An Evaluation of the success stories of low-income countries that met Millennium Development Goal 5 target; lessons learnt.

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An evaluation of the success stories of low-income countries that met Millennium Development Goal 5 target; lessons learnt.

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DEDICATION

To my beloved daughter Annabelle Laura Kisakye Tendo, You are the love of my life

ABSTRACT

Introduction

Maternal mortality is a challenge across the world especially in low-income countries and over time, countries all over the world have been making efforts to improve maternal health services with the aim of reducing maternal mortality. Maternal health has thus been an agenda item on all global development programs beginning with the UN Millennium development goals (MDGs) in the year 2000 and most recently the UN Sustainable Development Goals SDGs) agenda. At the end of the MDG era, not many low-income countries had achieved the health related goals, particularly MDG 5 of reducing the MMR by 75% yet these countries contribute the most to the high global MMR. However, there were a few low-income countries like Rwanda, Eritrea, Ethiopia, Bangladesh and Cambodia that made commendable progress in reducing their country specific MMR. This study was thus to evaluate the strategies these low-income countries that met the MDG 5 target used and the lessons other low-income countries can learn from them.

Objectives

The main purpose of this study was to evaluate the strategies used by low-income countries that met the MDG 5 target and the lessons that can be learnt from them to help the low-income countries that did not meet the target to make the necessary changes to propel them towards the achievement of maternal health related SDG target.

Methodology

The methodology adopted for the research was a combination of systematic literature review and scoping of studies guided by the knowledge-to-action conceptual framework.

Results

The interventions applied by low-income countries that met the MDG 5 target were not unique in nature from those used across other low-income countries. However, the focus was placed on optimum use of the few available resources through providing overall leadership during implementation and leveraging resources for effectiveness. They also focused on investments in other sectors like education, environmental protection, infrastructure (roads specifically) and improving household incomes that indirectly contribute to a reduction of MMR through improved livelihoods and promotion of health seeking behaviour of the population. This is hence a key lesson for low-income countries that did not meet the MDG 5 target moving towards the implementation of the maternal health SDGs.

Recommendations

Low-income countries that did not meet the MDG 5 target need to focus on learning from past experiences the strategies that work, the barriers in their local context and ways of adopting and sustaining maternal health interventions that work. Some of the strategies that can be adopted by low-income countries include: prioritization, leveraging and efficient use of the limited resources (finance and human resource) and putting in place strong policies to guide the implementation of maternal health programs. Low-income countries also need to investment in other sectors like education, infrastructure development and economic empowerment of families to increase access to maternal health care and the age at which women begin giving birth which are key in reducing maternal deaths.

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And finally a big thank you to my beautiful mum, thank you for taking care of my daughter while I studied. And to my entire family, thank you for the encouragement.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

ADB:	African Development Bank
AHPSR:	The Alliance for Health Policy and Systems Research
AU:	African Union
BTC:	Belgian Technical Cooperation
CHEW:	Community Health Extension Worker
CHW:	Community Health Worker
EmOC:	Emergency Obstetric Care
HMIS:	Health Management Information System
LDC:	Least Developed Country
LIC:	Low-income Country
MDG:	Millennium Development Goal
MMR:	Maternal Mortality Ratio
RMNCH:	Reproductive Maternal Neonatal and Child Health
SDG:	Sustainable Development Goal
UDHS:	Uganda Demographic and Health Survey
UN:	United Nations
UNECA:	United Nations Economic Commission for Africa
UNICEF:	United Nations International Children's Emergency Fund
UNDP:	United Nations Development Fund
UNFPA:	United Nations Population Fund
USAID:	United States Agency for International Development

VHT: Village Health Team

WB: World Bank

WHO: World Health Organization

DEFINITION OF KEY TERMS

Maternal Health: according to the World Health Origination (2016), maternal health is the health of women during pregnancy, childbirth and the postpartum period.

Maternal death: is the death of a woman while pregnant or within 42 days of terminating the pregnancy, irrespective of the duration and site of the pregnancy due to pregnancy related causes or causes aggravated by the pregnancy or its management but not accidental or incidental causes (WHO, 2014).

Maternal mortality ratio: is the annual number of maternal deaths per 100,000 live births (WHO, 2014).

Millennium Development Goals: According to the WHO, these were the eight international development goals for the year 2915 that had been established following the UN Millennium Development Summit in 200 following the adoption of the United Nations Millennium Declaration

Millennium Development Goal 5: this goal was to improving maternal health

Millennium Development Goal 5 target: MDG 5 had two targets; (a) to reduce the maternal mortality ratio by 75% and (b) to achieve universal access to reproductive health by the year 2015.

Least Developed Countries; According to the UN, these are low-income countries confronting severe structural impediments to sustainable development. They are highly vulnerable to economic and environmental checks and have low levels of Human Assets

Low-income country: According to World Bank, this is a country (economy) with a Gross National Income (GNI) of $1,005 or less

Eligibility of articles: the basis for inclusion of studies in the research

Systematic review: an appraisal and synthesis of primary research papers using a rigorous and clearly documented methodology in both the search strategy and study selection process (Higgins and Green, 2011)

CHAPTER 1
INTRODUCTION

1.1 Introduction

At the beginning of the 21st century, at the Millennium Summit held in September in the year 2000, World leaders under their umbrella body, the United Nations adopted the UN Millennium declaration called the Millennium Development Goals (MDGs) (The UN Millenium Project, 2006) to drive global development in key strategic areas including health, women empowerment and education.

The MDGs were eight in total with millennium development goal 5 focusing on improving maternal health by reducing the number of maternal deaths and achieving universal access to reproductive health by the year 2015. MDG 5 was important because it formed the basis for the reducing maternal deaths in Sub-Saharan Africa (Kyei-Nimakoh, Carolan-Olah and McCann, 2016).

By the end of the MDG implementation period in 2015, the global Maternal Mortality Ratio had reduced from 385 deaths per 100,000 live births to 216 deaths per 100,00 live births but the targets for MDG 5 were not met by most countries in the Sub-Saharan region and southern Asia where maternal mortality continues to be high (Kyei-Nimakoh, Carolan-Olah and McCann, 2016). The failure to achieve MDG 5 target in most countries was mainly due to limited number of skilled personnel, poor infrastructure, problems in tracking maternal deaths, lack of / poor community based health services. However there are countries that made commendable progress towards MDG 5 target with some achieving the set target.

This research work presents an evaluation of the lessons learnt from the implementation of MDG 5 in low-income countries that met the target (a) of reducing maternal mortality by 75%

by the year 2015. The study focuses on the key interventions in maternal health that helped these low-income countries to archive success to draw areas of learning for other low-income countries that did not meet the MDG target so they can make progress in achieving the SDG target of reducing the maternal mortality ratio to less than 70 per 100,000 live births.

The guiding conceptual framework for the research is the knowledge-to-action framework developed by Grahams (2006) which provides a process of learning from past experience, through research, to enhance future implementation. In the Grahams knowledge- to –action framework, the emphasis is on translating the best available evidence into actual health interventions in a timely way in order to deliver sustainable evidence-based interventions resulting into effective care and service (Field, Booth, Ilott and Gerrish, 2014).

The research work is composed of six chapters: after this introductory chapter, which gives a general overview of the research plus the research objectives, the next chapter is the background, which reviews the concept of maternal health and maternal mortality in particular and gives the justification for this study. Chapter three is the methodology that is used in conducting the systematic review and scoping of studies followed by chapter four which presents the discussion of results of the individual reports/articles included in the study and chapter five presents the discussion of the findings on lessons learnt from the implementation of MDG 5. The research work concludes with recommendations for low-income countries that did not achieve MDG 5 that can be adopted for successful implementation of the SDGs.

1.2 Background to the study

Maternal mortality is a global challenge and its reduction has been a global health priority for a long time and an item on many global agendas including the UN Millennium Development Goals, the Global Strategy for Women's and Children's Health (Say et al., 2014) and most recently the UN Sustainable Development Goals. According to the World Health

Organization, approximately 830 women die every day due to preventable pregnancy related causes and child birth and 99% of these deaths occur in developing (low-income) countries (WHO, 2016).

Improving maternal health was one of the eight millennium development goals and the target was to reduce the Maternal Mortality Ratio (MMR) worldwide by 75%. Between 1990 and 2015, the number of Maternal Deaths was reduced by 45% across the world (WHO, 2016). This progress motivated countries around the world to continue reducing the maternal mortality with a new target under the Sustainable Development Goals of reducing the Maternal mortality Ratio to less than 70 per 100,000 live births by the year 2030 (WHO, 2016)

During the MDG implementation period, there were 75 count down to 2015 countries (mostly from Sub Saharan Africa and Southern Asia) that were accounting for more that 95% of maternal and child mortality in the world and Uganda was inclusive. By the year 2014, only 20 of these countries were on track to achieve MDG 5 (a) target and of these only 6 were from the Sub Saharan Region (Cohen et al., 2014a). 80% low-income African Countries (including Uganda) were off-track for MDG 5a and 12% were on track despite the recorded progress (Cohen et al., 2014a). However several countries in Africa, including Uganda, Namibia, Senegal and Nigeria made good progress towards country specific targets of reducing maternal mortality given the various challenges that exist in these countries like limited funding, high HIV prevalence and limited human resources for health. Of the 75 countdown countries, only four countries finally achieved MDG 59a) and MDG 4 (another health MDG of reducing the Under 5 mortality) and there were Cambodia, Rwanda, Nepal and Eritrea (Cesar G et al., 2016).

Uganda with annual MMR reduction rate of 5.1% had a maternal mortality ratio of 343 by the year 2015 and thus did not achieve the MDG 5 (a) target. The purpose of this study is therefore

to find the reasons why some developing countries attained the target while others (with similar conditions) did not.

1.3 Problem statement

Although progress was realized globally in the reduction of maternal deaths, the progress was not uniform across countries and many countries especially low-income countries in the Sub-Saharan region did not make much progress and thus failed to meet the MDG 5(a) target of reducing MMR by 75%. Uganda is an example of a low-income country that did not meet the MDG 5a target despite the various efforts like increasing health worker recruitment, health facility infrastructure development and media campaigns yet some of the countries classified under the same category of "developing countries" like Rwanda, Eritrea, Nepal and Cambodia did meet the target. The question then arises as to what low-income countries that met the MDG 5 target did differently and how other low-countries that did not meet the target can adopt these experiences to their local settings and make improvements in maternal health related targets.

With the new agenda under the SDGs, it is important for low-income countries that did not meet the MDG 5 target to look back at the MDGs and take some lessons from the past experience of those that succeeded to propel them towards achieving the new global target through a process of knowledge creation and adaptation to local context (development of action oriented strategies basing on past experience). This can be achieved by focusing on tailoring of the strategies that worked to the needs of the populations, assessment of the barriers and facilitators to the success of the strategies, the key stakeholders required and their roles in ensuring the desired maternal health outcomes are achieved.

1.4 Research questions

This Study seeks to answer the following questions:

1. What strategies did low-income countries that met the MDG 5a target use to reduce their Maternal Mortality Ratio?
2. What lessons can be learnt from low-income countries that met the MDG 5 target?

A systematic review and scoping of relevant articles/reports form low-income countries that met the MDG 5a target highlighting the strategies/interventions used and the lessons learnt during the implementation of these strategies or the uniqueness in the methods of implementation of these strategies is an appropriate approach in answering these questions moving onto the new agenda.

1.5 Objective of the study

The main objective of the study was to evaluate and document the lessons learnt from the implementation of MDG 5 in low-income countries that met the target that can inform the successful implementation and attainment of the SDG target or reducing MMR to less than 70 per 100,000 live births by the year 2030 in other low-income countries.

The specific objective of this study were:

1. To evaluate strategies used to implement and achieve the MDG 5 target in low-income countries.
2. To document the lessons learnt from the low-income countries that met the MDG 5 target.
3. To assess adaptability of the successful interventions in other low-income countries.
4. To assess the barriers low-income countries will have to over-come to successfully implement the identified interventions.
5. To recommend selected interventions from successful low-income countries for use in other low-income countries.

To achieve this, the study focused on the known causes of maternal mortality and how the interventions of various low-income countries were instituted to overcome or reduce the impact of such causes and related factors given the various limitations / challenges that these countries face. Since the area of maternal health is a widely researched area, the researcher looked out for the uniqueness of interventions or the uniqueness in the mode of implementation of interventions in low-income countries that achieved the MDG 5 target.

1.6 Guiding conceptual framework for the research

The research was guided by the Knowledge-to-action framework developed by Graham and colleagues (Graham et al., 2006). The framework suggests a back to back process of knowledge creation and knowledge application (Straus, Tetroe and Graham, 2011): learning from past experiences (through research) to enhance future implementation. As knowledge acquired moves along the action cycle, it becomes more refined resulting into practical guidelines and practical decision making aids.

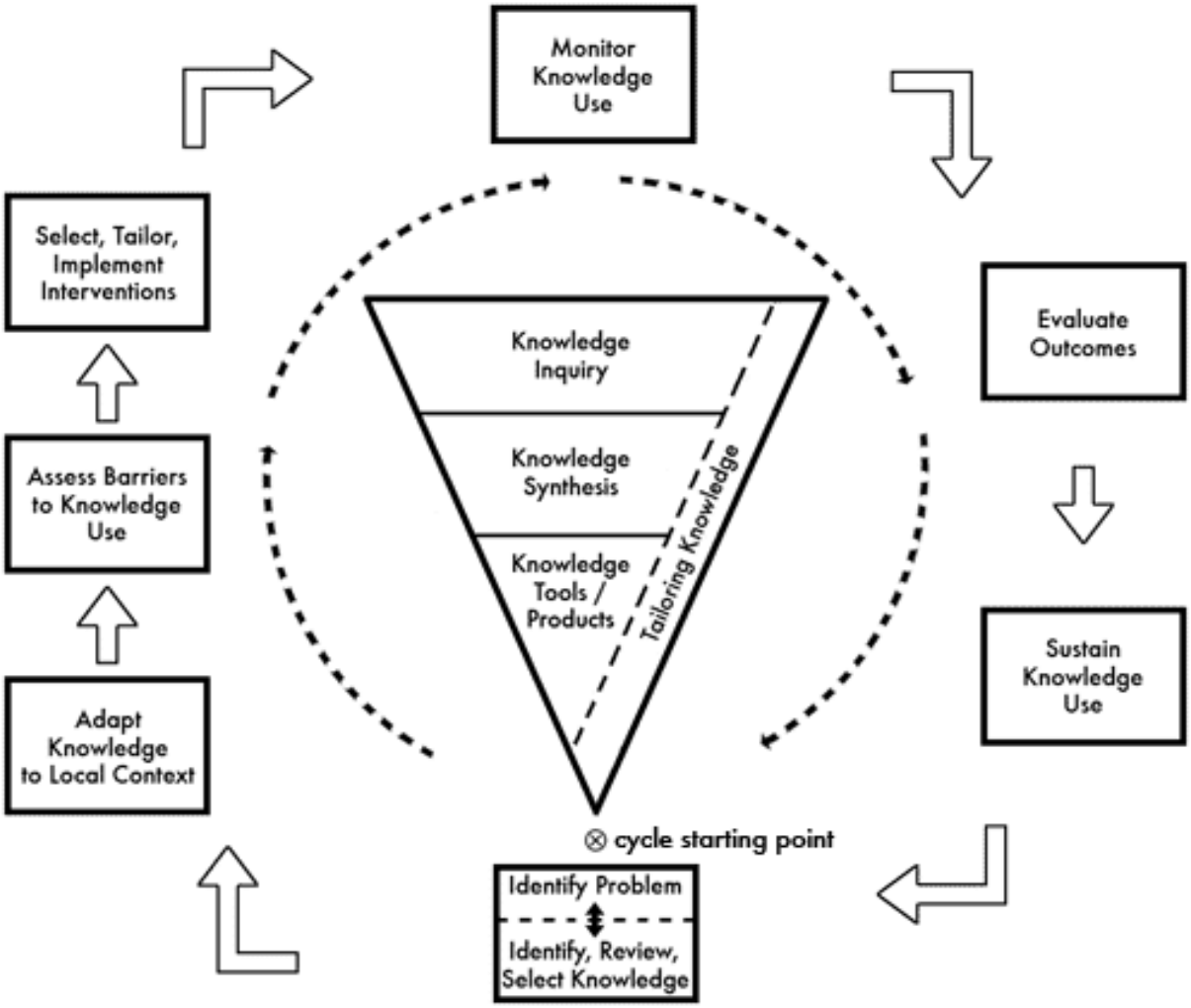

Figure 1: The knowledge-to-action process adapted from (Graham et al., 2006)

Relating to this study, the lessons learnt from the previous implementation of the MDG 5 and the experiences of the countries that have recorded success constituted the knowledge base for low-income countries to refine and adopt for the successful implementation of the SDGs.

1.7 Summary

This chapter provides an overview of the research and highlighted the background and research questions. The next chapter presents a literature review about maternal mortality and its impact on families and economies leading to the justification of this research

CHAPTER 2
BACKGROUND

2.1 Introduction

The premature death of women, regardless of the cause, causes adverse effects to families, communities and the economy at large (Knaul et al., 2016). Being the main caretaker in families, when the woman dies, the children are likely to end up neglected and miss many opportunities like quality education and for girls this may mean early marriage. While world over countries have made significant progress in reducing the number of women dying due to pregnancy and childbirth related complication, many women especially in developing countries are still dying due to preventable causes (Knaul et al., 2016).

2.2 The Millennium Development Goals

The Millennium Development Goals (MDGs) was a global UN agenda developed in the year 2000 as a response to the world's most pressing problems (McArthur, 2014).

The millennium development goals (MDGs) agenda committed the international community to achieve 8 development objectives by the year 2015 (Oldekop et al., 2016). These included: eradication of extreme hunger and poverty, achieving universal primary education, promote gender equality and empower women, reduce child mortality, improve maternal mortality, combat HIV/AIDS, malaria and other diseases, ensure environmental sustainability, develop a global partnership for development (The UN Millenium Project, 2006).

Following a period of focusing on policies aimed at economic empowerment of countries that resulted in limited results, the new development agenda acknowledged the inter dependence of several factors that influence more holistic development and hence the MDGs focused on the

elimination of poverty and deprivation (McArthur, 2014). The MDGs had a life span of 15 years that ended in 2015.

2.3 Maternal mortality

Maternal mortality as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, by any cause related or aggravated by the pregnancy or its management (WHO, 2014) . WHO estimates that 830 women die every day around the world due to pregnancy related causes or childbirth and most of these deaths (99%) occur in developing (low-income) countries (WHO, 2016) .

2.4 Causes of Maternal Mortality

Many maternal deaths across the world are from preventable causes including unsafe abortion, severe bleeding, infections and high blood pressure during pregnancy (pre-eclampsia and eclampsia) and obstructed labor (WHO, 2016)

The risk of maternal mortality is highest for women in developing countries and most especially adolescents under the age of 15 years (WHO, 2016). This is especially because women in the developing countries do not seek the care they need in time and sometimes they completely do not have access to this care due to poverty, lack of information, distance from home to health care facility, cultural practices and inadequate services (WHO, 2016)

2.5 Strategies for reducing maternal mortality

Countries across the world have employed various interventions to control maternal mortality. It is important to note that some of the interventions are too expensive for low-income countries to implement, for example free health care (Bullough et al., 2005) and therefore it is important to develop interventions that are affordable and applicable in the settings of low-income

countries. There are a number of strategies that can be used to reduce maternal mortality some of which are highlighted below.

Multi-sectorial approach: the socio-economic, cultural, political and religious context of the country influence the health of the population (Bullough et al., 2005). Some of the social factors that impact the maternal mortality rate are health seeking behavior, cultural practices (especially those inked to child birth) and decision making (level of authority) in a home. The economic status and education level of women and of the population also has a great impact on their health seeking behavior. Addressing these factors through a multi-sectorial approach will lead to a reduction in the maternal mortality ratio of a country

Promotion of safe motherhood (Bullough et al., 2005) is a broad strategy that encompasses interventions addressing the demand for maternal health services, community mobilization, training of health service providers, service quality improvements, family planning, improved nutrition, skilled attendance to delivery, safe abortion and post abortion care, emergency obstetric care and postnatal services. This strategy focuses mostly on the preventive and curative mechanisms for the causes of maternal mortality.

Information for evidence based decision making. A strong health information system is recommended as a strategy to guide the policy makers on forming appropriate policies regarding maternal health in a country. Strong policies are key in successful implementation of other strategies indented to curb maternal mortality.

Evaluating historical evidence of interventions that have worked in other countries (Bullough et al., 2005): this provides insight into the cost of implementation and expected level of impact and helps the implementers to make an informed decision before moving forward with a particular intervention.

2.6 MDG 5 and its targets

The international community acknowledged that the number of maternal deaths was high especially in developing (low-income) countries and therefore a specific MDG was put in place to improve maternal health

The goal had two targets:

a) To reduce the maternal mortality ratio by 75% between the years 1990 and 2015
b) To achieve universal access to reproductive health by 2015

The indicators used for monitoring target 5 (a) were the Maternal Mortality Ratio and the proportion of births attended to by a skilled health professional. For target 5 (b) the indicators were; contraceptive prevalence rate, adolescent birth rate, antenatal care coverage and unmet need for family planning.

The targets were set basing on the UN Millennium Declaration with the aim of creating a partnership between the developing and developed countries in order to have a conducive environment for development and poverty eradication (UN, 2008).

All the MDGs were interlinked, for example improving health impacts poverty eradication as people have more energy and time to work.

Improving maternal health is key in averting the thousands of lives lost each year due to pregnancy complications and childbirth.

2.7 MDG 5 implementation in low-income countries.

In 2015, developing countries accounted for 99% of all global maternal deaths and the sub-Saharan region alone contributed 66% of the figure (WHO, 2015).

The African continent is home to most of the low-income countries and much progress was made towards reducing maternal mortality on the continent through various partnerships. However, the continent still has the highest maternal deaths in the world and accounts for the 10 countries with the highest maternal mortality ratio in the world (UNDP, 2013).

Africa exhibited great political will to accelerate the achievement of MDG 5 and in 2009 launched a campaign on Accelerate Reduction of maternal mortality. By 2013, 37 countries had adopted the imitative with more planning to take on the initiative (UNDP, 2013). By 2013, Equatorial Guinea had achieved MDG 5 and Eritrea and Egypt were on track to achieve the goal.

The table below shows the progress on MDG 5 of the different African Countries as of 2015 as estimated by WHO, UNFPA, the World Bank and UNICEF (WHO, UNICEF, UNFPA and World Bank Group, 2015)

Table 1: Progress of African Countries in reaching the goal of reducing maternal mortality by 2015 (WHO et al., 2015)

Making Progress		No Progress		Achieved		Insufficient progress	
Country	**%Change in MMR (1990 - 2015)**	**Country**	**%Change in MMR (1990 - 2015)**	**Country**	**%Change in MMR (1990 - 2015)**	**Country**	**%Change in MMR (1990 - 2015)**
Angola	58.9	Algeria	35.2	Cape Verde	83.6	Botswana	46.9
Djibouti	55.7	Benin	29.7	Rwanda	77.7	Burkina Faso	49.0
Egypt	68.9	Cameroon	18.1			Burundi	41.6
Equatorial Guinea	73.9	Central Africa Republic	31.6			Chad	41.0
Eritrea	68.5	Congo	26.7			Comoros	47.2
Ethiopia	71.8	Cote d'Ivoire	13.4			Ghana	49.7
Madagascar	54.6	Democratic Republic of Congo	21.2			Guinea	34.7
Morocco	61.8	Gabon	31.0			Guinea-Bissau	39.5
Mozambique	64.8	The Gambia	31.5			Liberia	51.7
South Sudan	54.4	Kenya	25.8			Mali	41.9
Sudan	58.2	Lesotho	22.5			Niger	36.7
Tunisia	52.7	Malawi	33.8			Senegal	41.7
Uganda	50.1	Mauritania	29.9			Sierra Leone	48.3
Zambia	61.2	Namibia	21.6			Somalia	39.5
		Nigeria	39.7			Togo	35.2
		South Africa	-27.8				
		Swaziland	38.7				
		Zimbabwe	-0.7				

Most of the maternal deaths in Africa are attributed to lack of skilled birth attendants. As of 2013, only 7 countries (out of 52) in Africa reported 90% skilled birth attendance with 9

19 countries having less than 50% skilled birth attendance. WHO indicated that to achieve MDG 5, countries needed at least 80% skilled birth attendance (UNDP, 2013).

Interventions suggested for accelerated progress of MDG 5 in Africa included increasing availability of skilled health providers (to ensure high quality antenatal, delivery, postnatal and emergency obstetric care), increasing access to reproductive health care (including a good referral system between villages and health care units), a strong Health Information System – to aid policy making and availability of essential medicines and equipment.

Some authors like Soe-Lin and colleagues (2014) have indicated that the countries that met the MDG targets took different paths and there is no single combination of interventions that can guarantee success (Soe-lin et al., 2014). It is thus important for low-income countries, especially in Africa, to look back at the MDG path and identify a unique path for the successful implementation of the SDGs.

2.8 World progress on MDG 5

The world made significant effort in achieving the MDGs however, the achievements were not uniform across the world or across goals especially in Africa and less developed countries across the globe. Progress was particularly limited in the areas of maternal mortality reduction, reproductive health and child health (United Nations Department of Social and Economic Affairs, 2015).

The target for MDG 5 of reducing maternal mortality was a 75% (amounting to 96 per 100,000 live births) global reduction in maternal mortality (Hansen and Schellenberg, 2016),. The global MMR estimate for 2015 was 216 per 100,000 live births (indicating only a 45%

reduction). Only a few countries reached the MDG target of a 75% reduction from 1990 showing that the reduction in MMR is a slow process (Hansen and Schellenberg, 2016).

According to the World Bank, maternal deaths dropped by 45% between 1990 and 2013, however much as a lot of progress was made by many countries across the world, not much progress was registered by countries in the sub-Saharan Africa ((The World Bank, 2016). In 2015, high income countries had a MMR of 12 per 100,000 live birth while the Sub-Saharan region had a MMR of 546 deaths per 100,000 live births (Alkema et al., 2015).

Figure 2: Performance of regions on Goal 5 , target (a)

Adopted from the UN MDG monitoring database

In order to achieve the SDG target of reducing the MMR globally to below 70 per 100,000 live births by 2030 (Hansen and Schellenberg, 2016), countries in the Sub-Saharan region will have to reduce their country specific MMRs by 7.5% annually (Alkema et al., 2015) but the question remains as to whether these countries are ready for the challenge.

The Maternal Mortality Ratio figure for Uganda, for example, for the year 2015 stands at 343 deaths per 100,000 live births (The World Bank, 2015). According to WHO (2013) the MMR in Uganda is reducing at an annual rate of 5.1%, which is below the required rate of 7.5% if the country is to achieve the SDG target and the picture is similar in many other low-income countries especially in the Sub-Saharan region.

2.9 Factors that hindered low-income countries from achieving MDG 5 target on MMR

The slow progress of low-income counters and failure to achieve the MDG 5 target can be attributed to a number of factors mainly relating to the availability of funding, the socioeconomic status of the population and accessibility of maternal health care services.

Limited funding: low-income countries did not have sufficient resources in form of funding to implement programmes towards achieving the Millennium Development Goal target on maternal health (Vos, Sanchez and Inoue, 2007). Many low-income countries relied on foreign aid to fiancé maternal health programs yet the flow of this aid in uncertain (Vos, Sanchez and Inoue, 2007).

Limited and inequitably distributed health workforce: low-income countries face a challenge of limited critical cadres for the delivery of maternal health care services and worse still the few available personnel are concentrated in urban centres (Kyei-Nimakoh, Carolan-Olah and McCann, 2016). This makes maternal services (especially skilled birth attendance) inaccessible for the majority of the population in low-income countries.

Poverty: according to the World Bank (2016), the majority of the population in low-income countries survive on less than $1 a day. With limited funds, many women in low-income countries are unable to access maternal health care services given the direct costs (user fees in health facilities) and indirect costs (for example transport) involved.

Poor infrastructure: the poor state of roads in many low-income countries makes emergency response and movement to the health facilities very challenging (Kyei-Nimakoh, Carolan-Olah and McCann, 2016). As a result many women die from maternal related caused due to delays in reaching a health facility or at the hand of unskilled traditional birth attendants.

2.10 The SDGs and Maternal Health

At the end of the implementation period for the MDGs, the United Nations member countries adapted a new agenda for global development named the Sustainable Development Goals (SDGs). In September 2015, the United Nations launched the 15-year Sustainable development goals that are building on the achievements of the Millennium Development Goals (MDGs) with the aim of tackling the root cause of poverty and looks at the broader picture of development and gives every person an equal opportunity to live a decent life (United Nations Department of Social and Economic Affairs, 2015).

The 17 goals under the SDGs cover a wide range of areas including health, environment, economic growth, peace, security and human equality. The goals emphasize the issue of sustainability of interventions at all levels (United Nations Department of Social and Economic Affairs, 2015).

Sustainable development goal 3 aims to ensure healthy lives and promote well-being for all at all ages. It is focusing on many health issues including maternal mortality, sexual and reproductive health services, immunization, control of non-communicable diseases, healthy living, control of pollution and use of tobacco and control of road accidents.

Target 3.1 under SDG 3 aims to ensure a reduction in maternal mortality to less than 70 per 100,000 live births by the year 2030 (United Nations Department of Social and Economic

Affairs, 2015). The indicators to be used to monitor this target are Maternal Mortality Ratio and Proportion of births attended by skilled health professional.

If low-income countries like are to achieve this target, they have to reduce the country specific MMRs by 7.5% annually (Alkema et al., 2015). The aim of this study was therefore to identify lessons from the implementation of the MDGs that can help low-income countries to achieve this SDG target.

2.11 Justification of this Study

Despite the progress realized globally in the reduction of maternal mortality, many countries especially low-income (developing) countries in the Sub-Saharan region did not make much progress. With the new global agenda under the SDGs, it is important for countries to look back at the MDGs and take some lessons from the past experience to propel them towards achieving the new global target.

The lessons learnt from the previous implementation of the MDG 5 and the experiences of low-income countries that recorded success will constitute the knowledge base for other low-income countries to refine and adopt for the successful implementation of the SDGs basing on the back to back process of knowledge creation and knowledge applications as suggested by Graham (2011).

Many studies have been carried out in the area of Maternal Mortality including the causes and how they can be overcome. There are many reports produced on the performance of countries on the MDGs and why some countries especially low-income countries failed to achieve the targets. However, not much effort has been put into translating these reports, recommendations and lessons into practice to help the poor performing countries realize improvement. This argument is supported by Graham, et al (2006) who noted that not much scientific research

results into practical implementation and this may be one of the reasons why low-income countries keeps tackling the problem of Maternal mortality for years without making any remarkable improvement towards achieving the global goals.

This review therefore sought to translate the lessons learnt from across the globe into workable implementation guidelines for low-income countries towards the achievement of the SDG target on MMR.

2.12 Scope of the Study

The review focused on low-income countries that met the target for Millennium Development Goal 5 and low-income countries that were on track (UN MDG fast track countries) to achieve the target by the year 2013 with the intent to drawing lessons for other low-income countries.

The UN categorized countries for purposes of monitoring the MDG progress as Developed Countries, Developing Countries and Least Developed countries. However, there was no clear boundary between the Developing countries and Least Developed Countries (All LDCs appear on the developing country section although some developing countries are not in the LDC category). This categorization was matched to the World Bank categorization of Economies which is High Income, Lower Middle Income, Upper Middle Income and Low-income.

For this study, the country to be considered had to be a Low-income status on the World bank list as of the year 2011 and also be a Least Developed Country/Developing Country on the UN Grouping which were set in 2011 *(See Appendix 1).*

The Countries that qualified for the review hence were Afghanistan, Bangladesh, Cambodia, Eritrea, Ethiopia, Mozambique, Myanmar, Nepal and Rwanda

2.13 The PRISMA guide to Systematic review

The Literature discussed in this chapter is in the form of literature review guided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta Analyses) protocol guide. The PRISMA table guiding the data extraction and comparison is presented in Appendix 2.

2.14 Summary

Many low-income countries did not meet the MDG target of reducing the maternal mortality ratio by 75% by the year 2015 and the countries now faces a new global target under the SDGs of reducing the MMR to less than 70 deaths per 100,000 live births. However, there are low-income countries like Nepal, Rwanda, Cambodia, Eritrea and Bangladesh that met the MDG target.

The leading causes of maternal mortality in low-income countries are to a great extent similar. For example in Uganda, as highlighted in the Health Sector Performance report of 2014/2015 (MOH, 2015), the main causes of maternal death are obstetric haemorrhage, obstructed labour and uterine rapture, pre-eclampsia and eclampsia, postpartum sepsis and complications of unsafe abortion among others. These are very similar to the causes that countries like Rwanda, Nepal and Bangladesh had to address in order to reduce the maternal mortality to the point of achieving the MDG target.

The question therefore is what lessons can other low-income countries learn from these countries to in order to achieve the SDG target and what policy changes need to be made in the health sector and in the country as a whole to ensure successful implementations of the identified strategies.

CHAPTER 3
METHODS

3.1 Introduction

The methodology employed in this research is a combination of the systematic literature review and scoping of studies. The research process began with the development of a systematic literature review protocol which was guided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta Analyses) protocol guide. This is an evidence based minimum set of items for reporting in systematic reviews and meta analyses and is very useful in reporting evaluations of interventions.

3.2 Background information about Systematic reviews

Systematic reviews are important in summarizing evidence accurately and help health practitioners to keep information up to date and provide evidence for policy formulation and implementation regarding health care behaviours and interventions (Liberati et al., 2009).

The systematic review theoretical framework is a powerful methodology that has been adopted by researchers in the health field to put into context the various findings of different studies about the same subject area especially because it guides decision-making and policy formulation.

3.2.1 Characteristics of a systematic review

The characteristics of a systematic review include clearly stated objectives with a clear inclusion criterion for studies, a clear methodology, a systematic search that attempts to identify all studies that would be eligible, a systematic presentation and synthesis of the characteristics and findings of the included studies.

Systematic reviews are therefore researches in their own right and are used to address much broader research questions compared to empirical researches.

3.2.2 Importance of Systematic Reviews

Many studies have been conducted in the health care field, systematic reviews help researchers to put all this information generated together, analyse it and generate information that is useful for policy maker (Mallett, Hagen-Zanker, Slater and Duvendack, 2012).

Unlike traditional literature reviews, systematic reviews eliminate the researcher bias as they employ clearly predefined inclusion and exclusion criteria, search strategy and data synthesis processes. This results in improved research quality and produces dependable findings and recommendations. This methodology also allows other researchers to update the information at a later date and add new knowledge.

3.2.3 The Systematic Review Protocol

The systematic review protocol specifies the objective s and methods of the systematic review. The protocol defines the outcomes of interest and how the reviewer is to search and extract information about these outcomes. It helps to eliminate bias resulting from selective reporting. Protocol registration before the actual review is important as it helps to reduce the risk of multiple reviews about the same topic and provides transparency while updating the systematic review.

3.2.4 Reliability and Validity

Systematic reviews are mainly qualitative researches and thus for this kind of research validity refers to the quality/rigor/trustworthiness of the research and reliability refers to the dependability of the research (Abbaszadeh and Abbaszadeh, 2016). Reliability and validity are important aspects of all research and must be addressed because they are a measure of the level of acceptance of the research results by other researchers (Brink, 1993) .

Reviewers have to always be mindful of the possible risks to the reliability and validity of the review results which may include researcher bias (especially in qualitative studies), methods of data collection and analysis and the setting or social context of the research (Brink, 1993). Addressing these risks during the review will ensure quality results that can be applied by the intended users and also guide further research on the topic (information update)

3.2.5 Critical Appraisal

Critical appraisal is the process of carefully and systematically examining research to decide its trustworthiness and its value and relevance (Burls, 2009) to the review. Studies are often subject to bias and the process of critical appraisal helps to minimize this bias in the review.

There are a set of questions that guide the critical appraisal of a systematic review as indicated below:

Table 2: Systematic review critical appraisal checklist

General Systematic Review quality criteria			
	Yes	No	Not clear
Is the review questions clearly and explicitly stated?			
Were the inclusion criteria appropriate for the review question?			
Was the search strategy appropriate?			
Were the sources and resources used to search for studies adequate?			
Were the criteria for appraising studies appropriate?			
Was critical appraisal conducted by two or more reviewers independently?			
Were there methods to minimize errors in data extraction			
Were the methods used to combine studies appropriate?			
Was the likelihood of publication bias assessed?			
Were recommendations for policy and/or practice supported by the reported data?			
Were the specific directives for new research appropriate?			
Overall appraisal Include ☐ Exclude ☐ Seek more information ☐			

Adapted from the Joanna Briggs Institute (2014)

3.2.6 Data collection and analysis

The reviewer describes the kind of data required for the review and the sources of this data (Higgins and Green, 2011). It is also important to describes the method of data extraction from the reports and the process of confirming data from the included studies (Liberati et al., 2009). This includes the data extraction forms the reviewer used and how the information was handled to eliminate bias and where additional information was required, the steps taken to obtain the extra information.

Data extracted from included studies may require analysis before it is presented in the final review write-up (Liberati et al., 2009) and so reviewers have to report any processes undertaken to analyse this data and the resulting effect on the original data.

3.2.7 Meta-synthesis Versus Meta-Analysis

Meta-analysis is quantitative formal epidemiological study design used to systematically assess previous research studies to derive conclusions about the body of research (Haidich, 2010) while meta- synthesis attempts to integrate results from a number of different but interrelated qualitative studies (Walsh and Downe, 2005).

Meta-synthesis increases researchers' understanding of the contextual dimensions of health care problems since the method is interpretive rather than aggregating information as in meta-analysis for quantitative studies (Walsh and Downe, 2005). It is therefore important for reviewers to decide at the beginning of the study the approach to be taken given the type of data (qualitative or quantitative) the review will be taking into consideration. In this review, the researcher used meta-synthesis focusing on qualitative data.

3.3 Background Information about Scoping studies

Most of the reports/papers about the MDGs have been authored by organisations like the World Health Organisation, The World Bank, Individual Country Agencies and The United Nations.

As such these reports have not been peer-reviewed or published in peer-reviewed journals. To broaden the chances of finding the required literature for the research, the researcher also employed the scoping technique in combination with the systematic review to find additional relevant reports/papers.

Scoping allows the synthesis and analysis of a wide range of research and non-research materials regarding a given topic of study (Levac, Colquhoun and O'Brien, 2010). Scoping studies is guided by a six-staged framework:

Table 3 Stages of scoping studies (Levac, Colquhoun and O'Brien, 2010)

Stage	**Description**
1. Identifying the research question	The research question guides the decision for the inclusion criteria of studies and the search strategy to be used
2. Identifying relevant studies	This stage involves definition of the inclusion criteria, the search strategy, defining the places where to search for the studies/papers, time and resources required.
3. Study selection	Following the inclusion and exclusion criteria, studies are selected using the given search criteria for inclusion in the research
4. Chatting data	A form is developed and used to extract data/information from the selected studies.
5. Collating, summarising and reporting results	This stage involves synthesising the results of the selected studies and presentation of results
6. Consultation	This stage is optional. It involves the consumers of the research information providing guidance for further reference and improvement of the study

3.4 Protocol registration

Using the Systematic Review methodology requires the development of a systematic review protocol before the actual review begins.

The review was primarily meant for academic purposes. The protocol was filed with the school of postgraduate studies of Uganda Martyrs University.

3.5 Inclusion criteria

Publications / Reports were selected basing on the following inclusion criteria:

3.5.1 Setting:

The setting for the review was in low-income countries that met MDG 5 (a) target or were on track to achieve the target by the year 2013 (on the list of UN fast track countries)

Types of publication/ reports

All studies and publications considered for the review had a strong focus on maternal health and specifically interventions towards the reduction of maternal mortality (MDG 5). The types of studies and papers included in the review had specific focus on maternal health in developing countries and implementation of MDG 5 in low-income countries plus all areas relevant to the public health and health policy in the area of Maternal Health in relation to MDG 5.

The words developing country and low-income country are used synonymously in this review. According to the world Bank, low-income countries (developing countries) are defined as countries with Gross Domestic Product (GDP) per capita of $1,045 or less (World Bank, 2015).. This definition is applied to all countries referenced in this review under this category.

3.5.2 Language:

Only articles / reports written in the English language were considered for inclusion in the review because of the lack of ability to translate.

3.5.3 Timing:

Only papers published between the year 2005 and 2016 were selected for inclusion in the review because this is the time when country progress was being measured to show

whether they were on target or not and towards end of 2015 and early 2016 the final evaluation reports were produced.

3.5.4 Types of Interventions

The review explored interventions targeted towards meeting MDG 5a in low-income countries. These interventions were restricted to those commissioned or scaled up during the MDG implementation period with proof of impact on the final outcome of the target performance.

Studies about policy change and policy implementation were also included to guide the actualization of lessons learnt from the MDG experience towards achieving the SDG target.

These included published Health research studies commissioned by government and implementing partners (donor agencies, non-government organizations), research undertaken by individuals or organizations and published in recognized journals and other published works relating to the topic of study.

One of the aims of the review is to develop workable recommendations that can translate into policy or projects targeting the reduction of MMR in low-income countries. With the aid of Graham's Knowledge-to-action model, the review included interventions that reflect this approach to provide a benchmark especially from countries that have successfully reduced their MMR.

This process included problem identification, evidence review (including literature), evidence adaptation or development of an innovation to facilitate the use of the evidence, assessment of barriers to use of the knowledge at hand, selection of workable interventions and tailoring for use in situation at hand, implementation, evaluation plan, impact evaluation, decision to maintain, change or sustain ongoing implementation plan (using lessons learnt to inform decision making and policy review) and dissemination of results (Graham et al., 2006).

3.6 Exclusion Criteria

Publication/reports with the following characteristics were not included in the review:

1. Low-income countries that did not meet the MDG 5 (a) target and were not on the UN list of fast track countries by the year 2013.
2. Papers focusing on MDG successes in Developed countries and Middle income countries
3. Papers published before the year 2005 and after 2016 because this was the time when country progress was being measured to show whether they were on track to achieve the specific MDGs or not.
4. Papers written in other languages other than English because the reviewers had no knowledge of other languages and no funding for translation services.
5. Papers not highlighting the direct link between the intervention and the MDG 5a outcome

3.7 Information Sources

The materials used in this review include both printed and online sources. The review also included published peer reviewed papers

The following electronic databases were searched using the strategy detailed in the follow-on section for relevant reports and articles;

PubMed	The Lancet
PopLine	Google Scholar
ProQuest	World Health Organization, United Nations, UNICEF, UNDP and the World Bank databases
EBSCO	
BioMed	Journal of Applied Sociology
The BMJ	Uganda Ministry of Health Knowledge Management Portal

JSTOR

Other strategies for finding relevant information included evaluation of reference lists from relevant studies / reports

3.8 Search strategy

The review focused on finding reports/articles about the MDG implementation strategies and successes in low-income countries. No date, study design or language limits were imposed on the search although only articles / studies written in English and between the year 2005 to 2016 were later considered for inclusion in the review.

The following search terms were used for PubMed (and adopted for other databases); Low-income Country, Least Developed Country, Developing Country, "Country Name" e.g. Rwanda, Millennium Development Goals, MDG Implementation progress, Barriers to achieving MDGS, Maternal mortality reduction Strategies, met MDG 5, MDG 5 implementation strategies, MDG Implementation, Successful Strategies, Lessons learnt

The search terms were combined using various Boolean operators like AND, OR, WITHOUT

3.9 Study Records

3.9.1 Data management

The review consisted of reports / articles on MDG implementation in low-income countries / Least Developed Countries.

A simple word report format was used to extract information about the study design, the geographical coverage, the interventions and outcomes (strategies for achieving MDG 5), quality, and the relevant lessons on MDG 5 implementation.

3.9.2 Selection process

The reviewer selected the articles/papers for inclusion in the review in a two phased process.

All papers / articles were reviewed first on the basis of topic and abstract for indication of relevance to the review. The reviewer based on the content of the topic and abstract to include or exclude papers /articles in this phase. Where the title and abstract were not clear (did not provide sufficient information for the reviewer to make a decision), the reviewer obtained the full text for clarity

In the second phase, the reviewer considered the articles/papers identified as relevant from phase one and focused on the contents of the full text/papers and came up with the final list of studies to be included in the review.

The process was documented and illustrated using the following diagram as a guide to ensure transparency and objectivity.

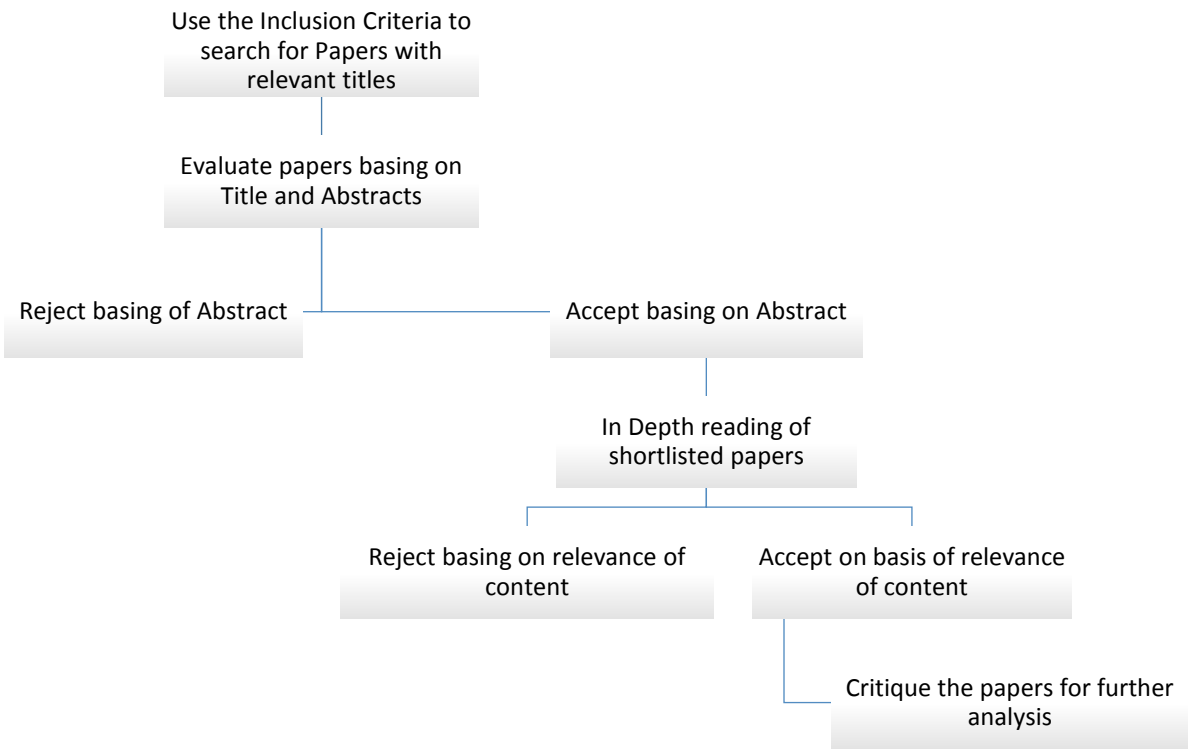

Figure 3: Process flow diagram for identifying papers

3.9.3 Data collection process.

The data collected was a result of reviews of literature authored by other people and/or organisations focussing on the implementation of MDG 5 in low-income countries.

The researcher created a data collection form using the inclusion/exclusion criteria defined above. The reviewer used these forms to extract data from all eligible articles/papers.

Data extracted included; date of publication (or article date), title of the article/paper, Author, MDG implementation strategy, intervention outcome, lessons learnt / recommendations, focus geographical region/ country of implementation.

3.10 Data Items

The variables for which data was sought included interventions /MDG implementation strategies that targeted improvement of maternal health services in low-income countries and their impact on the achievement of the Millennium development goal 5.

3.11 Outcomes and Prioritization

Primary outcome

The primary outcome the review looked out for was the documentation of the lessons learnt from implementing the various interventions towards improving maternal health.

Secondary outcomes

Secondary outcomes included achievement of MDG 5 target of reducing maternal mortality ratio in a low-income country as a result of interventions either at central government level or community based interventions and maternal Health Policy changes and implementation strategies towards reducing maternal mortality.

3.12 Risk of bias in individual studies / reports

For a long time during the MDG implementation period, many low-income countries/least developed countries did not have a formal survey to accurately determine the number of maternal deaths therefore international agencies like the World Bank and the United Nations relied on information on fertility, GDP, birth attendants and the regression model to estimate the country's maternal mortality ratio (UNDP, 2015). The figures reported therefore may have been affected by the compounding effect of the various elements used in the computation resulting into bias.

To minimize the effect of this, several studies and databases were compared and the mean figure for each year computed. This helped in checking for consistency in reported figures for any given period.

Meta – bias

Due to the nature of the review (focusing on reports that have national and international implications), there was a high risk of bias due to selective reporting and selective publication (Shamseer et al., 2015). To ensure that this did not affect the conclusions and recommendations of the review, many different sources of reports on the MDGs were considered to check for consistence in the reported figures and explanations for the observed outcomes.

3.13 Data Synthesis

The articles/papers used in this review were mainly qualitative in nature and a systematic narrative synthesis was used to analyse the information in text format and tables (Shamseer et al., 2015) giving the key characteristics of the reports and the reported interventions and outcomes

3.13.1 Meta-synthesis Versus Meta-Analysis

Meta-analysis is quantitative formal epidemiological study design used to systematically assess previous research studies to derive conclusions about the body of research (Haidich, 2010) while meta- synthesis attempts to integrate results from a number of different but interrelated qualitative studies (Walsh and Downe, 2005).

Meta-synthesis increases researchers' understanding of the contextual dimensions of health care problems since the method is interpretive rather than aggregating information as in meta-analysis for quantitative studies (Walsh and Downe, 2005). It is therefore important for reviewers to decide at the beginning of the study the approach to be taken given the type of data (qualitative or quantitative) the review will be taking into consideration. In this review, the research used meta-synthesis focusing on qualitative data.

3.14 Quality Control

To ensure the quality of the review and mitigate reviewer bias, the supervisor was the alternate reviewer for the study.

CHAPTER 4
RESULTS

4.1 Introduction

This chapter presents the summary findings from the various included papers/reports regarding the strategies used in reducing maternal mortality in low-income countries that met the MDG 5 target of reducing their MMR by 75%. The search for papers to include in the study was only on online databases using the inclusion/exclusion criteria outlined in the Methods section above.

4.2 Overview of the results

Using the pre-defined search protocol, a total of127,298 titles were found out of which 127,178 were judged as not being relevant basing on the title. The remaining 120 papers were subject to an abstract review after which 99 papers were dropped on the basis of the abstract not being relevant to the study. The remaining 21 papers potentially qualified for a full review based on title and abstract information. Following a full review of the 21 papers/reports, 6 papers fulfilled all the conditions under the inclusion/exclusion criteria (highlighted in table 2 below) and were included in the study for analysis and discussion. The process of selecting the papers/reports is presented in figure 4.

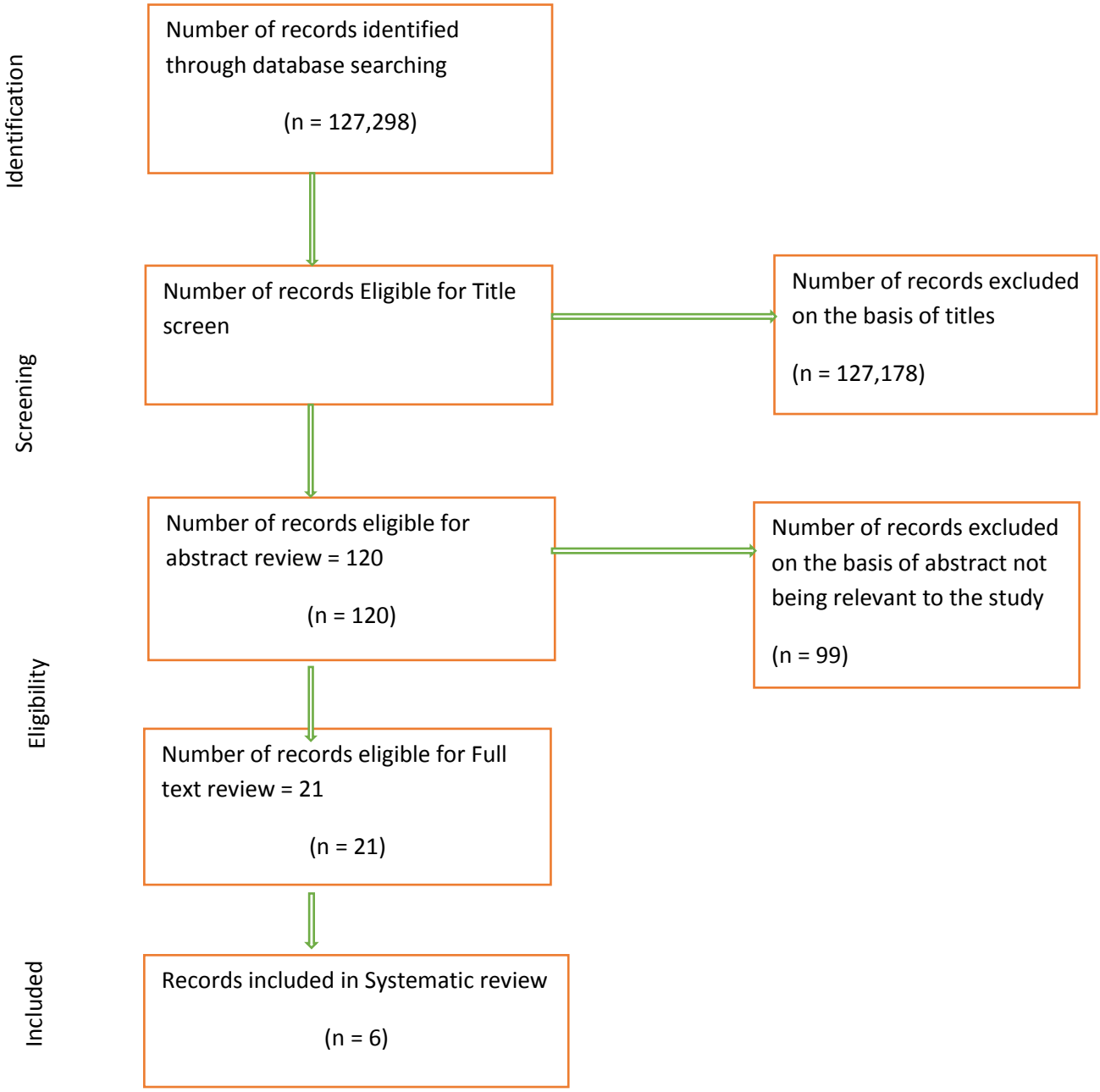

Figure 4: Search and screening process: PRISMA flow diagram

The 21 papers/reports which were fully reviewed had information closely aligned to the research objectives. However, basing on the inclusion/exclusion criteria more 15 reports/papers were excluded mainly because they did not precisely include the key areas of interest (unique implementation strategies for MDG 5 (a) and lessons learnt in the given coverage area), in some there was no direct linkage between the outcome and the strategy

implemented, while others had very summarized information that could not easily be based on to draw conclusions.

4.3 Overview of the reports/papers included in the review

All the papers included in the review were reports written following either national or international surveys on the maternal mortality in the targeted low-income countries highlighting the trend in the MMR of these countries, the interventions implemented to which the reduction in MMR can be attributed and the lessons learnt from the process.

It is important to note that although some countries had been indicated as being on track to achieve the MDG 5 target of reducing the maternal mortality ratio by 75% by the year 2015, some of them did not actually meet the target and from the list of the countries that had been highlighted as being of interest, Afghanistan and Mozambique were not included in this review due to this reason.

All the papers included in the review were obtained using the search protocol highlighted under the methods chapter.

Following the search criteria outlined in the methods of this study, the researcher zeroed on studies in six countries; Rwanda, Nepal, Bangladesh, Ethiopia, Eritrea and Cambodia, to draw lessons for other low-income countries in reducing maternal mortality. There was limited literature on the success factors for the other countries (Mozambique and Myanmar) and no sufficient documentation was found during the research regarding the MMR reduction success factors for these countries.

Table 4: Key statistics from the reviewed countries

Country	Maternal Mortality Ratio/100,000 LB			General Fertility rate per 1000			Skilled attendance at birth (%of births)		
	1990	2015	%Change	1990	2015	%Change	1990	2015	%Change
Rwanda	1300	290	78	204	122	40	17	83	66
Bangladesh	569	176	69	154	70	55	5	44	39
Nepal	901	258	71	167	74	56	4	53	49
Cambodia	1020	161	84	176	87	51	12	86	74
Ethiopia	1250	353	72	217	132	39	5	15	10
Eritrea	1590	501	68	182	138	24	20	45	25

**Note: MMR and Fertility rate measured for women 15 – 49 years*
***Source – Word Health Organization*

4.4 Results of individual papers

4.4.1 Success Factors for Women and Children's Health Rwanda (Ministry of Health Rwanda et al., 2014)

Introduction

This report was developed by the Ministry of Health Rwanda in collaboration with partners supporting Maternal, New-born and Child Health initiatives in the country including WHO, and other development partners. The report was published by the World Health Organization in 2015 although it was originally written in 2014.

Success factors for Women and Children's health was a three-year multi-disciplinary and multi country series of studies coordinated by the World Bank, WHO and Alliance for Health Policy and Systems Research. The main objective of the study was to establish how some countries managed to fast track the implementation of the MDGs 4 and 5a (reduction in preventable child mortality and maternal mortality) (Ministry of Health Rwanda et al., 2014).

To study the success factors in Rwanda, the researches carried out a review of quantitative data (population surveys and data from other national and international routine data systems), carried out interviews and meetings with key stakeholders and a literature review of peer-

reviewed and grey literature, policy documents and programme evaluation reports (including the country specific review) for MDG 4 and 5a (Ministry of Health Rwanda et al., 2014).

Rwanda is among the 10 low and middle income countries with a high maternal mortality rate (1300/100,000 in 1990) that made fast progress towards achieving the Millennium Development Goal 5a (reduction of maternal mortality) and by the year 2013 was already on track to achieve this particular MDG together with MDG 4 (reduction of child mortality) (Ministry of Health Rwanda et al., 2014). The study helped the Ministry of Health and partners to understand the underlying factors that led to this progress particularly focusing on policy and programme management best practices.

Study design

The study was a mixed methods research including literature review of peer reviewed and grey literature, policy documents, program evaluations, sector strategies and plans, review of data from population based surveys, routine data systems, international databases and other sources, key informant interviews and meetings.

Rwanda and the progress on MDG 5

Rwanda is a landlocked country located in East Central Africa. The country experienced a genocide in 1994 that left one million people dead and two million people homeless (Ministry of Health Rwanda et al., 2014). After the genocide, the government began rebuilding the economy of Rwanda through policies that focused on investment in infrastructure, agriculture and skills development. This resulted in a rise in the country's GPD per capita from $707 in 1990 to $1167 in 2012. With this development, Rwanda experienced improvements in health and livelihood.

Rwanda made tremendous progress towards achieving MDG 4 and 5a, by 2012 the country had achieved its MDG 4 target (reducing the child mortality) and was on track to achieve MDG 5a (reducing maternal mortality). The country's MDG 5a target was 268/100,000 live births (Governement of Rwanda and UNDP, 2014) and by 2010 the country had achieved an MMR of 476/100,000 live births (down from 1071/100,000 live births in 2000) with a 50% rate of decrease in MMR.

In order to achieve the required progress on Reproductive, Maternal, Neonatal and Child Health services, Rwanda had to overcome many challenges especially following the 1994 genocide. These included shortage of Health workers (especially midwives), poor infrastructure, limited coverage of Emergency obstetric and new-born care, and low uptake of family planning services, socioeconomic and geographical barriers that were preventing women from accessing health services.

Interventions that resulted in Rwanda's success in reducing MMR

Rwanda took a sector-wide approach in the planning of strategies to improve the health outcomes of the country and the government provided the much needed leadership role in guiding the implementation of health programs in the country.

The most notable strategies that propelled Rwanda towards achieving the Millennium development goals on health, particularly MDG 4 and 5a included increased health financing and donor alignment, improved human resources for health and community health care insurance scheme.

Health financing and donor alignment: The government of Rwanda has complete ownership of the initiatives in the sector and the country's development agenda as a whole demonstrated through continual increase of the health sector budget from 8.2% in 2000 to 16.5% in 2013.

Increased financing of the health sector means more people in Rwanda have access to health services, including maternal health services, especially through the community based health insurance scheme. The government also has a vision to reduce donor dependency. The donor agencies in Rwanda have to align their funding priorities to government plans, policies and strategies which has helped the government to be in control of the health sector guiding investment into key areas like improving maternal health.

Human Resources for Health; before 1997, Rwanda had no home trained midwives. However, the country has taken an initiative to grow the training of health workers in country. The government of Rwanda decentralized the management of human resources in the country, revised the staffing norms and provided new professional standards to improve quality. Delivery of quality maternal health care services requires adequate number of well trained health workers and by investing in Human Resources for Health training, Rwanda managed to produce the number of health workers they needed to achieve the reduction in maternal mortality

The country also enhanced its Community Health Workers program (45,000 CHW recruited and trained within the MDG period starting from 1995) to counter the shortage of health workers in the country. Although the Community Health Worker programme in Rwanda started in 1995 just after the genocide (some authors trace it as far back as the 1980s (Chambers and Golooba-Mutebi, 2012)), the CHWs were not trained and were mainly focusing in health education. However, in 2005 the programme was streamlined to include capacity building for the CHWs (Luigi and Audrey, 2016) and in 2007 the CHEWs were integrated into the country's formal health structure (Chambers and Golooba-Mutebi, 2012). Rwanda introduced two types of Community Health workers: the binomes (a male and a female) to be in charge of integrated case management of childhood illnesses and family planning, and the second group are the female community health workers in charge of maternal and newborn care services. This

initiative was coupled with performance based financing which provided incentives to both the mainstream health workers and the CHWs who provide excellent services and thus enhance commitment of health workers to providing quality services.

Outcomes monitored using evidence - web based HMIS. Rwanda integrated maternal, child health (including emergency obstetric care and family planning) into a comprehensive national monitoring and evaluation framework which has enabled close monitoring of these programmes resulting into improved planning, priority setting and resource allocation.

Since 2003, maternal death reviews in Rwanda have been scaled up to national level in form of facility-based audits, community based reviews and confidential reviews into maternal deaths. In 2013, Rwanda adopted the WHO updated guidance to use maternal death surveillance and review approach. The community health workers in Rwanda are also able to report births and maternal and child deaths using a web based system. The findings of these reviews help the country to understand the causes of maternal deaths and inform planning.

Political prioritization of essential health interventions (MDG 4 &5) - during the implementation period of the MDGs, Rwanda experienced many health sector reforms, an indication of the government's commitment to achieving the health related MDGS 4 and 5. Some of these reforms that had a direct impact on the reduction of maternal mortality included the mandate of the ministry of health to oversee the entire health sector in the country including the private for profit and the private not for profit (for example much as the faith based facilities do not provide some forms of family planning, they are mandated to provide information to clients about these family planning options and through a sting public-private partnership, the government employs health workers in PNFPs to provide the services which eases supervision ensuring high quality of care), Rwanda also relaxed the strict law regarding abortion and included protection of the women's rights in cases of rape, incest, forced marriages and fetal

impairment. This was key in reducing unsafe abortions which are a large contributor to maternal mortality.

Universal Health care – including breaking social and economic barriers to access of health services. The country has a National Insurance scheme which is an indication of the government's commitment to improving access to health services especially among the underserved population. In 1999 the government piloted the Community Based Health Insurance (CBHI) scheme and in 2008 the scheme was made compulsory. By 2012 90% of the Rwandan population was enrolled onto the scheme. The scheme reduced the out of pocked expenditure on health and improved utilization of health care services (including maternal health services) in the country.

Initiatives and investments outside the health sector including universal education, nutrition, infrastructure, water supply and sanitation. Improved education status of women has been shown to have an impact on various health indicators including contraceptive use, health care seeking behaviour, infant mortality rate, child bearing age and fertility rate. In 2008 Rwanda developed a Girls' education policy with the aim of improving enrolment, retention, completion and transition to higher institutions. The Ministry of Health also has programmes for girls in schools including those regarding reproductive health. This has reduced the exposure of girls in Rwanda to incidents that can result in unsafe abortions and other dangers of early child bearing that can result in maternal death.

Lessons learnt from Rwanda

From the presentation of the interventions implemented by Rwanda and the relationship to the outcome of successfully reducing the country's MMR to meet the MDG 5a target, the following lessons can be deduced;

Governance and leadership is a critical factor in improving health services in a country including reducing the maternal ratio. Good governance is the first pillar of Rwanda's vision 2020 strategy (a government development plan being implemented in the country). A government's focus on health systems strengthening is a key factor in providing effective Reproductive Maternal Neonatal and Child Health services.

Performance Based Financing increases health worker motivation increasing their productivity and improving the quality of services they offer. This results in increased utilization of maternal health services, boosts family planning coverage and number of institutional deliveries. Improvement in these factors results in a reduction in the maternal mortality ratio for a country.

The cost of health care services is barrier to utilization of the available services, including maternal health services A National Insurance Scheme improves utilization of health care services as it reduces out of pocket expenditure. The insurance scheme was major factor in reducing maternal deaths in Rwanda.

The Community Health Workers provide a linkage between the pregnant women in the communities and the health facilities/trained birth attendants. Rwanda has CHWs dedicated to maternal health care and assist in the reporting of births and maternal deaths and providing the necessary information that women need to overcome preventable maternal deaths. The community health workers are also trained and given incentives to motivate them to achieve the set targets.

A reduction in maternal mortality requires a multi-sector approach. For example, improvement in the women's level of education has a direct impact on the factors that reduce maternal mortality including fertility rates, childbearing age, modern contraceptive use, maternal health services utilization.

Recommendation from the study for sustainability and continued improvement

In order to continue reducing the maternal mortality in Rwanda, the study made recommendations about increasing the number of skilled birth attendants, improving the quality of service and increasing efforts towards improving access to family planning services.

Increase the number and improve the distribution of skilled birth attendants. Despite all the successes, Rwanda still faces a challenge of health worker shortage, specifically the midwives. The country needed an additional 586 midwives to achieve a 95% skilled birth attendance by the year 2015. This requires investment in the training institutions to be able to enrol more students and support the establishment of additional schools to meet the demand.

Improve the quality of health services: the various reforms in the health sector resulted in an increase in the utilization of Reproductive, Maternal, Neonatal and Child Health services in Rwanda. It is therefore important to continuously monitor for improvements in the quality of service and health outcomes.

Improve geographical access to health facilities: many Rwandese still live far away from the health facilities (more than an hour). To improve access to these facilities there is need to invest in infrastructure development including construction of more facilitates and improvement of the transport network.

Strengthen efforts in the areas of family planning, new-born health and nutrition. Rwanda is still experiencing high population growth and a high fertility rate and therefore needs to continue addressing the unmet need for family planning to further reduce the maternal mortality in the country.

4.4.2 Maternal Mortality in Bangladesh: a Countdown to 2015 country case study (El Arifeen et al., 2014)

Introduction

The study, published in the Lancet, was conducted by a team of university professors from different universities and with different background using data from two national maternal mortality surveys in Bangladesh to measure the changes in the risk of maternal mortality and the changes in the factors that were responsible the high maternal mortality in the country.

Bangladesh was another of the countdown countries that was on track to achieve the MDG 5 target by 2015. The country with a population of approximately 150 million is one of the countries with the highest population densities in the world (El Arifeen et al., 2014).

Bangladesh experienced commendable economic growth between 2001 and 2012 although in the same period the country also experienced political unrest and natural disasters. Bangladesh still remains a low-income country with about a third of the population still living below the poverty line and high levels of unemployment (El Arifeen et al., 2014).

The authors chose to study the drivers for reduction in maternal mortality in Bangladesh because the country was on track to achieve MDG 5, the country also has valid nationally representative household based surveys on progress towards MDG 5 and the reduction in maternal mortality in Bangladesh was accompanied by changes in other maternal health indicators and socioeconomic development.

The study documented how Bangladesh achieved the reduction in maternal mortality focusing on the period between 1998 to 2001 and 2007 to 2010.

Study design

The study used secondary data obtained from the published Bangladesh National demographic and health surveys. With the available data, the researchers carried out various statistical analyses to establish trends in MMR and associated factors. The researchers also carried out a desk review of the various policies and programmes in maternal and reproductive health.

Bangladesh and the progress on MDG 5

The MMR in Bangladesh reduced from 322 per 100,000 live births (1998 to 2001) to 194 deaths per 100,000 live births (2007 to 2010) indicating an annual reduction rate of 5.6%.

This reduction in MMR was marked by a reduction in the common causes of maternal mortality: eclampsia reduced by 50%, haemorrhage by 35%, obstructed labour by 26% and abortion by 85%. Overall Bangladesh achieved a 40% reduction in MMR within less than 10 years.

Interventions that resulted in Bangladesh's success in reducing MMR

Policy change – creating an enabling environment for the expansion of maternal health services, for example the increase in accessibility of the maternal services in Bangladesh was mainly through the expansion of the private sector (private health facilities). Bangladesh implemented a series of 5 year plans that focused on developing comprehensive maternal and child health services and access to family planning services. In the 1980s, the government of Bangladesh put in place a programme to provide maternal health services through district hospitals and also instituted about 73,000 field workers and satellite clinics to promote antenatal care, tetanus toxoid immunization, family planning and clean delivery services all of which were key in the country's effort to reduce maternal mortality.

Health sector-wide approaches ensuring better availability of human resources, equipment and medicines to make EmOC facilities more functional. Between 2001 and 2010, the proportion of births attended to by skilled personnel doubled in Bangladesh and there was also an increase in maternal health care seeking and facility based deliveries. This shift in the health seeking behaviour across all socioeconomic groups helped the country to register a substantive reduction in maternal mortality. Under the 2001 National strategy for maternal health, Bangladesh made investments in the establishment and upgrade of health facilities to provide Comprehensive Emergency Obstetric Care and trained community based skilled birth attendants to provide safe delivery at home. The government also invested in behaviour change programmes in maternal health.

Infrastructure development – improved transport system that made facilities more accessible. Bangladesh is highly populated country with many rivers and previously with very poor road networks. Between 2001 and 2010, the government of Bangladesh invested in the construction of over 19,000km of roads and 300km of bridges which increased access to health facilities reducing the access to care barrier experienced by several low-income countries.

Growth in the communication sector that resulted in more people having access to television and mobile phones – enabling access to information and communication between service providers and communities. It is estimated that two out of every three households in Bangladesh own a mobile phone which has facilitated these households to access the information they need regarding maternal health plus access to assistance in terms of treatment.

Improvements in household incomes and enhancing women's education levels: the improvement in the socioeconomic status of households resulted into a fertility reduction between 2001and 2010. The main factors that contributed to the reduction in maternal deaths in Bangladesh relating to improved economic status of households were a reduction in number

of births (contributing a reduction in maternal deaths of 21%) and a change in the age at which women begin having children (averting 7% of maternal deaths). More women in Bangladesh are staying in school and start having children from the age of 20 years thus increasing their bargaining power for safer family planning and increasing their levels of awareness of maternal complications and their ability to seek health care services when they need them.

Lessons learnt from Bangladesh

From the review of the report, the following lessons were identified by the reviewer;

Improvements in education and socioeconomic status contribute to improvement in maternal health (hence reduction in MMR) – because of reducing fertility, in Bangladesh most births take place in women in their early 20's (due to increased schooling) and the women have the ability to make safe reproductive health choices like family planning and seeking health care. Improvement in household incomes increases maternal survival as more people are able to and willing to pay for services in the widely spread private facilities.

The community health workers are trained to assist in the delivery of mothers from home which is very helpful given the transportation challenges and also reduces the cost of seeking for care on the side of the mother thus improving the health seeking behaviour of mothers.

The importance of the Public Private Partnership in ensuring availability and access to maternal health services. Between 2001 and 2008 in Bangladesh the number of public health facilities offering basic obstetric care and emergency obstetric care remained constant, the non government based facilities increased but their proportion remained small. However, the number of private facilities more than doubled and by 2008 constituted 39% of facilities offering basic obstetric care and 81% of all facilities offering emergency obstetric care. A survey conducted in 2010 indicated that a high proportion of the mothers were able to reach a

facility within one or two hours in Bangladesh attributed mostly to the increased number of private facilities in the country.

Recommendation from the study for sustainability and continued improvement

There is need to pursue a broader development agenda alongside increased and accelerated investment in improving access to and quality of public and private health care facilities providing maternal health services. This will ensure sustainability of the achievements realized in Bangladesh towards the reduction of maternal mortality.

4.4.3 Maternal Mortality; Paradigm shift in Nepal (Bhandari and Dangal, 2012)

Introduction

The authors of the paper used results published in the Lancet, PubMed, google scholar, WHO and Medline to study the factors leading to the reduction of maternal mortality in Nepal despite the existing challenges like low skilled birth attendance.

Nepal is one of the UN member countries and thus was a signatory to the Millennium Development Goals. The country faced the challenge of reducing its high maternal mortality rate within the 15-year period. Despite slow improvement in the key maternal health indicators like facility based deliveries and access to safe emergency obstetric care, Nepal managed to reduce its MMR within a period of 10 years from 850 per 100,000 live births in 1990 to 229 deaths per 100,000 live births in 2011 (Bhandari and Dangal, 2012). The study was thus to establish the underlying factors that helped Nepal achieve this level of success in reducing its MMR.

Study Design

The study was a literature review of local and international publications between the year 1990 and 2012 to establish the MMR tends in Nepal and factors associated with the trend. The search databases were PubMed, Google scholar, WHO, Lancet and Medline.

Nepal and progress on MDG 5

Nepal's target for MDG 5 was to reduce the country's MMR to 134/100,000 live births. By the year 2012 the country MMR had reduced to 229 deaths per 100,000 live births and Nepal was thus on track to achieve MDG 5 (Bhandari and Dangal, 2012).

Also important to note, Nepal's Total Fertility Rate reduced from 5.2 in 1990 to 2.6 in 2011.

Interventions that resulted in Nepal's success in reducing MMR

For a period of 30 years (1960 to 1990), many health facilities were established at the various levels in Nepal (district, zonal, central and local community levels) which increased access to health care and improved the health seeking behaviour of the people of Nepal. However, these efforts did not result into improved health outcomes. Following the restoration of peace in Nepal, the country focused on putting in place relevant policies and schemes in order to reduce the high MMR the country was facing. The policies and strategies instituted to reduce the prevailing MMR included the following:

National health policy 1991: aimed at extending health services to the rural population to offer them access to modern health services including family planning and maternal and child health services.

Second long term health plan 1997 – 2017: the plan's focus was to make services accessible and reduce the MMR to 250 per 100,000 live births and increase the contraceptive prevalence rate, number of deliveries attended by trained personnel and number of women attending ANC

Safe motherhood policy 1998: the government put in place this reproductive health policy to provide guidelines for maternity care, midwifery practice standards and safe motherhood clinical protocols and management guidelines. The overall aim was to establish Basic Emergency Obstetric Care and Comprehensive Emergency Obstetric Care in all districts

National Safe abortion policy 2003: the parliament of Nepal passed the abortion law in 2002 and this was followed by the policy in 2003 to mitigate illegal abortion and malpractices associated with abortion. It is important to note that unsafe abortions account for 13% of maternal deaths and so the policy was to counter the maternal deaths that occur due to abortion.

Nepal health sector programme – implementation plan 2004: set specific targets to measure progress including a reduction in MMR from 539 to 330 per 100,000 live births in 2009, increased skilled attendance to birth and increased budget allocation to the health sector.

Maternal incentive scheme 2005: this was aimed at increasing utilization of skilled care at childbirth and increase institutional deliveries. Women who deliver in health facilities are given cash incentives while the professionals also receive incentives for each birth attended to either in hospital or at home. The cash incentives were to reduce the barriers due to transportation costs.

National Policy on skilled birth attendants (SBAs) 2006: this was aimed at ensuring availability, access and utilization of skilled care at every birth. The policy took care of issues regarding training of skilled birth attendants, deployment, community sensitization and support for the SBAs.

National free delivery policy 2009: under this policy the government instituted the provision of free institutional delivery care of all women (normal, complicated and caesarean operation)

at all facilities with capacity to provide the services. This resulted in an increase in the number of institutional deliveries.

Nepal health sector programme implementation plan II 2010 – 2015: the target of the plan was to reduce the MMR to 134 per 100,000 live births through increased access and utilization of essential health care services, especially reproductive health services (family planning, ante natal care, delivery and neo natal care).

Lessons learnt from Nepal

The authors of the study identified the following as the lessons learnt in Nepal from the implementation of the various policies towards reducing the maternal mortality in the country;

Addressing cross cutting issues like Education, gender empowerment and political commitment towards women's rights is an important strategy towards successful reduction in the maternal mortality ratio of a country. The decline in maternal deaths in Nepal was highly associated with the education level of women, income status, employment, access to health services, controlled fertility rate, nutrition status and availability of skilled birth attendants.

The government of Nepal focused the country's health sector development plan (between 2010 and 2015) on improving the health services for women, children and other deprived groups. This special attention to women's health service needs like family planning, safe abortion, ante-natal care and delivery increases the confidence of women in seeking for health services and improves utilization leading to a reduction in maternal mortality.

Recommendation from the study for sustainability and continued improvement

Reduction of unwanted pregnancies through family planning: as of 2012, Nepal had a contraceptive prevalence of 49.7% which was way below the regional average of 57.5%.

Between 2006 and 201, the unmet need for family planning in Nepal increased from 24.6% to 27%. The country therefore need to work towards reducing the unwanted pregnancies among married women by reducing the unmet need for family planning.

Prevention of unsafe abortions: despite the legalization of abortion in Nepal in 2003, the country still had a high prevalence of unsafe abortions by 2012 and thus the need to increase access to safe abortion services.

Expansion of essential obstetric care: one of the main causes of maternal deaths in Nepal in the lack of access to emergency obstetric care (EmOC). Basic EmOC includes antibiotics, oxytocics, anticonvulsants, manual removal of placenta and instrumented vaginal delivery to increase survival chances.

Ensure antenatal and postnatal care: As of 2012, 58.3% of women in Nepal received at least one antenatal check-up and 50.1% received four or more check-ups which was below the regional average of 76% in East Asia. Only 49% of mothers were receiving postnatal care. Antenatal care and postnatal care are important in averting potential risks during pregnancy, delivery and after delivery.

Investigations into maternal deaths – many women (two thirds) in Nepal were still delivering from home as of 2012 and they would not seek health care from the facilities thereafter. This made the estimation of the actual maternal mortality in the country difficult and called for improved data management systems to ensure proper recording of the maternal deaths to ensure proper estimation of the MMR.

4.4.4 Success factors for Women's and Children's Heath: Cambodia (Ministry of Health Cambodia et al., 2015)

Introduction

Cambodia is one of the low-income countries that met the MDG 5 (a) target of reducing maternal mortality. By the year 2014, the country was already on track to achieve this target and a number of stakeholders including WHO, the World Bank, the Ministry of Health Cambodia and others undertook a study to identify the underlying factors to this achievement.

The main objective of the study was to identify factors both within and outside the health sector that had contributed to the reduction in maternal and child mortality in Cambodia focusing on policy and programme management best practices (Ministry of Health Cambodia et al, 2015).

Study design

This was a mixed methods study that included a review of existing literature (both grey and published literature), a review of quantitative data from various sources including population based surveys and routine data systems, and one on one interviews and meeting with key stakeholders.

Cambodia and progress on MDG 5

At the beginning of the MDG implementation period in 1990 Cambodia had a maternal mortality ratio of 1200 deaths per 100,000 live births. By the year 2013, the country MMR had reduced to 170 deaths per 100,000 live births (equivalent to 86% reduction). According to the World Bank's MDG tracker database, the country's MDG 5 target for MMR was 300/100,000 live births. By the year 2010, Cambodia had already achieved its national MDG target of 250/100,000 live births and by the year 2013, the country was on track to achieve the global target of 140/100,000 live births (Ministry of Health Cambodia et al., 2015).

The decline in maternal mortality was attributed to a reduction in the country's fertility rate (an indication of increased prevalence of contraceptives), increase in birth interval and a reduction

in births to very young and very old women. The country also recorded an increase in the number of women attending ANC, increased skilled birth attendance and an increased number of facilities offering both basic and comprehensive Emergency Obstetric and Newborn Care (EmONC).

Interventions that resulted in Cambodia's success in reducing MMR

The health sector initiatives and investments focused on policy and programme inputs in three major areas: laws, standards and guidelines, health systems and delivery strategies.

Focus area	Strategy	Intervention
Laws, standards and guidelines to support implementation of RMNCH interventions	Universal coverage with a package of high impact interventions	This focused on putting in place policies and development plans to guide investment in the health sector and guidance on the implementation of interventions in the sector. Some of these included the health sector strategic plan and the fast track initiative road map for reducing maternal and newborn mortality.
	RMNCH technical standards	The country put focus on drafting laws and policies to promote increase access to family planning in response to the increased need for maternal and reproductive health services. These included policies on birth spacing and safe motherhood, a law on safe abortion and an EmONC improvement plan.
	mechanism for improving coordination and sector-wide management	The Cambodian government implemented a sector-wide approach which was designed to facilitate collaboration and coordination between the Ministry of Health and other partners in the health sector regarding planning and financing of health services. Several working teams were instituted to cover the various areas, for example the RMNCH task force, sub-technical working

		group for MCH and technical working groups for health.
Health Systems Strengthening	Health care financing	• Increased per capita expenditure on health and reduced out of pocket expenditure. • Introduction and scaling up of financial protection schemes e.g. performance based contracting. • Government delivery incentive scheme (for mothers to deliver in health facilities under skilled attendants). • Donor alignment and harmonization to improve efficiency of resource allocation
	Health workforce	• Health workforce development plan – resulting in increased recruitment of health workers into the civil service • Plan to improve availability of midwives: increased number of midwives trained, improved recruitment, deployment standards and incentives for midwives. • Improved staff competences (revised pre-service curricula, in-service trainings, improved technical standards)
	Tracking progress with data	• Strengthened Health Information System • Regular population based surveys • Joint annual performance reviews • Subnational MDG tracking • Maternal death reviews and reporting.
Delivery strategies	Improved essential health infrastructure	The Health coverage plan guided the construction of health facilities especially in rural areas based on population and geographical area

		which increased access to the minimum health service package
	Integrated routine systems through provinces, districts and health centres	The ministry of health uses locally available resources (for example the Village health volunteers) and collaborates with local and international non-government organizations, other ministries and also works through routine facility outreaches to deliver basic services like family planning to communities.
	Health promotion and behaviour change campaigns	Health promotion and behaviour change campaign targeting early care seeking foe ANC (2007) – led to increased number of women seeking ANC services in Cambodia.

Cambodia also implemented initiatives outside the health sector including improvements in the education standards of women and children, improved nutrition and food security and access to clean water and improved sanitation, poverty reduction and good governance and leadership. All these together with the health sector initiatives empowered women to seek and have access to better maternal health services which resulted in the reduction of the country's maternal mortality ratio over the years.

Lessons learnt from Cambodia

The experience of implementing MDG 5 in Cambodia indicates that improvement in maternal health and thus reduction in maternal mortality is mostly driven by political commitment and sound governance which provide fertile ground for delivery of high impact interventions and use of data for decision making.

Improvements in maternal mortality are also directly attributed to reduced poverty, improved infrastructure, reduced poverty, decreasing fertility, improved education of women and improved access to skilled delivery services.

Recommendation from the study for sustainability and continued improvement

The study concludes with two major recommendations to further improve Reproductive Maternal Neonatal and Child Health: reduction in socioeconomic inequalities and improved quality of care.

The study indicates that rural populations and poorer households with no education suffer the most inequalities in RMNCH coverage, services and outcomes and thus interventions targeting service use in this population need to be emphasized to minimize socioeconomic inequalities in health outcomes.

The study also recommends a focus on improving quality of care in the face of increased demand for reproductive health services especially routine delivery, postpartum and postnatal care.

These recommendations were made for the post-2015 development agenda and it will be of interest during the evaluation of the SDGs to see if the country implemented them and how well they worked out for Cambodia.

4.4.5 Success Factors for Women's and Children's Health; Ethiopia (Ministry of Health Ethiopia et al., 2015)

Introduction

Ethiopia was one of the best performing countries during the implementation of the MDG and on the list of the countdown countries highlighted as fast track towards achieving MDG 4 and 5 as of the year 2013. The study was commissioned by the Ministry of Health Ethiopia in

collaboration with development partners with the main objective of identifying the factors that influenced the reduction in maternal and child mortality in Ethiopia both within and outside the health sector.

The study focused on how improvements in maternal and child health outcomes were realized focusing on programme and policy best practices and how these were tailored to Ethiopia's Unique context. Ethiopia is a large landlocked country and the second most populous country in Sub-Saharan Africa with most of the population being rural (only 17% of the population lives in urban areas). The country has 80 ethnic groups with 90 languages and its GPD per capita is one of the lowest in the world (Ministry of Health Ethiopia, 2015)

Study design

This was a mixed methods study that included a review of existing literature (both grey and published literature), a review of quantitative data from various sources including population based surveys and routine data systems, and one on one interviews and meeting with key stakeholders.

Ethiopia and progress on MDG 5

Ethiopia had to reduce it's MMR from 1400 (as of 1990) deaths per 100,000 live births to 350 per 100,000 live births by the year 2015 to meet the MDG 5 (a) target of reducing MMR by 75%. According to the UN estimates of 2013 (with an MMR of 420/100,000 live births at the time), the country was on track to archive this goal.

Despite the level of progress recorded by Ethiopia until 2013, the country was still experiencing major challenges in reducing MMR including low number of births attended to by a skilled professional (16%) and low prevalence of family planning.

Several factors were looked at as key drivers of the recorded achievements towards reducing MMR in Ethiopia as detailed in the next section.

Interventions that resulted in Ethiopia's success in reducing MMR

Interventions were designed to focus on initiatives both within the health sector and outside the health sector.

Focus area	Strategy	Interventions
Health sector initiatives and investments	National prioritization and commitment to women's and children's health	• Increased per capita expenditure on health (from $5.6 in 2000 to $20.77 in 2010) • Fee waiver for maternal and child health services • Community based and social health insurance schemes • Resource mobilization from donors
	National focus on sector alignment and coordination of all partners	• MDG performance fund – consolidating all funds from government and donors aimed at improving health which is centrally managed. • Sector-wide approach to improve aid effectiveness and alignment with government health priorities and plans
	Outcome monitoring using evidence	• Functional Health Management Information System (HMIS)
	Political prioritization of essential health interventions	• Health Sector Development Plan (HSDP) prioritization of RMNCH through improvement of quality and access to services.
	Focus on addressing health workforce shortages	• Increased and equitable distribution and deployment of the health workforce • Health Extension Programme aimed at universal coverage of health care services through physical infrastructure development and Health Extension Workers.

		• Increased Health Worker training – increase in number of training schools thus increased output.
	Legal and financial entitlements especially for underserved populations	• Construction of health facilities in underserved areas • Establishment of directorate to license health practitioners as a mechanism to improve quality of care and set national standards • Appropriate legal measures put in place to improve women's access to reproductive health services e.g. procedural guideline for safe abortion.
Initiatives and investments outside the health sector	Education	• Universal and free education • Gender equality in education opportunities.
	Innovation and research	• Community Health Workers to respond to the human resources for health gap. • Accelerated midwifery training to increase the number of midwives in the country • A new cadre of mid-level health professionals (Emergency Surgical Officers) to facilitate task shifting and increase the number of functional comprehensive emergency obstetric and new-born care facilities.
	Infrastructure, water supply and sanitation	• Increased access to clean water and improved waste management • Increased length and quality of the road network in the country.
Leadership and Governance	Political will and commitment to women's and children's health	• Pro-poor health financing policies • Rapid expansion of the health infrastructure. • Health workforce expansion and adoption of innovations to address shortages.
	Decentralization and democratization health services	• Health facility posts at village level (community based management) • Health Extension workers

	• Districts managing the health budgets for their areas of administration with regional technical supervision
Coordination of health interventions and central alignment of priorities with partners	• Joint review meetings on the performance of the sector bringing together government, private practitioners and donor agencies. • Pubic Private Partnerships
Government reforms	• Poverty eradication programs • Human rights and conflict prevention • Control of corruption

Lessons learnt from Ethiopia

Health systems strengthening and health worker training are a key success factor in reducing maternal mortality in the country and achieving desired health outcomes. Governments need to invest in midwifery training and training of Health Extension workers to provide services at the community level as a long-term solution to service availability and accessibility.

Quality of care of RMNCH services is another influencing factor in the reduction of maternal mortality. Maternal health surveillance and review is a key process in ensuring quality of care as it helps in understanding the causes of death and inform planning and policy decisions.

Research and innovation helps a country identify strategies that work best given the context of each individual country. Hence governments need to invest more in research and encourage innovations that can lead in reduction maternal deaths.

Recommendation from the study for sustainability and continued improvement

The research highlights key areas for concentration of efforts to further reduce the country's MMR and also sustain the achievements as increasing skilled birth attendants, meeting the unmet need for family planning, improving the quality of care, increasing resources for health financing and increasing focus on research and innovation.

4.4.6 Innovations driving health MDGs in Eritrea (Ministry of Health Eritrea, 2014)

Introduction

The report was produced under the Ministry of Health as preliminary work towards writing the country's MDG implementation report. The objective of the report was to highlight progress on the implementation of the health MDGs (MDG 4, 5 & 6) in Eritrea, the innovations that contributed to the recorded successes, the challenges encountered and the lessons that can be learnt and scaled up in Eritrea and other countries.

Study design

The study employed a mixed methods approach and include qualitative and qualitative data analysis, desk reviews focusing on comprehensive analysis of the achievements, drivers, challenges and lessons learnt during the implementation of the health MDGs in Eritrea.

Eritrea and progress on MDG 5

Eritrea's country target was to reduce MMR from 1,700/100,000 live birth (1990) to 425/100,000 live births (2015). By the year 2013, Eritrea had an MMR of 380/100,000 live births (Ministry of Health Eritrea, 2014) and hence had already achieved the MDG 5(a) target of reducing MMR by 75%.

ANC coverage in Eritrea increased from 19% (1991) to 93% (2013). Deliveries by skilled birth attendant increased from6 % to 55% between the year 1991 and 2013.

Interventions that resulted in Eritrea's success in reducing MMR

Strategy	Implementation
Cross cutting strategies	• Community involvement • Inter-sectorial approaches • Political commitment and leadership ○ National Health Policy

	○ Health Sector Development plan ○ Government led programming
Universal health care coverage	Health care planning and delivery in Eritrea is driven by the desire to achieve equity where services are provided to all and those in most need of them.
Integrated health service provision	The government of Eritrea runs a stratified 3-tier health care delivery system • Primary level – community based covering 2,000 to 3,000 people • Health stations – facility based primary health care services offered covering a population of 5,000 to 10,000 • Community hospital – referral facility covering a population of 50,000 to 100,000 and offering comprehensive services.
Comprehensive service delivery	The ministry of health in Eritrea put emphasis on health promotion and preventive services in addition to curative services.

Lessons learnt from Eritrea

The study highlights 6 key lessons from the implementation and achievement of the health MDGs, including the reduction of MMR, in Eritrea (Ministry of Health Eritrea, 2014):

A strong government with the ability to motivate and mobilize people behind a clear goal is key to progress. Community participation and involvement in health service delivery both helps to address shortages of skilled staff and brings services closer to the community. This removes the barriers to access to health information (including reproductive and maternal health information) and increases awareness.

Government ownership of developmental projects and programmes is important to ensure sustainability and commitment to goals. This is also important in countering the unpredictable shift in donor priorities/financial commitment.

Effective coordination among sectors helps avoid duplication (which causes wastage of resources) and leads to cost effective interventions. A good understanding of the available resources in the country and equitable use of these resources leads to formulation of realistic policies and informed decisions.

Investment in human capital (health and education) is also a key driver to development. Where there is development, maternal health outcomes improve leading to reduction in MMR.

Recommendation from the study for sustainability and continued improvement

The study recommends increasing health financing and improving the quality of health care as mechanisms for sustainability of gains made and further reducing the maternal mortality in the country and improve health outcomes as a whole.

The study further highlights the importance of addressing the human resources for health shortages in the country and putting in place mechanisms for addressing the non-communicable diseases as additional strategies for further improving the maternal health conditions in the country.

Another recommendation is a continuous review of the existing policies and guidelines to respond to the changing environment including growing populations which put pressure on the existing service points and resources

4.4.7 Summary of results

The strategies employed by the low-income countries that met the MDG 5 (a) target broadly rotated around political prioritization, health systems strengthening, inter-sector collaborations and appropriate legislations (policies and laws)

Table 5: Summary of strategic areas

Strategic area	Rwanda	Nepal	Bangladesh	Cambodia	Ethiopia	Eritrea
Political prioritization (will)	✓	✓	✓	✓	✓	✓
Multi-sector collaboration	✓	✓	✓	✓	✓	✓
Health systems strengthening	✓	✓	✓	✓	✓	✓
Appropriate legislation (laws and policies put in place)	✓	✓	✓	✓	✓	✓
Health sector-wide approaches	✓		✓	✓	✓	✓
Leadership and evidence based planning (including partnerships and strong HMIS)	✓		✓	✓	✓	✓

All the six low-counters put a strong emphasis on policy formulation to guide the implementation of maternal health programmes and improve access to maternal health care.

There are four strategic areas for policy focus for accelerated reduction of maternal mortality; leadership and multi-stakeholder partnerships, health sector, multi-sector arrangements, accountability for resources and results (Ahmed et al., 2016)

Table 6: Examples of key policy actions in the 4 strategic areas

Strategic area	Sample policy	Performance measure
Leadership and multi-stakeholder partnerships	• Establishment of mechanism for collaboration within government between government and with partners • Strengthening governance by eliminating corruption, promoting transparency and accountability	• Rule of law • Programme effectiveness
Health sector	• Guidance on how interventions are to be	• Percentage of births assisted by skilled personnel

	implemented in the sector • Allocation of adequate resources • Availability of health workers and their regulation	• Total fertility rate
Multi-sector arrangements	• Increasing allocation of funds to key sectors (Education, Infrastructure development, Water and sanitation) • Improved information and communication technologies (specifically eHealth)	• Female school enrolment • Availability of information for planning and decision making
Accountability	• Strengthened HMIS – including key indicators on maternal health • Conducting regular performance reviews • Conducting regular maternal audits	• Total health expenditure

Adapted from (Ahmed et al., 2016)

4.5 Lessons learnt in applying the selected methodology

Most of the papers/reports regarding the MDG implementation have been authored by international organisations and individual governments and not published in peer reviewed journals which made it a challenge to strictly follow-only the systematic review guide. This therefore led the researcher to combine the systematic review guidelines with scoping of studies in order to broaden the sources of information and the number of studies that were included in the study.

4.6 Conclusion

The success to be integrated by low-income countries that did not meet the MDG 5 target include: the rationalisation of the available recourses (financial and human resources) for efficiency and effectiveness, investment in other sectors that support the health sector like

Education and infrastructure, provision of overall leadership in the country by the central government in the management of maternal health programmes for sustainability.

This can be achieved using the Knowledge-to-Action framework by using these lessons as the knowledge base and adapting them to the local context of each specific country after analysing the local environment and the barriers.

Understanding the country context and identifying interventions / strategies that would work in the given context was a key area for countries that were making fast track progress in the implementation of the Millennium Development Goals (WHO, World Bank and AHPSR, 2014). While there was no standard procedure, the low-income countries that made fast track progress and achieved the Millennium Development Goal 5 (a) target of reducing maternal mortality employed three major strategies; multi-sector approach, political will (guidance), evidence based decision making.

The studies included in these study indicate that each of the countries took a different implementation approach but the broad strategies were generally the same. It is evident that the progress made by the selected countries was a result of committed political leadership, collaboration among all sectors and access to key information to inform policy formulation and decision making.

If these strategies worked for these low-income countries, the question remains as to how other low-income countries that did not make good progress with MDG 5 (a) can learn and adapt similar strategies and customize them to country specific context moving towards the post 2015 global agenda of the Sustainable Development Goals.

CHAPTER 5
DISCUSSION

5.1 Introduction

There is an increasing number of female headed households in the world and even in male headed households, women have taken up employment and other economic activities to supplement the family incomes. The premature death of women, regardless of the cause, causes adverse effects to families, communities and the economy at large (Knaul et al., 2016). Being the main caretaker in families, when the woman dies, the children are likely to end up neglected and missing education and other opportunities and for girls this may mean early marriage. While world over countries made significant progress in reducing the number of women dying due to pregnancy and childbirth related complication, many women especially in low-income countries are still dying due to preventable causes (Knaul et al., 2016).

Low-income countries contribute the most to the global Maternal Mortality burden and many of them, for example Uganda, Kenya, Tanzania and Burundi did not meet the MDG target of reducing their MMR by three quarters within the 15-year period. As a result, maternal mortality continues to be high on the global agenda as evidenced by the current Sustainable Development Goals agenda.

However, there are low-income countries that overcame the various barriers that such countries face to achieve success in the MDGs, specifically MDG 5. These countries included Bangladesh, Cambodia, Eritrea, Ethiopia, Mozambique, Myanmar, Nepal and Rwanda.

The main focus for this research was to evaluate and document the implementation strategies of the MDGs in low-income countries that met the MDG 5 target of reducing their Maternal Mortality Ration by 75% by the year 2915 and draw lesson for other low-income countries and

also determine the policy implications for these countries to meet the SDG target of reducing MMR to less than 70 deaths per 100,000 live births by the year 2030.

This chapter presents the discussion of the results presented in chapter 5 focusing on the key strategies to which the reduction of MMR in the studied countries is attributed and establishing the way forward for other low-income countries moving forward with the SDGs.

5.2 General Comments

5.2.1 Assessment of the quality of the body of knowledge

The assessment of the quality of individual studies included in the review was based on the Agency for Healthcare Research and Quality (AHRQ) approach (IOM (Institute of Medicine), 2011). The approach bases the assessment of the quality of evidence on five components; risk of bias, consistency, directness, precision and applicability.

Table 7: AHRQ approach to assessment of the body of knowledge

Component	Description
Risk of bias	Extent to which flaws in the design and conduct of studies affected the reported outcomes
Consistency	In the estimate of effect across the studies
Directness	Evidence in linking interventions to health outcomes
Precision	Degree of certainty about an estimate of effect for an outcome
Applicability	Evidence to specific context and populations

Other considerations in the assessment were the risk of publication bias and the strength of association between the interventions and the observed outcomes in the various countries. This is an important step in aiding the knowledge-to-action process framework employed by the reviewer to aid the use of similar interventions/strategies in other low-income countries.

Table 8: Score of the studies against the AHRQ criteria

Component	**Country report under study**					
	*Rwanda	Nepal	*Eritrea	Bangladesh	*Cambodia	*Ethiopia
Risk of bias	Minimal	None	Minimal	None	Minimal	Minimal
Consistence	✓	✓	✓	✓	✓	✓
Directness	✓	✓	✓	✓	✓	✓
Precision	✓	✓	✓	✓	✓	✓
Applicability	✓	✓	✓	✓	✓	✓

*Reports co-authored by the respective country Ministries of Health together with teams from other organizations (PMNCH, WHO, World Bank, AHPSR) and participants in the multi-stakeholder policy review meetings thus reducing the impact of government influence (bias) in the report.

5.2.2 implementation of global agendas in low-income countries

Global agendas, including the MDGs and SDGs are set with the similar targets across all subscribing countries irrespective of their economic status, resource availability or prevailing political environment (Cohen et al., 2014a). This pauses a challenge when comparing the achievements in the various countries even those in the same economic grouping like low-income countries. It is therefore important to put into consideration the prevailing socioeconomic conditions in each country in recommending strategies to use in the reduction of maternal mortality. Some researchers have recommended the use of country specific targets if the assessment of progress made is to be deemed fair (Cohen et al., 2014a) noting that there was a limited probability of achieving the global targets in certain countries right from the point of initiation of the MDG especially in low-income countries.

However, low-income countries can learn from their past experiences and make changes significant progress in the achievement of current or future agenda. This can be done through understanding their barriers, adapting relevant knowledge and selecting interventions that work given the existing barriers (Graham et al., 2006).

5.3 Strategies used in the reduction of maternal mortality

The interventions in the various countries align well with the WHO health systems framework building blocks; i.e. leadership and governance, health care financing, health workforce, access to medical products and technologies, information and research and service delivery. The discussion will follow these broad areas as themes and explore the innovations that each of the countries deployed under each block.

5.3.1 Leadership and Governance

The common turning point for the low-income countries reviewed that managed to meet the MDG 5 target was mainly the political will of the respective governments in providing the necessary leadership combined with the drafting and implementation of policies regarding maternal health services. Such policies focused on increasing access to maternal services like ANC, Family planning, skilled birth attendance, safe abortion, infrastructure development (health facilities and transportation) and provision of affordable health care service mainly through national health care schemes (insurances) and institutionalizing the community based health care providers.

Rwanda for example, focused on consolidating the interventions in the health sector the government took lead in the streamlining of policies and strategies and all partners were mandated to work within these guidelines, which resulted in leveraging resources and hence increasing access to maternal health services which is key in reducing maternal mortality. Likewise, Nepal, Ethiopia, Cambodia, Eritrea and Bangladesh also instituted policies that targeted increasing accesses to services like the legalization of safe abortion in Nepal and the institutionalization of field based workers and satellite clinics in Bangladesh to increase access to maternal health services like antenatal care and safe delivery.

Table 9: Country demonstration of political leadership

Country	Intervention
Nepal	Drafted the necessary policies and laws to guide implementation of RMNCH programmes in the country.
Bangladesh	Enabling environment for the implementation of RMNCH programmes including the drafting of supporting policies.
Rwanda	Increased health sector funding (budget allocation) and government control of all investments in the health sector (providing guidelines and plans)
Cambodia	The government enacted the relevant laws, standards and guidelines to create an enabling environment
Eritrea	Integrated service provision managed by the government
Ethiopia	Prioritization of RMNCH in national planning

Many governments in low-income countries appreciate the need to address the problem of maternal mortality and hence have many enabling policies in the health sector that can be matched to those in Eritrea, Cambodia, Rwanda, Bangladesh and Nepal. For example, in Uganda, the presence of a health facility at every parish level that is intended to increase access to services. However, there are problems in enforcement of these strategies and providing the necessary resources or leveraging the efforts of donors and other partners in the actualization of government programmes. If the government, through the Ministry of Health could provide the necessary leadership following the example of Rwanda, Uganda will make the necessary progress and be in position to achieve the SDG target on reducing the MMR.

Governments in low-income countries need to consider developing policies, strategies, plans and mechanisms to guide programme implementation through streamlining coordination and collaboration within the health sector, between other government agencies/sectors and with development partners (Ahmed et al., 2016). It is also the responsibility of the central government to strengthen governance by reducing corruption and ensuring accountability for investments in the health sector and having women represented at the decision making level so

that their interests concerning maternal health are included in the drafting of laws, policies and guidelines.

At the central government leadership level, there is need to ensure that health systems are strengthened to deliver the priority interventions by providing guidance on how the interventions are to be implemented and providing the necessary funding for implementation of intervention (Ahmed et al., 2016) either through direct budget allocation or by leveraging resources availed by development partners. The desired interventions have to also be marketed to the health personnel who are to implement them for buy-in (Bullough et al., 2005) to ensure successful implementation and a common goal towards the reduction of maternal mortality.

The successes in reducing maternal mortality recorded in countries like Eritrea are a proof that commitment of the leadership in the country and efficient use of the available resources, all other known strategies for reducing maternal deaths can be effective in low-income countries (Kyei-Nimakoh, Carolan-Olah and McCann, 2016)

Multi sector approach: The second strategy under leadership and governance that worked across the countries was the multi sector approach to implementation of the designed strategies. For example, the improvement of the household incomes and the education levels of women provided more opportunities for women to access maternal health service. Infrastructure development (roads, hospitals) is another factor that greatly improves access to maternal health services like ANC, Skilled birth attendance and emergency care that are key in reducing the MMR of a country. Many low-income countries made good progress on MDGs relating to other sector like achieving Universal Education. For example, Uganda has made strides in educating the girl child through the Universal Primary Education and the Universal Secondary Education. However, the dropout rates are still high due to factors like lack of sanitary pads and early pregnancy. Therefore, the country needs to implement more programmes targeting

improving the incomes of households to enable them afford basic needs and also invest more in reproductive health programmes in schools just like Bangladesh did to reverse this trend.

The collaboration between sectors needs to be combined with a sector wide approach in health so that all programmes in the sector are inter-linked and support each other to realize the desired health outcomes. If programmes are implemented in isolation, they may not lead to the expected results. For example, the legalization of abortion in Nepal did not necessary reduce the maternal deaths due to unsafe abortions because the services were limited to a few facilities and not many people were aware of these services. For such initiatives there is need to include training of the health workers to offer the services and the sensitization of the communities about the availability of services and the circumstances under which certain services can be sought.

Every country has a unique political leadership structure. The lesson other countries can learn from the reviewed countries is to provide leadership from the highest level possible (with authority and strong influence both at policy level and implementation level) to spearhead the implementation of maternal health programmes. This will drive ownership and sustainability (continuous utilisation of the adopted interventions).

5.3.2 Health Financing

Health financing played a vital role in the low-income countries that met the MDG target. For example, in Rwanda the health sector budget has been growing over the years from 8.2% in 2000 to 16.5% in 2013. Compared to other low-income countries, the health sector budget has not been given the attention required and the sector budgets in many low-income countries have stagnated or slightly been fluctuating over the years. For example, in Uganda, the budget allocation for the sector fluctuated between 7.8% to 8.9% of the overall government expenditure between the years 2010/2011 to 2014/2015, with inadequate funds for basic

medicines, wages for health workers, infrastructure development and monitoring of activities. The health sector in Uganda, like in many other low-income countries, is highly dependent on donor funding between 2000 and 2014, donor funding accounted for almost 26% of the health sector budget (Lukwago, 2016). These investments are not well regulated by the health ministry leading to duplication and wastage of donor funds by the implementing agencies.

The Ministries of Health on behalf of the central governments need to align all the donor programs to conform to the sector priorities and leverage the available resources to attain the desired maternal health outcome of reducing maternal deaths. Concurrently, continuing to advocate for an increment in the sector budget allocation to meet the needs of the rapidly growing populations in the low-income countries.

The overall aim of improving the financing in the health sector is to remove barriers to access of maternal health services. Many low-income countries like Burundi and Ghana have abolished user fees in the provision of maternal health-care services (UNECA, AU, ADB and UNDP, 2015).

Raising household incomes: one of the barriers to maternal health care access in low-income countries is poverty. The low-income countries that managed to reduce their maternal mortality towards MDG 5a invested in the promotion of the well-being of their communities. Empowering household economically gives the mothers access to the resources they need to access maternal health care services (like transport to the health facility) and also improves their nutritional status which is important in ensuring safe pregnancy and delivery. With income, families are also able to access a wide range of family planning services of their choice and also access services from private health facilities (which helps to decongest the public facilities).

While increasing the budget allocation for health is critical for success in reducing maternal mortality, it may not on its own result in the desired outcome without the necessary supporting structures (including policies and stewardship). Many low-income countries may also not have the capability to increase their budget allocation within the implementation period (Cohen et al., 2014b). Countries have to find mechanisms of putting the limited funding available to efficient use through effective monitoring and leveraging the resources availed by external and internal funding agencies. This can be made more realistic by identifying the most pressing issues like maternal mortality and placing them high on the specific country agenda for all partners to address.

Investments in other sectors that affect the delivery of maternal health services is also a crucial learning point for low-income countries. For example sectors like Education, Infrastructure development and Nutrition have a high impact on the accessibility and utilisation of maternal health services hence reducing maternal mortality.

5.3.3 Health Workforce

The percentage of births attended to by skilled personnel was one of the parameters used to measure for the MDG 5 target. Various countries made a deliberate effort to increase the availability of skilled health workers to address the maternal health needs. For example, Rwanda invested in the training of midwives and also introduced the performance based financing as a motivating factor for health workers. Countries like Cambodia also put in place pans to increase recruitment of health workers into civil service and ensure equitable distribution of the available health workers to increase access to maternal health services.

At the policy level there is need to strengthen the guidelines on the training of health workers (particularly those that deal with maternal health care) to ensure that they are competent enough to provide the required maternal health services like ANC, PNC, EmOC and post-abortion care.

Secondly, deliberate investment in the education sector for health training institutes (infrastructure, equipping sills laboratories, availing qualified tutors and student sponsorship) will increase enrolment and this will ensure availability of trained health workers and increase the quality and demand (Ahmed et al., 2016) for maternal health services hence reducing maternal mortality. This has to be combined with continuous assessment of the health worker needs to prioritize the training of key cadres in the delivery maternal health services (midwives, nurses and medical doctors).

Midwifery professionals are a key cadre in the campaign to reduce maternal mortality. The World Health Organization recommends a minimum threshold of 23 doctors, nurses and midwives per 10,000 population. However only 5 of the 49 countries categorized as low-income countries by the World Bank currently meet this threshold (WHO, 2018). While there is a global shortage of these key cadres, low-income countries need to put in place strategies to ensure equitable distribution of the available workforce. There is need for each country to develop guidelines and policies regarding attraction and retention of the key cadres (especially midwives) especially in the hard to reach and hard to stay areas (Kyei-Nimakoh, Carolan-Olah and McCann, 2016).

Some of the low-income countries that met the MDG 5 target on reducing maternal deaths do not have the recommended number of the critical cadres (Doctors, Nurses, midwives) per 10,000 population while some of those that did not achieve the target had a relatively higher number, for example Uganda.

Table 10: Comparison of the density of Doctors, Nurses and Midwives in selected Countries (WHO, 2018)

Country	Density of critical cadres for maternal health care	Progress on MDG 5
Rwanda	5	Achieved
Cambodia	10	Achieved
Eritrea	6	On track
Nepal	7	On track
Kenya	13	Not Achieved
Bangladesh	6	On track
Zimbabwe	9	Not Achieved
Uganda	14	Not Achieved

This indicates that the issue of human resources for health in delivery of maternal health care is not just about numbers but the optimum utilization of the available resources which is a concept other low-income countries can learn and endeavour to adopt.

Community Health Extension Worker: community health extension workers have proved to be effective in the delivery of maternal health and family planning information and commodities that were once limited to formally-trained health workers (Haver et al., 2015). Therefore, their role in the reduction of maternal mortality in low-income countries cannot be overlooked given the prevailing shortage of the formally-trained health workers.

The Community Health Worker strategy worked very well for low-income countries in reducing the maternal mortality where availability of the required number of skilled health personnel remains a challenge. The Community Health Workers are closer to the communities and their training and remuneration affordable. This also provides linkage between the mothers and the skilled professionals.

The CHWs also help leverage the limited professional workforce (especially the nurses and midwives) by taking on a few of the duties, specifically the community outreach activities

leaving the few available Nurses and Midwives to concentrate on the more technical aspects of maternal health care.

Many low-income countries are using community based health workers (for example Uganda is using Village Health Teams (VHTs)) to offer basic health care services at the village level. However, many of these were never trained and there has been no formal way of regulating their practice and paying for their services. The VHTs have mainly received informal training from the implementing partners in the health sector and receive incentives from the same partners, which is not consistent throughout the country. The Ministry of Health in Uganda has recently reviewed the policy on VHTs and is now switching to the Community Health Extension Workers (CHEWs) who will receive training and also be formally paid for providing services through streamlined government structures. If this CHEW program is well implemented as in Rwanda and Bangladesh, this will help Uganda and other low-income countries to make remarkable progress in reducing maternal deaths through increased access to maternal services and improved linkage between the communities and the health facilities.

Traditional Practitioners: Apart from the CHEWs, at the community level many mothers in low-income countries (especially in the Sub-Saharan region) still seek the services of Traditional Birth Attendants (TBAs) and other traditional practitioners (herbalists, diviners and spiritualists) (Kyei-Nimakoh, Carolan-Olah and McCann, 2016) due to some deep-rooted cultural beliefs. While many governments have stopped the training of the TBAs and encouraged women to seek help from professionals, many mothers still seek their advice and help especially during the pregnancy and therefore they form an important group that can assist in the campaign towards the reduction maternal mortality through providing the right information. It Is therefore important for guidelines to de developed in countries where these groups exist to guide their practice and draw boundaries on what they ca do and also link them to the professionals for referral of mothers on top of giving mothers the correct information

during their antenatal visits. This will help the countries not to lose out an the important vulnerable groups that still believe in these traditional providers and thus contribute to the reduction maternal mortality (Kyei-Nimakoh, Carolan-Olah and McCann, 2016).

While the ultimate goal for many low-income countries is to eliminate the practice of TBAs, it is important to note that this is a slow process and needs proper guidance, strong legislation and closely working with both the TRAs and communities within which they live. Rwanda successfully abolished TBAS through a gradual process of engaging them first by equipping them with sills and information to help mothers, and working with them to refer mothers to health facilities, the government ultimately integrated those who qualified into the CHEW program and their practice was finally out-lawed (Chambers and Golooba-Mutebi, 2012).

The success of Rwanda in dealing with the TBAs is attributed to strong legislation and government capacity to monitor and supervise their activities which other low-income countries intending to follow the same path have to institute (Chambers and Golooba-Mutebi, 2012).

5.3.4 Service delivery

Universal health care coverage: Universal health care is a critical success factor in the reduction of maternal mortality as many people in low-income countries do not have enough money to pay for the health care services they need including hospital user fees and purchase of required medicines. Rwanda, Bangladesh, Ethiopia, Eritrea, Cambodia and Nepal put much focus on providing affordable health care services especially maternal services. For example, Rwanda put in place the Community Based Insurance scheme while Bangladesh focused on improving the livelihoods of households and increasing their incomes so they can afford the services. Bangladesh also fostered strong public private partnerships and the private sector

greatly contributed to the reduction of the maternal deaths in the country through the expansion of the private facilities network.

Nepal put in place a policy of free institutional deliveries (in 2009) to encourage all mother s to deliver in a health facility (under skilled birth attendance). This made the services accessible to mothers and increased the number of births attended to by skilled personnel. Access to affordable medial services is critical in reducing maternal mortality in any country.

There have been attempts by many low-income countries to put in place some forms of national or community based health schemes. For example, Uganda conceived the idea of a national health insurance scheme in 2012 (ISER, 2015), but until now this has not been implemented. As such the out of pocket expenditure on health care remains high at 40% (Ministry of Health Uganda, 2016) for households. Yet, many Ugandans are still living on less than one dollar a day. (According to the World Bank (2016), 34.6% of Ugandans were living on less than $1 a day as of 2013).

Besides the insurance scheme, low-income countries like Rwanda also provided targeted maternal health care services for free for example free ANC consultations, free family planning services provided by all health facilities (Chambers and Golooba-Mutebi, 2012) which increased the ANC attendance and uptake of family planning in the country contributing to a reduction in maternal mortality. Other low-income countries that are not ready to offer universal health care insurance could start with providing selected free maternal services to increase their uptake.

Safe motherhood strategies: The World Health Organization development the concept of Making Pregnancy Safer (MPS) (WHO, 2004) focusing on widespread skilled birth attendance and access to emergency care (Bullough et al., 2005). All the countries in the review implemented strategies towards safe motherhood with investments in human resources for

health, improving service quality, prevention and treatment of complication (increasing ANC attendance and access to Emergency Obstetric Care) and community engagement. In order to address the problem of maternal mortality, these are key areas for policy formulation basing on available evidence in the country (ANC coverage, community health players, EmOC coverage, level of demand for maternal health services) (Bullough et al., 2005).

Community health strategies: many of the interventions that help in the reduction of maternal mortality like uptake of family planning, delivery in health facilities, ANC attendance, subscription to health insurance schemes, good hygiene and proper nutrition require behavior change (Chambers and Golooba-Mutebi, 2012) and family support systems. The strategy of community engagement in the form of health education and community health campaigns has been proven to be a success factor in low-income countries that have reduced their MMR significantly and other low-income countries could consider investment in this area.

Every country has a unique health service delivery model depending on the population size, spread and utilization patterns. Low-income countries need to invest in research in this area of service delivery to be able to design and adopt the most effective and efficient models and strategies for the delivery of maternal health services.

5.3.5 Medical products and technologies

There was a strong focus in the six countries reviewed to ensure availability of essential medicines for maternal health, for example medicines required for emergency obstetric care through partnerships between the public sector and the private sector (especially donor funded implementing partners).

Countries also worked towards increasing the contraceptive prevalence which is one of the interventions recommended by the World Health Organization towards reducing maternal mortality.

Low-income countries therefore need to think of strategies to maintained stocks of essential medicines for maternal health care and put in place mechanisms to monitor the stock levels throughout the health service delivery structure (from the lowest facility to the highest referral level). For-example low-income countries can adopt information systems that can help with the monitoring of stock levels in health facilities. The information systems can also assist in health managers to place orders quickly and more efficiently.

5.3.6 Information and Research

Low-income counties still face a challenge of tracking maternal mortality and in many cases the Maternal Mortality Ratio is estimated due to lack of an up-to-date national HMIS and delay in conducting national surveys. During the MDG implementation period much of the monitoring depended on modelled estimates of mortality, infrequent household surveys and ad-hoc systems for tracking policies, health system measures and funding flows (Cesar G et al., 2016). This could lead to misrepresentation of some country statistics and misinformation during policy development.

All the low-income countries reviewed put in place innovations to strengthen the health information systems to provide information for decision making. Information systems play a critical role in the drafting of policies and guidelines for maternal health and also provide a mechanism of accountability for each maternal death informing future planning. For example, Ethiopia introduced the score cards based on the health information system to promote accountability and encourage action (WHO, World Bank and AHPSR, 2014).

Key policies in this area need to focus on ensuring routing update and analysis of the information in the national HMIS, regular maternal audits and performance review to guide future planning of interventions and guidance for decision makers.

Research is a critical component for health systems in low-income countries to guide the generation of new strategies in tackling the rampant maternal deaths in these countries. With research health managers in low-income countries are able to make informed decisions, evaluate programmes that work for sustainability and drop those that have not worked overtime.

5.4 Summary

The reduction of maternal mortality in low-income countries during the MDG period highly depended on the ability of these countries to identify the problem areas, assess the most applicable strategies and counter the barriers to the implementation of the maternal mortality reduction strategies. The successful low-income countries ended up with all-round investment plans implying the inter-dependency of the all the MDGs.

Overall, the acceleration of progress towards the achievement of MDG 5 in all countries was due to the development of clear policies, strategies and guidelines led and coordinated by the respective governments (Ahmed et al., 2016). Investments in sectors outside health made a major contribution towards the reduction (estimated at half the reduction) of maternal mortality in low-income countries during the MDG implementation period (Ahmed et al., 2016).

Some of the strategies that worked in the low-income countries that met MDG 5 such as legalization of abortion are likely to face much resistance in many low-income countries (including policy makers and community leaders) due to the deep-rooted cultural and religious beliefs. However, through other interventions such as reproductive health education, girl

education and increasing the access and utilization of family planning services the incidence of unsafe abortions can be reduced. Low-income countries that did not meet MDG 5 can also borrow from other countries where laws on safe abortion have worked and increase the scope of circumstances under which abortion can be legal. Currently, abortion is only legal if it is recommended to save the life of the mother (medical complications), but there are common occurrences like rape and incest that highly contribute to unsafe abortions that can be considered.

The factors responsible for the reduction of the maternal mortality ratio in Nepal, Ethiopia, Eritrea, Cambodia, Rwanda and Bangladesh such as increasing the number of births attended by skilled personnel, reducing the unmet need for family planning, investing in the girl child education, infrastructure development and public private partnerships are not new in most low-income countries like Uganda. However, the uniqueness can be seen in the implementation strategies especially the leadership provided by the central governments in these countries that resulted in focused implementation of the various programs and this is a key lesson that other low-income countries can borrow from these countries in order to achieve the SDG target.

Low-income countries in the Sub-Saharan region made significant investment in infrastructure development by constructing more health facilities and renovating the old facilities. However, most of these facilities remained not fully functional due to various challenges, for example Uganda faced a shortage of human resources, equipment and the facilities were not well maintained (Lukwago, 2016). Moving towards 2030, the Ministries of Health in low-income countries need to invest in areas of human resources for health and medical equipment and supplies, which are critical in the success of Rwanda and Bangladesh during the MDG era.

While low-income countries may continue to struggle with insufficient resources like finances and trained health personnel, they can learn from the MDG experience strategies for efficient

and effective utilization of these limited resources. The Knowledge-to-Action framework emphasizes the continuous process of knowledge creation, adoption, evaluation and sustainability which is important for low-income countries going forward with the SDGs

5.5 Limitations of the study

The researcher only used online sources to search for studies to include in the study. This could have resulted in omissions of key studies that may be available in only print format or those not published in any online source.

Other low-income countries that met MDG 5 or which were on target to meet the target (indicating that they made much progress) were not included in the study as no credible studies were found regarding these countries. This may have made the generalization of the research findings biased

Additionally, the researcher only used free to access databases and journals and may have missed out on important information contained in other sources that require subscription plus those that are written in other languages.

5.6 Conclusion

In conclusion, these studies are important for low-income countries that did not achieve the MDG 5 target because they form the knowledge base for these low-income countries to learn from and adapt for future implementation of maternal health programmes. The studies do not indicate any new strategies from the traditionary known strategies of reducing maternal mortality, however, the successful countries changed the methods of implementing the strategies and became more innovative in the way they allocated the limited resources available and put in place enabling policies to make the strategies work better.

Putting into consideration the different economic status of the low-income countries in terms of GPD per capita, population dynamics and the priorities of the various governments, the

included studies provide a benchmarking ground on how these limitations can be handled and progress realised in meeting global targets specifically in the area of maternal health.

CHAPTER 6
RECOMMENDATIONS

6.1 Introduction

This chapter presents the reviewer's recommendations for other low-income countries moving forward with the implementation of the SDGs. The recommendations were drawn from the lessons learnt from the low-income countries that made commendable progress in the implementation of MDG 5 drawn from evidence in the studies that were reviewed.

Using the knowledge-to-action framework, low-income countries that did not progress in the implementation of MDG 5 can consider the strategies that the successful countries employed and transfer them into the specific country local context to aid the implementation and achievement of the SDG target.

6.2 Recommendation 1: Lessons from low-income countries that achieved MDG 5 target

There is no one strategy that yields positive results in reducing maternal mortality, it is a combination of strategies that have to be tailored to a specific country context in order to realize the desired maternal health outcomes. However, the experiences of the countries that succeeded in reducing MMR I the MDG era can form a knowledge base for other low-income countries to learn from. The following areas are recommended for consideration by other low-income countries as learning points in the development of country specific programmes to address maternal mortality.

<u>Role of political leadership and governance</u>

Political leaders (the president's office and the minister of health) in low-income countries that did not make progress on MDG 5 need to consider putting in place policies and guidelines that

encourage leveraging of the available resources for effective implementation of maternal health programs, for example guidance for donors and implementing partners to avoid duplication of programs and implementation of programs within the ministry of health frameworks. This concept was well exhibited by Rwanda.

The legislative arms of these low-income countries need to revise the relevant laws and institute new ones that promote the safety of mothers, for example a law on abortion to provide for safe abortion services to counter large number of women that die annually due to unsafe abortions.

Leveraging Health Financing and removal of barriers to maternal health care access.

Governments in the low-income countries that did not meet the MDG 5 target need to work towards increasing the financing of the health sector towards the Abuja Declaration of 15% (many of the low-income countries in the Sub-Saharan region are signatories to this declaration) and minimize donor dependency as this funding from donors in not predictable and not sustainable. There is need to broaden the funding sources in the health sector and prioritize investments areas to minimize wastage resulting from duplicate funding for similar programmes. This can be achieved through joint planning (government and other stakeholders) where each stakeholders interest areas and amount of funding is put into consideration

These governments also need to fast track the implementation of the national insurance schemes so that communities are also able to contribute to the financing of the health sector budget while at the same time accessing quality maternal health services at a low cost. Another consideration for low-income countries is the provision of free maternal health care services like ANC, delivery and emergency obstetric care.

However, it is important to note that increasing funding alone may not result in reduction in maternal deaths. Low–income countries may also fail to increase their funding due to the

prevailing conditions in individual countries. Therefore the lesson to learn is the identification of priority areas for funding and effective monitoring for efficient use of the limited recourses.

Service delivery

Fast tracking the implementation of the Universal Health Care insurance scheme in low-income countries will allow more women access to maternal health services. The WHO recommended out of pocket expenditure on health care is 15% however, the expenditure in most low-income countries still remains high. For example Uganda's out of pocket expenditure by households still stands at 40% (Ministry of Health Uganda, 2016) which is high. The Insurance schemes will reduce this expenditure and improve the health seeking behaviour of the populations in low-income countries including seeking maternal health care.

In order to scale up the number of births attended to by skilled personnel and the prevalence of contraceptive use, which are critical interventions in addressing the causes of maternal deaths, governments in low-income countries need to invest in infrastructure development (roads, health facilities) to increase access to these services and also provide incentives for women to be attracted to these service delivery centres, for example low/no cost for services, availability of supplies and personnel. Governments in low-income countries should also focus on public private partnerships to leverage the scarce resources to be able to reach a bigger population with quality maternal health services. They should also engage communities to contribute towards the delivery of services for example through affordable health insurance schemes and arrangement of transport for expectant mothers and women with emergency cases.

Leveraging the available Human Resources for Health

The challenge of limited human resources persists in low-income countries therefore low-income countries need to leverage the few available health workers and also adopt other cadres that easy to train and cheaper to pay like the Community Health Workers. This is a concept that worked well in Rwanda and other low-income countries should consider learning and adopting this to their local contexts.

Institutionalization of the Community Health Worker program in low-income countries will bring maternal services closer to the communities and enhance the linkage between the communities and the skilled health professionals. The Community health workers unlike the Village Health Teams will be trained, regulated and formally paid for their services and thus able to implement the national programmes by the respective ministries of health more efficiently and effectively.

Health Information Systems

Low-income countries that did not meet the MDG target of reducing maternal mortality need to invest in strong Health Management Information Systems (HMIS) to aid decision making and the design of interventions that fit the specific country context. Every maternal death needs to be accounted for and interventions designed to respond to the specific causes given the prevailing environment.

It is important to note that during the implementation of the MDGs, many of the country MMRs were estimated using models, moving forward with the SDGs, low-income countries need to ensure that a true picture of the country is represented in the national and global statistics

Investment in sectors outside health

There is a direct relationship between reduction in maternal mortality and improvement in other non-health indicators like improved education of women, improved road infrastructure (to ease transportation), improved household incomes and access to clean water and improved nutrition. Thus a multi-sector investment plan is a good consideration for low-income countries still struggling with high MMR that will accelerate progress towards the achievement of the SDG targets.

6.3 Recommendation 2: Assessment of barriers to implementation of strategies

Maternal mortality is influenced by many factors within and beyond the health sector (De Brouwere, 2017). Low-income countries should therefore consider assessing all barriers and drawing from the experiences of countries like Rwanda to overcome these barriers in order to ensure success of the adopted strategies. One key recommendation for assessing overcoming barriers to the reduction of maternal mortality is community involvement in maternal health programmes.

Community participation and breaking down cultural barriers.

Many maternal health reduction interventions are hinged on behaviour change among communities. The Ministries of health and partners need to focus more on community engagement right from the identification of interventions to be implemented and planning the implementation especially in sensitizing the communities on the benefits and how these interventions interact with their customs and beliefs.

Communities in low-income countries, especially in the remote areas, need to he supported to gain a clear understanding of the reproductive health needs of women so that they can supportive of

government programmes for maternal health. Some of the areas to consider for guidance and community engagement is spousal support especially in the uptake of family planning services and the importance of girl education in delaying marriage and increasing the age at which girls begin having children as a mechanism for reducing maternal mortality.

6.4 Recommendation 3: Adaptability of Successful strategies in other low-income countries

Low-income countries that did not achieve the MDG 5 target need to review the strategies that have proven to be successful and adopt them to their local context. From the global goals, low-income countries should consider developing local annual targets putting into consideration the prevailing socioeconomic factors (Ahmed et al., 2016). Taking the strategies from other countries and customizing them with achievable targets for specific countries will ensure ownership (by the health managers and the intended recipients) and sustainability

6.5 Recommendation 4: Sustainability of maternal health interventions in low-income countries

Low-income countries need to put in place mechanisms to ensure sustainability of adopted maternal health interventions. Continued use of the successful strategies will help these countries to gradually reduce their maternal mortality ratios. Some of the mechanisms that can be adopted include a strong monitoring and evaluation framework, breaking down the strategies into actionable plans to be adopted by the various stakeholders and using the various implementation progress reports for decision making (Straus, Tetroe and Graham, 2011).

Health managers in low-income countries need to invest continuously in research during the implementation period of the given agenda towards reducing maternal mortality to generate information required for policy formulation and decision making at all levels (Straus, Tetroe and

Graham, 2011). This will ensure that all stakeholders (including the political leadership) are continuously informed about the status of maternal health in the country and their support sustained (Gagnon, 2011).

6.6 Recommendation 5: Maternal mortality a public health issue

Maternal health is a critical public health issue since some of the causes of maternal deaths can be linked to lifestyle problems. For example, obesity which can cause high blood pressure in pregnancy, uptake of family planning, early sex resulting in unwanted pregnancies leading to abortion, early marriages that result in pregnancies in young girls whose bodies are not ready for childbearing. These problems can best be addressed from public health perspective which requires investments in programmes relating to public health campaigns for better living.

6.7 Summary

Securing the health of women resulting in progress for low-income countries given their contribution to the wellbeing of the populations (Knaul et al., 2016). Therefore all countries need to make considerable investment in the reduction of maternal mortality not just as a global agenda but as a strategy for development. Likewise women play and important role of childbearing and so it is imperative that all efforts are done to make it safe.

Many factors contributed to the reduction of Maternal deaths in Rwanda, Eritrea, Cambodia Bangladesh and Nepal. However, prominent among these were the political leadership of the governments in these countries, the enabling policies in these countries and improved access and utilization to maternal health services.

It is important to note that there was no uniqueness in many of the interventions that led to the success registered by these low-income countries, the difference was in the commitment of the

leadership, the partners and entire communities towards making a difference in their countries and the organization of the interventions to suit the local context. This is a big lesson that other low-income countries can adopt towards the implementation of the Sustainable Development Goals with a target of reducing the MMR to less than 70 per 100,000 live births by the year 2030.

It is also important to note that the global development agenda needs to be implemented as a wholesome agenda in order to achieve results on all targets. Many other interventions in the various MDGs like Education, Eradication of hunger and poverty, promotion of gender equality, reduction in child mortality, combating of HIV/AIDS and other diseases and environmental sustainability had an impact in the reduction maternal mortality in the low-income countries that made commendable progress on MDG 5.

Taking an example of Uganda as a low-income country still struggling with high MMR, to reduce the current high MMR in the country there is need for the political leaders to take charge of the maternal health programs and provide leadership though appropriate budget allocations to sectors that directly influence the delivery of maternal services. For example, improvement of the livelihood of families and mothers, education (especially of the girl child) and infrastructure development, plus health. The government also needs to take leadership in drafting the necessary policies to guide the implementation of maternal health programs in the country and to sensitize the communities and key stakeholders to support such initiatives.

Interventions that work towards the reduction of maternal health exist (Wagstaff and Claeson, 2004), the only challenge is that they do not reach as many people as they ought to. The success for low-income countries in the implementation of the SDGs will therefore be greatly influenced by the ability to identify the interventions that work, adopting the intervention in the specific

country context, drafting the necessary guidelines to counter the barriers and continuously scaling them up to cover the entire population. Low-income countries that did not achieve the MDG 5 target need to borrow strategies from the countries that succeeded as a knowledge base to inform future programming and hence reduction in Maternal Mortality.

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APPENDICES

Appendix 1: Country Categorization by World Bank and UN

#	Country	WB Income category (2011)	UN MDG Classification (2011)	MDG 5 Status by 2015
1	Afghanistan	L	LDC/DC	Achieved or On track
2	Bangladesh	L	LDC/DC	Achieved or On track
3	Cambodia	L	LDC/DC	Achieved or On track
4	Eritrea	L	LDC/DC	Achieved or On track
5	Ethiopia	L	LDC/DC	Achieved or On track
6	Mozambique	L	LDC/DC	Achieved or On track
7	Myanmar	L	LDC/DC	Achieved or On track
8	Nepal	L	LDC/DC	Achieved or On track
9	Rwanda	L	LDC/DC	Achieved or On track
10	Samoa	LM	LDC/DC	Achieved or On track
11	Timor-Leste	LM	LDC/DC	Achieved or On track
12	Tajikistan	L	DC	Achieved or On track
13	Angola	UM	LDC/DC	Achieved or On track
14	Bhutan	LM	LDC/DC	Achieved or On track
15	Equatorial Guinea	H	LDC/DC	Achieved or On track
16	Lao People's Dem Republic	LM	LDC/DC	Achieved or On track
17	Korea, Dem. Rep.	L	DC	Achieved or On track
18	Kyrgyz Republic	L	DC	Achieved or On track
19	Benin	L	LDC/DC	Medium Progress
20	Burkina Faso	L	LDC/DC	Medium Progress
21	Burundi	L	LDC/DC	Medium Progress
22	Chad	L	LDC/DC	Medium Progress
23	Comoros	L	LDC/DC	Medium Progress
24	Djibouti	LM	LDC/DC	Medium Progress
25	Gambia, The	L	LDC/DC	Medium Progress
26	Guinea	L	LDC/DC	Medium Progress
27	Guinea-Bissau	L	LDC/DC	Medium Progress
28	Haiti	L	LDC/DC	Medium Progress
29	Kiribati	LM	LDC/DC	Medium Progress
30	Liberia	L	LDC/DC	Medium Progress
31	Madagascar	L	LDC/DC	Medium Progress
32	Malawi	L	LDC/DC	Medium Progress
33	Mali	L	LDC/DC	Medium Progress
34	Mauritania	L	LDC/DC	Medium Progress
35	Niger	L	LDC/DC	Medium Progress
36	Sao Tome and Principe	LM	LDC/DC	Medium Progress
37	Senegal	LM	LDC/DC	Medium Progress
38	Sierra Leone	L	LDC/DC	Medium Progress
39	Solomon Islands	LM	LDC/DC	Medium Progress
40	Somalia	L	LDC/DC	Medium Progress

41	Tanzania	L	LDC/DC	Medium Progress
42	Uganda	L	LDC/DC	Medium Progress
43	Vanuatu	LM	LDC/DC	Medium Progress
44	Yemen	LM	LDC/DC	Medium Progress
45	Zambia	LM	LDC/DC	Medium Progress
46	Central African Republic	L	LDC/DC	Low progress
47	Congo, Dem. Rep.	L	LDC/DC	Low progress
48	Lesotho	LM	LDC/DC	Low progress
49	Kenya	L	DC	Low progress
50	Togo	L	LDC/DC	Low progress
51	Zimbabwe	L	DC	Low progress
52	*Sudan*	*LM*	*LDC/DC*	*No report*
53	*Tuvalu*	*UM*	*LDC/DC*	*No report*

L = Low Income
LM = Lower Middle Income
UM - Upper Middle Income
H = High Income

LDC = Least Developed Country
DC = Developing Country

Appendix 2: PRISMA Table: Summary of interventions

Reference	Country	Type of study	Setting	Participants	Interventions / focus areas	Outcome	Lesson learnt
Ministry of Health Rwanda et al, (2014)	Rwanda	Mixed methods	Low-income country	Local population, international organizations, ministry of health.	• Health financing • Human Resources for Health • Sector-wide approach • Universal Health Care • Political Prioritization • Robust HMIS	Achieved MDG 5(a)	• Performance based financing and national health insurance increase utilization of maternal health services • Leveraging resources through donor alignment and PPP increases access to maternal health services • Community Health Workers are a critical linkage between women un the community and health facilities/skilled birth attendants
Bhandari and Dangal (2012	Nepal	Literature review	Low-income country	Local population, international organizations, ministry of health.	Nepal focused on putting in place relevant policies and schemes in order to reduce the high MMR the country was facing. These included: National	Achieved MDG 5(a)	

					health policy 1991, Second long term health plan 1997 – 2017, Safe motherhood policy 1998 , National Safe abortion policy 2003, National Policy on skilled birth attendants (SBAs) 2006, National free delivery policy 2009		
El Arifeen et al (2014)	Bangladesh	Mixed methods	Low-income country	Local population, international organizations, ministry of health.	• Policy change – creating an enabling environment for the expansion of maternal health services • Health sector-wide approaches • Infrastructure development • Growth in the communication sector • Improvements in household incomes	Achieved MDG 5(a)	

Ministry of Health Cambodia et al (2015)	Cambodia	Mixed methods	Low-income country	Local population, international organizations, ministry of health.	• Laws, standards and guidelines • Health Systems strengthening • Service delivery strategies	Achieved MDG 5(a)	• Reduction in MMR is directly influenced by political commitment and sound governance • Improvements in other socioeconomic factors like education and income also greatly influences maternal health outcomes.
Ministry of Health Ethiopia et al (2014)	Ethiopia	Mixed methods	Low-income country	Local population, international organizations, ministry of health.	• Leadership & Governance • Prioritization of RMNCH in national planning • Health Systems Strengthening • Legal framework for women's health	On track to achieve MDG 5 (a) target as of 2013	• The key factors driving reduction in maternal mortality include research & innovation, quality of care of RMNCH services and health systems strengthening
Ministry of Health Eritrea (2014)	Eritrea	Mixed methods	Low-income Country	Local population, international organizations, ministry of health.	• Universal health care coverage • Integrated health service provision • Comprehensive service delivery	Achieved MDG 5(a) by 2013	• A strong government is key in achieving health goals • Community participation and involvement helps in improving

					• Community involvement • Political commitment and leadership • Inter-sector collaboration		maternal health outcomes • Government ownership of health programmes ensures sustainability in the country • Investment in health and education is a key driver to development.