Women's right to survive pregnancy outcomes in the following health components which are: antenatal, individual birth plan, and post – natal care services.

Family planning is also a component of potential human rights, which derive from basic principles of the 1948 Universal Declaration of Human Rights (UDHR) and subsequent international agreements, including the right to self determination, freedom of association and expression, liberty and security of the person, non discrimination equal treatment under the law, the enjoyment of the highest attainable standard of physical mental health and protection from cruel inhuman or degrading treatment (Charkin and Cheslter, 2005). Family planning also features as one of the important components of Millennium Development Goals, Tanzania Vision 2025 and its National Strategy for Growth and Reduction of Poverty (NSGRP) on reduction of child mortality and improvement of maternal health.

2.10.1 Antenatal care

It is the care which is provided to pregnant women through pregnancy, delivery and puerperium in a healthy condition. Women should be encouraged to start attending antenatal clinic as soon as they discover that they are pregnant. The following activities should be done during antenatal visits; medical history of the pregnant mother which is needed to rule out disorders. Physical examination head to toe assessment should be done to detect any deviation from normal. Laboratory examinations should be taken to know the

results for further management. Treatment of illness during pregnancy should be considered to avoid complications which could occur later on before and after delivery (Herbert, 2002).

2.10.2 Individual birth plan

Every woman must be assisted to develop an individual birth plan which include place of birth, a health facility where there are skilled personnel who will be able to manage complications example bleeding, anemia, eclampsia, sepsis (infection to the birth canal) and save funds to pay for emergency such as transport (Mills and Musgrove, 2003).

2.10.3 Postnatal care service

Postnatal care is the care given to the mother and baby during puerperium. The puerperium is the period starting from completion of the third stage of labor up to 42 days after delivery. During this period, the mother's body undergoes changes so as to regain its pregnancy state; breast feeding is initiated and maintained. Postnatal care is divided into immediate care during the first 24 hours. During the first seven days (early puerperium) and care from second to six week (late puerperium) (Locoh, 2002). As described below.

2.10.3.1 Immediate and late puerperium care

If delivery has taken place at a health facility it is advisable that the mother rests for at least 12 to 24 hours before she is discharged. Because the serious and acute obstetric complications often occur during the first few hours following delivery due to various reasons such as retention of membranes or placenta which lead to severe bleeding, if proper management will not be taken immediately. However, late puerperium care is the care which is given from second to six week after delivery. Mother should attend post natal clinic at least once during this period and other visits will be arranged according to needs

and problem (Retemberg and Baek, 2006). The subsection below describes important advice during postnatal care.

2.10.3.2 Advice on discharge

Advice include the importance of personal hygiene as well as of the infant, adequate rest and adequate nutrition so as to rebuild up the body, early reporting of any threatening complications such as bleeding, puerperal sepsis or puerperal pyrexia. Also to attend neonatal clinic for growth and monitoring, vaccination and nutritional advice and to use family planning method(s) to avoid unplanned pregnancy since a child is few months old in order to maintain health status of the mother and child as well as father is concerned (Vadnais and Kolis, 2006).

2.11   The Role of National Vision and NSGRP towards Maternal Mortality

Both the National Development Vision 2025 and National Programme for Economic Growth and Poverty Reduction (NSGRP) provide both frameworks and strategies to halve maternal mortality. URT (2007b), observed the effort made by National Development Vision 2025 target to reduce maternal mortality ratio by at least 50 percent by 2015. Malnutrition, and lack of access to quality primary health care and basic infrastructure, including water and sanitation, continues to be major causes of ill health and death among mothers and children. National Development Vision encourage having universal access to reproductive health services concerning health education on having fewer pregnancies and spacing births which increase the survival rate of both women and their children. Discourage harmful cultures such as female genital mutilation, using herbals during pregnancy and home deliveries attended by traditional birth attendants. According to WRATZ (2004), National strategy for Growth and Reduction of Poverty (NSGRP) (MKUKUTA) targets of reducing the maternal mortality ratio by three-quarters between 1990 and 2015 is the area of least progress among all the MDGs. Its role is to monitor the

implementation of the policy on maternal and child health services free of charge, ensure comprehensive emergency obstetric and neonatal care is available at health facilities and to ensure effectiveness of referral system for maternal and child health, through communication and passable roads throughout the year to enable access to health facilities especially in rural areas. Others roles include to involve family and community to deal with obstetric emergencies and collaborate with stakeholders at all levels to ensure maternal and child health care referral system works. The aim is all women in reproductive age should enjoy the essential quality of care and life saving in a supportive environment.

2.12 Health Policy and Strategies in Tanzania

The role of the Ministry of Health and Social Welfare has been transformed to assume policy making responsibilities, while decision making power has been devolved to Council Health Management Team (CHMTs). However, The Council Health Plans ensures community participation in the management of health facilities through Health Service Board and undertakes major rehabilitation of district hospitals and primary health facilities. The vision of the Health Policy function is to improve the health and well being of all women in Tanzania with a focus on those most at risk, and encourage the health system to be more responsive to the needs of the people. The Health Sector Strategic Plan (HSSP) for Mainland Tanzania is to provide an enabling environment for implementing the national health policy. It focuses on the provision of quality health services by devolving direct day to day management control to the district and regional authorities (MoHSW, 2007e).

The HSSP has nine strategies which are integrated into three components namely as the District Health Services, the Secondary and Tertiary Hospital and other tertiary level institution, including the Central level which plays the role of the region as well as the Central Ministers. The Mainland HSSP places more emphasis on district health services

where most of the essential services are provided close to the communities. The strategy plan is designed to ensure provision of preventive, curative and rehabilitative services, with a focus on the reduction of morbidity and mortality from all major causes of ill health and the disparities therein (Beryl, 2002).

2.13   The Obstetric Staff and Health Services Situation in Tanzania Mainland

The health care delivery system is pyramidal in structure consisting of primary, secondary and tertiary levels. In Tanzania reproductive health care services are available at health facilities and hospitals as well as through outreach services. Some of the health services provided at various levels are family planning, counseling, post abortion care, prevention of mother to child transmission of HIV and sexually transmitted infection (MoHSW, 2003).

There are 4 679 dispensaries throughout the country each serving a population of 6 000 to 10 000 people. Health facilities number around 481 each serving a population of 50 000 and provide referrals to the secondary level. There are a total of 219 hospitals including district, region and consultant hospitals which provide inpatient and outpatient services including maternal health care services. The 26 regional hospitals correspond to the 26 administrative regions in the Tanzania. Tertiary care is provided at Muhimbili National Hospital, Kilimanjaro Christian Medical Centre, Bugando Medical Centre and Mbeya – Meta Maternal Referral hospital (MoHSW, 2003).

According to URT (2005c), by 2005 the health sector in Tanzania had a staff population of 48 508 of which 72.4% from public health sector, 20.3% from faith based health facilities and 7.3% work for the private profit facilities. Women make up 58.3 percent of the health employees, however men constitute 86% of medical specialists in the country. Records from URT (2002) also show that the country had about 78% of Registered nurses and about

88% of enrolled nurses (Upgraded Nurses). In Appendix V shows the distribution of dispensaries and total health facilities to region owners' year 2004/05. In addition, the provider to population rations was 1:5 000 for nurses, 1:14 000 for clinical officer and 1: 38 000 for medical doctor. Tanzania Mainland is estimated to have a shortage of 200 000 skilled health personnel. Besides, Tanzania has approximately 105 nursing and allied health training institutions. Of these, government owns 70 training institutions where as 35 are owned by religious organizations and 2 owned by private-non religious institutions. The majority of these institutions train nurses at certificate and diploma levels (MoHSW, 2003).

2.14 Perceived Socio-Economic Effect of Maternal Mortality

Maternal mortality could reduce the quantity of labor force, and hence, the number of people involved in output production. However, such an effect would occur only if the levels of unemployment and underemployment are not high. If they are, arguably, it might be easy to compensate for attrition in labor force from the pool of the unemployed or underemployed (WB, 2000). Mothers play a vital role in nursing sick household members back to their normal health status, thus, death of a mother spells the loss of a strategic household caregiver or nurse. Thus, when the mother dies, the father is forced to reallocate work time to provide care to the bereaved children. This constitutes a loss in economically productive time (Ukoumunne and Gulliford, 2000).

Mothers not only care for the children and spouses, but also for the elderly. This is particularly important in Africa since homes for the elderly are almost non-existent, and it is not cultural to commit them to sanatoriums (Gallup and Sachs, 2001). The elderly in Africa play an important role as family and community life counselors, arbitrators of conflicts in relationships example marriage and transmitters of indigenous 'tacit'

knowledge and values to the youth. Unfortunately, maternal mortality severs the lifeline for the elderly leading in turn to their premature mortality and hence, loss of intra-and intergenerational social value hitherto added by the elderly (Pindyck and Rubinfeld, 2000).

There are high funeral-related costs, which at times may force the households to sell of some of the output producing assets for example, land, farm, machinery and equipment to pay for funerals. In African economies characterized by low capital-labor ratios, depletion of assets spontaneously erodes household production (Pindyck and Rubinfeld, 2000).

Maternal mortality has an adverse effect on future human capital creation process, on the quality of future labor force, and hence, future levels of income earned. This can be attributed to a number of factors, given that mothers play a prominent role in the production of household food, their death is likely to have a negative effect on the nutritional status of the children, and hence, their physical and cognitive development. In the African communities, mothers play a critical role in nurturing, socializing and educating children; thus, when a mother dies, a teacher dies. The children of maternal mortality victims may be forced to leave school early to perform duties hitherto performed by their deceased mothers, thus weakening their future socio – economic prospects. There is growing epidemiological evidence that maternal deaths frequently lead to infant deaths, which in turn reduces the size of future labor force (Branson, 2004). Premature mortality of mothers who are in active labor force may lead to a reduction in total household consumption, expenditure, government tax revenues, private business and personal savings, and hence, the resources available for investment purposes (Koutsoyiannis, 2000).

On psychological and social torture has noted by Gill and Rowe (2005), as a result in prolonged and adverse effects among the orphaned children and relationships with their

family members, friends and other members in the community. The symptoms may be non-specific including feeling loneliness, tired, unhappy, irritable, sleeplessness, loss of appetite and feelings of anxiety include guilt due to lack of security and love which were provided by parent or parents.

2.15 Knowledge Gap in the Studies on Maternal Mortality

In developing countries, the primary studies were based on case studies of women who gave birth in hospitals. Most of them were conducted in hospitals-schools and advanced maternity units (Mungra, 2006).

Most of the studies focused on evidence for clinical decision making rather than public health issues. Although social –economic variables were studied, but there was a lack of published information on the impact of cultural factors (Gonza'lez, 2005). Most studies were carried out by researchers from developed countries and lacked robust methodological design. Involving local researchers might remove the inequality between areas of scientific interest and actual prevalence of the causes of maternal mortality and could encourage the involvement of policy makers and professionals at country level in generating and disseminating information on best practice. Local culture needs to inform the implementation of health strategies in order to have a positive effect on maternal mortality.

On the other hand, information about maternal mortality is provided by international and national reports. There are periodic Safe Motherhood Program Reports (World Health Organization), World Population Monitoring Health and Mortality of the United Nations carried out important estimation on maternal mortality. However, they have no information from all countries and their estimations are limited due to different methodologies used.

We can assume them as a warning about the maternal mortality problem and level of reporting which can be over or underreporting. All enquiries can be a catalyst to improving documentation and practice in information gathering about events that take place at community level (Fortney and Smith, 2000).

Maternal mortality is difficult to assess for various reasons. First of all, a maternal death is a somewhat infrequent event; even in areas with high ratios the absolute number of maternal deaths is relatively low. Secondly, maternal deaths tend to be underreported and/or misclassified even in countries with a satisfactory vital registration system. In most developing countries vital registration systems are incomplete and correct attribution of cause of death is the exception.

In such settings, other approaches are needed to estimate the level of maternal mortality. A variety of sources can be used to collect data on maternal mortality such as maternal death certificates, maternal mortality committees, medical records, interviews with family members and scientific publications. All these will be useful ways of improving data collection for documentation purposes. Such data is vital to improve maternal health care services, planning and secure political commitment especially in developing countries. The accurate compilation of total numbers of maternal mortality requires use of all available information networks which must be established in health system. Still there is an opportunity to maximize our investments by improving data availability and using progress on maternal health as an indicator of overall health systems improvement.

Consequently, the importance of addressing gap in maternal mortality information with the same determination as that shown in MGD5 is the key point of reducing or preventing maternal mortality as well as establishing the maternal health care services at all health

facilities especially in rural areas in developing countries. All maternal death at reproductive age should be documented properly in order to fulfill the gaps which are to be observed for the future improvement. Thus, addressing the state of maternal mortality in rural areas of Tanzania as a developing country is the major focus of this study.

CHAPTER THREE

3.0   METHODOLOGY

3.1   Overview

This chapter describes the methodology which was used to carry out this study. It includes description of the study area, study population, research design, sampling procedures and sample size, data collection methods and data processing and analysis.

3.2   Description of the Study Area

3.2.1   Location of the study

Mvomero is one of the 6 districts of the Morogoro Region of Tanzania. It borders Tanga Region to the north, to the East Pwani Region to the Southeast by the Morogoro rural district and to the West the Kilosa district. The area extends between latitudes 5º and 7º South and longitudes 37º and 38º East.

The Mvomero District is administratively divided into 17 wards. The district occupies a total area of 7325 square kilometers which is equivalent to 9.98% of the regional square kilometers. Nine public facilities were involved out of fifteen public health facilities in two health cascades namely Mgeta and Melela which rendered obstetric care services. Names of the health facilities that were involved in the survey in Mgeta health cascade were Mgeta facility, Mgeta mission (Roman Catholic), Bunduki, Nyandira, Tchezema and Kibuko health facilities. However in Melela health cascade; three health facilities were involved in the study, they were Melela, Mangae and Doma health facilities. The remaining health facilities in Mgeta and Melela cascades were not included due to their inaccessibility because of rain and shortage of fund to hire vehicle to reach those remote areas. The two cascades were chosen because they are situated in two different

geographical altitudes and climate, Mgeta cascade is situated in a high plateau while Melela cascade is located in the low lands. These two geographical orientations are assured to influence access to maternal services. Normally locations along flat lands are easily accessible compared to those on steep slopes. Fig. 2 shows the Mvomero district and facilities in the study area.
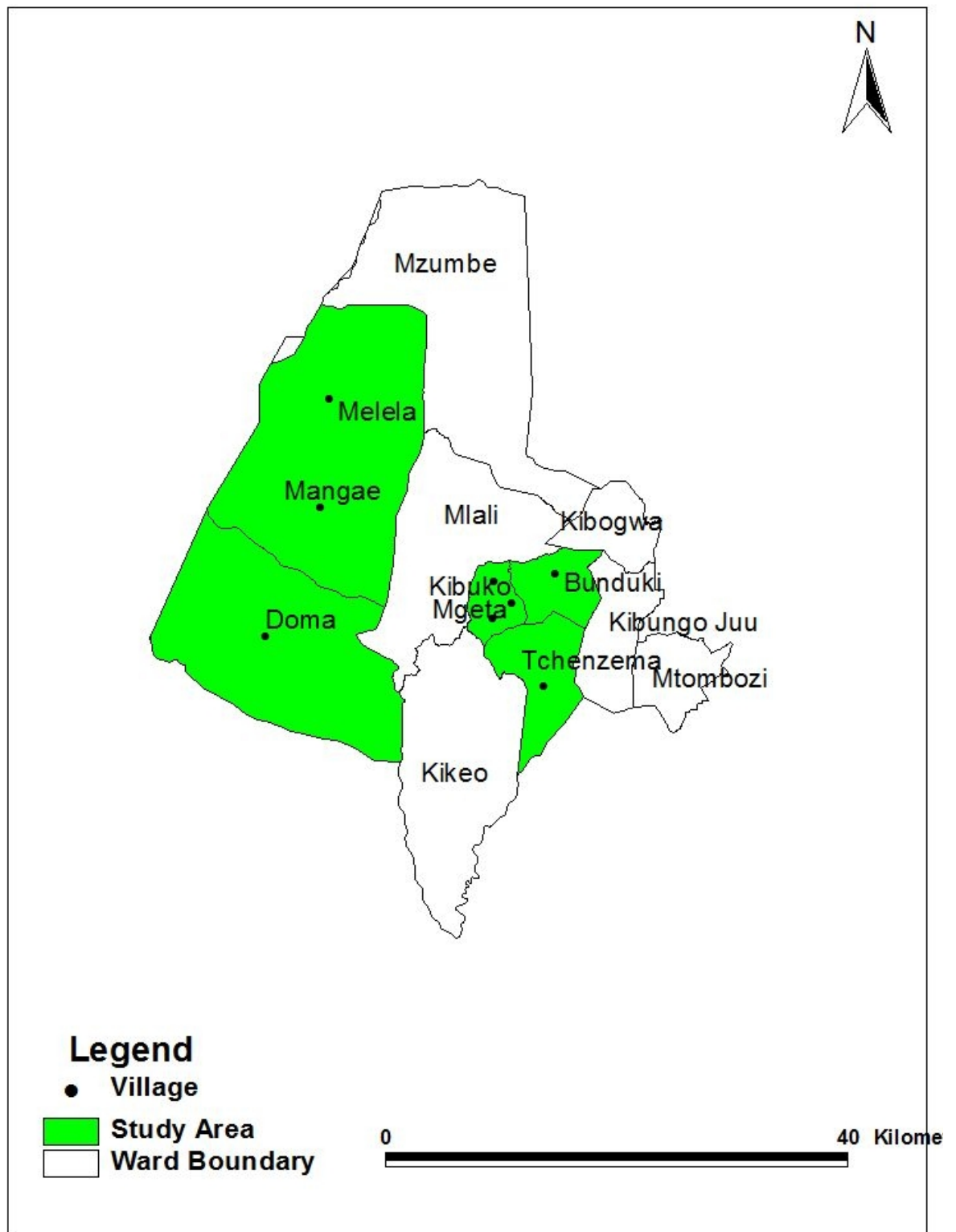
Figure 2: The map of Mvomero District showing the health facilities

3.2.2 Study population

The study population included a representative sample of the pregnant mothers, health staff and community leaders who engage in reproductive health and maternal health care services at health facility level. The population growth rate in the district was relatively high at a rate of 2.6 per annum (CBST, 2003). According to the 2002 Tanzania National Census, the population of the Mvomero District was 260 525 (URT, 2005c). Out of this 129 269 were female (URT, 2005a). The population in Mgeta health facility, Mgeta Mission (Roman Catholic), Bunduki, Nyandira, Tchezema, Kibuko, Melela, Mangae and Doma health facilities and their respective wards are shown in Table 1 (URT, 2003). The main ethnic group in the study area was Luguru who constituted 85 percent of the population while the remaining percent was made up by the Maasai, Mbulu and Guu who migrated from Arusha and Tanga regions respectively.

Table 1: Population profile of the study wards and health facilities

Name of Ward	Health facility	Village population	Ward population	Average Household size
Mgeta	Mgeta health cascade Mgeta Mission	8547		4.5
		2482		4.5
	Bunduki	6567		4.5
	Nyandira	3186		4.5
	Tchezema	6146		4.5
	Kibuko	4485		4.5
Subtotal		**31,413**	31,413	
Melela	Melela health cascade	8311		4.5
	Mangae	4839		4.5
	Doma	3741		4.5
Sub total		**16891**	16,891	
Grand total		**48304**	**48304**	

Source (URT, 2007a)

Physical observation was done in all health facilities selected for the study on standards required to be met for improvement of obstetric care services in health facilities. Observation was done in registry books for number of client, inventory book for

equipments and drugs as well as staff available at site. This formed an overview and identified gaps in information that will be addressed in the study.

3.3   Research Design

A cross – sectional research design was adopted in this study. The design was chosen because it allows data collection at one point in time and can be used to establish relationship between and among variables for the purposes answering research questions (Kothari, 1999).

3.4   Sample Size and Sampling Procedures

3.4.1   Sample size

The determination of sample size involved were pregnant mothers, all health personnel due to scarcity of trained health personnel and community leaders surrounding health facilities so as to obtain the relevant information in the study. The sample size consisted of 9 health facilities, 57 health staff, 132 pregnant mothers and 24 community leaders from the two-selected health cascades.

3.4.2   Sampling procedure

Purposive sampling was employed according to Kombo and Tromp (2006), to sample nine health facilities out of 15 health facilities in two health cascades in Mvomero district because of differences in climate, geographical orientations and cultural aspects. Respondent obtained from health facilities were pregnant mothers and health staff while community leaders were obtained from divisional level. The sample elements were selected in order to fulfill right criteria for the purpose of the study.

3.5   Data Collection

3.5.1   Primary data source

The range of methods and techniques was employed so as to get different information about the study in order to increase data validity (Cohen, 2006). Primary data were collected using structured questionnaire with closed and open ended questions (Appendix 1). The questionnaires were designed to capture all information on maternal health care services from health staff at selected health facilities, pregnant mothers attending antenatal clinics and community leaders' who worked in health committees in order to promote sexual and reproductive health including maternal child health care at village and ward levels. Furthermore, from this method, information on role of quality obstetric care services which related to reduction of maternal mortality among the pregnant women was obtained.

Focus Group Discussion method was also adopted to collect primary information and the interviewees included community leaders, religious leaders, health staff, influential people (traditional birth attendants and traditional healers') in community health committee members. The discussion was guided by checklist. The discussion was aimed at collecting information concerning on role of quality obstetric care services which related to reduction of maternal mortality and the whole concept of safe motherhood at ward level. One Focus Group Discussion was carried out in each ward   and the size was twelve members. According to Saunders *et al.* (2007), a typical focus group discussion involved four to twelve participants depending on interviewer skill and subject matter.

3.5.2   Secondary data source

The collection of secondary data relating to role of quality obstetric care services on reducing maternal mortality was done through literature review from Sokoine National

Agricultural Libraries (SNAL), Morogoro regional library, searching from internet, Centre for distance education – Medical school, Divisional Office, District and Regional Medical Office documents, health facilities reports and Ministry of Health and Social Welfare to ascertain the results obtained from primary data sources.

3.6   Data Processing and Analysis

Statistical Package for Social Sciences (SPSS) computer program version 11.5 was used to process and analyze quantitative data from questionnaire-based interview whereas qualitative data was subjected to content analysis. Different variables within health cascade and across the health facilities were compared using measures like frequency distribution and percentages. Data from interview schedule were coded and recoded before they were entered in the computer and analyzed. This enabled the researcher to ascertain values and attitude of respondent

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Overview

The chapter presents results and discussion which focused on general characteristics of respondents, the maternal health care dynamics and effect of maternal mortality on household socio-economic conditions as well as challenges and opportunities to improve quality obstetric care services so as to reduce maternal mortality.

4.2 General Characteristics of Respondents

The general characteristics of the respondents were extracted from a sample of pregnant mothers in the study. The characteristics of respondents that were examined include age, education, number of children and participation in family planning that were necessary to influence obstetrics care services delivery on reducing maternal mortality.

4.2.1 Age of respondents

Results presented in Table 2 below shows that age of respondents (pregnant mothers) ranged between 16 – 49 years old. All selected respondents were ready and capable to provide information needed on the role of obstetric care services in improving rural lives. The observed distribution of age of respondents corresponds to proportions of women-child bearing age (WCBA) and right bearing age (RBA) within and between cascades. According to Arkutu (2003), women-child bearing age is between 20 to 49 years while right bearing age is between 20 to 35 years as suggested by Levin (2000). RBA is the appropriate period for a woman to bear children as it is at this time when anatomy and physiology of female reproductive system become matured, strong enough and capable for carrying pregnancy.

About 67% and 58% of the respondents in Mgeta and Melela cascades respectively were within the range of WCBA. When compared between the two cascades, WCBA was found higher in Mgeta cascade (58.3%) compared to 41.7% in Melela cascade. As regards, to RBA 48% of respondents in Mgeta and 40% in Melela were in the right bearing age, respectively. Again when compared between cascades, RBA was higher (28.1%) in Mgeta than (16.7%) in Melela cascade.

Table 2: Distribution of respondents by age

Years	Name of health cascade (values within cascade)		Name of health cascade (values compared between cascades) N = 132		Frequency of both cascades	Percentage of both cascades
	Mgeta N = 77	Melela N = 55	Mgeta	Melela		
16 – 19	25(32.5)	23(41.8)	25(18.9)	23(17.4)	48	36.4
20 – 35	37(48.0)	22(40.0)	37(28.0)	22(16.7)	59	44.7
36 -49	15(19.5)	10(18.2)	15(11.4)	10(7.6)	25	18.9
Total	**77(100)**	**55(100)**	**77(58.3)**	**55(41.7)**	**132**	**100.0**

Respective numbers outside parenthesis and in parenthesis are actual count and percentages of respondents along the table

More pregnant mothers in Melela (41.8%) were categorized in risk group (below 20 years) compared to those of Mgeta cascade. Initial hypothesis was that Mgeta cascade would have more pregnant mothers falling under risk indices due to mountainous landscape and rainy condition that could hinder women access to maternal health care education and services. However, presence of a Non-Governmental Organization known as Family Planning Association of Tanzania (popularly known in Kiswahili as UMATI) in Mgeta cascade since 1989 might have influenced this trend. Thus, women in Mgeta cascade had accumulated higher knowledge in terms of reproductive health care education provided by UMATI. Besides, UMATI influenced experience and decision-making on maternal health issues pointed by Alexander (2000). UMATI provides not only maternal health care education

and services in antenatal clinics but also engineers income generating activities that keep women busy which probably reduced pregnancies at early age.

During pregnancy, teenagers are likely to get more complications than women aged between 20 to 35years due to maturity of women reproductive organs of the later group. The under- age pregnant women less than 20 years old are more vulnerable to get complications during delivery because at that age their reproductive organs are still growing and developing. Some of the complications include anemia, pre-eclamsia, and premature labor, long and or obstructed labor and low birth weight of infants (Andertson, 2004).

Both cascades registered appreciable numbers of pregnant women above RBA. Pregnant women above 35 years and especially over 40 years are likely to have serious complications during pregnancy or labor, including heavy bleeding, long labor, and ruptured womb largely due to weak muscles of the uterus (Ashaford, 2005; WHR, 2006). In synopsis, too early pregnancy before the age of 20 years old and too late pregnancy after the age of 35 years and deliveries more than five children are not advisable due to various health-related complications as observed by WDR (2004). It is advisable to make sure that the risk of pregnancy or delivery is as low as possible by effectively using facilities of obstetric care services available at health facilities.

4.2.2   Education level of pregnant mothers

The respondents' level of education was also observed, and results are presented in Table 3. From the table about 58% of the total population interviewed had completed primary school education, while about 28% had completed secondary school education. A total of 15% of pregnant mothers were holders of professional certificate and/or diploma which

they had acquired after completing off their ordinary level of secondary education and most of them were civil workers working at different positions in the community.

All respondents interviewed had at least primary education possibly due to efforts made by the Tanzanian government under the Ministry of Education since independence to ensure education is accessible to all citizens. Some of the national education programmes include Universal Primary Education (UPE) established in 1975, Complementary Basic Education in Tanzania (COBET) established in 1999 translated in Kiswahili as *Maendeleo ya Elimu ya Msingi kwa Waliokosa (MEMKWA)* and Primary Education Development (PED) translated in Kiswahili as *Maendeleo ya Elimu ya Msingi (MEM)*, which started in 2001. Every village in the study area had at least one primary school in an effort to fight against the three biggest enemies of development known as ignorance, diseases and poverty as described by the first President of the united of Tanzania Julius Kambarage Nyerere in 1975 (Nyerere, 1975). Both health cascades had more or less similar percentages in all levels of education as presented in Table 3.

Table 3: **Respondents' level of education**

Years	Name of health cascade (values within cascade)		Name of health cascade (values compared between cascades) N = 132		Frequency of both cascades	Percentage of both cascades
	Mgeta n = 77	Melela n = 55	Mgeta	Melela		
16 - 19	25(32.5)	23(41.8)	45(34.0)	30(22.7)	48	36.4
20 - 35	37(48.0)	22(40.0)	22(16.7)	15(11.4)	59	44.7
36 - 49	15(19.5)	10(18.2)	10(7.6)	10(7.6)	25	18.9
Total	**77(100)**	**55(100)**	**77(58.3)**	**55(41.7)**	**132**	**100.0**

Respective numbers outside parenthesis and in parenthesis are actual count and percentages of respondents along the table

Such relative high levels of education are important in ensuring safe motherhood. Normally, education is a key to life and is associated with higher understanding and adapting changes due to knowledge and skills acquired (Brazier *et al.,* 2002). Education

tends to broaden horizons beyond habit and traditions of an individual and encouraging participation in not only in development activities but also in reproductive health issues (Correan, 2004). Besides, such education levels helped pregnant mothers to read and understand leaflets, pamphlets and booklets related to safe motherhood provided to them by health staff. High education levels also helped pregnant mothers to understand various topics taught by trained health staff during antenatal visits especially on risk factors.

According to Borghi *et al*. (2004) education is a key determinant of the life style and status that an individual enjoys in a society. It affects many aspects of human life, including demographic and health behavior. Educational attainment has strong effects on reproductive behavior, contraceptive use, fertility, maternal morbidity, mortality, issues related to family planning, hygiene and the role of both men and women in family planning including reproductive health issues (Heizner, 2008).

Women with education tend to use antenatal care services more frequently for diagnosing and treating complications that could endanger their lives during pregnancy than those without education. Generally, education safeguards women's health during their reproductive years and increases women need for more family planning information and services (AbouZahr, 2000), Indeed more ambitious use of maternal health services is required to meet not only Millennium Development Goals number four and five (reduce child mortality and improve maternal health, respectively) but also to meet the Tanzania Development Vision 2025 (High quality livelihood).

4.2.3 Family planning services and fertility levels

Family planning means an individual or couple making a voluntary informal decision on when to have children, the number of children they want and the interval between

pregnancies using family planning methods of their choice. According to Tanzania family planning policy guidelines (MoHSW, 1996), everyone who can cause or become pregnant is eligible for family planning. During survey, family planning education in Mgeta cascade was provided by community service providers (CSP) who worked under home-based care programme. At that time the programme had twenty years of services in the area. In implementation of the CSP, home visiting was done according to appointment agreed upon between client (pregnant mothers) and community service provider for provision of more details concerning maternal health issues. Maternal health care issues covered under CSP programme are details of family planning, environmental sanitation, nutrition and income generating activities. Table 4 shows non-family planning use respect to level of education among respondents in the study area.

Table 4: Education level and respondents that did not use modern family planning methods

Level of education	Name of health cascade (values within cascade)		Name of health cascade (values compared between cascades) N =34		Average no of children		Frequency of both cascades	Percentage of both cascades
	Mgeta n=7	Melela n=27	Mgeta	Melela	Mgeta	Melela		
Standard V11	5(71.4)	15(55.6)	5(14.7)	15 (44.1)	4	5	20	58.83
Form 1- 1V	2 (28.6)	7 (25.9)	2(5.9)	7 (20.6)	3	5	9	26.47
Post 1V – Training	0(0.0)	5(18.5)	0(0.0)	5(14.7)	2	2	5	14.70
Total/Average	**7(100)**	**27 (100)**	**7(20.6)**	**27 (79.4)**	**3**	**4**	**34**	**100.0**

Respective numbers outside parenthesis and in parenthesis are actual count and percentages of respondents along the table

According to results presented in Table 4 above, out of total respondents that did not use modern family planning methods in Mgeta cascade, slightly over 71% (5 respondents) had attained primary education while the remaining 29% had graduated ordinary level of secondary education. All respondents that attained post-secondary education training in Mgeta used modern family planning methods. Of those who did not use family planning in Melela cascade (27 respondents), about 56% had attained primary education and close to 26% had graduated ordinary level of secondary education while the remaining 18% had attained post secondary education training. Out of total respondents for both cascades (34 respondents) that did not use modern family planning methods, Melela cascade had about 44% respondents with primary education compared to 15% in Mgeta cascade in that order. However, low scores of non-users of modern family planning methods were registered among those with ordinary level of secondary education (about 6% in Mgeta compared to 25% in Melela) followed by those with post-secondary training (0% in Mgeta and about 15% in Melela). These findings suggest that use of modern family methods is directly proportion to the level of education.

Women with education are more likely to access maternal care services including family planning and to deliver in hospital compared to women with no or low education. Their probability of using contraceptives is higher compared to women with low education status. In most cases, uneducated and poor women start using contraceptives after had more children than educated and affluent women (Caldwell and Gaminiratne, 2009).

Barbery (2007), observed that fertility decreases with education and wealth. In Tanzania, women with secondary school or more education have only 3 children on average, compared to 7 children among those with no education. Similarly, women from the poorest

households have more than twice as many children as women from the wealthiest households also fertility is high in rural areas (Atrash and Alexander 2001). When comparison was made between cascades, Mgeta cascade registered low scores of non-users of modern family planning methods across all levels of education compared to Melela cascade. In total, Melela had about 80% non-users of modern family planning methods, which was about four times higher than that of Mgeta cascade. Melela cascade also registered higher average of number of children across levels of education compared to Mgeta cascade. However, the average number of children in both cascades is lower than the national average fertility rate of 5.7 (Alexander and Berg, 2000). Presence of UMATI and government services that provide comprehensive reproductive health services in Mgeta cascade may have influenced this difference as also discussed in section 4.2.1.

Reproductive health services provided by UMATI and government in Mgeta include Information Education and Communication (IEC), counseling and family planning methods which included barrier methods (such as use of condoms) and hormonal methods (hormonal tablets and injectables). Research findings evidently showed positive relationship between education level, family planning users and average number of children. Lamprech and Grammer (2006), urge that education attainment corresponds to high prevalence of contraceptive use that eventually decreases the average number of children.

Education is vital in terms of cultural changes and use of maternal care services at large. Where illiteracy is high, it can be a factor of increasing unplanned families and awareness of maternal health programme could not be understood. All respondents in the study areas had formal education which helped them to understand the advantages of using family planning methods such as avoiding unwanted pregnancy, which normally occurred within

six months after delivery, and also encouraged them to participate effectively in various activities in the community without maternal health problems. The number of children differs from one level of education to another due to ability of understanding among the education levels. In both health cascades, due to education given on family planning methods women managed to have minimal number of children. Family planning methods were accessible to all groups in need particularly the risk groups.

During the survey it was also reported by health staffs those barrier methods and hormonal tablets were available at community levels and were provided by CSP in Mgeta health cascade. The services were provided to recipients after attending family planning training that focused on maternal and child health care, nutritional health, environmental sanitation, and malaria prevention and control by using impregnated nets. Other training components focused on entrepreneurship skills such as how to start and maintain income generating activities at individual, group and community levels. Services provided by the CSP were free of charge. This could also contribute to relative low average number of children in Mgeta cascade compared to Melela cascade. However, both barrier methods and hormonal tablets are considered in the school of public health as temporary methods to family planning (Zamudio, 2000). In the Tanzania perspective, CSP means the utilization of non-medical personnel in the community who are trained to provide selected non clinic based family planning services at the community level.

A total of 132 respondents also confirmed that they had heard about permanent methods (Tubal ligation and vasectomy) of family planning, which were offered only at health-facility level attended by special medical staff trained on family planning technologies. The programme existed since in 1989 managed in collaboration between the governments of Tanzania and Japan and is being implemented by UMATI–Tanzania under the monitoring

of the Ministry of Health and Social Welfare. The programme aims at reaching the grass

root level by providing its services free of charge. Rationale for family planning uses is

based on the fact that it helps women health recovery after delivery through prevention of

morbidity and mortality.

Morogoro region has fertility rate of 2.4% as documented in National Population Censuses

done in 2000 (URT, 2005d).While the national fertility rate stands at 2.9%. Increasing use

of modern family planning can be one of the major factors to declining fertility in

Morogoro and the country at large. In the past 40 years, contraceptive use has increased

from less than 10% to 60% and fertility in developing countries has reduced from six to

about three births per woman (Collier and Rubando, 2007). In Tanzania, there has been

slow but steady increase in contraceptive prevalence rate and it has doubled since 1999 to

2000, from 10% to 22% of all women in bearing age (Fauveau, 2007). However, the

average fecundity in the country stands at six children, which signifies more efforts needed

to pull it down to less than five children in women lifetime as (URT, 2005b).

It is observed world-wide that fertility decreases with education and wealth study

(Koblinsky and Campbell, 2007). Bernis *et al. (*2007), shows that women from the poorest

households tend to have more than twice as many children as women from the wealthiest

households. Fertility is in most cases higher in rural areas than in urban areas. Similar

results were also observed in the study area where women with secondary school education

or more had less children on average compared to those with primary school education in

Table 3 above.

Research conducted by Koblinsky (2006), shows that women face a greater risk of

pregnancy-related death or disability depending on the frequency of pregnancies (number

and spacing), mother's age, and desire for the child. Women can better plan their pregnancies if they are exposed to family planning information, education, and communication (IEC) programs, and client-friendly services to increase access to contraception. These interventions have been credited with a substantial increase in contraceptive use and fertility decline in developing countries (John, 2003).

4.2.4 Availability of obstetric care services at health cascades

Health centers provide health services and cater for the population of about 50 000 people. It provides both outpatients and inpatients including maternal and child health services. They are also a referral centers for dispensaries in its catchments area in the division (MoHSW, 2007d).

The provision of integrated services at health facilities is aimed to meet the needs of vulnerable populations' in rural areas as special effort to strengthen maternal health care services which include family planning, antenatal care delivery services and referrals. All obstetric care services were provided under the secular of Tanzania government health policy of maternal services (MoHSW, 2007d).

Most of the health facilities were public-based and only one (Mgeta Mission) was under Roman Catholic Church which did not offer modern family planning services due to religious faith. Tanzania National Population Policy which was adopted in 1992 and revised in 2006 that puts special emphasis on regulating population growth rate so as to enhance population quality and improving the health and welfare of women as well as children (UNESCO, 2004).

In the study areas, antenatal care services were most routinely performed by the nurses and complicated ones' were done by clinical officers. Normally antenatal is done four times during pregnancy. During all four visits, antenatal examinations done are such as physical, abdomen and laboratory examination according to condition of the client. Usually, nurses used to put a star or dot in patient's clinic card as an indication of previous bad obstetric history or danger sign observed in present pregnancy. In such a situation, client was not allowed to deliver at home by any means. Data from health facilities registry presented in Table 5 show various obstetric care services provided at both health cascades.

Table 5: **Attendance to obstetric care services at health facilities in the study area**

Health cascade	Dispensary	Obstetric care services provided			
		Family planning	Antenatal clinic	Deliveries at cascade health facilities	Deliveries at referral district hospital
Mgeta	Mgeta	1950	192	175	10
	Mgeta Mission	N/A	75	3	2
	Bunduki	950	210	135	5
	Nyandira	134	375	107	34
	Tchezema	1443	166	91	4
	Kibuko	945	135	33	15
	Sub total	**5422**	**1153**	**576(50.0)**	**102(8.8)**
Melela	Melela	1242	302	138	3
	Mangae	812	84	48	15
	Doma	516	33	20	3
	Sub total	**2570**	**419**	**206(49.2)**	**21(5.0)**
	Grand total	**7992**	**1572**	**782(49.7)**	**123(7.8)**

Source: DMO office – Mvomero district (2008)

Number(s) in parentheses indicate the percentages of clients delivered services at health facilities

Findings presented in Table 5 above show appreciable attendances during antenatal care in both cascades. However, the data show looming tendencies of pregnant mothers not delivering at health facilities. Out of 1153 pregnant mothers that attended antenatal services in Mgeta cascade, only a total of about 59% delivered at cascade catchments health facilities and those delivered at district referral hospital. It can be deduced from this data that about 41% of pregnant mothers in Mgeta cascade that attended antenatal services

delivered outside health facilities. It was even worse in Melela cascade where only about 54% of pregnant mothers that attended antenatal services delivered at health facilities while the remaining 46% delivered outside health facilities. In an average about 43.5% of pregnant mothers that attended antenatal services from both cascades delivered outside the health facilities. Mgeta health cascade was leading in deliveries at health facilities, largely contributed by maternal health education provided by UMATI and CSP at home based care programme since 1989. These programmes were not available at Melela health cascade.

The lowest attendance was found in Mgeta Mission dispensary where only 5 clients out of 75 that attended antenatal clinic delivered at health centres. Respondents observed that, Sisters at Mgeta Mission dispensary were not open enough on reproductive issues may be due to religious norms. In such scenario, maternal mortality can be high as observed by Ijadunola *et al.* (2007), who reported that low level of access to and use of quality reproductive health services play significant roles in high maternal mortality.

The other lowest percentages in deliveries at health facilities were revealed in Kibuko 24% and Nyandira 29% dispensaries, respectively. These facilities were affected by geographical orientation which is mountainous, steep and slippery landscape especially during the rainy season which leads to uneasy accessibility to health facilities. Thus, complications in transportation constrained pregnant mothers from making regular visits to antenatal clinics hence high referral cases were also registered from the same health facilities. For this reason some of them ended in the hands of traditional birth attendants for delivery services, while others went to their relatives who were nearby health facilities either in health cascade or district level. These factors made a conclusion to unequal number of those attended clinic compared to those delivered at health facilities in all dispensaries.

The higher percentage of pregnant women that did not deliver at health facilities from Melela cascade was also possibly contributed to cultural beliefs and practice of using herbals for various pregnancy functions. Such services are normally managed and provided by traditional birth attendants. It was noted that 25 (45%) respondents out of all interviewed in Melela cascade agreed of visiting traditional birth attendants and used traditional medicine practice at some point during pregnancy. They believed that such medicines are crucial in stopping vomiting, curing many other diseases including infections related diseases to pregnancy and ensuring right position of the baby. During delivery, pregnant mothers believed that traditional medicines play important functions of stimulating contractions during labor, facilitating smooth delivery as it speeds up the dilation of the cervix and stop labor pains and eased detachment of the placenta soon after (Roth and Denise, 2000).

Though traditional birth attendants are at a verge of conflicting acceptance by formal institutions, in some cases, they have produced tremendous results by using traditional medicine where modern medicines have been inaccessible. However, they lack specialized knowledge on specific complications and diseases. Thus, they do not have proper studies regarding to very common conditions and diseases. Their practices are largely conducted on trial and error bases. Their knowledge base is largely inherited from family, neighbor; village and elder relatives. Some of them tend to keep as family secret (Fitsum, 2006). Contrary, Midwives are trained time to time to attend pregnant women and advice them about their reproductive health (Magrert, 2007).

Despite the existing ambivalences, traditional birth attendants still have a significant role in delivery services, especially in most rural areas of developing countries and Tanzania in particular. Indeed, though the risk is high, still women depend upon traditional birth

attendants due to easy availability at the living places. Some of traditional birth attendants (TBAs) had undergone training conducted by UNICEF in order to assist women in rural areas to delivering safely. This intervention however, showed limited impact on reducing maternal mortality ratios due to lack of basic obstetric care knowledge among TBAs. In Mexico for instance, UNICEF discontinued funding for TBAs training courses since maternal mortality rates have not dropped after twenty years of TBAs training and the conclusion was that training on TBAs does not work (Robbie, 2002). This is in line with Rosenfield and Maine (2000), who contend that traditional birth attendants may certainly improve the routine delivery care that mothers and newborns receive, but they have proved ineffective significantly in reducing the maternal mortality.

Respondents and health staff accord various reasons to high percentages of non-delivery at heath facilities by pregnant mothers from both health cascades. Shortage of skilled health staff goes for their annual leave and inadequate equipments and drug supplies were some of the reasons for non-show up of pregnant mothers to deliver at health facilities. Unavailability of transport and radio call in peripheral health facilities in both health cascades forced some of pregnant mothers to stay with their relatives in town so as to obtain quality of care at urban hospitals where obstetric services are believed to be of relatively high standard. Such situations are in line with Iyun (2005), who reported that pregnant women may even choose not to visit the health facility, even when they are near, if they know that such facilities lack qualified personnel with obstetric skills and adequate medical-related facilities. Similarly, William *et al.* (2006), assert that in many sub-Saharan African countries, deliveries in health facilities can be risky due to poor quality of obstetric care services hence pregnant mothers refrain from using such facilities.

Focus group discussions with medical staff in both health cascades through check list revealed that, about 75% of pregnant mothers attended antenatal clinic only three times out of four visits as principally required. Pregnant mothers on the other hand believed that attending clinic up to third visit was enough to display all the necessary information concerning their health risks. When they find out that there is no risk factor recorded in their antenatal cards by third visit they negotiate with traditional birth attendants to be taken care-of for the remaining period. Normally, traditional birth attendants accept such responsibility only when there is no risk sign indicated in the antenatal card. This situation complicates the national insight of providing quality maternal services. Deliveries at health facilities are regarded as more hygienic than those occurring at home.

Proper medical attention and hygiene conditions during delivery can reduce the risk of complications and infections which can cause death or serious illness to either the mother or the baby (Clara and Erica, 2000). Indeed, antenatal clinic (ANC) services are important because women are provided with health education and counseling on danger signs during pregnancy, labor and delivery. Women should be strongly encouraged to deliver in health facilities so that they can receive maternal care promptly to reduce birth-related risks. This was also observed in many poor countries that due to lack of birth preparedness, including basic information on childbirth and taking action around "delays," increase risk (Maine and Deborah, 2002). According to UNICEF (2006), one of the critical pathways to reducing maternal mortality is improving the access, use, and quality of skilled services for the treatment of pregnancy and childbirth-related complications.

Focus group discussion was done by using checklist with medical staff also revealed that in rural health facilities the risk was high for those who needed assisted-vaginal delivery as the service was not offered at health cascade level. In such cases, referrals were made to

district hospital level where they could have access to specialized gynecological services. Other common referral cases to district hospital level were severe anemia, hemorrhage before and after delivery, infections, hypertension and rupture of uterus largely due to herbal intoxication especially during labor. The use of herbals among pregnant mothers' precipitate uterine contractions which they believe will enable them to delivery earlier and safely. Certainly, lack of access to emergency obstetric services poses a great threat to women's lives in rural areas as also reported by Ojeda (2003).

In spite of appreciable referrals occurred as shown in Table 5 above in both health cascades, no maternal mortality was reported for the past two years probably due to accessibility to communication media. Radio call was used to inform the health personnel at district level and preparations were done before the arrival of the patient. Availability of ambulance services at both health cascades was used to transport pregnant mothers and other patients with emergency cases to referral facilities free of charge, hence prevention of causalities (Hogberg, 2007).

Improved communication system is vital to reducing risks to pregnant mothers especially when referral issues are involved. Such communication system needs to be close enough to be accessible to all women, particularly the poorest and most vulnerable, whose risk of death is much higher. In India for example the Government of Madhya Pradesh has piloted a referral transport scheme. Self-help groups purchased a vehicle and implement the system, ensuring that the driver is in contact with all pregnant women in the locality. On the basis of a successful pilot programme, the scheme is now being scaled-up across the state, with a state-wide common telephone number (Ensor and Cooper, 2007).

In Zanzibar Island, a project known as "Wired Mothers" ensured that pregnant women were linked to a primary health care unit through use of mobile phones receiving standard messages reminders for care appointments and who can call the primary provider in case of both acute or non acute problems. The health system was strengthened by the use of mobile phones from the level of pregnant mothers, traditional birth attendants and through health centre to referral hospital (UNICEF, 2004). Mobile phones prevented communication gap between different levels for better performance in obstetric care services. This simple intervention, according to Lester *et al.* (2006), improved access to maternal health care services and shifts some of the responsibility of care and referral to the health system rather than to women and their families. Certainly, explosive spread of mobile phone networks across developing world has created a unique opportunity to significantly transform the way in which global health challenges can be tackled and WHO is increasingly supporting and prioritizing strategies that explore such opportunities (Plummer, 2006).

4.2.5 Health staff profile and responsibilities

Health personnel distribution depends on the level of health facility available at site. In the rural areas the levels of health facilities differ from dispensary, health center to health cascade. According to Ministry of Health and Social Welfare under Regulation Act No 6 of 1977 Section 26 on standards guidelines for health facilities (TDHS, 2000), the health cascade is supposed to have thirty workers in different fields, such as twenty Medical personnel, one Laboratory technician, one Pharmaceutical assistant, one Dental therapist, one Medical recorder assistant, one Health officer, one Kitchen attendant, one Accounts assistant, two Watchmen and one driver, while at dispensary it is supposed to have five health staff of different cadres as follows, two Clinical officers, two Public nurses and one Nurse attendant.

It was observed in the study area that all Medical officers, Clinical officers and Nursing officers had attained secondary education before pursuing the professional studies. Public nurse, Nurse Midwife, Maternal and child health attendant (MCHA) and Nurse Attendants had attained primary school education before undertaking their professional courses. None of them had university degree hence have limited technical know how to handle complicated maternal issues.

Shortage of skilled health staff in both health cascades was noted as there was lack of seven medical staff of different carders in Mgeta health cascade as well as eight health staff in Melela cascade as indicated in Table 6.

Table 6: Distribution of health personnel by education and carders

Health cascade/Dispensary	Education level and carder							Total
	Area medical officer	Clinical Officer	Nursing officer	Public nurse	Nurse Midwife	MCHA	Nurse attendant	
Mgeta cascade Dispensaries	1(3)	2(2)	0	3(5)	4(3)	2(2)	1(1)	13
Mgeta Mission	0	0	0	1(3)	2(3)	0	2(1)	5
Bunduki	0	0	0	2(5)	1(3)	0	1(1)	4
Nyandira	0	0	0	2(5)	2(3)	0	1(1)	5
Tchezema	0	0	0	2(5)	1 (3)	1(2)	1(1)	5
Kibuko	0	0	0	2(5)	1(3)	0	2(2)	5
Sub total	1	2	0	12	11	3	8	37
Melela cascade								
Sub total Dispensaries	1(3)	2(2)	1(4)	2(5)	4(3)	0	2(1)	12 3
Mangae	0	0	0	1(5)	1(3)	0	1(1)	
Doma	0	0	0	2(5)	1(3)	0	2(1)	5
Sub total	**1**	**2**	**1**	**5**	**6**	**3**	**5**	**20**
Grand total	**2**	**4**	**1**	**17**	**17**	**3**	**13**	**57**

Number(s) in parenthesis indicate professional training years in each cadre

It was observed that out of 57 health staff interviewed in both cascade, about (12.3%) of them were young and fresh from medical institutions holding high positions due to their education compared to those who were aged. This means that they depended on shared

knowledge and skills from the experienced trained staff when providing maternal and child health care services including immunizations as well as deliveries.

According to data obtained in the study areas, Mgeta health cascade had 65% out of 57 health staff interviewed compared to Melela health cascade. That was due to high population found in Mgeta ward than Melela as indicated in Table 1. Maternal Child attendants and Nurse Assistant were more or less the same in number, in both health cascades. They were responsible in assisting in provisional care after attending one year course and through job training from higher carders. Public nurses and Nurse Midwives were relatively in large number in both health cascades compared to other carders. Trained personnel were not enough in both health cascades according to report given from Health Secretary in Mvomero District.

It was reported from Health Secretary in Mvomero District that, health staff were busy attending all outpatients, inpatients, antenatal clinic, deliveries and postnatal care. This meant that there was an overload of work compared to the number of health staff. The situations become worse when some staff were on annual leave, sick or absent due to various reasons. However, services were provided twenty four hours and provided gratis. Due to understaffing all medical personnel were forced to work at maternity ward regardless of their professional backgrounds. Thus, there was no professional specialization while providing care for patients, thus, destroying health staff talents, knowledge and skills which were imparted in them during their medical training. Indeed, insufficient skilled health staff and long working hours made them tired and sometimes unable to integrate their work with family roles and obligations effectively. Understaffing and lack of skilled health personnel is not unique to the study cascades alone for the deficit of trained staff is observed in many spheres. Like many other developing countries,

Tanzania has experienced a large number of skilled health workers migrating from rural to urban facilities as well as brain drain within and outside Tanzania and Africa due to various reasons (Kwast and Bergström 2005).

Seminars and workshop were prepared by Ministry of health and Social Welfare and sometimes in collaboration with UNICEF and other stakeholders' example UMATI for trained staff in order to update there with maternal health care services and modern technologies on how to handle various conditions such as HIV/AIDS in maternal and child health care during pregnancy, labor and after delivery. Seminars assisted them to make right decision when doctors were not available.

To be precise, the term "skilled health staff" as defined by WHO (2005c), refers to "an accredited health professional – such as doctor, nurse or midwife, who has been educated and trained to proficiency in the skills needed to manage normal and complicated pregnancies, childbirth including the immediate postnatal period. Other skills include identification, management and referral of complications in women and newborns. Therefore the auxiliary nurses and traditional birth attendants whether trained or not have not been included in the category of skilled birth attendants.

Good performance of skilled health staff has been revealed by health cascade committees and pregnant women during the study in spite of difficult geographical landscape and unhealthy cultural practices, few apparatus provided yet they managed to prevent maternal deaths for two years. This encouraged people to use the health facilities for it showed that the medical services provided were valued in spite of various problems faced.

4.2.6 Availability of essential equipments and medicines

Health cascades should have the capacity to screen and identify high risk pregnancies, and refer them to more skilled and better equipped level of care (Hunter, 2004). Appendix 4

shows the required equipments according to standards guidelines for health facilities in Tanzania (MoHSW, 2007c). Appendix V shows the essential drugs required according to standard guidelines for health facilities in Tanzania. Results reveal that drugs and medical equipments used for diagnosis and therapeutic purposes were not enough in both health cascades for provision of quality obstetric care services and management of obstetric complications.

Equipment like solar power, public wall clock, oxygen cylinders, suction machine were in short supply in both health cascades. Other equipments like delivery beds, screens and Bp machines were badly torn-out. The functions of missing equipments such as oxygen cylinder and suction machine are very important as they help to clear the airway after having suffocation. The missing of such equipments may lead pregnant woman ending up to fits and comma in eclampsia condition or in asphyxia baby.

Blood pressure machines for monitoring vital signs were malfunctioning and sometimes ended into incorrect results. Lack of screens prompted lack of privacy whereas worn out delivery beds made clients uncomfortable. In some areas, modern obstetric care equipments could not be used due to lack of technical know-how. In Doma (Melela cascade) health facility for example, a modern delivery bed was provided by World Vision but health staffs did not know how to use it and no follow up was done by the provider. Public wall clock is a key instrument guiding to all kind of treatment given to patient or client. During observation it was noted that no public wall clock was available at various rooms and labor wards. Consequently, health staffs were using their own watches and sometimes instituting treatment based on guess timing.

In Melela health facility, the solar power was not working since the date of its installation. Health staff reported that, the situation become worse during the night especially when intravenous treatment was needed. In most health facilities, there was no replacement of old equipments and no introduction of modern equipments according to science and technology which save time and lead to high performance and satisfaction to the clients of maternal health care services.

Lack of essential drugs and equipment supplies hamper health facilities from providing lifesaving. Estimation of burden of maternal mortality was a challenge due to inadequate supplies of essential drugs and equipment in common to most sub-Saharan countries. The study by Abdhalah *et al*. (2006), in the slums of Nairobi Kenya for instance observed that the quality obstetric care services procedures was poor and needs improvement. Specific areas that require attention include supervision, distribution and ensuring that essential drugs, equipment supplies and trained personnel are available in order to handle obstetric complications in public health facilities.

Drugs are important in ensuring quality obstetric care services on reducing maternal mortality. It was discovered during the study that both cascades had shortages of parenteral drugs which are usually used for unconscious patients. Parenteral drugs such as anticonvulsant, antibiotics and antedema were critically needed. Lack of drug supplies observed in this study plagues many health facilities in rural areas. The shortage of drug in health facilities was due to various factors such as delay in requisition and transport especially during rainy season when the roads often become inaccessible. Inaccessibility to remote health facilities was more severe in Melela than Mgeta cascade due to its geographical landscape thereby offering inadequate and inconsistent supplies to health facilities.

Drugs supply deficiency was frequently experienced one month before the next supply arrives. The National Medical Stores Department (MSD) supplies drugs quarterly thereby cause a delay in supplies. The inadequate supply of essential drugs, such as antibiotics, oxytocics and anticonvulsants have impact on accelerating maternal complications and or mortality. It is often observed that ineffective implementation and poor management of the distribution of the available essential equipment and drugs has a great impact on maternal mortality. This will require the deployment of minimum requirements of skilled staff with their supportive supervision, the provision of necessary equipment and drug supplies a total refurbishment of the infrastructure and support services of such health facilities in rural areas (Sibley, 2001).

A lack of essential drugs and equipment supplies hampers observed in health facilities in the study area is also common to other sub-Saharan African countries. Lack of such essential medical supplies plagues women to receive medical treatment before, during or after childbirth. Such shortages occur at all levels of the health system in developing countries. There is little question that this situation is due, in part, to the challenge of limited resources. On the other hand, it is often compounded by ineffective organization and poor management of the available resources (Romans and Graham, 2006).

In Kenya for instance, country has seen a gradual decline in the quality of health services particularly those in the public sector. This has adversely affected the health of pregnant women. The research conducted in Nyanza Province found that public health facilities were lacking of essential drugs and equipments. Health staffs were unable to offer even basic therapeutic and diagnostic services. The pregnant mothers lost confidence in health facilities hence opted for services from traditional birth attendants (Kennedy, 2000).

Thus, MSD should ensure availability of quality equipment and medicines supplies at all times. This remains as a challenge for Tanzania especially in rural areas to achieve maximum possible quality of health care consistent with available resources, standard of care on a continuous basis and end up with quality health care as well as performance of health service which are effective, equitable, sustainable, affordable and user-friendly (MoHSW, 2006b).

4.2.7 Laboratory investigations

Laboratory tests and essential laboratory equipments are required for prevention and reduction of maternal health problems and death. Important laboratory tests to pregnant mothers include protenuria, Rhesus factor (blood group) hemoglobin and intestinal worms. Essential laboratory equipments such as microscope, soap, disinfectants and antiseptic, glass slides, specimen bottles, bricker, cotton wool, gauze, torniquet, various sizes of syringes and needles and refrigerator.

The study showed that in both cascades there were no important laboratory tests done to pregnant women which could enable early detection for signs and symptoms of complications during pregnancy. Essential laboratory equipments and reagents were also lacking in some dispensaries and when available most of them were defunct or had some parts missing as shown in Table 7.

Table 7: Missing important laboratory tests and prophylaxis drugs on maternal health care dynamic

Health cascade and dispensaries	Laboratory investigations				Prophylaxis drugs during Antenatal (Tin=1000Tablet1)			
	Haemoglobin	**Albustics**	**Sugar**	**Rh factor**	**Mebendazole Tablets**	**Fefo (Folic/Ferrous)**	**Malaria tablets**	**Mebendazole tablets**
Mgeta Cascade	0	0	0	0	1(4)	1(4)	1(3)	1(3)
DispensarieMgeta mission	0	0	0	0	1(2)	1(2)	1(2)	1(2)
Bunduki	0	0	0	0	1(2)	1(2)	1(2)	1(2)
Nyandira	0	0	0	0	1(2)	1(2)	1(2)	1(2)
Tchezema	0	0	0	0	1(2)	1(2)	1(2)	1(2)
Kibuko	0	0	0	0	1(2)	1(2)	1(2)	1(2)
Sub total	**0**	**0**	**0**	**0**	**6**	**6**	**6**	**6**
Melela Cascade	1	0	0	0	1(4)	1(4)	1(3)	1(3)
DispensarieMangae	0	0	0	0	1(2)	1(2)	1(2)	1(2)
Doma	0	0	0	0	1(2)	1(2)	1(2)	1(2)
Sub total	**0**	**0**	**0**	**0**	**3**	**3**	**3**	**3**
Grand total	**0**	**0**	**0**	**0**	**9**	**9**	**9**	**9**

Number(s) in parenthesis are presenting the total number required by standards guidelines for health facilities level in Tanzania.

Microscopes machines were found only at health cascade headquarters that means Mgeta and Melela, respectively. Due to shortage of microscope machines in catchments dispensaries, pregnant mothers were forced to travel to health cascades headquarters for requested investigations such as blood hemoglobin, malaria parasites, stool worms, bilharzias, occult blood and sputum for detection of tuberculosis and other associated chest problems.

Laboratory tests could also help detect protein in urine, which indicates albumen in the body and possibility of having high hypertension which leads to eclampsia and still births. Urine analysis for sugar levels helps to detect the signs and symptoms of diabetic mellitus for pregnant mother as well as for a new born baby. Blood group scrutiny helps to disclose the type of blood group whereas Rhesus factor enables to identify abnormalities such as blood group AB positive or negative that calls for special attention before delivery. Generally, a health cascade constitutes a high level health facility with investigative laboratory, a range of health staff and laboratory technicians.

The rationale of conducting important laboratory tests to pregnant mothers and the rationale of having state-of-the art laboratory equipments for quality obstetric care services have been widely acknowledged. A study by Magadi *et al*. (2004), on maternal mortality in Kenyan hospitals observed that Pumwani hospital, the specialist obstetric hospital in Nairobi was better equipped with obstetric equipments including laboratory tests than most hospitals and recorded lower maternal mortality than other hospitals.

Malaria prophylaxis was not supplied constantly to pregnant mother in both cascades. Malaria infection during pregnancy affects the health of both mother and foetus. It can cause maternal anaemia, fatal loss, premature delivery, intrauterine growth retardation, and

low birth weight (Katona, 2005). Pregnant women who are HIV-positive are particularly at a high risk of these adverse effects of Malaria in pregnancy (Sherman, 2007).

In sub-Saharan Africa, Malaria infection during pregnancy is estimated to cause 400 000 cases of severe maternal anemia and 75 000-200 000 infant deaths annually (Herbert, 2002). The World Health Organization currently recommends the following three interventions to reduce these adverse effects in Africa where there is a high transmission of Plasmodium falciparum malaria. Intermittent preventive treatments (IPT) are such as the use of suplhadoxine-pyrimethamine (SP) and use of Insecticide-treated bed nets. Remaining two interventions are early diagnosis and treatment of malaria in febrile illness during pregnancy (Chatterjee *et al*., 2007).

Mebendazole tablets were not supplied constantly in both cascades. These drugs are necessary for pregnant mothers because it kills worms which tend to suck blood in the intestine and make pregnant mother pale, which is a sign of anaemia.

Folic acid and ferrous sulphate tablets were supposed to be given as a routine until at the end of pregnancy in order to combat anaemia for pregnant mothers in both health cascades. Many women in developing countries suffer problems in pregnancy due to lack of vital nutrients -especially iron tablets (Folic acid and ferrous sulphate tablets) (Wendy, 2006). The supplementary of folic acid, ferrous sulphate help to prevent anaemia as a first line management during pregnancy. Lack of iron deficiency pregnant women can end up to poor weight gain during pregnancy. Anaemia is one of the stiff challenges which cause maternal death before, during and after delivery. Under-nutrition, malnutrition in pregnant woman leads to anemia (Mridula, 2009).

Complications of anaemia can cause premature birth, still born fresh or macerated and low body weight due to poor nutritional status around the time of conception, lack of iron supplement, intestinal worms and severe malaria during pregnancy. According to Hussein (2006), low birth weight is defined as babies weighing less than 2.5 kg at birth. This can be due to premature birth or intra-uterine growth retardations or a combination of both. Birth weight is a good measure of infant health, with a strong negative relationship between low birth weight and infant mortality and morbidity, health throughout the lifespan from infancy to adulthood. Low birth weight is a significant risk for infant mortality and morbidity in the first year of life. A well-nourished pregnant woman can successfully continue to be healthy by using supplementary food, iron and malaria prophxialasis drugs as a major concern in terms of maternal health care to pregnancy.

Counseling and HIV/AIDS test was performed at two health cascades only and none in the catchments' dispensaries. This was due to lack of both equipments and skilled health personnel. It was observed that when a client is tested positive to HIV referral is written to district hospital for antiretroviral (ARV) treatment. In Mgeta cascade five pregnant mothers (which is about 6.5% of all pregnant mothers in that cascade) were tested positive to HIV and willing to start treatment which was available 45 km away at Morogoro district hospital. This level of infection calls for immediate intervention as the prevalence percentage was higher than that of Morogoro region though slightly lower than that of National adult prevalence reported by URT (2007c).

Counseling procedures are performed at recognized health facilities by trained health staff. The recognized maternal health clinics offer HIV counseling and testing to all pregnant women as part of prenatal care. Pregnant women have the right to receive quality health care and to make informed choices about their health especially during pregnancy. It gives

information needed to pregnant women to stay healthy and to protect their babies before and after birth. HIV positive pregnant women have free chance to get treatment or courses of action which will reduce the risk of HIV being passed to their babies (Rosemarie, 2008).

In Morogoro region the HIV prevalence was estimated at 5.4%. AIDS patients were 21 901 while the patients on antiretroviral therapy (ART) were 3 759 (WB, 2000). In 2008, Tanzania was estimated that 114 800 (8.2%) of 1 400 000 pregnant women were HIV/AIDS positive. Of these, only 608,007(43.4%) were reached by Prevention of mother-to-child transmission (PMTCT) services and 519 287(37 percent) were actually tested for HIVAIDS infection (MoHSW, 2008). Globally, vertical transmission of HIV is the most common cause of HIV infection in children under age 15. Without any intervention, 35% of infants will be infected of which 15-20% during pregnancy, 50 percent during labor and delivery and 33% through breast feeding. The World Health Organization through national and regional health PMTCT programmes promotes a comprehensive approach to the prevention of HIV in infants, including mothers and their families (NACP, 2003).

The PMTCT programme is only found at health cascades levels and make those from health facility level to miss the opportunity to know their health status. It was noted that there was no reliable transport from health facility to another health facilities within the health cascades. This caused more delay to reach at health facility. However, most of the centres that benefit from PMTCT programmes are located in urban centres and village cascades leaving the high proportion of pregnant mothers un-attended. It was reported that by health staff in the study area that some pregnant mothers were not going for HIV testing, counseling and therapy due to long distance from their villages to district headquarters and sometime due to lack of transport fares.

The study by Chery (2009), found that the maternal mortality ratio was more than six times higher in HIV-positive women (776 deaths per 100 000 births) than in HIV-negative women (124 per 100 000). Nearly half of the 108 women who passed away between 2003 and 2007 in South Africa died from HIV-related causes, most commonly tuberculosis and pneumonia. Between 28% and 33% of women attending antenatal clinics in South Africa are HIV positive. The deaths of most of the HIV-positive women in the study could have been avoided if they had begun ARV treatment, and had been given cotrimoxazole prophylaxis (an antibiotic that helps prevent opportunistic infections).

4.3   Maternal Mortality Effects on Household Socio- economics

Maternal mortality levels are very much influenced by the socio-economic factors which include education of women, economic performance of a particular place or household as well as an individual. Low socioeconomic status is significantly associated with low maternal health status and under utilization of maternal health care services (Ellis *et al.,* 2006). Other social economic factors are access to safe water, sanitation aspects, incidence of orphan hood, and childbearing age and type of residence rural or urban. On the other hand, maternal mortality has diverse and frustrating impacts to the society especially in rural areas whereas the chance of choice is limited. Some of the effects of maternal mortality were observed in the studied health cascades as indicated in Table 8.

Table 8: Effects of maternal mortality on household socio-economics

Response	Name of health cascade (values within cascade)		Name of health cascade (values compared) N =61		Frequency of both cascades	Percentage of both cascades
	Mgeta (n=26)	Melela (n=35)	Mgeta	Melela		
Economic- hardship	7(26.9)	9 (25.7)	7(11.5)	9 (14.7)	16	26.0
Depression	5(19.2)	7 (20.0)	5(8.2)	7(11.5)	12	20.0
Single parenthood	6(23.1)	9 (25.7)	6(9.8)	9 (14.7)	15	25.0
Orphanage	8(30.8)	10(28.6)	8(13.1)	10(16.4)	18	29.0
Total	**26(100)**	**35(100)**	**26(42.6)**	**35(57.3)**	**61**	**100.0**

Numbers in parentheses are percentages of respondents

Some of maternal mortality effects were observed and expressed in percentage according to respondents' opinions and real situation experienced at family level. Orphanage was the first group of missile after maternal death that showed 29% in total from both health cascades. The English word "orphan" is derived from Greek and Latin roots meaning "a child bereaved by the death of one or both parents" (Foster and William, 2000). Due to interruption of mode of life in the family after maternal death, economic hardship starts to be part and parcel of life. Single parenthood and depression were also some of the difficulties that households faced after maternal death.

Maternal deaths reduce the quantity of labor force, and create economic hardship at various levels of communities. Family incurred expenses in funeral, which at times forced the households to sell some of the output producing assets example land, farm machinery and equipment to pay for funeral costs. Such lessening of assets spontaneously erodes household production potentials. Sometimes, children are forced to leave school early to perform duties which were done by their deceased parents. For instance, when a mother dies means a teacher dies because she is a transmitter of indigenous 'tacit' knowledge and values to the youth (Urassa *et al.,* 2003).

Results in Table 8 above, show that 20% of the families experienced loneliness and depression in both health cascades soon after the death of their beloved who played a prominent role in tender age and loving care for both father and children. Maternal deaths brought a negative impact in the family on the nutritional status, especially for under age of five years children. Socialization and education as well as the whole concept of human growth development processes become constrained. Literature show that due to dissatisfaction sometimes children decide to quit at home and go somewhere they think it will be the right place for them to stay such as, friends, relatives or unrelated families. But such decision is not always correct and some of them end up living in street with a lot of problems. Psychologically distress, including loneliness was a common occurrence in some families, in particular those men who depend much on women as also was found in Benin (Fillippi, 2007).

Depression is combination of social, psychological and biological factors. The symptoms may be non-specific including feeling loneliness, tired, unhappy, and irritable, sleeplessness, loss of appetite and feelings of anxiety and guilt. Early identification is imperative as failure to provide tender loving care. Depression may result in prolonged and adverse effects on the o family members (Beatrice, 2005).

It was revealed by those interviewed in both sites that single parenthood was very hard and tough for men when wife dies. Because women in Sub Saharan Africa play a vital role in nursing sick household members back to their normal health status thus, a death of a mother spells the loss of a strategic household caregiver or nurse. When the mother dies, the father (or some other person) is forced to reallocate work time to provide care to the bereaved children. This constitutes a loss in economically productive time. Also mothers not only care for the children and spouses, but also for the elderly. This is particularly

important in Africa since homes for the elderly are almost non-existent, and is not African culture to commit them to sanatoriums (Lund, 2008).

Orphanage started immediately after death of the parents, either single or both parents. The responsibility is left to the members of the family, extended family, or sometimes to elderly child as reported by respondents. Experience in both sites showed that most of the time the orphaned children decided to remain in their parent's house and their own land in order to protect their inheritance rights. If father had passed away, the oldest child would take over the responsibilities to support and care for his younger siblings. If all were not available then women were selected to take care of the orphans, because it is believed that women are more prepared to take care of orphans than men because of African culture and beliefs (Ainsworth and Semali, 2000).

In a study conducted by Semali (2005), in Tanzania, orphaned children were more likely to be stunted. Orphaned children from the poorest households are severely affected due to economic hardship including those with least access to health care. In low income countries, orphanage care is likely to have a greater role in a child's physical wellbeing and survival, as the environment is often more hostile than in wealthy countries. Poverty, overcrowding, and poor sanitation are common, resulting in a greater risk to a child's physical health (Luxier, 2009). There is epidemiological evidence that maternal deaths frequently lead to infant deaths, which in turn reduces the family size and future labor force. Premature mortality of mothers who are in active labor force may lead to a reduction in total household consumption expenditure, government tax revenues, and private business and personal savings, and hence, the resources available for investment purposes, thus weakening future economic prospects (Freedman, 2007).

4.4 Community Leaders' Participation on Safe Motherhood Initiative

The formation of village and ward health committee have been a very useful invention for Safe Motherhood programme based on maternal health care in order to reduce maternal mortality and complications in pregnancy or childbirth in women. Cascade committee members made efforts to support the implementation of maternal health programme activities in health cascades. The community health committee was supposed to report to health cascades. Community leaders' health ward committee members were selected from villages, in order to discuss maternal health problems at ward level. Such a programme is essential to attain the goal of health for all in the community as well as an individual level (Mooney, 2007).

Various representatives were identified to form the ward health committees. Community leaders selected in health ward committee in both cascades were Sheikhs, Pastors, Priests from Roman Catholic Church, Divisional officer, Ward executive officer, Ward Agriculture officers, Ward educational officers and two influential traditional leaders and two health's staff in each cascade making twenty four members from both cascade as showed in Table 9.

Table 9: Community leaders' participation by sex from both cascades
Numbers in parentheses are total percentages of community leaders' participation by sex in health cascades.

Title	Sex (N=24)		Frequency	Percent
	Male	**Female**		
Religious leaders	6	0	6	26.0
Civil servants	10	4	14	62.0
Influential people	2	2	4	16.0
Grand Total	**18(75)**	**6(25)**	**24**	**100.0**

The formation of community health committees in both health cascades showed various percentages of participation according to designations. Civil servants percentage was

higher (62%) compared to other groups in the committee because committee depended more on civil servants knowledge and experience. Religious leaders formed 26% because of moral support that was needed to bring changes in the communities and people trusted them a lot. Influential people contributed to 16% because people were still listening to them due to their wisdom. Together they managed to facilitate the health committee functions towards the community for maternal health development.

Men constituted 75% of community leaders and remaining percentage were women. It was observed that due to low percentage of women in health committee, improved changes in maternal health care will take time because traditionally men have the control over women's health as it is believed women have to survive and procreate only. Empowering women on one hand involves making them self-dependent and financially independent to the extent that they can demand and extract their rights; and on the other hand it involves motivating men to support the women in their lives to get empowered.

There is a need to motivate more women to be involved in maternal health committees so that they can plan their real ideas and transform those ideas into implementation process for improvement on maternal health. The aim of this is to increase knowledge, empower women and their families to access and demand quality maternal health services at their community levels. This will as well build capacity of an individual and community to plan and implement for local authorities activities, which include the advocacy in health management reform in rural community's levels (Bender and Ewbank, 2006).

4.5   Functions of the Community Ward Health Committee

Functions of community health committee at health cascades level were mentioned namely to address the main health problems in the community through promotive, preventive, curative and rehabilitative services. That involved not only the health sector but all related

sectors and aspects of division of community development. Community level action encouraged community participation in the planning, organization, operation and control of health care, making fullest use of local, district and other available health-related resources. However, shortage of health staff limits the community activities support, such as outreach activities.

The main functions of the religious leaders were to build up the moral support and to enhance integration of health education services by speeches in religious places because in more occasions than not people trust them more than government leaders. They also help to clear out the fiction and misconception found in the community on the whole concept of safe motherhood. Both religious and government leaders were performing activities on safe motherhood in their areas in order to promote the maternal and child health care such as to advocate the importance of using health facility during delivery, where skilled health personnel are demonstrating their roles as professional attendants. Community leaders were also supposed to strengthen maternal health and environmental sanitation. The maternal health component is considered as successful respect to high antenatal attendance and vaccination coverage.

It was however observed that, there was no clear indication of specific strategies to monitor quality of obstetric care services by community committee. This was supposed to be done by selected committees through community involvement. For example cultural realms in the area encourage home delivery, while the committees encourage pregnant mothers to attend antenatal clinic. Despite the fact that, health strategies call for community-centered health care, experience from surveyed areas showed that supervision of facility health staff concentrates on technical competence.

Cascade health committee is also supposed to overseer maintenance of health facilities. Unfortunately, most of the members in the existing committee teams lacked technical know how especially maintenance of medical equipments. Thus, offering inadequate technical support in maintaining health facilities. Medical equipment requires special trained personnel to service and to perform professional technical repairs. Both health cascades had defunct medical equipments due to lack of maintenance hence undermining provision of quality obstetric care services in rural areas.

Despite some selected weakness, community leaders were the backbone of various programmes in their society, such as safe motherhood programme. Community leaders were responsible for monitoring and sustainability of the programmes introduced. Like community services provider (CSP) which was dealing with maternal and child health care including family planning, they attended various trainings concerning health issues. It was observed that community committees played their part to advocate and support health facilities to ensure the availability of emergency transport incase of maternal health problem. This ended with good result because there was no maternal death for two years now in both health cascades.

4.6 Challenges Faced On Roles of Obstetric Care Services

It is important to start with an understanding of the real situation of particular areas. Some common features of the health care challenges in surveyed health facilities were cultural realms, equipments and drugs supplies; shortage of skilled health staff including laboratory investigations. There is a need to find a way to achieve better results of obstetric care services.

4.6.1 Drugs and equipments related challenges

One of the important needs identified for safe motherhood is ensuring that a health staff with midwifery skills is present at every birth and has the essential obstetric equipments and drugs supplies, needed to provide for quality of care services. Availability of equipments and drugs supplies were inconsistence at health centre facilities partly due to improper reporting system and inadequate communication between health staff and medical stores department (MSD) staff.

Pregnant mothers were not consistently and routinely supplied with supplementation of iron tablets, folic acid and ferrous sulphate, mebendazole and malaria tablets during antenatal period In essence, maternal health care services need support from various stakeholders in order to overcome challenges in terms of financial support in providing hospital equipments such as radio call and ambulance as well as drugs. Availability of equipments and drugs in time, will establish maternal health care services achievement as planned by the health policy in Tanzania. Expenditure will depend much on report submitted from health facilities at right time and that will assist the government budget.

4.6.2 Laboratory related challenges

Laboratory quality system was not good at health facilities levels. While at health cascades levels reagents were not available constantly for further investigations. Some of pregnant women were not screened for necessary laboratory tests such as proteinuria, hemoglobin level, Malaria parasites and stool for ova was not available all the time due to lack of consistence supply of various reagents in health facilities.

4.6.3 Training related challenges

The training should be on educational approach involving knowledge and skill, lectures and practices to improve the management of obstetric care services as well as to identify

early on an impending obstetric care services in health facilities. In order to provide quality obstetric care services health, staff should have further training which is relevant to real situation and the number of them should be enough at health facilities. It is to be borne in mind that with passage of time, trained personnel tend to forget both knowledge and skills, especially when they are not in use. This creates a gap that can be filled only by updating or revising and reinforcing what was once learned. Training aims to improve the knowledge and skills of those health staff providing care at the front line in the management of obstetric care services in health facilities. Both pre-service and in-service education and training programmes should be based on a competency model, with those who teach midwifery in clinical or classroom settings being themselves competent in midwifery and having undertaken adequate preparation for their role. Improving quality of care depends on the new graduates' ability to practice their newly acquired skills in the real situation.

Staff needs to have up-to-date knowledge about what to do in delivering quality obstetric care services and during obstetric emergencies. There is a need to develop or strengthen accreditation systems, including ensuring periodic updating and professional continuing education programmes. It was found that most health centers employees had minimum level of education to handle complicated issues for pregnant mothers or obstetric issues.

4.6.4   Cultural realms related challenges

In some selected occasions, example in Mgeta health cascade some of traditional birth attendants (TBAs) had undergone training funded by UNICEF in order to assist women in rural areas to deliver safely, that had been shown to have limited impact on reducing maternal mortality ratios. Traditional birth attendants may certainly improve the routine

delivery care that mothers and newborns receive, but they have proved ineffective in significantly reducing the maternal mortality ratio.

The study observed that women lack essential information on pregnancy, labor and delivery. Women's planning and decision – making during pregnancy and their access to adequate maternal health care were severely constrained by cultural beliefs. In spite of various efforts made in order to encourage pregnant women to delivery at health facilities, still some of them who did not deliver at hospitals due to culture and beliefs and trust on traditional medicine and traditional birth attendants. Indeed, broad based educational and advocacy programme through community leaders are needed to dispel negative myths among the pregnant mothers.

CHAPTER FIVE

5.0   CONCLUSION AND RECOMMENDATIONS

5.1   Conclusion

The focus of this study was to determine the life-saving in the roles of quality obstetric care services in order to reduce maternal mortality in rural areas. Maternal health is a cornerstone of family life and family health. The findings aim to assist the Ministry of Health and Social Welfare to pinpoint areas for improvement and specifically to identify the major problems which need comprehensive progress in health cascades surveyed in Mvomero district through district Medical Office.

The study was on the roles of quality obstetric care services on reducing maternal mortality. Quality obstetric care services have important contribution to the maternal survival in rural areas. It has been observed that the success to maternal health care services is not only determined by skilled health staff at health facilities but also together with other health intervention packages can significantly reduce maternal mortality. The role of government in supporting maternal health care services appears to be very significant. In addition, the good quality of care services provided in maternal health care services as well as communication and transport influenced on the performance of maternal life- saving is very much material and essential in reduction of maternal mortality.

Several findings emerged from the analyses with respect to the study objectives. The first objective of this study was to assess the quality of obstetric care services with respect to maternal mortality rural areas. The results revealed that pregnant mothers were aware of the services provided at maternal health clinics (which included antenatal care, delivery service and postnatal care – family planning).

The roles of quality obstetric care services on reducing maternal mortality it need a functioning health system. This includes human resources (particularly midwifery) essential drugs and equipments supplies; infrastructure (maternal health clinics); transport and communications for referral; electricity power, water and sanitation. Reducing maternal mortality depends on the extent of health care availability for expectant/pregnant mothers, particularly when dealing with complications. Preventing complications involves maintaining a normal pregnancy and managing complications in essence of good quality of care services.

The study also revealed that a few skilled health workers, limited essential drugs and equipments. Transport (ambulance) and communication (radio call) were used between health cascades staff and district health staff and therefore managed complicated cases timely and appropriately. There was success on reducing maternal mortality for two years in the study health cascades acting in collaboration with health facilities within the catchments areas. This observation was only valid for those who delivered at health facilities.

The second objective was to establish effect of mortality on socioeconomic conditions. The research revealed that maternal deaths were avoidable with competent care, through interventions addressed as broad set of maternal health issues. Risk factors for both serious maternal health problems and potential death can be social, economic or cultural and they can be related to health condition of the pregnant mother and fetus. Preventing and reducing maternal deaths is important because the impact of a maternal death on families and communities is distressing as experienced in health cascades surveyed in Mvomero district. To reduce the risk factors, health system improvements must be complemented by attention to wider social, economic, and cultural factors as well as reproductive rights and

maternal heath. It was further revealed in the study that maternal deaths create huge economic costs for the household finances and reduce income due to low productivity at family level, also push families below the poverty line and prevent them from investing for the future in assets and children's education. Maternal mortality has several impacts such as orphan hood which is significant in relation to child development. In early childhood, at school age and in early or late adolescence affects children and father differently both psychologically and developmentally.

The final objective of this study was to identify out the challenges and opportunities to improve the obstetric care services. Maternal health services need support from various stakeholders in order to overcome challenges which still exist in health cascade surveyed. In this respect, roles of obstetric care services can be used to address the challenges of maternal mortality in policy makers for changes. The proportion of deliveries to the availability of health professions (doctor or nurses), essential drugs and equipments supplies, laboratory (maternal health investigation), transport, communications, power supply, water and sanitation is discouraging the former being too many while the latter being too many limited. There is thus a need for further management and progress in improving maternal health care services.

Other challenges were women lack essential information on pregnancy, labor and delivery. Women's planning and decision – making during pregnancy and their access to adequate maternal health care were severely constrained by cultural beliefs. In spite of various efforts made in order to encourage pregnant women to delivery at health facilities, still there were some of them who do not deliver at hospitals due to culture and beliefs on traditional medicine.

Broad based educational and advocacy programme through community leaders under community health committee are working hard to dispel negative myths among the pregnant mothers. Such as traditional birth attendants (TBAs) are providing pregnant mothers traditional medicine to ease labor pains or to stimulate labor process. In several cases, they realized they could not deliver them. The TBAs referred the women to a health care facility, but that was often after several hours after labor had started that means delay. Also the report written in pregnant mother antenatal clinic card indicates all the progress. But those who had no any bad obstetric indication preferred to be attended by traditional birth attendants, as they believe no complication would occur.

There were some opportunities found in the study area such as supportive supervision instituted to monitor maternal health care are in standard through community health committee at cascades level. As well as to ensure that environment is conducive for both health staff and clients including follow up on equipments and drugs supplies provided by various stakeholders are working or not. Transport and communication played a great role in reducing maternal mortality used by health staff in surveyed areas. The explosion spread of communication networks and transport across the Mvomero district has created a unique opportunity to significantly transform the way in which Mvomero district health challenges can be tackled. This intervention improves access and shifts some of the responsibility of care and referral to the health system rather than the women and their families. From this observation the following recommendations for consideration should be done, because the roles of obstetric care services are noted to be powerful tools for reduction of maternal mortality as it has been revealed in the study.

5.2   Recommendations

5.2.1   Increasing budget in health sector

The government of Tanzania has already acknowledged that maternal deaths are a serious issue in the country. Hence in allocating resources in Ministry of health and Social Welfare, priority should be given to women who are living in rural areas, because they don't have access to health facilities compared to those who are living in urban. The policy makers should come up with concrete plans which are aiming at preventing and reducing maternal mortality in Tanzania. The Local Government Authorities should make sure that available resources in the basket fund at district level are used to meet the required needs in health facilities.

The government should increase its budget in health sector to ensure that there are enough radio calls and ambulance at health facilities level for easy communication and save life of the pregnant mothers by enabling them to be in hands of medical professionals. The budget in health sector need to be delivered in health care systems should be supportive to improve maternal health care at community level and family level. There is a need of increasing budget in health sector towards maternal health care services. This will involve the quality of obstetric care services in health facilities. The budget in health sector will be an integral part of the existing maternal health care services which will be closely monitored by Ministry of health and Social Welfare at district and health cascade level.

5.2.3   Antenatal care service

Essential elements of routine prenatal care should be done in all maternal heath care services. Screening and treatment for venereal disease, HIV/AIDS, immunization with tetanus toxoid, prevention and treatment of anemia, prevention and treatment of malaria with prophylaxis or bed nets should be carried out on four-visit, prenatal schedule that

include educating women and birth attendants about danger signs and the need for skilled attendance at delivery should be done.

Birth preparedness includes planning for the place of and the attendant at delivery(skilled health staff), as well as arranging for rapid transport to a health facility or hospital if needed, The risks of adverse outcomes for mother and baby are highest during childbirth. It is recommended that delivery services be provided by professionals with obstetric skills, whether the birth occurs at home or in a health facility. A major strategy for reducing the maternal health burden involves increasing the use of skilled providers for the vast majority of normal deliveries and managing complications at the primary level with referral to district hospital level if necessary. The pregnant mother, relatives, and other community members, including traditional birth attendants (TBAs) should know the best place for delivery is at health facility only.

5.2.4 Improving accessibility of communication networks

Health cascades in the referral chain had accessibility to reach emergency obstetric care by calling through radio call installed at health cascade. Radio call phone numbers were available from control room of radio call office. This is generally health communication system from health cascade to district hospital level. It will be excellent if availability will start from health facilities level to district hospital level in all health cascades.

5.2.5 Improving training for health staff

There is a gap that needs to be fulfilled only by imparting update knowledge and skills for health staff, so as to be perfect and confident on how to use modern equipments and dispensing drugs. Health staff should be supported by the government in order to accomplish their studies up to degree level, so that they can bring changes in women's

lives. On job training is needed since seminars and chances for professional training are limited. That will increase the number of trained personnel with basic obstetric skills in health facilities.

5.2.6   Inadequacy of essential equipments and drugs at health facilities

Availability of equipments and drugs in time, will establish maternal health care services achievement as planned by the health policy in Tanzania. Distribution and supply of equipments and drugs are supposed to be equal to population served to prevent shortage and inconsistence of drugs and equipments. Expenditure depends much on report submitted from health facilities at right time and that will assist in government budget. At the national level it will help to offer the maximum available resources, to distribute equally especially essential equipments and drugs to reduce maternal mortality.

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APPENDICES

Appendix 1:   Interview schedule for administration or in-charge of the health cascades, pregnant mothers and community leaders

PART A (1): **Interview guide (checklist) for Focused Group Discussion (FGD)**

Checklist for Administration or In-Charge of the Health Center

A. Background

Health cascade…………………………………

Name of Health facility……………………………………

Date of interview ……………………………………

Name of interviewer ……………………………………

Age of interviewee……………………………………………

Gender of interviewee……………………………………

B. Health facility details

1. Number of staff at health facility

2.   Number of midwives at health facility

3. What is the coverage area of your service area

4. Number of villages serviced/covered……….

5. How many pregnant mothers are registered or attended in ANC per year

6. How many deliveries recorded per year? …………

7. How many deliveries recorded per year? …………

8. How many maternal deaths are recorded per year? at health facility

9. How many maternal deaths are recorded per year? at home

10. Mention causes of maternal mortality which were occurring at ealth facility with in two years

11. Mention causes of maternal mortality which were occurring athome in two years back

12 Mention causes of maternal mortality which were occurring at health facility in two years back

13 Mention causes of maternal mortality which were occurring at home two years back

14 What are the impacts of maternal mortality at house hold level?

15. Do you have family planning members?......................................

16. How many are they per methods?

     1 = Pills ………………………………….

     2 = Injection Depo provera……………………….

     3 = Implants ………………………………….

     4 = Condom………………………………….

     5 = Neo Sampon/Jellys……………………………..

     6 = Tubal ligation………………………………….

     7 = Vasectomy ……………………………………………

THANK YOU VERY MUCH

PART A (ii) Checklist for Health staff in the study area

A. Background

Health Cascade ……………………………………

Name of health centre ………………………………

Date of interview ……………………………………

Name of interviewer …………………………………

Age of interviewee……………………………………

Gender of interviewee……………………………..

Position ………………………………………………

Education Level ………………………………….

State your professional training years …………………..

B. Health staff academic qualifications

1. How many years have you been working as skilled health staff?

       1. = 5 years   2. = 5 – 10 years 3. = Over 10 years

       3. =4 years;   4= others   (specify)……………………..

9. Have you attended any seminar(s) on maternal health after completing your Certificate/Diploma course?

       1 = Yes   2. = No

10. If yes, mention the title…………………………………………….

11. Mention the duration of the seminar(s) attended

       1= 2 weeks   2 = one month   3 = over a month   4= None

C. Maternal Health Care Dynamics

12. Do you have all necessary equipments and drugs needed for midwifery procedures?

    1. Yes   2. No

13. Mention missing essential equipments in maternity procedure

1. Delivery bed

2. Fetal scope

3. Syringe

4. Oxygen cylinder and its apparatus

5. Catheter

6. Gloves

7. Sucker

14. Mention missing essential drugs in maternity procedures

    1. I/V sets

    2. Recitations drugs

    3. Injectables pain killer

    4. Injectables anticonvulsant drugs

    5. Pitocin

    6. Ergometrine

    7. Lignocane

15. Mention missing essential laboratory tests for pregnant woman

    1. Hb

    2. B/S

    3. Rh factors

    4. VDRL test

    5. Albumin

    6. Blood sugar

16. What are possible causes of these problems that lead to complications during pregnancy?..

17. Give any suggestion(s) that can lead to improve in the maternal health care service delivery. ………………………………………………………………………….

THANK YOU VERY MUCH

PART B: Questionnaire for Pregnant mothers

A. Background information

Health Cascade …………………………………

Name of health facility ………………………………

Date of interview …………………………………

Name of interviewer ………………………………

B. Obstetric history

1. Age of pregnant mother………………..

2. Education**………………………**

3. Occupation………………………

4. Gravida /Number of pregnancies so far………

5. Para /Number of deliveries………………

6 Number of live births………………….

C. Provisional of maternal health care services

7. Mention the prophylaxis which are provided at ANC for pregnant women,

Circle the proper one(s) which are provided

   1.   Ferrous sulphate (2 tablets every day)

   2.   Folic acid(1 tablet per day)

   3.   Mebendazole (500mg start)

   4.   Sulphadoxine Pyrimethamine (SP) 3 tablets after 20 weeks repeat after 4 weeks.

   5.   Tetanus toxide (state how many have already been given)

8. Mention types of investigation(s), which are provided for investigated as pregnant mother (circle the right one(s).

1. Hb

   2. VDRL

   3. B/S

   4. Rh factor

   5. Albumin in the urine

   6. Sugar in the urine

   7. Blood group

9. Are you given health education on pregnancy care during various visits at ANC?

        1=. Yes   2. = No

10. If yes, circle the topics that are taught in ANC

      1=. The importance of attending clinic early

      2 =. The importance of immunization

      3 = The importance of laboratory investigations during pregnancy

11. Are you satisfied with the services provided by service providers?

     1= Yes   2 =. No

12. If yes select the right one

1= Are they knowledgeable?

2. = Are they friendly?   3= Are not friendly

13. Do pregnant mothers go to traditional birth attendants for delivery?

    1= Yes

    2 =No

14. If Yes why?...

15. Have you heard about maternal mortality?

      1 = Yes   2 = No

16. Mention the effects of maternal mortality at house hold level

……………………………………………………………………………………..

17. Are you member of family planning methods before pregnancy?

    1=Yes   2 =No

18. Mention the family planning method(s) used

    …………………………………

17. Give general view(s), which will assist to improve maternal health services.

……………………………………………………………………………………………

………………………………………………………………

THANK YOU VERY MUCH

PART C: INTERVIEW GUIDE (CHECKLIST) FOR FOCUSED GROUP DISCUSSION (FGD)

Check list for Selected Community Leaders in study areas

A. Background

Location/Village/Sub-village …………………………………

Position…………………………………

Date of interview ………………………………

Name of interviewer …………………………………

Village leaders name ………………………………......................................

Gender of the leader

Circle the right answer

Type of leadership

      1=. Religious leader

      2=. Traditional leader

      3=. Government leader

B: Community leaders' opinion

1. What is your opinion concerning general performance of the health facility for pregnant mothers in this area...

2. Mention risk factors, which can be prevented by community itself in order to rescue the life of mother and newborn.

      1= Male involvement

      2=Community participation

      3. = Others specify……………………..

3. What about number of staff at health facility in correlation to work load available

      1=. Enough

2. = Not enough

      3= others specify …………………………………

4 Explain the relationship between health staff and community leaders in broad sense in terms of sustainability and accessibility of maternal health service care.

5. What should be done in order to improve maternal health service delivery?

1=. Cooperation

2. = Tender loving care

3. =Others specify ……………………

6. What are your task(s) in this health facility as community leader?

1. = Educate community on health matters

2. =. Educate male as an equal partner

3. = Others specify………………………………..

7. Do you think that there is any relationship between midwives and tradition birth attendants?

1=. Yes   2 = No

8. If Yes why………………………………………………………

9. What are the perceptions of the community in general concerning maternal death in this area?

1=.Ritual 2=God plan 3=others (specify)……………………………………………………

10. Have you heard about maternal mortality?

1 = Yes   2 = No

11. Mention the effects of maternal mortality at household level

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

12. What are the challenges do you face to assist in maternal health care

…………………………………………………………………………………………

…………………………………………………………………………………………

THANK YOU VERY MUCH

Appendix 2: Distribution of essential drugs at health cascades

Health cascade and dispensaries	Prophylaxis drugs during Antenatal (Tin=1000Tablet1(2)s)		Essential drugs during delivery (Carton = 12 Items)					
	Mebendazole Tablets	Fefo (Folic/Ferrous)	Malaria tablets	Parenteral antibiotics	Parenteral 0xytocine	Parenteral anticonvulsant	Infusion (drips)	Lignocane
Mgeta Cascade	1(4)	1(4)	1(3)	4(8)	4(8)	3(6)	4 (6)	3(5)
DispensariesMgeta mission	1(2)	1(2)	1(2)	2(4)	2(6)	2(3)	2(3)	2(4)
Bunduki	1(2)	1(2)	1(2)	2(4)	2(6)	2(3)	2(3)	2(4)
Nyandira	1(2)	1(2)	1(2)	2(4)	2(6)	2(3)	2(3)	2(4)
Tchezema	1(2)	1(2)	1(2)	2(4)	2(6)	2(3)	2(3)	2(4)
Kibuko	1(2)	1(2)	1(2)	2(4)	2(6)	2(3)	2(3)	2(4)
Sub total	6	6	6	14	14	13	14	13
Melela Cascade	1(4)	1(4)	1(3)	4(8)	4(8)	3(6)	4 (6)	3(5)
DispensariesMangae	1(2)	1(2)	1(2)	2(4)	2(6)	2(3)	2(3)	2(4)
Doma	1(2)	1(2)	1(2)	2(4)	2(6)	2(3)	2(3)	2(4)
Sub total	3	3	3	8	8	7	8	7
Grand total	9	9	9	22	22	20	22	20

Number(s) in parenthesis are presenting the total amount required by standards Guidelines for health facilities level in Tanzania (TDHS, 2005)

Appendix 3: Distribution of insufficiency essential equipments at health facilities

Health cascades and Dispensaries	Delivery bed	Fetal scope	Observation set	Oxygen apparatus	Suction machine	Solar power	Microscope	Ambulance	Public Clock
Mgeta cascade	1(2)	1(2)	1(2)	0(1)	0(2)	1(1)	1(2)	1(1)	0(2)
Dispensaries	1	1	1	0	0	0	0	0	0
Mgeta misson									
Bunduki	1	1	1	0	0	0	0	0	0
Nyandira	1	1	1	0	0	0	0	0	0
Tchezema	1	1	1	0	0	0	0	0	0
Kibuko	1	1	1	0	0	0	0	0	0
Sub total	6	6	6	0	0	0	1	1	0
Melela	1	1	1	0	0	1	1	1	0
cascade									
Dispensaries	1	1	1	0	0	0	0	0	0
Mangae									
Doma	1	1	1	0	0	0	0	0	0
Sub total	3	3	3	0	0	1	1	1	0
Grand total	9	9	9	0	0	2	2	2	0

Number(s) in parenthesis are presenting the total number required by standards guidelines for health facilities level in Tanzania.

Appendix 4: Number of staff by Region as was in Year 2001

Category	Dodoma	Arusha	K'Njaro	Tanga	Morogoro	Coast	DSM	Lindi	Mtwara	Ruvuma	Iringa	Mbeya	Singida	Tabora	Rukwa	Kigoma	Shinga	Kagera	Mwanza	Mara	Total
Medical Doctors	9	36	23	18	17	0	28	11	12	9	14	6	10	8	2	10	6	16	17	6	258
Specialist Doctors	1	18	10	12	7	0	12	0	3	4	5	4	3	1	0	3	1	0	11	2	97
Denatal Surgeon	0	1	3	1	1	0	8	1	1	2	1	0	0	1	0	0	1	1	2	1	25
Specialist Denatal Surgeon	1	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	4
Pharmacists	2	5	4	3	0	0	8	1	1	1	2	1	1	0	0	2	2	1	7	1	42
Chemists	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	6
Asst Dental Officer	2	25	3	6	6	0	6	1	2	3	3	8	2	4	0	2	0	27	7	5	112
Dental Assistant	3	10	8	5	3	0	9	1	2	2	2	2	2	1	0	2	5	25	12	1	95
Assitv Medical Officer	22	49	57	51	29	0	41	19	20	21	34	15	16	27	10	21	22	17	35	14	521
Medical Assistant	139	208	297	205	130	0	196	86	81	123	113	129	91	115	56	99	175	121	212	139	2716
Rural Medical Aids	119	155	194	236	132	0	85	94	94	129	163	168	92	98	102	106	118	43	208	97	2431
Nursing Officers	70	147	207	148	122	0	116	56	104	82	94	55	44	70	28	46	53	93	150	70	1,765
Public nurse	211	474	610	374	257	0	243	147	228	391	184	146	323	250	76	192	148	419	407	198	5288
Nurse Tutors	4	36	8	15	0	0	2	2	13	3	8	0	6	4	0	1	2	6	5	9	124
MCH Aides	137	181	258	300	158	0	244	114	135	146	156	199	103	146	62	102	67	117	159	105	2,889
Medical Laboratory Technicians	5	16	15	5	8	0	7	2	5	12	10	25	9	4	3	9	7	9	44	4	199
Radio graphers	1	8	1	13	6	0	4	1	1	2	3	1	6	2	0	2	1	1	6	2	61
Dental Technicians	0	4	1	12	1	0	1	0	0	2	1	0	0	0	0	0	3	0	2	1	28

Source: Health Statistical Abstract, 2002

Category	Dodoma	Arusha	K'Njaro	Tanga	Morogoro	Coast	DSM	Lindi	Mtwara	Ruvuma	Iringa	Mbeya	Singida	Tabora	Rukwa	Kigoma	Shinga	Kagera	Mwanza	Mara	Total
Optometry Technicians	1	3	3	0	2	0	3	1	3	2	3	1	0	1	0	1	2	0	1	1	28
Orthopedic Technicians	0	0	0	0	1	0	0	0	1	1	0	0	0	0	1	0	1	0	0	1	6
Physiotherapists	0	4	1	2	2	0	0	0	1	3	1	0	2	1	0	1	1	0	1	0	20
Chemical Laboratory Technicians	0	3	0	1	4	0	1	0	1	4	0	0	0	0	0	0	0	0	2	0	16
Health Officers	37	40	33	37	36	0	56	24	21	5	36	46	25	36	18	40	34	17	82	35	658
Medical Recorder Officer s	1	28	10	6	12	0	36	3	0	2	3	10	6	1	4	0	1	2	11	2	138
Pharmaceutical Technicians	2	9	9	3	5	0	7	2	3	5	1	6	7	3	2	4	7	0	11	5	91
Launderers	5	11	15	22	22	0	1	18	35	15	21	8	14	11	19	13	0	13	35	38	316
Catering Officers	0	3	0	0	0	0	2	0	0	4	0	1	0	0	0	0	0	1	1	0	12
Health Secretaries	1	3	9	4	2	0	7	0	2	3	2	4	1	1	2	3	2	5	7	2	60
Mortuary Attendants	1	8	13	7	15	0	5	5	4	5	3	5	4	15	0	2	3	8	16	7	126
Medical Attendants	495	1018	1121	1642	752	0	286	354	692	730	366	664	567	654	427	659	957	611	1271	548	13814
All Others	203	274	270	348	240	0	220	51	122	243	37	149	222	184	147	183	121	171	256	363	3804
Total Staff	1472	2778	3183	3479	1971	0	1634	992	1587	1954	1266	1633	1557	1649	959	1503	1740	1727	2999	1657	35750

Source: Health Statistical Abstract, 2002

Appendix 5: Distribution of dispensaries and total health facilities to region owners' year 2004/05

Region	Dispensaries					All Health facilities				
	Gvt	Vol	Prr	Pvt	Total	Gvt	Vol	Par	Pvt	Total
Dodoma	185	28	12	15	240	208	32	12	16	268
Manyara	75	36	1	11	123	83	45	1	11	140
Arusha	89	60	7	40	196	108	72	10	47	237
K'njaro	149	63	7	113	332	175	76	9	122	382
Tanga	186	23	0	22	231	209	34	0	25	268
Morogoro	159	49	13	28	249	185	58	17	32	292
Coast	128	28	10	16	182	148	30	11	17	206
Dar es Salaam	71	28	11	230	340	80	38	15	258	390
Lindi	135	6	7	6	154	153	10	8	7	178
Mtwara	128	12	1	11	152	144	15	1	11	170
Ruvuma	127	31	3	13	174	138	39	3	13	193
Iringa	190	70	5	17	282	214	90	6	21	331
Singida	89	38	0	8	135	103	46	0	9	158
Mbeya	227	40	7	33	307	253	55	7	36	351
Tabora	156	22	2	27	207	172	27	2	28	229
Rukwa	156	11	0	17	184	178	29	0	17	215
Kigoma	164	17	7	8	196	180	23	8	8	219
Shinyanga	108	52	23	33	216	136	55	24	35	250
Kagera	142	99	4	10	255	161	120	4	13	298
Mwanza	243	25	16	52	336	281	34	16	57	388
Mara	131	25	9	23	188	147	33	9	26	215
Total	3038	763	145	733	4679	3456	952	163	809	5379

Source: Health Statistical Abstract, 2006.

Gvt = Government, Vol = Voluntary Agencies, Par = Parastatal, Private Health Facilities