

# **The challenges of the Ethiopian Health Extension Workers to reduce Maternal Mortality**

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**Ethiopia**

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# **The challenges of the Ethiopian Health Extension Workers to reduce Maternal Mortality**

A thesis submitted in partial fulfillment of the requirement for the degree of Master of Public Health.

by

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Ethiopia

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## List of abbreviations

<b>Abbreviation</b>	<b>Definition</b>
ANC	Antenatal Care
BeMoNC	Basic Emergency Obstetric and Neonatal Care
CEmONC	Comprehensive Emergency Obstetric and Neonatal Care
CNHDE	Center for National Health Development in Ethiopia
CBSMP	Community Based Safe Motherhood Project
CSA	Central Statistics Authority
NDHS	National Demographic and Health Survey
DOTS	Directly Observed Therapy – Short Course
EmOC	Emergency Obstetric Care
FGD	Focus Group Discussion
FMoH	Federal Ministry of Health
GDP	Gross Domestic Product
GTP	Growth and Transformation Plan
HAD	Health Development Army
HC	Health Centre
HEP	Health Extension Program
HEW	Health Extension Worker
HF	Health Facility
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
HSDP	Health Sector Development Plan
HP	Health Post
ICHD	International Course in Health and development
KIT	Royal Tropical Institute, Koninklijk Instituut voor de Tropen,
L10K	Last Ten Kilometer
MDG	Millennium Development Goal
MOFED	Ministry of Finance and Economical Development
MMR	Maternal Mortality Rate
NGO	Non-Governmental Organization
NHA	National Health Account

<b>Abbreviation</b>	<b>Definition</b>
PHCU	Primary Health Care Unit
RHB	Regional Health Bureau
TB	Tuberculosis
TBA	Traditional Birth Attendant
UN	United Nations
UNDP	United Nations Population Fund
vCHWs	Voluntary Community Health Workers
WB	World Bank
WHO	World Health Organization

## Glossary

**Model House Family:** Those who are involved in other development work, and /or that have community acceptance and credibility, as early adopters of desirable health practices to become role models in line with health extension packages. Model families help diffuse health messages leading to the adoption of the desired practices and behaviors by the community (FMoH , 2007).

**Maternal Mortality Ratio (MMR):** is the number maternal death during a given time period per 100,000 live births during the same period (WHO, 2009).

**Maternal Death (ICD- 10 definition):** “is the death of women while pregnant or within 42 days of termination of pregnancy irrespective from the duration and the site of the pregnancy from any causes related to or aggravated by pregnancy or its management but not from accidental or incidental causes” (WHO, 2009).

**Skilled care:** “is a quality of care to the women during pregnancy, childbirth and postpartum period and her infant provided by a skilled personnel supported by an enabling environment (necessary equipment, supplies and medicines and infrastructure) and functional referral system” (WHO, 2012).

**Skilled health worker/ Skilled Birth Attendant (SBA):** “is an accredited health professional such as midwife, doctor or nurse who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postpartum period, and in the identification management and referral or complications in women and newborn” (WHO, 2008).

**Traditional Birth attendant (TBA):** “traditional, independent (of the health system), none formally trained and community based providers of care during pregnancy, childbirth and the postpartum period. TBAs either trained or not, is excluded from the category of skilled health workers” (WHO, 2004).

## **Abstract**

The Ethiopian Health Extension Program (HEP) has successfully improved the health of the majority of the rural population, but Ethiopia's maternal mortality reduction still delays the country's achievement of the Millennium Development Goal (MDG) 5. The 2011 Maternal Mortality Rate (MMR) was 676 per 100,000 live births, which was not an improvement over 673 per 100,000 live births in the 2005 NDHS of five years before. The health extension program was aimed to contribute to reduction of the MMR by 2/3rd by attending normal delivery, promoting institutional delivery and referring to the health center in case of complicated labor in order to achieve MDG 5 by 2015. However, there is no much improvement in institutional delivery coverage after the implementation of HEP. This study analyzes those factors preventing Health Extension Workers (HEW)s to achieve this goal, mainly in rural Ethiopia.

## **Objectives**

The aim of the study is to describe and analyze factors that hinder the HEP from improving institutional delivery service coverage in rural Ethiopian communities and to make recommendations to government and stakeholders so that the country will be able to achieve MDG 5 and save mothers lives.

## **Methods**

A literature review on maternal health was undertaken. The adopted three delays model is used to critically explore factors. Literatures conducted in relation to HEP/HEWs and maternal health in Ethiopia was used by using different key words from PubMed, Google scholar, Google, VU and KIT library. I also used Ethiopian FMOH , WHO website.

## **Results**

Most women in Ethiopia prefer to give birth at home with the assistance of a Traditional Birth Attendant (TBA), rather than by HEWs. The study found a number of factors contributing to the low coverage. Seeking care, delay 1, was linked with individual factors such as age, income, education, marital status and place of residence, and with social factors such as deep rooted traditional, cultural norms and beliefs. Reaching care, delay 2, was caused by transport unavailability or costs. Receiving appropriate care, delay 3, was hindered by unavailability of competent staff, unavailability of adequate facilities providing emergency obstetric care (EmOC) and week referral system for complicated pregnancies.

## **Conclusion**

The HEP in Ethiopia has shown significant positive impacts on the health of communities. However, HEW have not improved the low coverage of institutional delivery. The three delays model show the obstacles for achieving safe delivery. Solving only the challenge of one of the delays cannot bring improvement in coverage of institution delivery so that the country can

achieve MDG 5. Thus to attack all three delays the government need to work with other sectors using a multi-sectoral approach.

### **Recommendations**

To address delay one by strengthening HEP using the new FMoH strategy called Health Development Army (HAD), delay 2 by procuring and distribution of Ambulance, delay 3 by training and monitoring the quality of the training of staff at HC/HP, ensuring sustainable and adequate supply, expanding facilities to provide EmOC. In addition and very important inter-sectorial collaboration to manage challenges beyond the scoop of the health sector.

### **Key words**

Health Extension program, Health Extension Workers, maternal health, institutional delivery, Skilled birth attendant, safe and clean delivery, health development Army and Ethiopia.

### **Word count**

12447

## **Introduction**

My name is Nafkot Abadura Abafita. I graduated in BSC Public Health from Gondar University Collage of Medical and Health Science (GCMHS), Ethiopia in 2007. Since then I have been working at the Federal Ministry of Health of Ethiopia as an Officer in Health Promotion and Disease Prevention Directorate, mostly involving in EPI and maternal health related issues. As an officer I was expected to go frequently to the field to do supportive supervision, attending national and international meetings, supporting Regions in addressing their logistics and financial gaps from Federal Ministry of Health (FMoH) and partner and involved in national health planning in collaboration with Regions and partners

The reason I am interested in writing my thesis on this topic is, most of the meetings that I attended and the FMoH by itself mention Health Extension Program (HEP) as best innovative and successful program in Ethiopia in almost all packages of the program. And regarding maternal mortality reduction, they also mentioned the country does not show much improvement since the implementation of the program. Personally I wonder why this is happening, when I conduct supportive supervision I can be a witness for the government of Ethiopia doing a great job in making health institutions in the majority of rural areas accessible: there are Health Posts (HP) in place equipped by lots of expensive medical equipment donated by UNICEF even those materials we cannot find them at the Health Centers (HC). Most of the Health Extension Workers (HEWs) that I supervise are trained in safe and clean delivery and they can assist normal delivery. Then I was asking myself what is the challenge the HEWs have in improving the countries institutional delivery coverage. Then I decided and was motivated to explore the major challenges that the HEWs are facing in improving institutional delivery coverage of the country and recommend the FMoH of Ethiopia by using the knowledge and analytical thinking my school gave me through the year.

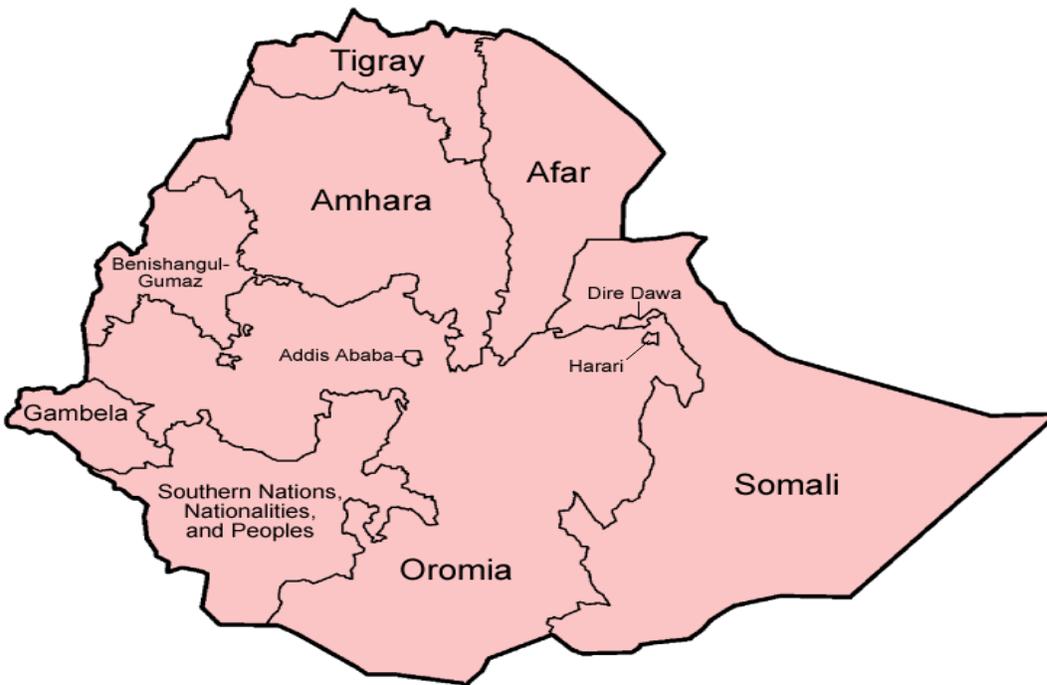
# Chapter 1: Background

## 1.1 Geography and Demography

Ethiopia is located in East Africa in the region commonly called the Horn of Africa. It covers an area of approximately 1.14 million square kilometers and is one of Africa's most populous countries. The size of the country and its location privilege it with diverse topography, geography and climatic zones and resources. Ethiopia is one of the poorest and least developed countries in the world, with a population of 82 million (UN, 2009) with about 83.6 % living in rural and 16.4% in urban areas. The female population is about 49.5% of the total and 24% of them are in the reproductive age group (15-49). From the total population 44.95% are under the age of 15 years and this group is projected to increase by 2.6 % every year. Currently the average family size is 4.7. The total fertility rate significantly decreased from 6.4 births per woman in 1999 to 4.8 in 2011 (CSA, 2011).

## 1.2 Governmental Administration

Administratively the country is divided in to nine Regional States and two City Administrations. Those are further divided into 817 Woredas (districts) which are further divided into 16,253 Kebeles which are the smallest units in the Ethiopian administrative structure.



**Figure 1. Map of Ethiopia and its nine Regional States**

Source: Ethiopian Regions English- Mapsof.ne

### 1.3 Socio-economic situation

Ethiopia is implementing a market-based and agriculturally led industrialized policy in order to faster develop the economy. Although the country is following a mixed developmental policy, the country's economy is predominantly agriculture-based, with 83.4% of the labor force working in agriculture, an estimated 85% of the population earns its livelihood directly or indirectly from agricultural production, and more than 65% of foreign exchange is because of coffee production and export (USAID, 2013). Agriculture contributes 43.2% of the Gross Domestic Product (GDP) and 80% of exports. The country has a GDP of US\$29.7 billion and a per capita income of US\$ 390(WB 2011), ranking 174 out of 187 on the UNDP Human Poverty Index (UNDP, 2011). The per capita health expenditure is estimated to be USD 16.09 NHA (FMOH, 2010), which is below the minimum per capita spending of USD 34 recommended in 2001 GC by the WHO Commission on Macroeconomics and Health for providing basic health care services in developing countries (WHO, 2001)

In 2010/11, 29.6% of the population lived under the poverty line, indicating a decline between 1995 and 2011 of an annual average of 2.32% (UNDP, 2012). Although Ethiopia faces economic challenges, since 2006 there was 5% annual economic development and double-digit (11.8%) economic growth since 2008. To meet Millennium Development Goal (MDG) 1 (*Halve, between 1990 and 2015, the proportion of people whose income is less than \$1.25 a day*) the country should register 7% annual economic development and Ethiopia is doing well to attain that and should become a middle-income country in the next two decades through the current Growth and Transformation Plan (GTP) (MoFED, 2010).

### 1.4 Health System Organization and Policy/strategies on Maternal Health

The Ethiopian health sector is implementing a three-tier health care delivery system. In the first tier a district health system with primary hospitals provides services for populations of 60,000 to 100,000. A Health Center (HC) serves 15,000 to 25,000 populations. Under each HC there are 5 satellite health posts (HP) which provide primary health care services to one kabala/village (3000 to 5,000 population). About 15,000 HP are constructed and equipped ( CNHDE, 2011).

In the second level of the health tier system general hospitals provide services to 1-1.5 million people. In the third level, specialized hospitals cover populations of 3.5-5 million. The primary hospitals and the HCs and their five satellite HPs together are considered a Primary Health Care Unit (PHCU). The health sector is augmented by the private for-profit and NGO sectors which play a significant role in expanding the health service coverage and utilization (FMoH, 2012).

The country is following a devolution type of decentralization for its health system: decision making for public service deliveries flows from the center to the regions and down to the district level. Each Region has its Regional Health Bureaus (RHBs) and under each RHB there is a

Zonal level health office next to the district health offices to manage public health services at each level. The Federal Ministry of Health (Foch) and RHBs focus on policy development and technical support at all levels of the health system and districts mainly work on managing and coordinating the operation of the district health system under their authority (FMOH, 2012).

The country established its first health policy in 1993. Since then there have been policies and strategies formulated to improving maternal health based on the health policy: Making Pregnancy Safer (2000), Reproductive Health Strategy (2006), Adolescent and Youth Reproductive Health Strategy (2006), and the Revised Abortion Law (2005).

Ethiopian health services according the National Health Accounts (NHA) (2007/08) were financed by the international donors (40%), out of pocket funds (37%) and government (21%), and the remaining insignificant proportion comes from the private sector and private insurance (FMOH, 2011).

#### 1.4.1 Health Extension Program

The Health Extension Program (HEP) is a community based health service provision launched in 2003 to expand the national health program to make health service accessible for rural community based health interventions as a primary component of the Health Sector Development Plan (HSDP), and for institutional health service provision which is one of the strategies adopted with a view to achieving universal coverage of primary health care 2009 in the context of limited resources. The goal of the HEP is to create a healthy society and reduce maternal and child morbidity and mortality rates (FMOH, 2007, Banteyerga, 2011).

HEP is a package of basic and essential health promotion and disease prevention and basic curative health services targeting households in a community, based on the principle of Primary Health Care (PHC) to improve the families' health status with their full participation. The rural HEP includes clean and safe delivery service provision at community level. The objective of the program was to enable the country to achieve Millennium Development Goals 4 (reduce child mortality); 5 (improve maternal health); and 6 (combat HIV/AIDS, and malaria) by providing health promotion and disease prevention activities. Before the implementation of HEP the distribution of human resources for health was more focused in urban areas. HEP was also a response for shortage of human resources in the health system. (FMOH, 2007).

The HEP package design responds to major health problems of the country's rural community. The HEP Implementation guideline has elements of primary health care coverage as defined in the Alma Ata Declaration and has four health subprograms: **disease prevention, family health, environmental hygiene and sanitation, and health education and communication**. Within these four subgroups it has 16 health interventions (FMOH, 2012).

**Table 1. Package of HEP Health Interventions**

Disease Prevention and Control	Family health	Hygiene and Environmental Sanitation	Healthy home environment
<ul style="list-style-type: none"> <li>• HIV/AIDS and other sexually transmitted infection (STI) prevention and control</li> <li>• Tuberculosis (TB) prevention and control</li> <li>• Malaria prevention and control</li> <li>• First aid emergency measures</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Maternal and child health</u></li> <li>• Family planning</li> <li>• Immunization</li> <li>• <u>Nutrition</u></li> <li>• Adolescent <u>reproductive health</u></li> </ul>	<ul style="list-style-type: none"> <li>• Excreta disposal</li> <li>• Solid and liquid waste disposal</li> <li>• Water supply and safety measures</li> <li>• Food hygiene and safety measures</li> </ul>	<ul style="list-style-type: none"> <li>• Personal hygiene</li> <li>• Rodent control</li> <li>• <u>Health education and communication</u></li> </ul>

Source: USAID 2013

The role of the HEW for maternal care is to provide Clean and Safe Delivery at the Health Post comprising antenatal care, assisting with normal delivery, post natal care and referral complicated labour to the supervising health centre. The health centre provides basic Emergency Obstetric Care (Bemus) and women with more complications are referred to the hospitals for comprehensive emergency obstetric care (Comic) (See Annex 1)

About 34,382 HEWs (two per kabala) were trained and are stationed at the HP to provide HEP services. Among them 30,813 HEWs are employed in four populous region of the country (Mahatma, Roomier, SNNPR and Tigray).The HEWs are the first point of contact of the community with the health system. They provide integrated preventive, primitive and some curative health services, with a special focus on maternal and child health (Foch, 2011) (Refer to Table 4, page 18 )

The HEWs expect to work 25% of their time in HPs providing services and 75% of their time in the community providing services through household visits and community outreach activities by training families to adopt desirable health practices, and to serve as ‘models’ in their neighborhood, and organizing communities to participate in the expansion of HEP services (FMoH, 2012).

The Health Development Army (HAD) is an even deeper grass roots Foch strategy that uses HEWs to strengthen and expand the HEP. There are community members networked one to five and the leader of the network is trained by the HEW to focus more intensively on sparking local behavior change. The one to five network leaders will check and encourage all HEP package implementations by their members. The leaders are from “model families” and the HEWs use them as a model to encourage the community to practice the same way (FMoH, 2011).

The design and implementation of the HEP considers the socio-cultural diversification of different regions and has three versions: agrarian, pastoralist HEP and urban HEP. Almost all HEWs in agrarian areas are female, while because of cultural and environmental factors pastoralist area HEPS, male HEWs dominate. In urban areas the intervention package was modified to focus on chronic health problems (FMOH, 2007).

The strategies for the interventions of HEP focus on the household, however the result is a cumulative effect of action at all levels. HCs receive referral cases from HPs, conduct supportive supervision and provide technical and practical support to the HEWs. The District Health Offices have an important role to play in support of the Health Centers and the Health Posts. The government has shown high commitment in prioritizing the HEP program by ensuring it receives the necessary financial and political support (FMOH, 2010).

#### **1.4.2 Health Situation in Ethiopia**

The majority of the Ethiopian population lives in rural and impoverished areas with poor access to safe and clean water, housing, sanitation, food and health service. Those factors together result in a high incidence of communicable diseases including TB, malaria, respiratory infections, diarrheal diseases, and nutritional deficiencies. Mostly urban areas are affected by HIV especially in those areas where there is high mobility (transport-corridor settings). Transmission results from lack of awareness, mobility, and high-risk behavior in most-at-risk populations. Low utilization of modern contraceptives contributes to the high fertility rate of the population which causes annual population growth 2.6% the highest from the world (FMOH, 2011)

The high fertility rate and lack of access to quality service provision results in high MMR and neonatal mortality in the country. Annually about half a million under five children die, with 120,000 of those in the first month of life. Asphyxia, sepsis, and prematurity are the major cause of neonatal mortality. 30% of under-five mortality is caused by neonatal mortality and the rest results from respiratory infections, diarrheal diseases, and malaria (WHO, 2006).

However, since the Introduction of HEP the country registered dramatic changes in health service delivery indicators (JSI,2011). It showed an increase in primary health care coverage from 76.9% in 2005 to 90% in 2010 (USAID, 2009), the national contraceptive prevalence rate doubled from 15% in 2005 to 29% in 2011. Among urban women the rate rose only slightly from 47% to 53% while it doubled among rural women (11% - 23%). ANC coverage reaches 34% by SBA and 9% by HEWs. Over the last two decades Ethiopia registered a 60% under-five mortality reduction and a 20% reduction between the last 2 NDHS surveys, from the 124 per 1000 live births in 2005 to 88/1000 in 2011. Infant mortality dropped from 77 per 1,000 live births in 2005 to 59 in 2011 (CSA, 2011).

## Chapter 2: Study overview

### 2.1 Problem statement

Maternal mortality is a globally recognized indicator of a country's overall health and development status. Globally in 2010 about 350,000-500,000 women died from complications during pregnancy and childbirth (WHO, 2010), of them 56% are from Sub-Saharan African countries and 29% are Asian. In total this accounts for 245,000 women or 85% of the global maternal deaths. An estimated 15% of pregnant women will develop complications associated with pregnancy which needs skilled assistance. The Global Maternal Mortality Ratio (MMR) was 210 per 100,000 live births in 2010. Sub-Saharan Africa countries had the highest MMR (500/100,000 live births) while Eastern Asia had the lowest among MDG developing regions (37/100,000 live births in 2010 - WHO 2012). The woman's risk of dying from pregnancy and childbirth complications that could have been prevented and treated by having better access to healthcare over her life time in Sub-Saharan Africa is 1 in 39 showing great disparity from the developed world which is only 1 in 3800 (WHO, 2013). Currently, in sub-Saharan Africa, a woman's risk of dying from treatable or preventable complications of pregnancy and childbirth over the course of her lifetime is 1 in 22, compared to 1 in 7,300 in the developed regions (UN 2008, WHO, 2009).

Globally more than 70% of maternal deaths are due to five major complications: hemorrhage / bleeding during delivery process, infection, unsafe abortion, hypertensive disorders of pregnancy, and obstructed labor. The majority (61%) of these deaths occur during the post partum period (WHO, 2011). Poor health and poor nutritional status of a women and the lack of care are major contributors to death in pregnancy (WHO, 1999).

In Ethiopia about 2.6 million women give birth each year and 26,000 women die and 50,000 women suffer from obstetric fistula (FMoH, 2011). The Ethiopian government is working strongly to achieving the MDG, with a focus on MDGs 4 (reduction in child mortality) and 5 (reducing maternal mortality) (Afework, 2010). The country increased the number of trained midwives and implemented new initiatives such as HEP (CSA, 2011) but despite such interventions, maternal health services continue to be underutilized by mothers and it is especially unlikely that the country will achieve MDG 5 by 2015. The MMR in 2010 was 600 which is very close to the 2005 reported figure of 673/100,000 live births and the country is far from the 2015 MDG 5 target (Koblinsky, 2010). Though the MDG indicators for achieving universal access the reproductive health has shown progress (as presented in Annex 2), Ethiopia is still one of the 11 countries which are characterized as having made "no progress" and are likely to miss the MDG target unless accelerated interventions are put in place (WHO, 2010). Since 2007 when the HEP was implemented the country started to progress in all aspects of health programs, but maternal mortality is remains high. Ethiopia remains one of six countries that contribute to about half of worldwide maternal deaths (Hogan, 2010).

In Ethiopia 85% of maternal mortality is directly attributed to pregnancy in addition to other illnesses. The most important causes contributing to MMR are obstructed / prolonged labor (13%), ruptured uterus (12%), severe pre-eclampsia/eclampsia (11%) and malaria (9%). Moreover, 6% of all maternal deaths are attributable to complications from abortion, shortage of skilled midwives, weak referral system at health centers, lack of Basic Emergency Obstetric, Newborn Care (BeMoNC) and Comprehensive Emergency Obstetric and Neonatal Care (CEmONC) equipment, and under financing of the services. On the demand side, cultural norms and societal emotional support bestowed to mothers, distance to functioning health centers and financial barriers are reported to be the major causes (FMoH, 2011). There are also indirect causes which contribute to high MMR in the country. HIV/AIDS (4%), anemia (4%), malaria (9%), and complications from other causes (9%) contribute to about 21% of maternal deaths (Mengesha, 2013). Only 12% of women conduct the WHO recommended four or more antenatal visits and only 5% receive postnatal care. Almost all births (90 percent) in Ethiopia take place at home (CSA, 2011), and one child in eight dies before reaching age five. Most mothers and children who need care live too far from a road, let alone a health facility (Save the Children, 2013).

Even though 34,000 HEWs are trained and deployed to promote health in the community and 11,324 of them received additional training on clean and safe delivery with the intent to support deliveries at HP level to decrease maternal mortality, the percentage skilled birth attendance remains very low (Ranging from 10%-16%). Nevertheless, this is a key intervention for reducing maternal deaths and it is considered as a proxy indicator for measuring improvements in maternal mortality. The institutional delivery remains extremely low (Tsegay,2013). The percentage of deliveries attended by HEWs is also low and even showing a downward trend (from 17% in 2010 to 14% in 2011) which is less than half of the 34.4% target stated for the year (FMoH, 2011; CSA, 2011).

This study will analyze factors contributing to low utilization of institutional delivery even when the government makes accessible maternal health services available in rural communities of Ethiopia.

## **2.2 Justification**

Maternal mortality has direct social and economic consequences for the family, community and for the country as whole. The husband of a family where a mother has died will have the additional responsibility of household management. In addition the family that has lost a mother has a higher risk of suffering from nutritional problems. The children are more likely to have low school enrolment (Kassaye, 2010). If a mother suffers from complications during pregnancy and child birth (anemia and malnutrition), this can cause a problem on child health. The likelihood of a baby born to a mother who has nutritional problems in having low birth weight is high, and this

will directly affect the baby's development, possibly contributing to disabilities and early death (UNDP, 2012).

The majority of maternal deaths occur during or immediately after childbirth. Research has shown that newborn babies whose mothers have died have a lower probability to survive. Every year globally more than 1 million children are left motherless and vulnerable because of maternal death and the chance of death in children who have lost their mothers prematurely is up to 10 times higher than those who have not (Ransom, 2002; Kassaye, 2010). Globally nearly 2/3<sup>rd</sup>s of the 8 million infant deaths that occur each year result largely from poor maternal health and hygiene, inadequate care, inefficient management of delivery, and lack of essential care of newborn (WHO, 1999). By giving much focus to maternal mortality reduction, programmes can have a direct impact in reducing child mortality reduction as well.

Maternal mortality has an effect on older children's survival as well. Study conducted in Bangladesh indicate that the likelihood of children under the age of ten were 10 times more following their mother death compared to those their mother are alive. The country also loses its economic development; the government will invest more on maternal health and education.

Finally, the maternal mortality place a significant challenge in Ethiopia health sector which could not even show much change after the implementation of HEP. The reason that I am interested to write on this topic is, after the implementation of the community level health enervation/HEP by government of Ethiopia and financially and technically supported by different developing partners, still maternal mortality is among the highest in the world.

## **2.3 Objectives**

### **General objective**

The aim of the study is to describe and analyze factors that hinder HEP as a means to improve maternal mortality by improving maternal health in Ethiopian rural communities in order make recommendations to government and stakeholders based on the study findings so that the country will be able to achieve MDG 5 and save mothers' lives.

### **Specific objectives**

1. To identify the determinants of seeking health institutional care during delivery in Ethiopia
2. To examine the strength and limitations of HEP in reducing maternal mortality in Ethiopia
3. To provide recommendations to the FMOH in Ethiopia as to how to better address maternal mortality through the HEP

## **2.4 Methodology**

### **Data Collection Techniques**

This thesis is a descriptive study based on literature review. To achieve the above stated objectives, data were collected from various studies and research related maternal health and factors contributing to home delivery in published journals articles where necessary.

### **Search strategies Key words and inclusion criteria**

Pub Med and Google Scholar were all accessed to review published literature. KIT and VU libraries provided easy access to published books and other relevant information.

Key words used: Various combinations of the following words were used to search the literature. Ethiopia, Health Extension Workers, maternal health, clean and safe delivery, Health Extension Program, home delivery, referral linkage, Economy, and Policies on maternal health.

Inclusion criteria: The inclusion criteria were studies conducted in Ethiopia in different regions of the country and other developing countries with similar socio economic background that are written in English. Journal articles where only abstracts could be accessed were excluded. The search was restricted to those articles / studies published from 1990 to 2013 except for a few key historical articles where no other literature was available.

### **Grey Literature**

Websites of MoH, UNICEF, FAO, World Bank and World Health Organization (WHO) were also explored. The 2005 and 2011 Ethiopian Demographic and Health Survey (NDHS) and relevant peer review publications were explored to determinant factors for mothers to not give berth in health institution over a period of time. Ethiopian HSDP I, II, III and IV were also assessed and compared, and gaps were identified to inform the policy makers.

## **2.5 Conceptual Framework**

The conceptual framework as show in Figure 2 is the three delays model developed by Thaddeus and Maine (1994) to analyze factors that affect obstetric care utilization and health outcomes. The model focuses on factors that occur between the start of having obstetric complications until the time women receives necessary adequate and appropriate care. The three delays model describes thus three groups of barriers that can cause women not to receive timely the required and effective medical care for safe delivery. The mothers can face 1) delay in decision to seek care, 2) delay in reaching care and 3) delay in receiving adequate care.

In this thesis, the three delay framework is used to analyze factors contributing to low performance of HEWs in institutional delivery service utilization in Ethiopia

For the purpose of the thesis I have adapted the original three delay model slightly to explore factors contributing to low coverage of safe clean delivery and of EmOC in referral cases. I have

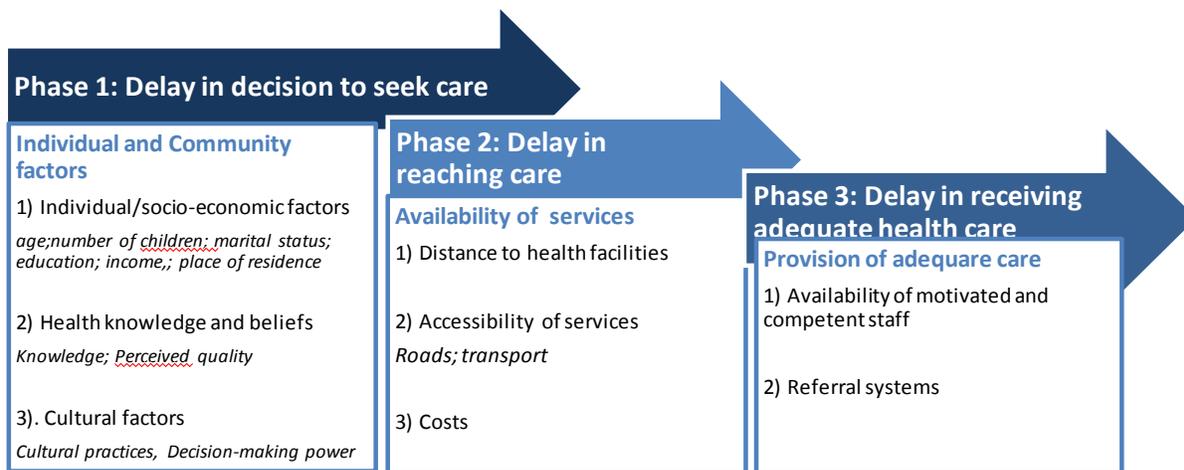
done so to be able to also explore women’s perception and barriers in the utilization of institutional delivery service in more depth than the model allowed.

The three delay model has been adapted using elements from the Social Determinants of Maternal Health ( UNDP, 2011, see Annex 4).

Phase one of the original three delay model identifies socioeconomic and cultural factors affecting mothers utilizing maternal health services. In this theses I adopted this part by including also community factors, and distinguishing three components for delay one: i) Individual and socio- economic factors (age, education, number of children, marital status, income and place of residence), ii) Health Knowledge and Beliefs (Knowledge and perceived quality) and iii) Cultural Factors (Cultural practice, Decision-making power).

The delay 2 in reaching care, is determined by the availability and accessibility of the services. This component was divided into i) distance to health services, ii) accessibility to services and iii) related costs of going to the services. For the provision of health care, delay 3 ,influencing factors were explored for i) Availability of motivated and competent staff and ii) Functioning Referral system for complicated pregnancies ad deliveries.

The framework is presented in figure 2.



**Figure 2. The three delays model adapted to the conceptual framework**

## Chapter 3: Results and Findings

This section of the thesis is going to explore factors hindering HEWs to improve the countries institutional delivery coverage in detail by using the adapted three delay model.

### 3.1 Socioeconomic/ Cultural factors

#### 3.1.1 Individual characteristics/socio-economic factors

##### *Age*

Age of the mother plays a role in utilization of delivery facility services (Shiferaw, 2013). A study conducted in southern Ethiopia indicates that younger women are more educated and less dependent on their husbands for financial decision making than are older women and therefore can more easily make decisions on health issues (JSI, 2009). Ethiopia is a country where early marriage is practiced. In most rural parts of the country girls are married by age 15 and are expected to give birth in the following year. Because their bodies are not fully developed, they are at high risk of experiencing complications, which can be deadly if they do not deliver in a health institution. Women who marry earlier are more likely to give birth earlier. The average age at first marriage among teen age women is 19. Maternal mortality is higher among those who give birth below the age 20 and over 40. Adolescent pregnancies contribute to high maternal mortality in Ethiopia because 12 % of pregnancies occur among in this age group (CSA, 2011).

##### *Number of Children*

Being multi gravid has an effect in giving birth in health institutions, as women with higher birth orders have lower odds of seeking healthcare, compared to those with fewer births. First time mothers are at least 43% more likely to seek care during pregnancy and delivery than mothers in their 4<sup>th</sup> or 5<sup>th</sup> pregnancy. Mothers tend to seek modern healthcare only during the first pregnancy. She and the community believe that after this, she has experience and does not need to visit health facilities any more (Woldemicael,2010). This finding is reinforced in another study among 15,367 women aged 15-49 years. Those who have two to four children were 50% less likely and those with five or more children were 60% less likely to deliver in a health facility than single-parity women (Mekonnen, 2003)

##### *Marital status*

Married women are more likely to use ANC than their unmarried counterparts. Although marriage is widely practiced in Ethiopia evidence shows that 10% of institutional delivery occurred among 15,367 study participants to women who were not married. Stigma associated with unmarried women becoming pregnant is high in Ethiopia and this deters them from seeking care (Mekonnen, 2003).

## Education

One of the reasons that most of Ethiopian communities have health problems is directly associated with illiteracy or under education. The level of education in a country becomes a marker significantly influencing the spread of disease, shaping the health seeking behavior of individuals and communities including the utilization of modern health care service (Hussein, 2011). A study conducted in the Tigray Region found that women who are able to read and write are more likely to access maternal health services (Medhanyie, 2012).

Women's education is a significant and independent predictor of use of delivery services in rural Ethiopia. Obviously, women with no education are less likely to use the health services. Institutional delivery was about four times higher for women with primary school education and eight times higher for women with secondary or higher levels of education than for women with no education (Mekonnen, 2003).

Similarly, a study of factors contributing to home delivery among 909 women in Ethiopia indicate that women with secondary education were more likely to deliver in health institutions than those with less than secondary education. 84% of participants gave birth at home, 16% were assisted by health professionals and the majority (78%) was assisted by traditional birth attendants. Delivery assisted by HEWs was a very small percentage (2.4%). Even if other individual and household factors of low health seeking behavior of the community are addressed, women's education still has a significant effect on health seeking behavior of the community, as it was found that in Ethiopia, a mother with primary or higher educational is about three times more likely to access healthcare than one no education (Woldemicael, 2010).

**Table 2. Age, educational status and decision making power of women as a factor for women for institutional delivery**

Characteristics	Place of delivery		P-value	Health professional	Type of Professionals			P-value	Total
	Home	Institutional			TBA*	HEWs**	No one		
<b>Age</b>									
15-29	81.9	18.1	0.58	18.9	76.5	3.0	1.5	0.49	132
30-39	86.8	13.2		13.6	78.6	1.9	5.8		103
40-49	83.3	16.7		16.7	83.3	0.0	0.0		12
<b>Educational status</b>									
No formal education	84.1	15.9	0.37	13.2	75	5.9	5.9	0.10	68
Primary	85.5	14.5		15.9	80.8	1.3	2		151
Secondary and above	75.0	25.0		28.6	67.9	0	3.6		28
<b>Decision on household expenses (n=239)</b>									
Respondent	85.7	14.3	0.19	14.3	85.7	0	0	0.79	7
Husband	87.9	12.1		14.4	77.5	3.6	4.5		111
Jointly	79.2	20.8		19.8	76	1.7	2.5		121
<b>Total</b>	<b>84.0</b>	<b>16.0</b>		<b>16.6</b>	<b>77.7</b>	<b>2.4</b>	<b>3.2</b>		<b>247</b>

\* - Traditional Birth Attendant \*\* - HEWs - Health Extension Workers.

Source: Survey on why women prefer home births in Ethiopia by Shifraw, 2013

### *Income*

In Ethiopia primary health care service delivery is free of charge at all levels due to the health care financing proclamation. HEP provides primary health care in rural parts of the country and mothers can utilize maternal health services including delivery for free. However, among health facilities in Ethiopia providing maternal health services 68 % charged a fee in cash or kind for normal delivery and 65% still charge for some aspect of care, including drugs and supplies because they are not reimbursed by the government for the costs spent for maternity health services (Pearson, 2011). Because most Ethiopian mothers are uneducated and many depend on their husbands' income, this situation might cause mothers to not utilize maternal health service. A study conducted in Tanzania showed that mothers do not want to go to health facilities because they cannot afford the cost of the delivery kit. Delivery assisted by TBAs is preferable there because they do not ask much money: about \$0.05 for gloves and a razor blade. In some Tanzanian institutions the facilities do not discharge women until their debts were paid. If they do not have cash on hand to pay they go to sell their land – a catastrophic expenditure (Mrisho, 2007).

It is likely that the situation in Ethiopia is not much different, as economic status at home is a significant predictor of maternal health seeking behavior among Ethiopian women. According to a study conducted on women's autonomy and their health seeking behavior, women from the richest households are 53% more likely to access health care than those from the poorest households and women in rural Ethiopia are shown to have lower health seeking behavior. This most likely not because they live in rural areas but directly because of their economic level (Woldemicael, 2010). Those who have lower income are much less likely to utilize the Antenatal Care Services; the women belonging to the lowest wealth show much lower percentages of ANC than the women in the highest wealth quintile as shown in Annex 3 (CSA, 2011).

Cost of travel to referral centers and indirect costs (such as for food for the patient and companions) is a significant deterrent in many rural settings. Sometimes the HC does not have adequate staff and equipment and although women in labor are referred they may prefer to deliver at home because of costs. Oftentimes the community will start collecting the money to take her to the referral facility but the time spent contributes significantly to the second delay (Shiferaw,2013).

On the other hand, a study conducted in the Afar Region of Ethiopia indicated that there is no association between economic status and health facility delivery in the rural area of the region. There is an association between mothers' educational status instead ( $p < 0.001$ ) (Mekonnen, 2012). Nevertheless, this could still mean that educated women have income and they are not dependent on their husband to seek health care.

### *Place of Residence*

Place of residence has an effect for institutional delivery: women in rural areas are five times less likely to give birth with a health professional compared to women in Addis Ababa. Living in remote areas make the problem of maternal health worse: women face a lack of adequate health facilities and are more exposed to harmful traditional practices - such as child marriage and female genital mutilation which increases risks during pregnancy and delivery (Shimeka, 2012).

### **3.1.2 Health Knowledge and Perceptions**

#### *Poor Knowledge*

In order for mothers to be able to choose health facility delivery they need to have information at the beginning. They must understand the pregnancy danger signs like bleeding and prolonged labor so that they and their family can decide to go to the nearest health institution. Sometimes the communities have the information about the need to deliver in health institutions, but because there is no medical facility which can manage the problem or if there are no medical doctors or nurses/midwives there, they decide to not go to a facility. This situation is common in developing world, where people's decisions not to use the health facilities available to them make sense because even if the health facility physically is near to the community, if it is not well functioning the community will not go and use the service provided there (Maine, 1999).

This may also apply to the HEP. In a study conducted on community perception on HEP with 10,000 people, mainly household heads, 81.2% had heard about the HEP from HEWs, and 90.8% had information about HEWs working in the community. The majority of the respondents knew three services given by HEWs: family planning (61.9%), immunization (41.2%) and health education (38.4%) (FMoH, 2008). Delivery services were generally not mentioned. Lack of knowledge on pregnancy and delivery services were also found to be associated with delivery service utilization (Teferra, 2012).

#### *Perceived Quality*

Women perceived delivery service providers at health facilities to be less satisfactory than TBAs. In a study mothers reported that health professionals do not allow relatives to enter the delivery room and left them alone on the delivery couches: they did not consider privacy needs and allowed staff to move about the clinic. They do not give mothers psychological support when they need it most. This is another reason why they prefer to give birth with the assistance of a TBA at home. Comments from focus group discussion participants pointed out the lack of confidence in health workers' ability to assist delivery compared to TBAs and mothers were also not sure about provision of delivery services at weekends and at night (Shiferaw, 2013).

A study conducted in 11 different regions of Ethiopia indicated that women want to give birth at home because they feel comfortable at their own home and health facilities do not let their

relatives enter the delivery room. The community believe that the mother needs somebody's help while she is in labor (Warren, 2010).

Most rural communities accept health service provision if it provides curative service, because they can see the result eminently compared to health promotion. At the beginning when the HEP was planned and implemented, the objective was to provide only health promotion and disease prevention health packages. At that time the community did not want to accept the HEWs because they would not provide curative services. In 2008 the HSDP III review meeting changed HEW's duty by allowing them to support TBAs with utilities and training to improve delivery skills and care but they were not allowed to provide delivery care. This situation make the community distrusts the skill of HEWS: they perceived that HEWS were unable to assist delivery and so continued to deliver with the assistance of TBAs. In response to this, in 2009 the FMoH planned and implemented a 4-week in-service training of HEWs on clean and safe delivery, which allowed them to attend normal deliveries at the HP level. Nevertheless, a high number of mothers in the country still give birth at home with the assistance of TBAs

DHS 2011 reported that more than 61% of the population believes that institutional delivery is unnecessary and 30% stated it is not normal to give birth outside home (CSA, 2011). Nevertheless, a study among 425 mothers, found that 56.3% claimed HEWs have more knowledge and skills compared to TBAs, 20.1% felt TBAs were superior, 4.6% said there was no difference and 4% said HEWs could not conduct ANC (Mekonnen, 2012, Koblinsky, 2010).

Negative experience cause mothers not to want give birth at a health facility. A woman who participated in a Focus Group Discussion reported that health professionals misdiagnosed her labor as abdominal pain and treated her in the wrong way. When she was back home she delivered a baby with assistance of a TBA. She delivered subsequent babies at home because she convinced herself that going to the health facility is useless (Shiferaw, 2013).

Although Ethiopia implements a village level primary health care program (PHCU) as the main point of care to the community, the pyramidal structure of the health care delivery system is considered to provide poor quality service at HP level, which is designed as a referral center. Communities therefore tend to bypass the PHCU and go to directly the next level of health system (Koblinsky, 2006). Similarly, a study conducted in Ethiopia and Tanzania indicated that a high proportion of mothers do not want to utilize the nearest primary health facility, favoring higher lever government facilities because they perceive the quality at HP level is poor. Of mothers who gave birth at facilities, 44% (186 of 423) had bypassed their nearest facility in Tanzania. The adjusted analysis indicated that women were 2 times more likely to bypass when nearby facilities were thought to be of low quality, and that women 35 years or older were 2½ more likely to bypass than younger women (Kruk, 2009).

### 3.1.3 Cultural factors

#### *Cultural practices*

Elderly people are respected in Ethiopian communities and it is believed that their ideas should be respected, so in most rural parts of the country they are influential people. They do not encourage pregnant women to deliver in health institution because in their past there were no modern healthcare services. The same study also found that women do not give birth at health facilities because they cannot massage the abdomen with butter, which is believed to ease labor, and they are not given the placenta, which they want to bury near the home. (Shiferaw, 2013).

DHS 2011 showed that 60% of women believe that there is no need to go to a health facility to give birth unless they develop complications (CSA, 2011). Additionally, women believe they need birth assistance only in case of visible complications during delivery (WHO, 2007 ).

Findings from focus group discussions indicate that most of women report that the reason they prefer giving birth assisted by TBA is that they are familiar and they have much trust in TBA. Nevertheless, the community believes that pregnant women should deliver at health facility when the labor is complicated (Shiferaw, 2013).

Although hemorrhage is the main cause of maternal mortality in Ethiopia, in some communities bleeding during pregnancy and swelling of the legs and face are considered normal and can be relieved by delivery (Deribe, 2010).

#### *Decision- making power*

Gender differences in countries like Ethiopia make significant impacts on health seeking behavior of women. The barriers vary by region. In most parts of Ethiopia, the man is the leader of the house and women cannot go anywhere without his permission. Sometimes other senior family members like the mother in-law or older sister in-laws have a say, but generally, decision making power is associated with the source of income to the household. In most Ethiopian households the husband is the one who has the money, so whenever a woman wants to seek care she needs to ask him for money and permission at the same time (Wado, 2013). Where women have the power to decide on household expenditure by themselves or jointly with their husbands they are more likely to deliver in a health facility (Shiferaw, 2013). In rural Butajira, in south central Ethiopia, about 89.3% of women were dependent on their husband for decisions to seek care for any woman's health problem. They decided to use a health facility only after they had tried all traditional means of help available in the woman's immediate area (JSI, 2009). Lack of awareness by decision makers on possible outcomes of giving birth at home, such as the rapid onset of complications, can lead to dangerous situations (Warren, 2010).

## 3.2 Delay in reaching care

### 3.2.1 Distance to services and facilities

In Ethiopia distance is not the major challenge. Almost all villages have one HP and two HEWs per 5,000 populations that can provide primary health care (FMoH, 2011). Nevertheless, the services available at HPs are limited (see section 3.3 and 1.4.1). Table 3 gives an overview of the annual extension of the HEP by region

**Table 3. Number of HEWs trained and deployed in Ethiopia, by region, 2005/6-2009/10**

Region	2005/06	2006/07	2007/08	2008/09	2009/10	Total
Afar	0	0	164	148	196	572
Amhara	3,500	2,631	680	382	330	7,342
B. Gumuz	0	59	120	315	403	924
Dire Dawa	0	33	0	0	63	142
Gambella	0	47	0	410	0	457
Harari	0	0	0	0	8	47
Oromia	1,296	3,524	2,884	4,526	524	13,487
SNNPR	1,500	2,666	2,650	800	627	8,542
Somali	0	0	420	545	327	1,427
Tigray	840	0	0	134	73	1,442
National	7,136	8,960	6,918	7,260	2,551	34,382

Source: FMoH, 2011

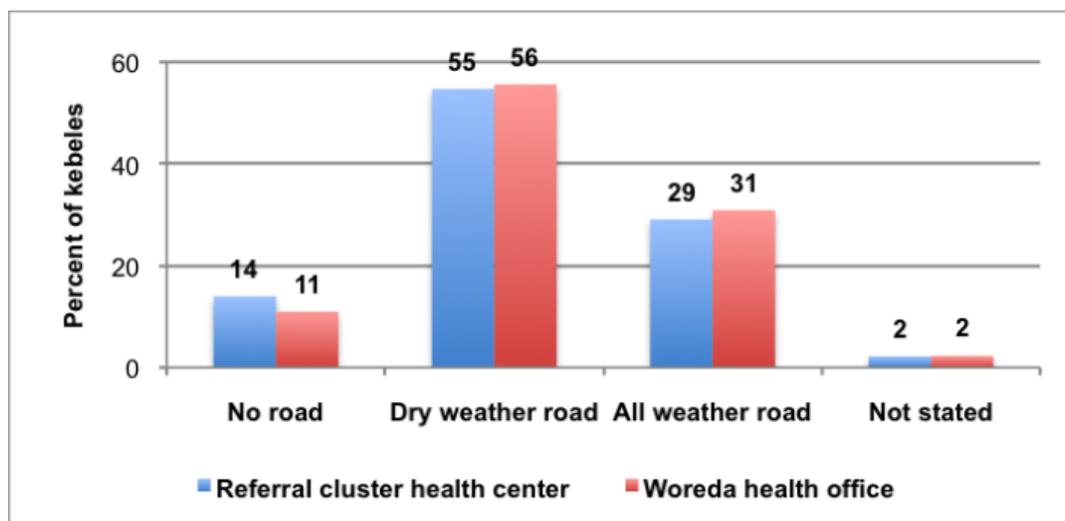
Although coverage of HPs is good, the topography is still a challenge in reaching health facilities from the HPs (FMoH, 2009). This is compounded by distance. As we can see from Table 4, 56% of the HPs are 10km or farther from the HC, 28% are 11-20 km away and 11% are more than 20km away from the HC (CNHDE, 2011).

**Table 4: Percent distribution of HPs by distance to nearest health facility and woreda health office, rural Ethiopia 2010**

Region	Percent of HPs by distance to any nearest health center		
	1-10Km	11-20Km	>20Km
Tigray	59.0	25.0	6.5
Afar	70.0	30.0	0.0
Amhara	60.7	21.6	13.6
Oromia	48.1	32.9	12.3
Benshangul	19.4	31.7	34.2
SNNP	75.5	22.6	1.9
Gambela	47.4	32.0	19.1
Dire Dawa	0.0	66.7	0.0
Harar	75.0	25.0	0.0
Somali	11.5	39.0	37.4
<b>No. of HPs</b>	<b>56.1</b>	<b>27.7</b>	<b>11.3</b>

Source: CNHDE, 2011, HEW and health post Performance survey, 2010

The distance to the nearest referral health facilities is therefore among the major factors hindering communities from utilizing these health services. In a survey of 293 HPs summarized in Figure 3, it was found that 55% of the roads connecting the kebele (HPs) to the HC were dry weather roads and 14% of HP had no road connection to the HC (CNHDE, 2011).



**Figure 3: Percent distribution of kebeles by type of road connecting to district health office and referral health center, rural Ethiopia 2010**

*Key.* The left side bars refer to access between HPs and Referral HCs. The right side bar indicates access to Woreda health offices

Source: CNHDE , 2011, HEW and health post Performance survey, 2010

### 3.2.2 Accessibility of services

#### *Roads and transport*

According to a 2011 study of 293 HP, the majority (86.3%) were referring women to the nearest HC. The average distance between the HC and HP was 12.6 km and stretchers were the main means of transportation to the HPs (42.8%). The second option was animals (14.8%). Although 67.1% of HEWs reported that the majority of referred cases went to a referral center, 50.2% reported lack of transportation, 49.7% distance to referral facilities and 41.8% poor road infrastructure as a major deterring factors (CNHDE, 2011).

Nevertheless, progress is being made. A study conducted by the Essential Services for Health in Ethiopia (ESHE) project in four the most populous regions of Ethiopia found that access to health facilities within two hours of walking distance increased from 60% in 2003 to above 90 percent in 2008.

A 2009 study conducted by the University of Addis Ababa in rural Tigray Region found that 80% of maternal deaths were related to home delivery and among those, 50% of deaths were the

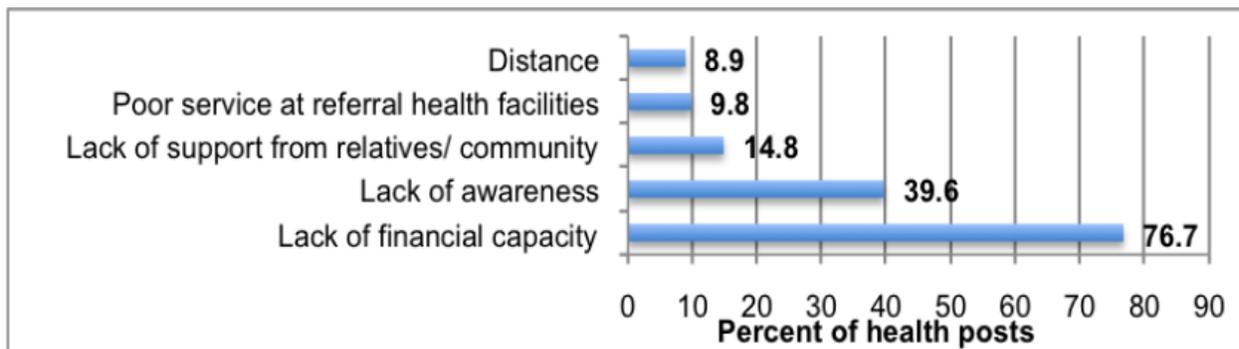
result of delayed transportation to a health facility (IRIN, 2013). Mothers in rural Ethiopia prefer home delivery because of the cost and lack of transportation, lack of accessible roads, harsh topography and weather conditions (Warren, 2010). Another study indicated that women who did not mention transportation as a challenge to deliver in facilities were 45% more likely to access health care than those who reported distance as a big problem (Woldemicael, 2010).

A study conducted in Jima Hospital to see the ten year progress of maternal health found that two thirds of those with ruptured uterus (66 of the 86 deaths) were admitted in moribund condition with shock due to travelling long distances to reach the hospital (Gaym, 2002).

### 3.2.3 Costs

Delays in reaching health facilities also occur in relation to costs of transportation and services. In the Amhara region of Ethiopia, among 5,560 married mothers who had their last live birth in the five years preceding the survey, 70% delivered at home because of geographical accessibility such as distance and transportation cost to a reach health facility (Woldemicael & Tenkorang, 2010). In case of referrals from HPs to HCs, mothers do not want to go to HC because the cost of transport. Among 50 HPs studied, 63% were 10 km from the HC and would require paid transport to reach (Teklehaimanot, 2007). Raising transportation cost is a big challenge for families to take pregnant women to the referral HC, and the indirect costs for those accompanying her aggravates the problem (JSI, 2009). In addition, the high costs of treatment within the facilities also deterred access to the referral center (Warren, 2010).

This is corroborated by evidence from HEWs about women’s willingness to go to referral health facilities (Figure 4), with 76.7% of HEWs reporting that referred cases often did not go due to lack of financial capacity; 50.2% of HEWs cited cost of transport, and 29.5% fees for service and/or drugs at the referral health facilities as specific reasons (FMoH, 2008).



**Figure 4. Percent of kebeles reporting main reasons for people not willing to go to referral facility, rural Ethiopia 2010**

Source: CNHDE , 2011, HEW and health post Performance survey, 2010

### 3.3 Provision of adequate care

#### 3.3.1 Availability of motivated and competent staff

The HEWs are women aged 18 or older with minimum 10th grade education. They are recruited from the community in which they reside in order to ensure acceptance by the community and to know the local culture and customs. After they are selected based on the criteria, they complete a one-year comprehensive practical and theoretical training (FMoH, 2007).

##### *Availability of Service*

Most HPs are staffed with two HEWs, but the frequent absence of the HEWs from the work place is a major problem in HEP implementation. In a study of 293 HPs, 51.9% were open five to seven days per week for a minimum two hours per day, and 61.9% of the HPs were open at least one day during the weekend. However this differs among regions. (FMoH, 2008).

##### *Availability of staff*

The standard is one HEW to 2500 population, the country actually achieved HEW deployment (1/ 2,437 population). The HEWs spend 75% of their time as an outreach and 25% at the HP providing curative activities including attending normal delivery. Thus, mothers coming to utilize maternal health services cannot find them at the HP. A 2009 study in Tigray Region indicated that HEWs reported that only two hours per week were used on delivery service compared to other health promotion activities (Koblinsky, ). Additionally, donors and implementing partners keep HEWs busy attending different meetings, workshops, and trainings that the partners and government organize. As a result, HEWs leave the village for more than two weeks per year on average (FMoH, 2012).

##### *Motivation of staff*

The quality of service that HEWs provide is affected by different factors such as lack of motivation resulting from a lack of career structure development. There is on-going further career development by FMoH, but it is not reaching all of them (Medhanyie, 2012a). Since 2008 the FMoH has been working to upgrade the skill and knowledge of HEWs from the level III they are in to level IV which is equivalent to Ethiopian Occupational Standard Diploma level training. Under this programme, 1,100 HEWs were trained in six regions in 2011 (FMoH, 2011).

Low salaries also reduce low HEWs work motivation. In a study of 293 HPs, nearly 30% of HEWs replied that the salary they earn is fair compared to their level of professional training they received. The majority (96.6%) perceive they are not paid well for their workload, while 75.5% of them felt they were paid very low or at a lower salary compared to other government employees with similar educational backgrounds (FMoH, 2008)

Other demotivating factors for HEWs include their poor skills confidence, poorly equipped health posts, and poor referral systems which are not supported by HC, so that the service they provide is not optimal (CNHDE, 2011). In addition to their duties they are expected to submit timely and accurate information with standardized reporting formats to Kebele Councils and Woreda Health Offices for review and action. At the Kebele level, the HEWs meet weekly with the Kebele Committee and vCHWs to report to the Kebele cabinet on program implementation (FMoH, 2007).

The Distance of the villages from the HPs is one factor that makes it difficult for HEWs to visit mothers at home frequently, especially in the area with poor transportation and communication systems. Distance also has an impact on transporting logistics to the HP, conducting monitoring/supervision and referrals, and therefore directly impacts the overall motivation of the HEW (Teklehaimanot, 2007).

### *Competence*

In a study conducted among 50 HEWs where 82% had received additional on-job training on ANC and clean and safe delivery, it was found that 92% of HEWs had assisted a delivery. On average they had assisted 5.8 births, with 82% assisted at home and 10% at HPs. HEWs very often sent the mother to the next level referral health system; 48% of HEWs referred mothers for ANC and 54% for delivery. They reported they got assistance from HC very rarely: only 20% of HEWs receive skill assistant from midwives from HC. More than half (54%) of HEWs were found to have poor counseling skills during ANC care, especially on the importance of facility based delivery and on danger symptoms, danger signs and complications in pregnancy. Among 725 mothers interviewed, only 8 (1%) of them delivered at a health post and of these, less than 10% had PNC checkups for their baby (Medhanyie, 2012b). None of the HPs had a protocol helping HEWs to follow standard

Research indicates that HEWs lack confidence in attending delivery. They prefer performing activities in which they feel confident, such as health promotion and disease prevention activities. The family health package that is given during the training of HEPs alone is not enough to promote self-efficiency in attending delivery among most HEWs. Those HEWs who are confident in attending delivery typically described some sort of additional experience to supplement the family health package, with one HEW specifically citing training on clean and safe delivery (Handley, 2008).

Some HEWs who are trained on clean and safe delivery do not want to tell the community they are trained and that the community can access the delivery service at HPs because of their lack of confidence to attend deliveries. They usually assist delivery by accident while doing home visits together with TBAs (FMoH, 2010). In relation to the skill to attend delivery, the stress HEWs

experience while attending delivery creates an emotional state that can affect their ability to manage the situation effectively (Bandura, 1977).

Most of the HEWS cannot identify complicated labor signs, so they do not refer mothers on time. More than a quarter of HEWs participating in a study missed the answer for the major signs of obstructed labor. Once they diagnosed obstructed labor, 90% of them stated that they would refer the woman to higher facility (CNHDE, 2011).

#### *Collaboration with TBAs*

The voluntary community health workers and TBAs help the HEWs in identifying pregnant women and by attending normal deliveries in case the HEWs are unable to attend. TBAs refer the pregnant women to HEWs if they have difficulty attending the delivery at home. The HEWs give assistance to TBAs when difficulties are encountered, and these cannot be managed they will refer to the HC. Managing or facilitating appropriate referrals is challenging as TBAs are not considered part of the health system. In a study conducted in Amhara region, TBAs reported that the community preferred the assistance of TBA, but after the implementation of HEP the system discouraged TBAs, making them feel marginalized. They were complaining that the government should give them training instead of discouraging their skill (Handley, 2008)

### **3.3.2 Referral systems**

The referral linkage between health posts and health centers is very weak. HCs and HPs do not have formal ways of communication and providing feedback. They do not have formal referral slips and the HC cannot communicate to the HEWs either. For those cases referred to HCs, unavailability of services at the referral facility is a big challenge for the referral system. HCs are supposed to receive cases from HPs and give curative services. However because of lack of necessary human resources and supplies they ask fees to buy drugs (JSI,2009).

UN standard for EmOC providing facility for 5 facilities per 500,000 populations where the health facility is geographically distributed so as to provide equal access to all women. EmOC service is known to directly contribute to maternal mortality reduction, but in Ethiopia it is not yet functioning in all health centers and hospitals. Only 1 region (harari met the standard ), most of largest regions of the country(Oromia, Amhara, and SNNPR) regions had 0.4, 0.4 and 0.5 EmOC centers respectively. With 2.6 million birth annually, 15% (400,000) of delivery expected to be complicated and need medical attention, but in case of Ethiopia only 3% are delivered in EmOC and 3% partly functioning facility(Regional variation from 0 somali 49% in Harari) skilled birth attendant providers (midwives, specialists, and trained health officers) are not yet available at the levels the services are needed. Only 752 HCs start providing EmOC and about 400 health professionals trained. FMOH has also plane to expand the service in 1,915 HCs in a more intensive manner and provide adequate equipments for all HC providing the service (Admasu, 2011). There was ongoing training on accelerated training of nurse midwives for

1,634 midwives in six regions and 252 Integrated Emergency Surgery Officers (IESO) training was also given in five universities( FMoH, 2011),even though HEWs refer mothers to deliver in health facilities there is no adequate service provision at referral centers (Koblinsky, 2010, FMoH, 2010).

A survey on National baseline assessment for EmOC , 58 facilities were reported to be fully functioning comprehensive EmONC facilities (57 hospitals or 51% of all hospitals and one health center/clinic) FMoH, 2008).

**Table 5. Availability of EmONC based on signal function performance in the preceding 3 months, by type of facility and sector.**

Type of facility	CEmONC	n	BEmONC	n	Partially functioning <sup>1</sup>	n	Total n <sup>2</sup>
Hospitals	51%	57	14%	16	34%	38	111
Health centers/clinics	<1%	1	1%	9	99%	651	684
<b>Sector</b>							
Government	6%	45	3%	22	91%	682	749
Private for profit	27%	7	8%	2	65%	17	26
NGO, Religious	30%	6	5%	1	65%	13	20
<b>Total</b>	<b>7%</b>	<b>58</b>	<b>3%</b>	<b>25</b>	<b>90%</b>	<b>712</b>	<b>795</b>

Source: National baseline assessment for EmOC, FMoH, 2008

HEWs rarely utilize the referral system; among 50 HEWs studied, 40% of had not reported any referral (Medhanyie, 2012b). One study found that HEWs never received any feedback on referrals to the HC because of the weak referral system between HPs and HCs, although they were expected to follow up the case after she was sent back home (Teklehaimanot, 2007). Similar research confirmed that referral linkages in the PHCU were not functional, limiting the full potential of the HEP. Among 293 HPs studied, only about 22% received feedback from the referral HC about the patients they referred and only 29.5% of the HCs referred patients back to their village for the HEWs to follow up ( CNHDE, 2011).“Nearly half of the women who faced complications did not use skilled providers at the time of obstetric complications. Cognitive, geographic, economic and cultural barriers were involved in not using skilled maternal care” (Worku, 2013).

## Chapter 4. Discussion

The HEP is developed in response to inadequate basic health services needed to allow the country to achieve the MDG goals. Before the implementation of HEP, basic health services had not reached the rural community of Ethiopia. Through implementation of the HEP, the country has addressed to a certain extent physical and financial accessibility of services: 34,382 HEWs are deployed and 15,000 functional HPs are built and the country registered dramatic changes in health service delivery indicators e.g. primary health coverage reached 90%. Even though there is an improvement in SBA rates and SCD coverage, these levels remain very low in 2011 at 10% and 16%, respectively. Many factors contribute to the low institutional delivery coverage. The following section discusses major factors that hinder HEWs in encouraging mothers to utilize institutional delivery in rural Ethiopia according to the adapted three delay model.

### Delay 1. Seeking care

The major factors that contribute to delay in seeking care this study identified are mostly related to the demographic and socio-cultural aspects of women.

Socio-economic status of women in the community plays a major role in delaying the decision to deliver in a health facility. More specifically, lack of awareness on the importance of skilled care, deep rooted cultural norms, distance to referral HC and financial barriers were found to be major factors ones.

One of the major underlying causes of low health seeking behavior for pregnant women to seek skilled care during delivery was found to be early marriage. The likelihood of utilizing delivery services is generally higher in younger women, as they are generally more educated and less dependent financially on husbands to decide on health issues. Nonetheless, early marriage is a normal practice in Ethiopia that goes against this norm. When women marry in their teens, the likelihood that they attended school is very low. This situation makes them dependent on their husband, both financially and for decision-making. Although Ethiopia has a law to stop early marriage (a family marrying off their daughter before the age of 18 will be punished by law), this law is not readily enforced.

Linked to the issue of teenage marriage, the decision-making power of women in relation to finances and family welfare contributes to low facility delivery in Ethiopia. Limiting women's decision-making power at home has a negative impact on their health seeking behavior. Research indicates that women's decision making power is positively associated with seeking institutional delivery, thus improving women's decision making power can improve maternal health outcomes.

The issue of women's empowerment is not the only factor contributing to the delay in seeking health care. A woman's perception on the quality of service also plays a role. Although surveys indicated that more than half of the subjects felt that HEWs were more knowledgeable than

TBAs, most rural women prefer giving birth with the assistance of TBAs. One of the reasons stated was that health facilities do not allow the family into the delivery room, while they believe they need psychological support during labour and delivery. Additional reasons affecting decision making, were a preference for traditional practices that are not offered by the health facility, such as massaging the abdomen to ease labour and the conduction of a community ceremony after delivery .

Deep rooted cultural norms and practices are therefore a major factor for low utilization of institutional delivery services. This is the area where the HEWs face one of their biggest challenges in ensuring optimal outcomes from program implementation. HEWs are in place primarily to promote institutional delivery, as only a limited number can provide SCD services and expected to refer complicated labour to HC for EmOC/SBA. However, the provided health promotion services related to SBA cannot impact maternal health outcomes. Changing community culture and beliefs is challenging, and changes cannot be expected overnight. There are no studies on how much time it takes to change community culture and norms that address issues such as women decision-making power and early marriage. However, it is likely to take decades, so it is unsurprising HEWs have not yet been able to change community cultural beliefs in favor of institutional delivery. Improving the educational level of women, ensuring their empowerment and elevating their economical status can assist in creating this change. However the health sector alone through HEP cannot make change in this regard, rather it requires intersectional collaboration with organizations like FMOE, MOFED, and Ministry of Agriculture working together.

Another reason for low utilization of SBA is even though the HEWs provide health education, the start of labour is unpredictable. Women will often call TBAs and deliver at home.

### **Delay 2. Reaching care**

In addition to providing general health education on pregnancy and delivery, the second maternal-health related task of the majority of HEWs is referral of pregnant women to the nearest health facility for delivery. But the programme does not support this referral in any way other than verbal encouragement. The families therefore have to contend with the realities of the second delay of seeking care: making their way to the health facility and finding sources of money to pay for both the transport and the services.

The topographical nature of the country and the type of roads and transport in most of rural Ethiopia are not well suited for pregnant women to reach the HC/HP. In addition cost of transportation and service fee (as two-thirds of facilities charge for delivery service) contribute to low coverage of SBA in Ethiopia. The factors related to the second delay will also influence decision-making at the level of the first delay. Furthermore, the duration and stresses of travel may aggravate a pregnant woman's condition, determining whether the type of care available at a health facility, once the women reached; there may not be sufficient care for her to save her life (delay 3).

In conclusion, most rural areas have a dry season in which road condition can be very poor, making it difficult for pregnant women to travel and reach the HC or HP in time. Also, a lack of and the cost of transportation contribute significantly to the delay 2 in rural Ethiopia. Although the Ethiopian government's provide sufficient primary health care service (one HP for each 50,000 population), it cannot completely solve the challenge of reaching the health services. The topographical nature of the country remains the major challenge for women to seek delivery services.

### **Delay 3. Receiving appropriate care**

Like other developing countries, Ethiopia also lacks quality health service provision. The mothers that reach HC/HP (passing delay 1 and delay 2) are still challenged by inadequate treatment at the health facility.

The HEP faces three major issues in ensuring that women in labour receive appropriate care: unavailability of trained staff, lack of adequate supplies and weak referral linkage. Although delay 1 and 2 are partially addressed by dramatically increasing coverage and ensuring services are free of charge, the small proportion of HEWs trained on SCD is one of the reasons for low coverage of SCD by HEWs. Only about 1/3 of HEWs are trained in the provision of SCDs, and the majority of HEWs are therefore unable to provide delivery services.

Those HEWs, who were trained, often lack confidence in assisting delivery. The quality of their training may have been poor as the training courses are relatively new (4 weeks) and the HEWs may not have been able to practice adequately to develop their confidence in the short 4-week training period. Additionally, the HEWs willingness to provide delivery services is reduced because of low motivation influenced by low salary, lack of educational opportunities, limited technical support from the HC and working in rural areas. This may lead to HEWs treating the mother unsatisfactory, and this poor quality of services might bring a woman back to delay one, as they or the family will decide to seek alternative sources of assistance.

The HEWs who have not been trained in SCD are not expected to assist delivery. Rather they promote the importance of health facility delivery during ANC visits and home visits through health education, and strongly advise to immediately refer women to the HC.

The second major issue which limit the impact of HEWs on maternal health outcomes are external factors where Health facilities face shortages of skilled health professionals, lack of EmOC equipment, and under financing of the services. These are major supply constraints that hinder progress towards improved SBA coverage in the country.

Even when trained HEWs can provide delivery services, and when supplies are available, 15% of pregnancies cannot be managed at HP level as they are complicated and cannot be managed at the level of a Health Post. In these cases higher-level health professionals are needed.

Complications are likely to be fatal for mother and the newborn due to delays in seeking EmOC. Even if HEWs could rely on an affordable and reliable referral service (which is not the case), the availability and capacity of health facilities to provide EmOC services in the higher-level health facilities is severely limited

### **The way forward**

In addition to providing improved physical and financial access to services, in order to better address maternal health issues in Ethiopia, the HEP needs additional strengthening, and support from additional programs to address the key gaps contributing to the three delays in seeking maternal health care.

### **Health Development Army (HDA)**

An existing program that lies within the mandate of the HEP and can provide some support is the HDA. It is a new strategic direction to strengthen and expand the HEP to address challenges in Delay one -improving the health care seeking behavior of the community. The HDA is an approach which increases community awareness by creating networks in all rural communities. The leader of the network is the model, and he/she is taught and generally practices the essential habits from the 16 HEP packages. He/she is connected to 5 other families, and is responsible for encouraging this network to adopt these practices as well. This seeks to capacitate families who are lagging behind in terms of adopting safe health practices. The leader of the network is provided with technical support and training by HEWs, and they in turn will train the 5 other members. The program expects each family to create an annual plan for family health, and its performance will be evaluated at the end of the year in a community meeting facilitated by the network leaders. The HDA makes every community member responsible to its own health (FMoH 2011).

Since 2011, training has been given in four regions (Tigray, Oromia, SNNPR and Amhara). SNNPR and Tigray regions started implementing immediately after they finished training the leaders. Coverage increased rapidly over two years, with 2,198,924 (60.6% of the annual target) of model families trained in 2011, and the cumulative number of model families graduating was 12,178,630 (88.9% of total target) (FMoH 2011).

The HDA will help to expand the successful HEP experiences deeper into communities and families. They are expected to be involved in community awareness creation activities such as promotion and prevention activities at household level and in the community. They are also involved in regular coordination of structured community meetings and lead the discussion sessions with the guidance of the HEWs. Thus, HDA will help improve community ownership and scale up the best practices. This program has the potential to address many of the social and cultural challenges the HEWs face to bring change at community level, including those related to institutional delivery.

Previously the country implements a similar program called vCHW. However the sustainability of the program was a concern. Even though the program was voluntary, different implementing partners paid incentives, and this could not be maintained. The HDA could be more financially sustainable, and help communities develop a sense of ownership about their health.

### **Improving physical and financial access**

With the rapid expansion of the HEP across the country, and the explicit specification that the services provided should be free, the HEP has addressed the delay in reaching care in time... Although, it is limited by the fact that only a relatively small proportion of HEWs is able to and willing to provide maternal delivery services. It is therefore important to also address the second delay in relation to access to SBAs at health facility level. Existing social gathering (named Idir) which is the traditional practice of collecting money when somebody dies from the community to support the family of the deceased, can possibly be utilized for local resource mobilization to support pregnant women to deliver in health facility.

Possibly one of the fastest ways of improving access to SCD in Ethiopia is by further scaling up the HEP: training the remaining HEWs in the provision of delivery services. It must be noted that training alone is not enough – the training curricula must be reviewed and steps taken to ensure that HEWs come out of the training with sufficient experience and confidence that they can assist deliveries in the HPs. Financial resources should be made available for the training.

### **Improving quality of services**

In addition to training the remaining HEWs in SCD, those who have already received training could benefit from ‘refresher training’ and regular supervision from a skilled midwife to discuss problems in order to improve their confidence and quality of care. If possible, financial allocations should also be made to improve the wages of HEWs to improve motivation. Altogether it seems wise to build on the existing program, as the trust that has been established between the communities and the HEWs over the past years (as evidenced by the program evaluations and overall success of the program), will also increase the likelihood that coverage of SBA and reduction of maternal mortality can be effected through the HEP.

The country’s current track record on the quality of service provision is not optimal, and expansion of services could result in an overall reduction in quality of current services in the event that current human and financial resources are redirected to support this expansion of services. Additionally, there is no obvious indication that the referral system (i.e. ambulances, access to transport) will be improved.

Ethiopia can learn lesson from Nepal in expansion and utilization of EmOC service. The Nepali context is similar to Ethiopia. With a population of 23 million, 86% live in rural areas, 46% live below the poverty line, and about 70% women do not have education (MOH 2002). The MMR in

Nepal is among the highest in Southern Asia: ranging from 549 to 740/100,000 live births (Pradhan 1997, UNICEF 2004).

By engaging all facility staff and the community in planning and review meetings, a non-confrontational, humanistic approach was established to improve the quality of the service to develop sense of accountability. It was found that community involvement in planning of the health facility made the staff increasingly motivated and established a sense of ownership to serve the community and provide quality service (Rana, 2007).

National Safe Motherhood Program Plan (2002 -2017) project trained both new and existing health providers at EmOC centers, recruiting new staff and retaining the skilled man power. Different cadres of health professionals were trained on EmOC using a step-by-step approach. In the project supported area, training will be continued as staff is often transferred and new staff will take up that position (Rana, 2007).

The program also focused on advocacy and facilitating information and resource dissemination at National and regional level through a major advocacy platform at district level and meeting with the community two times per year to review their performance and challenges together.

#### **Adopting a comprehensive approach**

Although the Nepal project primarily focused on making quality services available, it also mobilized the community under an existing community level project by UNICEF called Community Based Safe Motherhood Project (CBSMP). The project addressed the 1st and 2nd delay by: 1) empowering women and the community in providing information about the danger sign of pregnancy and birth preparedness, 2) establishing a community fund collecting mechanism to travel to EmOC service, 3) developing an emergency transportation mechanism (Ambulance, stretchers) and 4) facilitating the community in referral cases, and Giving training to community health workers to attend delivery, provide obstetric first aid, and refer in case of complicated labor.

Between 2000 and 2004 coverage of SBA/EmOC improved from 3.8 to 8.3% and the case fatality rate declined from 2.7 to 0.3%. The key strength of the project was that in addition to expanding service provision, it also ensured community empowerment and partnership with the donors.

Ethiopia seems to be taking the right steps, but could benefit from the Nepali project's experience in implementing the already established road map for accelerating the reduction of maternal and new born mortality in Ethiopia from 2012-2015.

## Chapter 5: Conclusions and Recommendations

Availability of PHCUs in the community cannot guarantee an improvement in women's delivery service utilization. Ethiopia faces different challenges in utilizing health service as any developing country. The likelihood that Ethiopia will succeed in achieving MDG 5 is low, because the important indicator to reduce MMR (SBA) does not show much improvement to date. The HEP was expected to make a great contribution regarding MDG 5 improvement by doing promotion and assisting normal delivery at HPs and referring to EmOC/HCs for SBA, but the outcome was not as great as expected. There are different factors contribute to low performance HEWs in improving institutional delivery. The major factors the study identified were individual characteristics/socio-economic factors (women' decision-making power, education, age, and income, place of residence, awareness, culture and beliefs). Health sector factors also played a considerable role, and included lack of skill HEWs/ HC staffs, lack of motivation, inadequate EmOC providing HC, working hours of HEWs, and a weak referral system. Reaching health-facility (access and cost of transport) should also be mentioned.

### Delay 1. Seeking institutional care

The education level of women has an important impact on the utilization of maternal health services. The importance of focusing on education of women is because it has a direct association with income level of the women. Educated women are more inclined to choose to deliver in a health facility compared to less educated women. Those educated have developed self-esteem as a result of not being completely financially dependent on their husband. Furthermore, the likelihood of them being influenced by traditional beliefs and culture is less. Thus educating women can bring a major change in maternal service utilization. However, tackling this problem is beyond the health sector scope. Intersectoral collaboration is very important in educating women and empowering them to make decisions about their own health. To make the women educated is a long term plan implementation for low income country like Ethiopia. To see a change regarding maternal health, the country needs a short-term strategy to reach un-educated women who are not utilizing health services in order to meet the goal.

The deep routed cultural beliefs in the rural community of Ethiopia are the major challenge to the HEWs to bring optimal outcome from the HEP. The HEWs are in the community to promote/educate them about their health so that the community can protect itself from health problems. However, the deep routed cultural practice and beliefs of the community does not allow them to make a change regarding institutional delivery. Giving priority and working towards those issues can bring a great change in reducing MMR in the country by improving women utilization of institutional delivery.

### **Recommendation for decreasing Delay 1**

- Creating awareness on danger signs of pregnancy using HDA special focus given to those women economically poor and non-educated taking in account cultural practices and local conditions

### **Delay 2. Reaching the services**

Those who decide to deliver in health institutions are also challenged by a lack and costs of transportation. Even though there are adequate number of staff at HPs and adequate number of HPs built throughout the country, the topographical nature of the country does not allow pregnant women to travel easily and reach a HP or the referral centre. Addressing only the delay one and three without addressing delay two it will not bring Ethiopia closer to achieving MDG 5.

### **Recommendation for decreasing Delay 2**

- The government should provide ambulances at least at HC level so as to give service for five satellite HP in case of referral
- Encouraging communities to create emergency transportation plans by using local fund rising initiatives
- Establishing maternity waiting homes at referral centre when appropriate

### **Delay 3. Receiving appropriate cares**

The poor quality of delivery service in Ethiopia is a major contributing factor for low coverage of institutional delivery. The HEWs are the link between the community and the HC. However the HCs are not equipped adequately to receive cases from the HP. On paper staff from the HC is supposed to technically support HEWs in assisting normal delivery, receive referral case from HPs and give feedback to the HEWs for the mother to be followed up when she is back to her village. However, in practice this support is not adequate.

### **Recommendation for decreasing Delay 3, reaching the health facility**

- Strengthening confidence and motivation of trained HEWs by ‘refresher training’, opportunity on career development of HEWs, and considering increase of salaries
- Enhancing referral systems and technical support between HC and HP
- Training remaining HEWs in clean/safe deliveries and danger signs of pregnancy
- Increase number of HCs providing EmOC service and train more health professional, ensuring adequate and sustainable supplies
- Improving availability of HEWs at HP (less than 75% of time spent in the field) and ensuring their availability in the village

## Overall Conclusion and Recommendation

FMoH was successful in making primary health care available in each 50,000 populations, and employing a large number of HEWs to serve the community to promote health. However, creating awareness without making sure the availability of quality health care (Delay 3) in HF and without working on the means of reaching HF (delay 2), cannot bring the results the government hopes to achieve. The FMoH plans to expand EmOC-providing HCs. Though, service expansion alone is not a solution for achieving the desired results. In addition to service expansion there should be a way to improve the community awareness (Delay 1) and the means the community to get in to the HF (Delay 2).

In conclusion, each delay is linked to each other. Solving only the challenge of one of the delays cannot bring improvement in coverage of institution delivery so that the country can achieve MDG 5. Thus to attack all three delays the government need to work with other sectors using a multi sectoral approach, so as to ensure women's education, upgrading roads and transportation mechanism, involving women in developmental projects to make them economically well and national curricula for health providers include practical sessions on EmOC which are beyond the health sector scoop.

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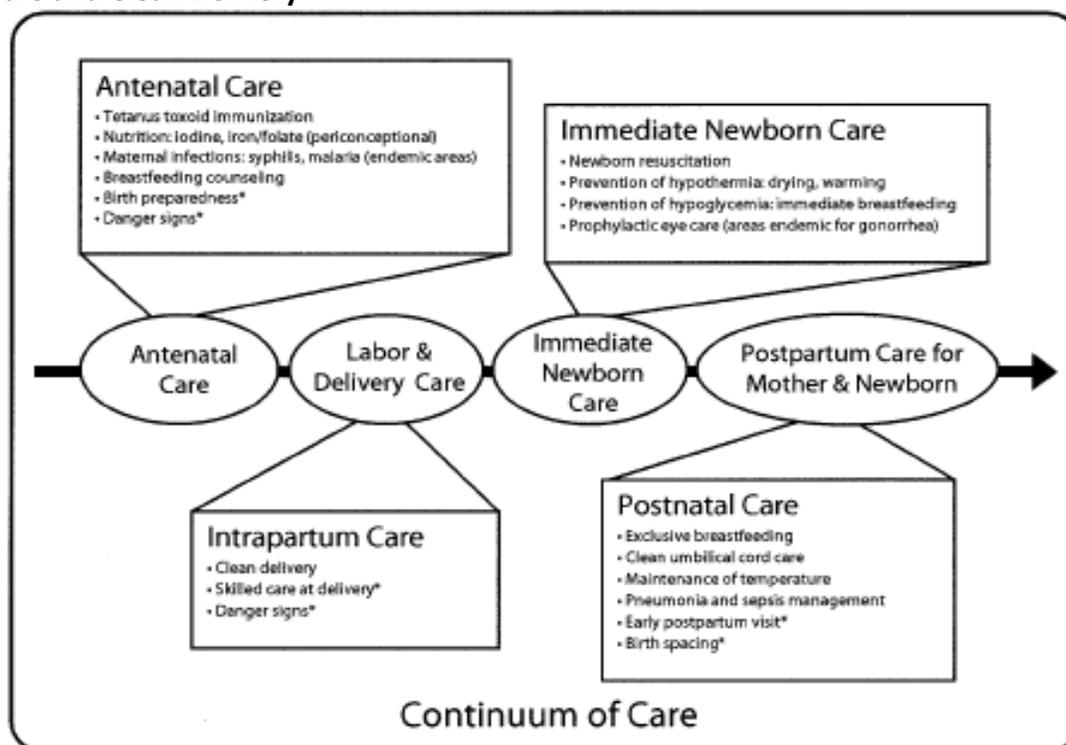
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## Annex 1: Overview of standards of obstetric services

### Safe and Clean Delivery



“Summary of priority antepartum, intrapartum, and postnatal interventions for inclusion in programs of maternal and neonatal health care, based on assessment of available evidence for impact on perinatal and neonatal health status. \* indicates essential elements of the Saving Newborn Lives conceptual framework for advancing newborn health and survival, which either were not reviewed in this report or for which evidence is lacking (see “Methods”).” (Zulfiqar, 2005, page 524)

### Emergency Obstetric Care : Source: a handbook, WHO, UNFPA, UNICEF, AMDD

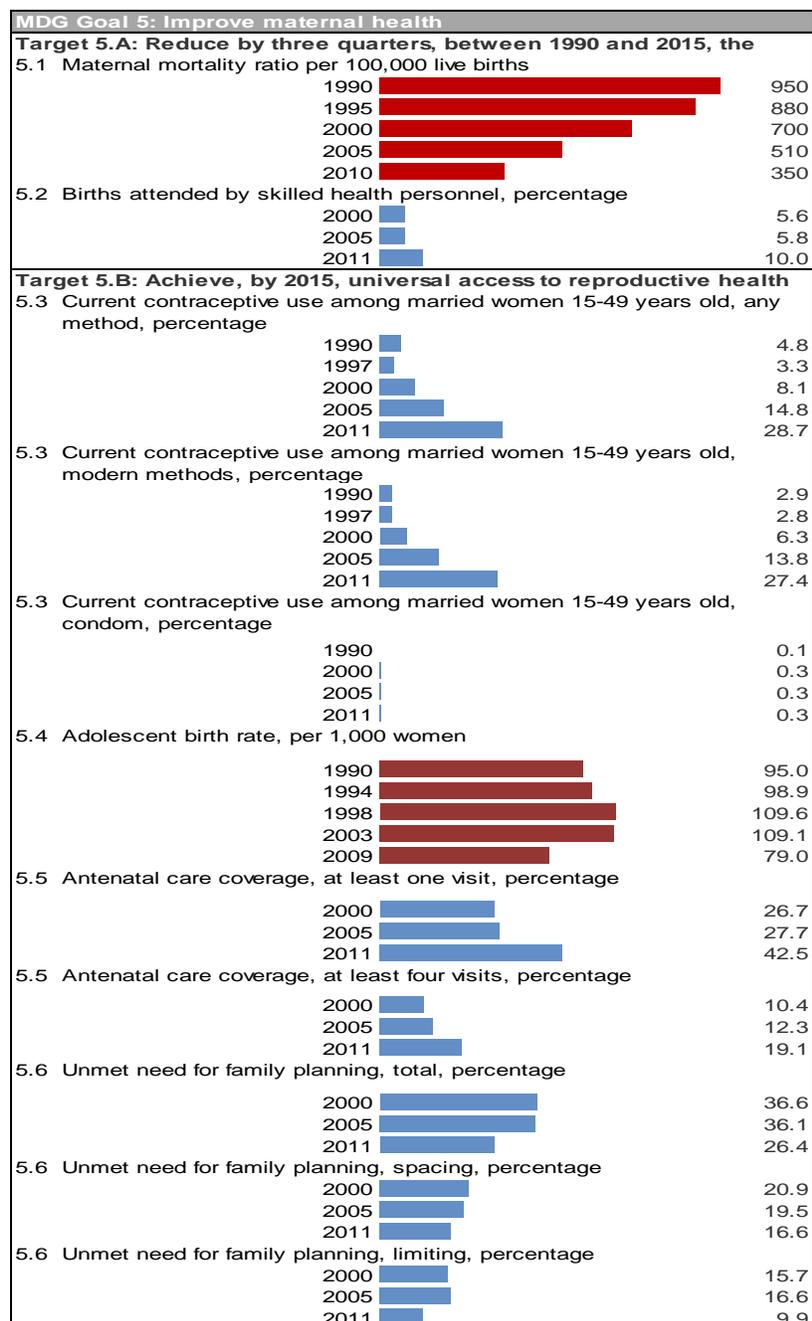
**Table 4. Signal functions used to identify basic and comprehensive emergency obstetric care services**

Basic services	Comprehensive services
(1) Administer parenteral <sup>1</sup> antibiotics	Perform signal functions 1–7, plus:
(2) Administer uterotonic drugs (i.e., parenteral oxytocin <sup>2</sup> )	(8) Perform surgery (e.g., caesarean section)
(3) Administer parenteral anticonvulsants for pre-eclampsia and eclampsia (i.e., magnesium sulfate).	(9) Perform blood transfusion
(4) Manually remove the placenta	
(5) Remove retained products (e.g. manual vacuum extraction, dilation and curettage)	
(6) Perform assisted vaginal delivery (e.g. vacuum extraction, forceps delivery)	
(7) Perform basic neonatal resuscitation (e.g., with bag and mask)	
A basic emergency obstetric care facility is one in which all functions 1–7 are performed. A comprehensive emergency obstetric care facility is one in which all functions 1–9 are performed.	

## Annex 2: Progress towards Millennium Development Goal 5

: Improve maternal Health, Key Indicators, 1990 - 2010 (Source:

<http://mdgs.un.org/unsd/mdg/Data.aspx>)

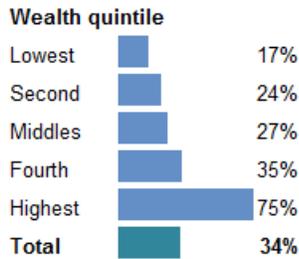


### Annex 3 Comparison of ANC among woman of different income

Components of ANC received among women age 15-49 with a live birth in the five years preceding the survey

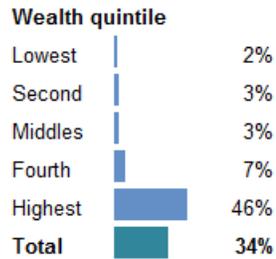
#### Components of ANC received among women age 15-49 with a live birth in the five years preceding the survey

Percentage receiving antenatal care from a skilled provider



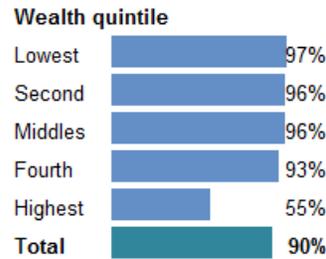
Eth\_DHS, 2011, table 9.1

Percentage with assistance of skilled provider during delivery



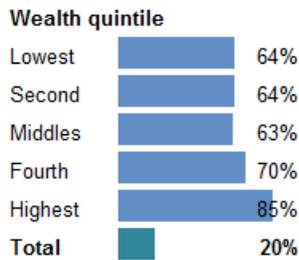
Eth\_DHS, 2011, table 9.7

Place of delivery - Home



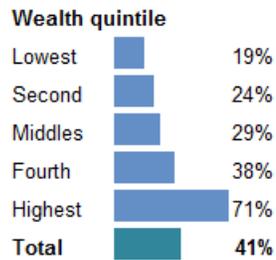
Eth\_DHS, 2011, table 9.6

Blood pressure measured



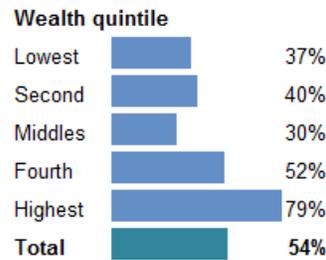
Eth\_DHS, 2011, table 9.3

Urine sample taken



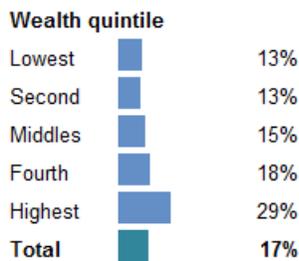
Eth\_DHS, 2011, table 9.3

Blood sample taken



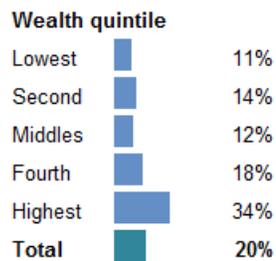
Eth\_DHS, 2011, table 9.3

Took iron tablets



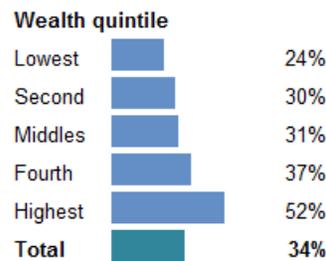
Eth\_DHS, 2011, table 9.3

Informed of signs of pregnancy complications



Eth\_DHS, 2011, table 9.4

Received two or more tetanus toxoid injections



Eth\_DHS, 2011, table 9.5

## Annex 4: The Social Determinants of Maternal Health

Adapted from WHO(2011) Closing the Gap: Policy into Practice on Social Determinants of Health. Discussion Document for the World Conference on Social Determinants of Health. Geneva: World Health Organization: page 7.

