



Making childbirth safer: what works for Ethiopia?

By

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Masters Thesis

Management Economics and Consumer studies
specialization in Public Health and Society (SCH 80433)

Supervisor: Prof. Dr. Anke Niehof

Examiner: Dr. Kirsten Verkooijen

Wageningen University, Department of social sciences

August, 2010

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This report is produced by a student of Wageningen University as part of the degree of Masters in Management Economics and Consumer studies, specialization in Public Health and Society.

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Abstract

More than half a million women die each year from causes related to pregnancy, delivery and child birth. Ninety nine percent of these deaths take place in the developing countries. Maternal mortality ratios vary widely across the countries of the world ranging from one to 2000 in 100,000 live births. The achievement in the reduction of maternal mortality in parts of the world indicates that almost all maternal deaths are preventable. The majority of maternal deaths occur during labor, childbirth or within 24 hours after delivery from obstetric causes. As a result, the widely recognized strategy to reduce the avoidable deaths from childbirth is skilled birth attendance during childbirth. This strategy has resulted in a significant reduction in maternal mortalities mainly in the high income and to a certain extent in the middle income countries. Nevertheless, the impact of this strategy in reducing maternal deaths in low income countries particularly in Sub Saharan Africa is negligible. The overall average reduction in maternal mortality ratios has been less than one percent per year during the period between 1990 and 2005 and 0.1 percent in Sub Saharan Africa. Therefore, it is found to be important to find an alternative strategy that works best in this part of the world. Consequently, an exploratory study that involved literature review and case study has been conducted in Ethiopia to identify areas of intervention that would enable to come up with a strategy to make childbirth safer within the existing situation. Ethiopia is one of the countries in Sub Saharan Africa that sustains high maternal mortality and the lowest percentage of skilled birth attendance. Literature reviews followed by interviews with key informants at different levels and community members were carried out. Secondary data was obtained through review of records at national, regional, zonal, *woreda* (an administrative unit comparable to a district level), health facilities and *kebele* (the lowest administrative unit in Ethiopia) levels. The major findings include lack of health infrastructure to provide skilled care to all women who give birth, inefficient use of the existing infrastructure including health facilities and health professionals, lack of commitment, accountability and professional competence among the health workers, lack of a functional referral system, varying perception about risk related to childbirth and its management among different actors and inadequate registration and documentation mechanism. Opportunities such as the existence of health posts and trained HEWs, TBAs who are motivated to take part in the field, community readiness to support each other at the time of need for referral have been identified. The study concludes that there is a room to improve the care during childbirth and make deliveries safer within the existing situation in Ethiopia. The study recommends six areas of intervention, maximizing the effectiveness of the existing services, providing basic obstetric care at the health posts, empowering TBAs to take part in assisting women during delivery, arrangement of a functional referral system, establishing and strengthening of registration and documentation including of vital events and, ensuring the commitment of all actors.

Dedication

To Abeselom and Eyobed

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Glossary

This section presents abbreviations and terms used throughout the document.

DHS E: Demographic and Health Survey Ethiopia

CSA: Central Statistical Agency

FGD: Focus Group Discussion

FMOH: Federal Ministry of Health

GP: General Practitioner

HEWs: Health Extension Workers refers to community health worker trained by the government of Ethiopia to deliver primary health care services at the health posts that are established at the kebele level

Idir: is a form of social group in Ethiopia established by the local community as a social security system to help each other during the time of death of members of the family of relatives in the community to organize the funeral ceremony and alike

Kebele: The smallest administrative unit of Ethiopia

Maternal death: The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

MMR: Maternal Mortality Ratio.

Maternal Mortality Ratio: The number of maternal deaths during a given time period per 100,000 live births during the same time-period

NHCs: Nucleus Health Centers refers

NICE: National Institute for Health and Clinical Excellence

SNNPR: South Nations Nationalities and Peoples Region

SSA: Sub Saharan Africa

TBA: Traditional Birth Attendant

UNFPA: United Nations Population Fund

UNICEF: United Nations Children's Fund

WHO: World Health Organization

Woreda: The second lowest administrative unit of Ethiopia next to *kebele*

Zone: An administrative unit of Ethiopia above *woreda*

Introduction

The first chapter of this paper defines the objectives of the study and describes the concepts used in the document. Secondly, it gives an overview of a review of literatures about the trend of maternal mortality followed by the strategies in place to reduce maternal mortality and their outcome so far. Then it depicts the situation of the health care system and maternal health care services with a special focus on intra-partum care in Ethiopia. Lastly, it concludes by identifying areas for intervention and suggesting ways for maximizing the utilization existing public and community resources in a way that results in to safer child birth, that eventually leads to the reduction of maternal mortality ratios.

1.1. Background

Every year, over half a million women die from conditions related to pregnancy and child birth. More than half of these deaths occur in sub-Saharan Africa (WHO, 2007), whereas only less than one percent takes place in the developed countries. Maternal mortality that is death of a woman while pregnant or within 42 days of termination of pregnancy, from causes related to pregnancy and child birth, is an area where the biggest discrepancy is observed across countries of the world. Maternal mortality ratios ranged from 1 to 2100 in 100,000 live births among the different countries (UNFPA, 2009). Significant reduction has been noticed over time in maternal mortality ratios in parts of the world (Loudon, 2000). The trend of maternal deaths and the achievement in its reduction in the developed world indicate that almost all maternal deaths are preventable (Hill et al., 2007; Loudon, 2000). Thus, reducing maternal deaths has become the target for the Millennium Development Goal (MDG). MDG 5 targets to reduce maternal mortality ratios (MMR) by 75 percent between 1990 and 2015 (UN, 2008). To reach this target it requires an average reduction of 5.5 percent each year. However, this goal has been reported to be an area with little progress the average reduction being less than one percent a year during the period between 1990 and 2005 (UN, 2008). In Sub Saharan Africa (SSA), where maternal mortality ratios remain high an average annual reduction of 0.1% has been reported (WHO, 2007).

It has been established that majority of maternal deaths take place during labor, delivery or within 24 hours after delivery (Campbell & Graham, 2006). It is well known that majority of deaths and illnesses related to pregnancy and child birth are primarily caused by hemorrhage and infection, which is associated with lack of proper care and poor hygienic conditions (Abouzahr, 2003). Ensuring proper care and a clean and hygienic environment during delivery reduces the risk of the resulting death and illness (UNICEF, 2009; Loudon, 2000). Therefore, care during delivery has been suggested to be crucial to reduce maternal deaths. WHO strongly recommends a universal access to skilled birth attendance to all deliveries as a strategy to reduce maternal mortality (WHO, 1999; WHO, 2004). Nevertheless, the percentage of skilled birth attendance remains low in most of the

developing countries due to socioeconomic, infrastructural and cultural reasons (UNFPA, 2009; UN, 2008). As a result, the countries sustain continuous high ratios of maternal mortality (Campbell & Graham, 2006; WHO, 2007; UNICEF, 2009). Therefore, a strategy that recognizes the socioeconomic, cultural and infrastructural circumstance, and which is relevant to the situation of the countries needs to be in place in the countries widely affected to prevent these deaths. The study is carried out in Ethiopia, a country in SSA and that sustains high maternal mortality ratio, 720 per 100,000 live births and the lowest percentage of skilled birth attendance, which is six percent (UNFPA, 2009).

1.2. Problem statement

In Ethiopia, the majority of births take place at home in poor hygienic conditions, and births at home are usually attended by unskilled people who do not have any training about proper care during delivery, whereas, only six percent give birth at health facility and are assisted by trained personnel (CSA & ORC, 2006). An attempt to increase the rate of skilled birth attendants by increasing health facility delivery, and by ensuring deliveries at home to be conducted by trained professionals require adequate financing and resources including trained professionals, functional health facilities and better infrastructure which might need years to go in order to make it practical (Goodburn & Campbell, 2001).

Therefore, it is important to consider making deliveries safer within the existing situation to reduce the ongoing preventable deaths, illnesses and disabilities resulting from unsafe delivery. This study attempts to identify possible areas of interventions to come up with relevant and practical recommendations that will enable to design a strategy that will make delivery safer within the existing situation in Ethiopia.

1.3. Objective and research questions

1.3.1. Objective of the study:

The objective of this study is first, to identify areas of intervention to make delivery safer within the existing situation in Ethiopia secondly, to provide recommendations based on the findings.

1.3.2. Research questions

The Main research question: What are the possible areas of intervention to make delivery safer within the existing situation in Ethiopia?

The following sub-questions have been drawn to answer the research question.

1: What prevents the community from using the existing facilities to have safe deliveries?

This question answers whether the health facilities are accessible in terms of physical distance, cost, and availability of the service.

2: How does the perception of different actors affect the practice of safe delivery?

The following questions will be answered under this sub-question.

- i) Who are the different actors involved in the area of child birth?
- ii) What are the similarities and differences of the perception of different actors regarding safe delivery?
- iii) What implication does the perception of the different actors bear in the process of ensuring safe delivery?

3: What potential resources are available that could be used to ensure safe delivery?

This sub-question will answer the availability of a functional health care system as well as other public and community resources to provide adequate care to women during child birth. Under this question analysis will be made to answer the questions:

- i) Is there a functional health care system in place?
- ii) Is there a functional referral system?
- iii) Is a reliable data available about the situation?
- iv) What are other public and community resources available?

4: What are the areas of intervention to be considered to ensure safe delivery through efficient use of the existing resources?

This will answer the questions:

- i) In what ways can the service in the existing health care system be enhanced to make it more efficient?
- ii) In what ways can the use of the identified resources be maximized in a way that they can contribute to ensure safer deliveries?

1.4. Concepts and theoretical framework:

1.4.1. Safer delivery

It is a situation where deliveries are conducted with lesser risks for the life and the health of the mother and the baby regarding the problems that occur during labor, delivery and within 24 hours after delivery.

1.4.2. Accessible quality and timely care

Refers to the existence of the best possible options of care readily available and all members of the society are entitled to and have access to use regardless of their geographic, socioeconomic or cultural background.

1.4.3. Resource

It involves the existing community and public resources and socioeconomic and cultural situations in a specific place.

The existing community and public resource is a potential physical and non physical resources owned and controlled by the community or the public that can be used to produce a positive result, which in this case is to improve the accessibility of timely and quality care.

Socioeconomic and cultural situations involve the living standards of individuals, families and communities and their shared values and beliefs that directly or indirectly influence their care seeking behavior.

This can be summarized as community or public possessions that have the potential to result in accessibility of quality and timely care by maximizing the efficient use of it without requiring large economical and infrastructural changes.

1.4.4. The perception of different actors

The perception of different actors is the views held by each of the actors in matters related to safe delivery, which eventually influences the outcome. This includes the response of segments of the community about risk and its management with the aim of achieving safe delivery. This will be described from the perspective of etic-emic views of health and illness, and the model for classification of health care practices in the household production of health according to the emic and etic perspective (Niehof, 2004). Etic view is an outsider point of view and the cultural framework of the learner which is used to interpret and make sense of the Other. Emic view is the local cultural views of actors. Niehof (2004), describes the emic views as 'intended as health care' or 'not intended as health care' which could produce a desirable or undesirable health effect or they could be with no health effect. (See Table 1) (Niehof, 2004). Therefore, odds are there that any of the actors including the health professional not understanding the views of others and the notion behind it could have a perception that might affect the outcome positively or negatively, or neutral. It is therefore important to visualize the different views against the available resources.

Table 1: Classification of health care practices in the household production of health (HPHH) according to the emic and etic perspective

Etic perspective	Emic perspective	
	No health care intention	Health care intention
No measurable health effect	Not relevant category (1)	Intended as health care but not yielding measurable health effects (2)
Measurable health effect (Positive or negative)	Practices not intended as health care but yielding measurable health effects (3)	Practices intended as health care and yielding measurable health effects (4)

Source Niehof, (2004)

Based on the theory of the emic and etic perspective of house hold health care practices the model that takes into account as they relate to the risk and its management is used as a framework in this study. The perception of different actors will be analyzed against the available resource using the etic-emic model below (see Fig. 1)

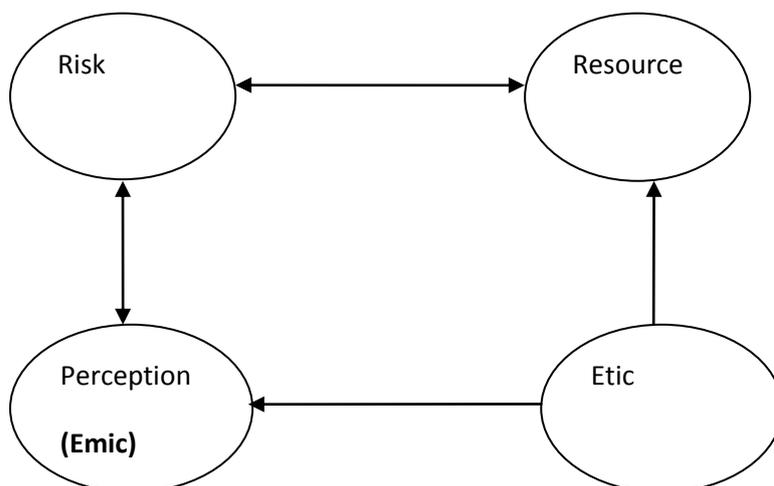


Figure 1: Etic-emic model that analyzes the link of perception and resources to the risk

2. Literature review

This chapter describes the causes and the trends of maternal deaths in general and the strategies that have been executed so far, and the factors that determine maternal mortalities as per the literature points at.

2.1. Causes of maternal deaths

The two leading causes of maternal death are hemorrhage and sepsis (Khan et al., 2006). In the early nineteenth century puerperal sepsis was a renowned problem that has caused the vast majority of maternal deaths. In 1874, 52 percent of maternal deaths in England and Wales were reported to be caused by puerperal sepsis (Loudon, 1992: 49). Despite its decline in the developed countries with an introduction of asepsis and antibiotics, followed by hospital technology, sepsis still remains among the major causes of maternal death, especially in the developing countries. In 2000 puerperal sepsis was found to be the cause for an estimated 77,000 maternal deaths, following hemorrhage as the leading cause, resulting in 132,000 deaths (Abouzahr, 2003).

In a systematic review study, Khan et al. (2006) found out deaths from sepsis to be the highest in Africa with than in the developed countries (Khan et al., 2006). Other causes of maternal deaths include pre eclampsia/eclampsia causing 63,000 deaths, obstructed labor 42,000 and abortion being responsible for 69,000 deaths in 2000 (Abouzahr, 2003). However, the leading cause of maternal death varies among the regions; while it is hemorrhage in Africa, hypertensive disorders is the leading cause of maternal deaths in Latin America (Khan et al., 2006)

2.2. Global trends of maternal deaths

Maternal mortality had been high in European countries before the First World War. The ratio was as high as 890 per 100,000 live births for Sweden, 740 for Belgium, 440 in England and Wales and 410 in The Netherlands during the periods of 1875 to 1879. The causes for majority of the deaths in those days were found to be puerperal sepsis; as a result, aseptic techniques during delivery were introduced between 1880 and 1900 (Loudon, 1992: 451). There was a continuous decline in maternal mortality in most European countries after the introduction of asepsis and its establishment between 1880 and 1900, resulting in a marked differentiation between the rates in the 1870s and in 1910, despite few hospital deliveries. The ratios for the period between 1900-1904 were almost halved compared to the ratios for the period 1875-1879 in the Netherlands, from 410 to 240 per 100,000 live births, whereas, from 890 to 230 in Sweden (Loudon, 1992: 451).

Subsequent decline in maternal mortality continued in European countries except for some alterations after 1910, the period between the First and the Second World War, where the rates either stagnated or were rising, which could be attributed to the effect of the wars that

has resulted the rise in abortion rates, instabilities and unsteadiness of the care system (Loudon, 1992: 109-119). Loudon argues that the possible reason for the stagnation or the rise of the maternal deaths during this period could be sepsis (Loudon, 1992: 455-459).

Despite a marked decline in the number of deaths, maternal mortality ratios in the developed countries ranged from 250/100,000 live births in the Netherlands to 700/100,000 live births in the United States in 1930 (Loudon, 2000). After an introduction of more intervention methods including ergometrine, blood transfusion and also better organized obstetric care services after the mid 1930s, further reduction was noticed in maternal mortality ratios in the developed countries to almost a similar level in all countries, 60 per 100,000 live births registered in 1960 (Loudon, 2000).

Three decades later, the average maternal mortality ratio for the developed regions for the period 1990-2005 was reported to be 9, whereas the rates for the same period are estimated to be as high as 905 for Sub-Saharan Africa(SSA) (Hill et al., 2007). At present, maternal mortality is an area where a big gap across the countries of the world is noticed(Hill et al., 2007; Abouzahr, 2003). In 2005, maternal mortality ratios were three for Sweden, six for the Netherlands, eight for UK, 11 for USA, and one for Ireland (UNFPA, 2009). However, in most of the developing countries the ratios remain as high as they were a century ago in the developed world. The same report shows maternal mortalities of 1,800 for Niger and 2,100 for Sierra Leone (UNFPA, 2009). Loudon hence hypothesizes that the control measures used in those days in the developed countries perhaps would work today in the developing countries where the current mortality ratios are comparable to the ratios in the developed countries at that time (Loudon, 2000). Table 2 shows maternal mortality ratios and the number of deaths in different parts of the world in 2005.

Table 2: Maternal mortality ratios and number of deaths in different regions of the world and in Ethiopia in 2005

Region	Maternal Mortality Ratios per 100,000 Live births	Number of maternal deaths
World Total	400	536,000
Developed Regions	9	960
Developing Regions	450	533,000
Africa	820	276,000
Sub-Saharan Africa	900	270,000
Ethiopia	720	22,200

Source: Hill et al., 2007

2.3. Strategies for safe delivery

Adequate nutrition, improved hygiene, antenatal care, skilled attendance at birth, all play a significant role in reducing the risk of maternal death (UNICEF, 2008). Intrapartum care, care during child birth, has been given primary attention because it has been established that majority of the deaths are attributed to this period. The national Institute for Health and Clinical Excellence (NICE) clinical guideline for England and Wales 55 defines intrapartum care, as care of healthy women and their babies during childbirth (NICE, 2007). Various approaches of intrapartum care have been executed. The different approaches had practical limitations in some settings while they produced the desired result in others. Koblinsky et al., (1999) in their review of country programs and projects in the developing countries described four models of delivery care with respect to the place of delivery and the person who performs the care. They described *model 1* as home deliveries by non-professionals trained briefly; *model 2* home deliveries by trained professionals, *model 3* delivery by professional attendants at basic essential obstetric care facility, and *model 4* deliveries by professional attendant at a comprehensive obstetric care facility. They also, reported that it has been possible to reduce maternal mortality ratios to a level of 100/100,000 live births but not further by applying *model 1*, which is home deliveries attended by non-professionals trained briefly, with close supervision and an effective referral mechanism (Koblinsky et al., 1999).

According to Koblinsky et al. (1999), the application of *model 2*, home delivery by trained professionals, in Malaysia has resulted in the decline of maternal mortality ratios to 50 per 100,000 with most births taking place at home but attended by a trained midwife; and further reduction was achieved by shifting to *model 3*, whereby deliveries are conducted at basic essential obstetric care facilities. Midwife to population ratio during the application of

model 2 was 1:4300, and one health unit serving on average a population of 50,000 with four sub centers. The service was made free and a strong referral system to a comprehensive essential obstetric care services was in place (Koblinsky et al., 1999), perhaps political commitment has also contributed to this achievement. However Koblinsky et al. (1999) indicated that the practice of provision of home deliveries by trained professionals in Africa and Asia is minimal (Koblinsky et al., 1999). Furthermore, some countries that provide delivery care under *model 4* were reported to have maternal mortality ratios of less than 10 per 100,000 live births. However, Koblinsky et al. (1999) argue that the application of *model 4* alone does not guarantee the achievement of these low ratios. As Koblinsky et al. (1999) quoted Stephenson P et al. (1992) and Bobadilla JL et al. (1996), maternal mortality ratios in Romania and Mexico City were 180 and 114 per 100, 000 respectively in the 1980s, while most of births being attended by professionals in hospitals. They pointed out that in Mexico 88 percent maternal deaths during 1988 -1999 occurred in four hospitals and 85 percent of these deaths were preventable (Koblinsky et al., 1999).

Years later, Campbell and Graham (2006) described the intra-partum care strategy at four levels, in terms of the person providing the care and the place where the care is provided in a little different way recognizing the need for more options to address the choice of women and the feasibility to the context. These are *health center intra-partum care strategy, skilled birth attendance at home, community health worker at home, trained TBA at home and untrained TBA/relatives at home* (Campbell & Graham, 2006). Health center intra-partum care is also referred to as basic essential obstetric care, or skilled care at the first level, refers to the care that is provided by trained attendant at the health facility. The others are described as strategies where the care is provided at home by different categories of people ranging from skilled attendant to untrained TBAs or relatives. Campbell and Graham (2006) further described the practical limitations of each of the strategies in range of settings; hence all of them are practiced so far in different parts of the world depending on the situations that determine their existence (Campbell & Graham, 2006).

The first two strategies, *health center intra-partum care* and *skilled birth attendance at home* can be categorized under skilled birth attendance. WHO stresses skilled care during pregnancy, delivery and immediate postnatal period especially in countries where the coverage of skill birth attendance is less than 85 percent as a means to achieve the MDG of reducing maternal mortality ratios by three-quarters between 1990 and 2015 (WHO, 2004). "Skilled attendance refers to the care provided to a woman and her newborn during pregnancy, childbirth and immediately after birth by an accredited and competent health care provider who has at her/his disposal the necessary equipment and the support of a functioning health system, including transport and referral facilities for emergency obstetric care"(WHO, 2004). WHO defines a skilled birth attendant as an accredited health professional- such as midwife, doctor or nurse-who has been educated or trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, child birth and the immediate postnatal period, and the identification, management and referral of

complications in women and newborns". (WHO, 2004); "The minimum training period required is generally considered to be 6 months. TBAs trained or untrained are not included" (WHO, 1999 In Bergstrom & Goodburn, 2001).

According to Campbell and Graham (2006) *health center intra-partum care, or skilled care at first level*, is an option in places where women prefer to deliver at a health facility pointing out its safety (Campbell & Graham, 2006). Shiffman (2000) also showed that skilled birth attendance at birth has a high statistically significant correlation with maternal mortality ratios (Shiffman, 2000). However, only a slight increase in the rates of skilled birth attendance, with an average annual increase of 1.7 percent have been reported globally, with no change in SSA during the period of 1989 to 1999 (Abouzahr & Wardlaw, 2001). Bergstrom and Goodburn (2001) argue that it is worthwhile considering skilled attendance at delivery; however, it is not available for the people in many parts of the world. According to Bergstrom and Goodburn (2001), in a DHS analysis involving 22 Sub Saharan countries only one was found to provide skilled care for more than three quarters of the cases (Bergstrom & Goodburn, 2001).

The strategy *health center intrapartum care* requires adequate number and distribution of functional health facilities and health professionals, in order to produce the desired result. Thus relying on it as a single strategy in places where there is limited number of health centers and health professionals cannot be a solution. Apart from the existence of health facilities and trained professionals accountability and performance of the staff has a significant implication. Reports indicate that maternal mortality remained high in situations where there are hospitals with trained professionals (Leberghe & Brouwere, 2001). Besides, considering women's choice of place of delivery, geographical proximity and affordability is noteworthy (Campbell & Graham, 2006). Reports indicate that in the first half of the twentieth century some countries including Sweden, Japan, Denmark, Norway, and the Netherlands, achieved reduction in maternal mortality with midwifery led care that combined strong policy and strategy that considered geographical, cultural and financial proximity, even without hospital technology. On the other hand, MMR remained higher in countries like, USA, Great Britain, France, Belgium and Italy until hospital care becomes accessible (Leberghe & Brouwere, 2001).

While *skilled birth attendants care at home* seems an approach suitable in conditions where women prefer to give birth at home, it still requires adequate number and equitable distribution of health professional to count it as a primary option. In addition, the need to take into account of home conditions, time of the health professional and availability of transportation means has been pointed out (Campbell & Graham, 2006). It is further indicated that in conditions where an effective referral mechanism is not in place, there is a chance of lack of trust of the community served to be assisted by the health professional that results from unmet expectations of the outcomes. Frustrations and lack of interest of

health professionals to assist women who live away from their village have been reported in such conditions (Chowdhury, 2006 In Campbell & Graham, 2006).

The other strategy defined by Campbell and Graham (2006) is *Trained Traditional Birth Attendants at home* (Campbell & Graham, 2006). "A Traditional Birth Attendant (TBA) is a person who assists the mother during child birth and initially acquired her skill by delivering babies herself or through apprenticeship to other Traditional Birth Attendant." (WHO 1992 In Lefebvre, 1994). Every year 53 million women give birth at home without skilled birth assistance. An analysis of 44 developing countries showed that 24 percent of live births were assisted by TBAs, and the combination of live births assisted by TBAs, relatives or others was 43 percent, which is ranging between 1 percent and 89 percent (Sibley & Sipe, 2004). According to a study conducted in Rural Bangladesh 86.6 percent of deliveries were assisted by untrained TBAs while 11.4 percent by trained TBAs, and only 4.2 percent of deliveries were assisted by trained health professionals (Paul & Rumsey, 2002).

TBAs play different roles assigned by the society in different cultural backgrounds, the main target being facilitating a child birth process whereby both mother and child ensured to be safe, through physical and spiritual interventions at times, whereby they use their skills and call up on the supernatural power to intervene. What so ever, the responsibility about the outcome of the birthing process, which is expected to be well mother and well baby is upon the TBA (Niehof, n.d.). According to Niehof, TBAs play a mediatory role at different levels, between mothers and children, helping women to become mothers and helping children to join this world; and between a society with different cultures and their health care system. This role of the TBA is needed but with caution for their practices in the process of helping women through child birth process, such as massaging the abdomens during delivery and removing the placenta manually (Niehof, n.d.).

An attempt was made to train TBAs and integrate them in the system in the 1970s and 1980s to narrow the gap with lack of access to health facilities and skilled birth attendance in the developing countries. However, training TBAs was declared to be ineffective and the training was abandoned since 1990 (Rash, 2007). It has been suggested that the training of TBAs was not effective due to briefness of the training and lack of backup system. To date, the effectiveness of training of TBAs is a controversial issue according to the result of different studies. A comparative study conducted on 800 women in Bangladesh reported that training of TBAs on hygienic measure does not prevent postpartum infection compared to the non trained TBAs (Goodburn et al., 2000). Hand washed with soap, clean surface and clean umbilical cord care were considered clean delivery in this study. According to Goodburn et al. (2000) trained TBAs practice hygienic measure better than the untrained. However, neither clean delivery nor training of birth attendants was associated with the occurrence of post partum infection. Rather, pre-existing infection, prolonged labor and insertion of hands in to the vagina are highly associated with post-partum infections, and the trained TBAs

were found to be the ones more likely to insert their hands into the mothers' vagina (Goodburn et al., 2000).

On the other hand, in a study in Afghanistan, training traditional birth attendants was found to be associated with safer deliveries (Miller et al., 1995) This study reported that untrained TBAs used unclean equipments like dirty razor blade, knife, stone and the cord was tied with shoelace only once in about four-fifth and was cut before it is tied in 5 percent; whereas the trained TBAs used a cooking pot for sterilizing equipments and tied the cord three times with sterile threads. The trained TBAs put gentian violet or nothing on the umbilical cord, while the untrained TBAs put mud, powder, Vaseline, cotton wool, ashes of the mothers' hair. Maternal complications reported to be more significant among women attended by untrained TBAs compared to those attended by trained TBAs. The reported complications include retained placenta, severe recto-vaginal tear, uterine prolapse and death of the mothers, delayed crying of babies, stillbirths, deaths of infants in neonatal period two of them due to neonatal tetanus. Nothing was stated about postnatal infection in this study (Miller et al., 1995).

Similarly, in an intervention study in Pakistan where the intervention group was assisted by TBAs who received a three days training and provided with delivery kits, and the control group received a usual care by TBAs who neither received training nor were provided with a delivery kit, found out that the rate for maternal deaths was less in the intervention group corresponding to 268 in 100,000 live births compared to 360 in the control group. The study was conducted among 10,144 women in the intervention group and 9443 women in the control group, and the topics of the training included topics how to conduct a clean delivery, use of disposable delivery kits, when to refer women for emergency obstetrical care, and care of the new born. There was significant difference in the rates of complications in the two groups, 0.77 percent versus 4.24 percent for puerperal sepsis, and 1.72 percent versus 2.75 percent for hemorrhage in the intervention and the control group respectively (Jokhio et al., 2005).

A meta analysis on the association of training of TBAs and outcome of pregnancies indicated that training of TBAs is associated with increased TBA attributes; knowledge, attitude and behavior, advice, and a decrease in peri-neonatal mortality; they reported a significant difference with regard to the practice of atraumatic (safe) delivery, hygiene (clean delivery)and cord care. This study however did not measure the association of training of TBAs and maternal mortality (Sibley & Sipe, 2004)

The WHO recognizes the importance of incorporating TBAs into a strategy of providing skilled care but as an advocate for skilled care to encourage women to seek care from skilled attendant and give advice on health related topics (WHO, 2004). However, there is no alternative strategy setto replace the TBAs for women who do not have other option in places where there are no skilled professionals and health facilities. Evidence suggests that industrialized countries were able to reduce maternal mortality rates by half by providing

midwifery care in earlier times, but reduced further by improving access to hospitals (Rash, 2007; Loudon, 1992).

Community Health Workers often don't have training on assisting during child birth, hence, they don't have the required skills and knowledge as it is in most cases (Campbell & Graham, 2006). *Untrained Traditional birth attendants or relatives at home* have always been in place in many developing countries and have counted for high rates of maternal mortality. Therefore, training of TBAs has been suggested as an alternative means for women who would anyway give birth at home and assisted by a TBA or relatives (Campbell & Graham, 2006).

2.4. Determining factors of maternal mortality

Various factors influence maternal negatively or positively. In this section the factors, availability of information, income, antenatal care and the perception of different actors and their relevance is discussed.

2.4.1. Availability of information

It has been challenging to measure maternal mortality ratios accurately due to the complexity of its definition as it requires to distinguish between deaths from other causes and maternal deaths correctly, and poor registration system of births and deaths mainly in countries where the rates are high (Hill et al., 2007; WHO, 2007). However, maternal mortality ratios have been estimated using a combination of various measures including the rates of skilled birth attendance, the number of cesarean section and survey results of births and deaths among women in the reproductive age group in countries where the vital event registration system is poor (Hill et al., 2007).

Leberghe and Brouwere, (2001) indicate that information about the extent of the problem and responsiveness of the public authorities to the available information is crucial for achieving an effective strategy and corrective measures to reduce maternal mortalities. They point out that countries with adequate information and good registration system were the first to achieve the lowest maternal mortality ratios, whereas countries lacking information sustained higher ratios (Leberghe & Brouwere, 2001) Likewise, low income countries particularly SSA where maternal mortality ratios remain high suffer poor reporting of vital events, hence, lack of reliable data about the magnitude of the problem (AbouZahr, 2003; Hill et al., 2007; WHO, 2007)

2.4.2. Income and maternal mortality

In general, low-income countries are the ones sustaining high rates of maternal mortality. The socio economic situation of a country determines the progress in several ways, including poor health infrastructure, shortage of facilities and supplies, shortage of trained professionals, lack of transportation means, poor hygienic conditions and poor nutritional status are all related (Shiffman, 2000).

On the other hand it is arguable that the economic situation is not the only and a straight forward answer for reducing Maternal Mortality Ratios. Figure2 shows maternal mortality ratios against GNP in 1993. Some countries with the lowest GNP also fall among countries with moderately low maternal mortality ratios (Leberghe & Brouwere, 2001). This indicates that there is a room for poor countries to attain lower rates of maternal mortalities with effective and feasible strategies in place.

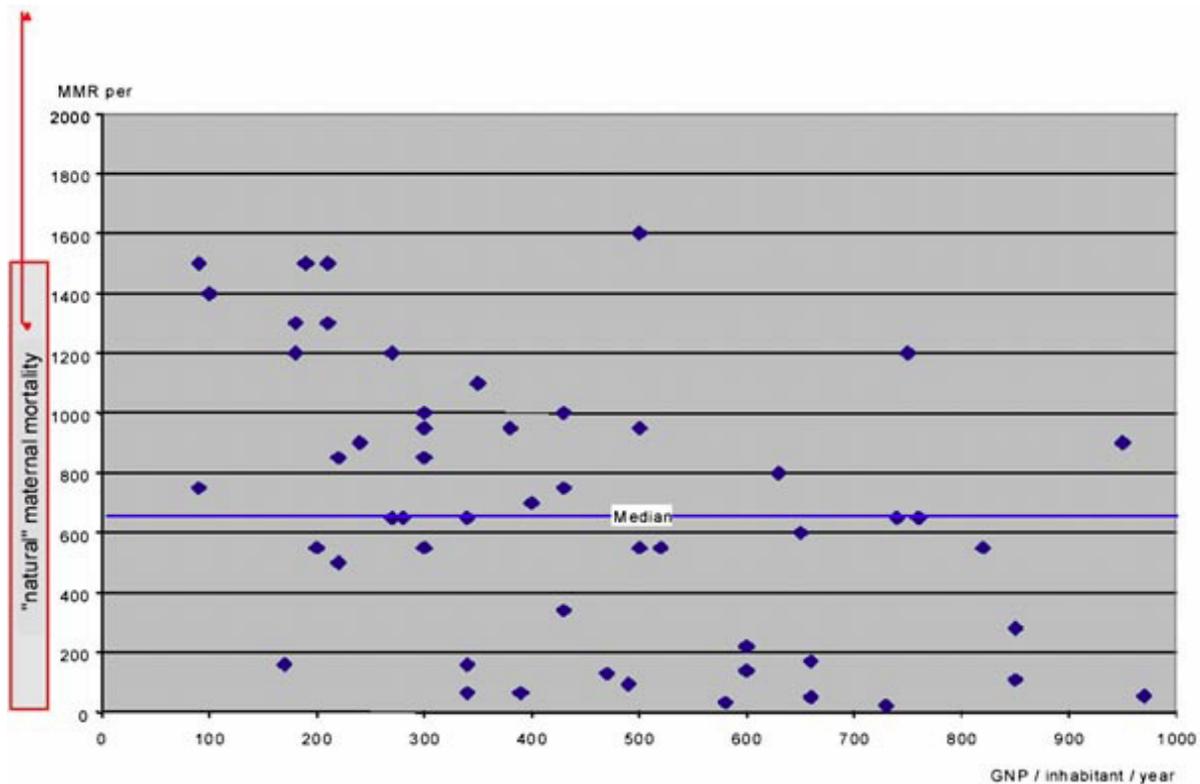


Figure 2: Maternal mortality ratios against GNP income of countries:

Source: GNP/inhabitant in 1993: World Bank 1995 Estimation of Maternal Mortality Ratios in the 1990s: Stanton et al. (1995) In Leberghe & Brouwere (2001) (Leberghe & Brouwere, 2001).

In an analysis of the association between wealth and maternal mortality ratios among high income, middle income and low income countries the ratios were found to be low for high income countries, and moderate for middle income countries. Unlike that of high and middle income countries where in the ratios are consistent with the level of income, maternal mortality ratios ranged between high and moderately low among low income countries (Shiffman, 2000). Furthermore, an empirical analysis of the association of maternal mortality ratios and its potential determinants, the wealth indicator was found to have the least strong correlation with maternal mortality ratios as compared to, health and empowerment indicators. Female gross secondary school enrolment rate, which is an empowerment indicator for this study, has the highest strong correlation followed by the proportion of

women who received skilled birth attendance, which is a health indicator that had a significant correlation with maternal mortality ratios. The speculation for this was that wealth could be a distant determinant of maternal mortalities by affecting the other two (Shiffman, 2000). Nevertheless, further analysis revealed that percapita income neither has a significant association with female gross secondary school enrolment rate nor with the proportion of women who received skilled birth attendance. Rather, this analysis showed a significant association between women's education and the rates of skilled birth attendance. Hence, Shiffman questions the existence of substantial relationship between national wealth and maternal mortality ratios or its determinants, education of women or skilled birth attendance rates (Shiffman, 2000)

2.4.3. Antenatal care

Antenatal care helps to detect risk conditions that become evident before the onset of labor and to plan the appropriate intervention. Studies suggest that there is correlation between antenatal care and maternal deaths (WHO, 1993). In their analysis of the correlation between the proportions of women attended antenatal care and maternal mortality, Shiffman (2000) found that antenatal care to be the second significantly associated indicator among the elements of health indicators following skilled attendance at birth (Shiffman, 2000)

On the other hand, there is a great chance that problems that have not been evident during pregnancy and antenatal checkups occur during labor and delivery. Shiffman (2000), acknowledges the benefits of Antenatal care in detecting risks, treat conditions, and give relevant advice for women. However, Shiffman (2000), argues that the limitation of ante natal care pointing out that often complications that cannot be predicted beforehand occur during birth (Shiffman, 2000).

Besides, it has been indicated that even high level of antenatal care has a limited impact in conditions where there are no adequate means to manage the identified risks (WHO, 1993). Hence it is important to take into account the possibilities for linking the detected high risk cases to the facilities with appropriate intervention. Nevertheless, due to resource limitations this study focuses on care at time of childbirth.

2.4.4. The perception of different actors about safe birth

Studies indicate that different actors in safe delivery would have contrasting views regarding the type of care provided during childbirth, and the place where the care is provided. Walsh (2007) in an ethnographic study showed the difference in perception even among health professionals, the midwives at a birth center and GPs of a maternity hospital. Walsh (2007) showed that the staff of the birth center views birth as a phenomenon to take a more natural process, at times ignoring the dangers, the GPs focus more on safety and perceive birth as a process requiring medical intervention more often, and hence hospital as the appropriate place for birth to take place; while for the clients that appears to be less

important as they have other priorities to be considered in their choice of the place of delivery (Walsh, 2007).

According to Walsh (2007), the clients have their own views which are based on accommodating their other interests, including the type of care they would like to receive, having their family members around during birth, not wanting to go far away from home, being able to perform household chores in the meantime (Walsh, 2007). Pilkington (2008), in their study indicated that often women's choice of maternity units is based on proximity (Pilkington et al., 2008). According to Walsh (2007), the advice by the GPs to give birth in the hospital at times perceived by the clients in the study as a pressure put on them unnecessarily. The study indicated that the advice other women give them from their previous experience was more important for clients rather. However, the author showed that the clients made their own analysis for the choice of place of birth based on their observation and advice received from different sources, acknowledging the existence of the maternity hospital as a referral point for complications that occur occasionally (Walsh, 2007).

This shows that despite the common goal among different actors involved in the process, which is achieving safe delivery that results in a healthy baby and a healthy mother, the interest in the process for achieving it is viewed differently. This varied perception among different actors could be a possible determinant for effectiveness of strategies in place. Therefore, it is important to look at the perception of all the actors involved and develop a strategy that considers their interests.

3. Methods and study area

In this chapter description of the area where the study has been conducted and the methods used to gather data, the different levels and characteristics of the sources of data.

3.1. Study area

The study was conducted in Ethiopia, one of the countries with the high maternal mortality ratios and the lowest percentage of skilled birth attendance has been reported. Ethiopia was chosen because of its low percentage of skilled birth attendance and also for practical reasons because of familiarity of the researcher with an Ethiopian background. Ethiopia is a country in Sub-Saharan Africa located in the Horn of Africa, is one of the least developed countries in the world. It is the 27th largest country in the world with an area of 1.1 million km², and an estimated population of 77 million. Ethiopia shares boundaries with Eritrea and Djibouti to the North, Somali to the east, and Kenya to the south and Sudan to the West.

Administratively the country is divided into 11 administrative regions, which comprises 9 regional states and two administrative cities. The regional states are further divided in to 611 *woredas* and 15,000 *kebeles*. Over 80 percent of Ethiopian population resides in rural.

The country is sustains high rates of morbidity and mortality mostly resulting from preventable conditions. Besides, the health care system suffers lack of infrastructure, shortage of health professionals and inequitable distribution of the existing facilities, and poor quality of services. As a result the rural population hardly accesses basic health services. With the current health care reform expansion of primary health care units through health extension program with the aim of accessing primary health care for all is underway.

3.2. Methodology

An exploratory study that involved literature reviews and a case study, which looked at the situation of maternal health care services and practices in Ethiopia has been conducted between the period from June 2009 and August 2010. The fieldwork was carried out between September and December 2009. Both qualitative and quantitative methods were deployed in the study. The methods used are a preliminary literature search and review of records followed by a case study in one *woreda* that involved review of records, interviews with key informants and community members, and a Focus Group Discussion (FGD). Personal experience of the researcher from working on the area for years in a rural Ethiopia in a hospital with a functional essential obstetric care services, located in a remote area with poor infrastructure has been incorporated.

3.2.1. Selection of the *woreda*

The case study was done in Shebedino *woreda*, one of 145 *woredas* in SNNPR. Multistage sampling technique was used to select the *woreda*. After preliminary literature search and acquiring secondary data at the national level, selection of the region and the zone was made considering the findings at each level; thus purposive sampling technique was used to

select the region and the zone with low rates of institutional deliveries. Hence, Sidama zone one of the zones in SNNPR was selected. Administratively the zone is sub divided into divided in to 19 *woredas* and two city administration. Among these a *woreda* with the lowest institutional delivery percentage despite the existence of health center was selected. The existence of health centers in the *woreda* was of interest because it enables to examine their performance and the reason behind. The health centers are generally classified as 'Health center' and 'Nucleus Health Centers (NHCs)'. NHCs are health facilities that do not meet the standard set for a health center in terms the building, facility and equipment. and often are upgraded from the 'clinics' of the former health care system of the country. From the report obtained from Sidama Zone health office it was established that Shebedino *woreda* has the fourth lowest institutional delivery coverage, which is 1.5 percent following two *woredas* with no health center but with either one or two Nucleus Health Centers (NHC), and another with one health center but no NHCs. Shebedino *woreda* is the *woreda* with highest number of the combination of health centers and NHCs with one health center and three NHCs according to the report from the zonal office. However, during the interview it was established that it had actually four NHCs.

The health center in the *woreda* was purposefully selected because it is the only health center where deliveries are conducted at a regular basis in the *woreda*, and is also used as a referral point for the NHCs, according to the information obtained from the *woreda* health office. One out of the four NHCs in the *woreda* was selected randomly. Two health posts each from the catchment area of the selected health centers was chosen randomly. The *kebeles* served by the health posts were the targets for interviewing TBAs and community members. FGD was held with community members in one of those *kebeles*.

Selection of the health centers, health posts and *kebeles* was restricted to one health center, one NHC, two health posts and their respective *kebeles* out of 29 in the *woreda* due to recourse limitations. Nevertheless, selection of the health posts was made in a way that one health post that operates under each health center is involved to make it more representative.

3.2.2. Data collection

Both primary and secondary sources of data have been used in the study. Secondary data involved external and internal sources. External sources are books, articles and reports and internal sources are data from within the organization that involved records and reports at health offices and health facilities. These were obtained through review of records and reports at different levels, regional, SNNP Health Bureau, zonal and *woreda* health offices and health centers. All the quantitative data come from secondary sources.

Primary data were mainly qualitative and collected through semi structured interviews with key informants from regional health office, *woreda* health office, health professionals and community members and a FGD. A total of 28 interviews has been carried out. This involved 16 community members, women who have given birth within five years preceding the data

collection. The criteria for the selection of community members was being residents of the villages and having given birth within five years prior to the data collection. This was required so that they can also share their own experiences also considering the issue of temporal relevance and recent memory. Most of the women were interviewed at home but also women encountered at the health center and the health posts that are eligible were interviewed. Ten of the women were interviewed in their homes, while three of them in the health center and three in the health posts. This comprised nine interviews from one *kebele*, and seven interviews from the other *kebele*. A total of four TBAs, two from the two *kebeles*, two from each *kebele*; and two HEWs from two health posts one from each health post were interviewed. Four health professionals from two health centers two from each health centers visited, the head of the health center and the midwife were interviewed. Two interviews with officers, one from the *woreda* health office and another from the regional health bureau were carried out.

One FGD was held with ten community members in one *kebele*. The group comprised of three men and seven women, one of the men has a leadership position in the *kebele*, and one woman was untrained TBA. Observation of the availability of facilities, equipments and supplies needed for essential obstetric care service was made in two health centers. Table 3 shows the characteristics of participants as a source of information in the study.

Table 3: Participants in the study as a source of information

Category	M	F	Total	Form of participation
Community members, women who have given birth within five years prior to the study		16	16	Interviews
TBAs		4	4	Interviews
Health Extension workers		2	2	Interviews
Health professionals	2 (Head of the health center)	2 (Midwives)	4	Interviews
Officers from regional health Bureau	1 (Responsible for regional family health department)		1	Interviews

Officer from woreda health office	1 (Responsible for woreda Family Health department)		1	Interviews
Total interviews	4	24	28	
Community members	3 (1 involved in the local leadership)	7 (1 Untrained TBA)	10	FGD

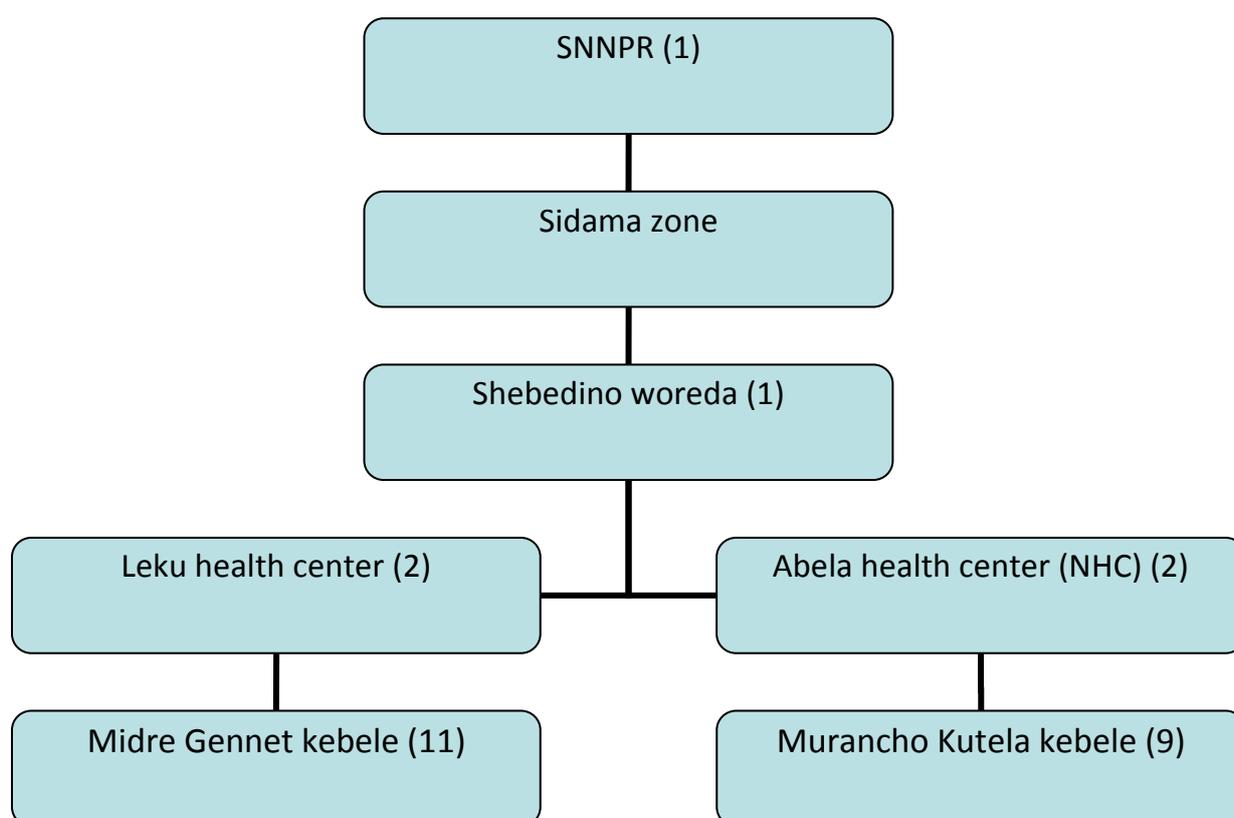


Figure 3: Diagram that shows the number of interviews at each level

3.2.3. Data collection tools

The tools used for data collection include, semi structured interviews for respondents from regional health office and *woreda* health office, health professionals, HEWs, community members and TBAs. FGD guide was used for the FGD with community members. Observation checklist is used for the observation of health facilities to gather data about facilities, supplies and equipment needed for essential obstetric care services.

3.2.4. Data analysis

Data was coded manually. A comparative analysis method was used to analyze and interpret data where similarities and differences within and among categories is examined and linked

to the literature. The findings then are presented in a narrative form. Quantitative data from secondary source was presented also in a form of tables and figures

3.2.5. Ethical considerations

Permission was obtained at each level, regional, zonal and *woreda*, before proceeding to the next based on the letter written from Wageningen University explaining the purpose of the study. Informed consent was acquired from the respondents of the interview and Focus Group discussants. Explanation was given about the purpose the information required and the anonymity of the process before proceeding with the interview and the discussion.

3.2.6. Validity

The use of triangulation of sources that involved health professionals of different levels and community members as primary data and review of documents of internal and external sources for secondary data strengthens the internal validity of this study. The use of the results of surveys and reports at a large scale and, wide range of literatures strengthens the external validity. However, the case study is limited to a specific area which has an effect on its external validity.

3.2.7. Limitations

The collection of primary data did not cover a larger area due to lack of resources including financial, personnel, and material. The attempt to seek support for the study was unsuccessful and was time consuming. In some government organizations though maternal health problems and the need for research on the area is well appreciated by the staff working on the area, it seems that either the topic is not considered as a priority issue, or the significance of research to bring a change is not grasped by decision makers. In other organizations I had contacts like Public Health association, maternal health issue does not seem to an area of interest, topics like HIV/AIDS are recognized better according to the response I got. In an attempt to contact international organizations that have maternal health as one of their priority, UNFPA and UNICEF, it was difficult to make contact with the appropriate persons, as they were often busy or away, and it needed longer time than the scheduled. Finally, the response I got from the regional UNICEF, SNNPR personnel was that it is not the priority topic for UNICEF. This also has affected the schedule of the research process.

In general, though much is being talked about the topic, maternal mortality practically it seems that inadequate attention is given either to the subject or to researches on the area. As a result, it was needed to consider selection of an area where there is at least public transportation for the case study. In addition, the interviews were limited to a smaller area. This might have prevented more new ideas from being generated that would affect the external validity. However, this would be complemented to by the quantitative data which is taken from the national surveys and regional reports that involved large number of participants in a more representative way.

Language was another challenge where in most cases the researcher had to rely on interpreters during interviews and FGD. This might have altered the flow of information between the interviewer and the interviewees, and also during the FGD. This might have an implication on the internal validity of the result.

4. Results

The major results obtained from the study are presented here. It covers the health care setup and information on maternal health care services at different levels, national, regional, zonal, *woreda*, and *kebele*. Next, the identified resources and gaps that enable the analysis of areas that need intervention are presented.

4.1. Health care set up

Health infrastructure in general including health facilities and health professionals availability and distribution should be the first point when it comes to the availability, accessibility and utilization of services. This part analyses the types and numbers of health facilities and professional with special focus on those who are more relevant in to the area of safe delivery.

4.1.1. Health care system in Ethiopia

Access to health services is limited especially in rural Ethiopia. The government of Ethiopia has focused on strengthening primary health care as a strategy to tackle this problem through establishment of health centers and health posts. Therefore, the primary health care system is arranged as a health center and five health posts attached to it. The target is that there should be one health post for each *kebele*, with an estimated population of 5,000 on average, and a health center for a population of 25,000. Two HEWs, who underwent one year training on disease prevention measures, are assigned in each health post to provide basic curative and preventive health services. This is aimed to improve distribution of primary health care services in the country.

Nationally, there are 143 hospitals with 13,677 beds, 690 health centers with 1,495 beds, 1376 health stations and NHCs, 1,755 private clinics (1,376 for profit and 397 non profit), and 9,914 health posts. With regard to health professionals, there are 1806 physicians, 1,151 health officers, 18,146 nurses, 3184 health assistants, and 17,653 HEWs according to FMOHE (2007). Primary health service coverage is 98 percent, taking in to account all the health centers, private clinics and health posts (FMOHE, 2007).

According to this data one hospital on average serves over half a million populations and one health center serves 111,594, hence still a long way to go to achieve the planned health center to population ratio which is 1:25,000. Regarding health professionals, nurse to population ratio is 1:4207, whereas, physician to population ratio is 1:42,706, while WHO standard is 1:5000 for nurses and 1:10000 for physicians. The midwife to population ratio is 1:76212 (FMOHE, 2007). This data indicates the existence of a big disparity in the physician to population ratio and midwife to population ratio from the WHO set standard whilst nurse to population ratio is well within the recommended standard.

The target for HEWs to population ratio, which is 1:2500, seems to be half way, as it is 1:4369 according to this data. Not only the number that matters but also the distribution, as most of the health professionals and facilities are concentrated in the large cities while they

are very limited in number in the rural part of the country where more than 80% of the population resides. (FMOHE, 2007)

An assessment was made whether or not any of the following factors, getting permission to go for treatment, money problem, distance to health facility, have to use transportation means, not wanting to go alone, concern there may not be a female provider, concern there may not be a health provider and no one to accomplish household chores, could be a reason for not seeking health care among 14,070 women in the study. Almost all, 95.7 percent mentioned at least one of these as a problem; concern there may not be a health provider being the first which was 80.5 percent, followed by problem of money for treatment, 75.6 percent. Distance, and having to take transport counted for 67.7 and 71.6 percent respectively (CSA & ORC, 2006).

4.1.2. Health care system SNNP

Among the 11 regions and 2 administrative cities in the country, SNNPR is the third largest region with a total population of 15, 321, 000, and owns 18 hospitals with 1,897 beds, making the hospital to population ratio 1:851,167 which is lower than that of the national, which is 1:538,461. The region has 180 health centers (no data of number of beds is available), that is, on average a health center serves a population 85,117 a bit higher than the national ratio, 1:111,594. There are 167 Nucleus Health Centers and Health Stations, usually either upgraded to the health center or downgraded to a health post depending on their physical status, location and the population they serve. There are 4,258 health posts, with coverage of 89 percent according to the report of the regional health bureau for the fiscal year 2008/2009, (SNNPR Health Bureau annual report 2008/2009), and 77 private clinics not for profit. In the region on average one health post serves a population of 3598 (FMOHE, 2007). With regard to availability of health professionals, SNNPR has 12 gynecologists, 98 GPs and a total of 155 physicians including other specialists, which means gynecologist for a population ratio of 1:1,276,750 and one physician for 98,845 populations. All nurses 2,143, midwives 223, the ratio being 1:7,149 for all nurses, and 1:68,704 for midwives. Though there is relative scarcity with the number of hospitals and physicians in the region compared to that of the national, the region is better off in terms of basic primary health care facilities, which are the health centers and health posts. It is evident that there is a huge disparity between the national physician population ratio and WHO recommended ratio. There is consistency between the national nurse to population ratio and the ratio set by WHO. There is however, a big variation in the distribution of nurses with in the country; making the ratio varied among the regions, ranging from 1:733 to 1:9,946, SNNPR being the fourth lowest in the nurse to population ratio. Nurse to population ratio is also lower in SNNP compared to the national.

Table 4: National and SNNPR ratios of health facilities and health professionals

	National	SNNPR	Target (WHO/National ¹)
Hospital	1:539,350	1:851,167	-
Health center	1:111,594	1:85,117	1:25,000
Health posts	1:7,780	1:3,598	1:5000
Physicians	1:42,706	1:98,845	1:10,000 ¹
Nurses	1:4,250	1:7,149	1:5000 ¹
HEW	1:4,369	1:3,431	1:2500

Source: FMOHE, Health and health related indicators, 2007.

4.2. Maternal health care services

This section gives the situation of maternal health care services with special emphasis on the intrapartum care at national, regional, *woreda* and *kebele* level in different settings, health centers, health posts and home and the person that involved in providing care in the settings was assessed.

4.2.1. Maternal health care Ethiopia

Data obtained through literature review and the data from Central Statistical Agency (CSA), Ethiopia indicates high rates of maternal mortality and low rates of skilled birth attendance at birth in Ethiopia. According to CSA and ORC (2006), from a total of 7,307 women involved in the study, 28.5 percent attended ANC including those attended by traditional birth attendants. However, only a small proportion (0.2%) of ANC was performed by traditional birth attendants. There is discrepancy among different sources on the coverage of maternal health care services. According to FMOH (2007), the coverage of antenatal care for the year 2006/2007 is 52 percent (FMOHE, 2007). It is well understood that antenatal care is one of the components of maternal health care that plays a significant role in the reduction of maternal deaths. However this study did not look in to the number and timing of antenatal care due to limited resource and time.

Regarding deliveries, out of 11,163 women in the study who have given birth in the five years preceding the survey, only six percent of deliveries were assisted by skilled health professionals (CSA & ORC, 2006), which is consistent with the data estimates for 2007 of UNFPA, 2009 (UNFPA, 2009). The data from FMOHE, (2007), shows 16 percent for skilled birth attendance for the year 2006/2007, (FMOHE, 2007), but still among the lowest in the world. Percentage of skilled birth attendance is 66 for the world and 100 for more developed countries, where as it is 47 for Africa (UNFPA, 2009). The majority (61%) of deliveries was assisted by relatives or others, while 28 percent assisted by TBAs. The rest five percent in

specified regions, namely, Benishangul Gumuz 23.8 percent, SNNPR 12.4%, Gambella 10.5 percent were deliveries without any assistance.

4.2.2. Maternal health care in SNNPR

The region where the case study was done, SNNPR, is a region with the second lowest rates of skilled birth attendance (4.2%) and institutional delivery (3.4%) in the country (CSA & ORC, 2006). It is the region with the lowest in the rates of deliveries attended at the public health sectors, which is only 3.3 percent. The discrepancy between the rates of skilled birth attendance and institutional deliveries suggests that deliveries have been assisted by health professionals in other settings than health facilities. The highest number of births (68.8%) was assisted by relatives/others, while 14.8 percent is assisted by traditional birth attendants in the region. A good number of births (12.4%) took place without assistance by anyone (CSA & ORC, 2006)

According to the regional report for fiscal year 2006/2007, 15 hospitals provided essential emergency obstetric care, and 36 health centers out of 161 in the region were yet supported in order to enable them to provide basic essential obstetric care (SNNPR Health Bureau annual report of 2006/2007). According to this data, on average there is one facility with basic essential obstetric care for 4 *woredas*, or a population of 425,583, and one facility with emergency obstetric care service for 10 *woredas* or a population of 1,021,400 on average in the region.

According to the data from the regional health bureau there has been some progress with some fluctuations in the percentage of institutional deliveries in the region between 2004/2005 and 2007/2008; but in most of the zones it has declined in the final year, hence, the overall rate for the region has been lowered from 12.41 percent in the previous year to 11.61percent. Table 5 shows the percentages of institutional delivery in the past five years in the region and in the zones.

Table 5: Trends of institutional delivery in SNNP by zones in the past five years

	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009
SNNP	6.68	8.83	10.8	12.41	11.61
Bench Maji	6.22	10.4	11.54	18.67	13.04
Dawro	5.87	10.21	11.22	12.91	6.66
Gamo Goffa	5.74	6.73	6.9	9.5	11.68
Gedeo	2.84	5.3	6.51	8.02	5.87
Gurage	12.33	14.38	17.02	19.58	24.22
Hadiya	4.75	8.86	11.93	13.99	13.5
Keffa	7.19	9.26	8.9	7.72	4.95
Kembata Tembaro	8.46	14.16	20.46	20.07	26.86
Sheka	12.83	15.12	18.12	16.34	7.94
Sidama	4.13	3.91	5.2	5.49	3.7
Silte	4.07	4.38	4.95	4.7	7.15
South Omo	7.65	7.04	10.66	9.93	9.59
Wolayta	6.06	9.34	14.61	18.83	15.04
Awassa city administration	42.00	45.5	30.09	37.64	43.58

Source: SNNPR, Maternal and Child Health Service Annual Reports for the year 2004/2005 through 2008/2009.

Sidama zone has the lowest percentage of institutional delivery in 2008/2009, among the zones in the region but excluding the special *woredas* in the region. There has been variation in the percentage of institutional deliveries in Sidama zone in the past five years, between 2004/2005 and 2008/2009, ranging between 3.7 percent and 5.5 percent, the lowest being 3.7 percent in 2008/2009. The Zone was consistently having the position among the three lowest in the percentage of institutional deliveries of all the zones, being the lowest in the years 2005/2006 and 2008/2009, the second lowest in 2006/2007 and 2007/2008, and the third lowest in 2004/2005(SNNPR Maternal and Child services Annual Report: Institutional delivery coverage 2004/2005 through 2008/2009)

Two special *woredas* out of eight in the region, Yem and Basketo have extremely low percentages of institutional delivery throughout, the final year's being 1.9 percent for Yem and 2.0 percent for Basketo. This could be due to poor health infrastructure in those special Woredas. On the other extreme, the percentage for Awassa city administration was as high as 43.6 percent in the final year with a significant difference from the other zones and special *woredas*. Figure 4 shows the rates of institutional delivery in Sidama zone in comparison to that of the regional and the rates for Awassa City, which is the highest in the region during the period 2004/2005 through 2008/2009 (SNNPR Maternal and Child services Annual Report: Institutional delivery coverage 2004/2005 through 2008/2009).

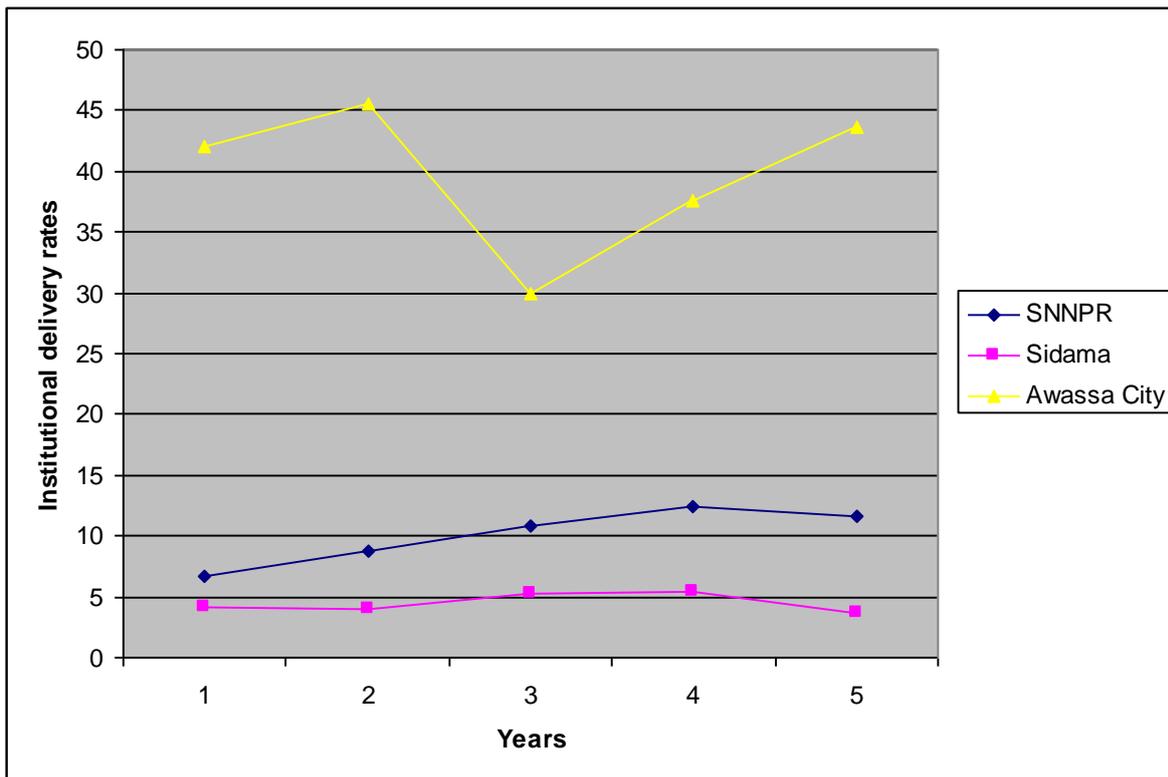


Figure 4: Trends of institutional delivery for SNNPR, Sidama zone and awassa city

Source: (SNNPR Maternal and Child services Annual Report: Institutional delivery coverage 2004/2005 through 2008/2009)

During an interview with an officer from the regional health bureau it came out clearly that the regional office is well aware of the low rates of institutional delivery in the region. The reason, according to the interviewee is mainly lack of awareness of communities about the importance of maternal health care and inaccessibility of the service. Strategies designed to improve the coverage include:

1. HEWs to educate the community to increase awareness of the importance of institutional delivery
2. To make basic maternal health services available in all health centers
3. To make a comprehensive maternal health care services including surgery and blood transfusion in selected health centers and all rural hospitals; there is an ongoing training to health officers and General Practitioners
4. Home deliveries also to be conducted by trained professionals
5. To train HEWs to conduct deliveries.

Regarding the integration of TBAs in the strategy, the response was that the HEWsto work jointly with TBAs, sharing each other’s knowledge and experiences.

According to the respondent from the regional health bureau the problem with the referral system especially with regard to transportation means is recognized by the regional health

bureau. The only plan to solve this problem is to seek support from major partners, like UNFPA to get ambulances. With respect to cost of the service the respondent reported that delivery services are given for free in government health institutions. However, there are certain costs to be covered by the clients like the cost for medications and equipments used; and communities find it difficult to cover even the minimal cost. The plan to address the problem with cost according to the respondent of the regional health bureau is to establish a community insurance system and keep money which will be used for related purpose. *Idir*, is a social group established by the society to support members during loss of family members and arrange funeral ceremonies. The aim is to enable these groups to go beyond that and engage in addressing such issues. But this does not seem to be functional yet, nor will be functional in the near future, as it has never mentioned by community members as a solution during the interviews or the FGD.

4.3. Health care and birth attendance in Shebedino *woreda*

Interviews with key informants and community members, review of records and FGD with community members was carried out in Shebedibo *woreda* to acquire data about the situation of availability, accessibility and utilization of essential obstetric care service and its determinants, and to identify the available potential public and community resources that would help in improving the service.

4.3.1. Health facilities and health professionals

From the interview with an officer responsible for maternal health care services of the *woreda*, and review of records at the *woreda* health office, it was established that the *Woreda* is subdivided in to 32 *kebeles*, three urban and 29 rural *kebeles* and serves a total population of 262,610. There are a total of one health center and four NHCs in the *woreda* according to the interview which has a discrepancy from that of the report from the zonal health office which was one health center and three NHCs. All the rural *kebeles* own a health post, hence 29 health posts each of them staffed by two HEWs, except two of them that are staffed by three HEWs each. There are no physicians in Shebedino *Woreda* with three health officers, 70 nurses of all types seven of them midwives, making the nurse to population ratio 1:3751 and midwife to population ratio 1:37516 which puts the *woreda* in a much better position with regard to the density of nurses and midwives compared to that of the regional which is 1:7,149 and 1:68,704 respectively.

4.3.2. Essential obstetric care at health facility

Among the health facilities, one health center and four NHCs in the *woreda* only the health center provides basic essential obstetric care at a regular basis. Cases from NHCs are referred to the health center.

According to the data obtained from the *woreda* health office the coverage for attended deliveries in the *woreda* was 33.9% for the past year. This includes deliveries attended by trained TBAs and observed by HEWs. Nevertheless, these are not considered skilled birth attendance, as only institutional deliveries considered deliveries performed by skilled birth

attendants in the *woreda*. Likewise, As has been mentioned elsewhere in this report TBAs trained or untrained are not considered skilled birth attendant according to the WHO definition. According to the definition a minimum training of 6 months is required to qualify as a skilled birth attendants (WHO, 1999 In Bergstrom & Goodburn, 2001). Though the HEWs had a training of one year delivery care is not include in the curriculum. Data for the overall institutional delivery was not readily available at the moment as it has been merged with other deliveries.

The officer from the *woreda* health office believes that the number of institutional delivery is very low for the *woreda*. The reason for this, according to his statement is the fact that the service is usually provided by one health center in the *woreda*. The NHCs refer the cases to this health center because they lack the facilities, like, water and light, and also due to lack of professional competence and confidence to undertake the procedure among the health professionals. Nevertheless, there are two health officers, one Bsc. Nurse, 58 clinical nurses, four public health nurses, and seven midwives assigned in the health centers and NHCs in the *woreda*; there are midwives assigned in all health centers.

It is a controversy that basic essential obstetric care is not provided at a regular basis in the NHCs despite the existence of at least one midwife in each NHC, due to lack of facilities and partly due to lack of professional competencies and commitment. The interview and the observation during the visit to one of the NHC revealed the existence of lack of basic equipments and facilities required in the delivery rooms, like sterilizers and not having a separate delivery room, only two delivery sets. This health center reported three deliveries throughout the year in the past one year. On the other hand, during the interviews and observation it has been established that there are plenty of equipments required for essential obstetric care services in the other health center.

Further information was sought from the health center and the NHC to find out the types of service provided and how referral is arranged in case it is needed, through interviews with health professionals working in the health center and NHC, and review of records. Two health professionals from each of the health center and NHC, the head of the health center and the person in charge of the delivery rooms were interviewed. According to the mid wife, who is in charge of delivery room in the health center normal deliveries and vacuum extraction, which is a component of emergency obstetric care, are conducted at the health center; but not forceps deliveries. As opposed to the situation in the NHC where there is a midwife but not the equipments required for delivery the reason for not carrying out forceps delivery in the health center is lack of skilled personnel to do it, as the equipments required for it are available. This is where the gap in matching of the facilities and equipments and the professionals available is noticed. Cases that need further help are referred to the nearest hospital. The health center conducts 13-23 deliveries a month on average compared to one or two deliveries in a month if at all in the NHC, according to the midwife. Review of the

registration of deliveries in the health center shows that a total of 173 deliveries were conducted in the past one year.

Delivery cases are referred to the health center by TBAs, HEWs and NHCs, or self referral. According to the midwife, delivery cases arrive early enough to the health center. The problem is when they need further referral, then the whole process takes longer time, and this causes a delay on the process of referral. The midwife believes women receive appropriate and timely care once they are in the hospital. Fifteen women were referred for further help to a hospital in the past year, and it was possible to send all the cases that needed referral to the hospital. While no deaths were reported at the health center, two deaths were reported on the way to the hospital the previous year. The midwife mentioned about the problem with transportation means to refer cases. She stated, "It is possible to use a car from the health office when the car is around, and they are supposed to pay the fuel cost. But at times the car is not available, and even when it is available the clients are not willing to pay the fuel cost because they expect everything to be free of charge including the transportation cost".

According to the head of the health center, there are chances of delay while referring cases to the hospital due to problem with transportation, and deaths of a few cases on their way to the hospital occurred. "They usually pay 400-500 birr, which is about 22 to 28 Euros, if they are to use public transportation means, which is very expensive to them". The possible solution for this according to the head of the health center is that the health center owns a car for such cases.

When asked what could be done to solve this problem with the delay during referral, "women identified as high risk are usually told to stay near a hospital; some accept it and others do not follow the instruction" the midwife stated. The midwife believes that there are all the required equipments in the health center but there are no skilled professionals to use them. If they were skilled professionals and suitable environment, it should be possible to perform most of the procedure at the health center and minimize number of cases that need referral to the hospital.

The midwife and the head of the health center agree that the number for institutional delivery is low, and the reasons for this according to the midwife include the preference of women to deliver at home unless they have problems related to the pregnancy or delivery, and this is mainly due to lack of awareness about the importance and the cost which is minimal, between 10-90 birr, which is 0.55 Euros to 5.0 Euros. "TBAs also contribute to this by telling the women that they can deliver at home without problem, and the community accepts what the TBAs say to them", stated the midwife. The midwife suggests increasing the awareness of the community on the importance of giving birth at health institution as a mechanism to improve the delivery service.

In NHC two interviews were carried out with the head of the health center and the midwife in charge of the delivery room; and review of records was undertaken. The head of the health center appeared to be more familiar about the situation than the newly assigned midwife. The health center serves seven *kebeles* with a total population of 53,967. There is a health post in each *kebele* staffed with two HEWs each. According to the head of the NHC basic maternal care services including antenatal and delivery care are provided by the NHC though it is not satisfactory. The head of the NHC agrees that institutional delivery coverage is very low and the reasons mentioned include, that the women don't want to be seen by outsiders while giving birth, fear of cost as they are supposed to pay for certain equipments and medication though the service is free, lack of major equipments, with only two delivery sets and no sterilizer in the NHC. Equipments are sent to the health center for sterilization. He believes that it is possible to improve the coverage by educating the community and increase the awareness. The midwife is assigned to the health center recently, hence, does not seem to be familiar about the situation. However, she says that women are scared of the cost and about the procedure to deliver at health institution, thus the number is very low, one in the previous year and three in the past year. Review of the registration book for deliveries showed that three deliveries have been conducted in the NHC in the past one year.

In case of need for further help cases were referred to the nearest hospital, according to the head of the NHC. Delivery women are referred to the NHC by TBAs, health extension workers, and self referral but not by other NHCs. He pointed out that there is a delay on the arrival of laboring women to the health center according to the head of the NHC. The reason for this, as explicitly put is mainly the deep rooted trend and preference of women to give birth at home. "They are not happy to give birth at the health facility. They come when it is too late. They prefer the TBAs" he stated. And he further stated the importance of awareness raising, and he believes that TBAs could also play a role in teaching the community.

During the interview it was established that there is no significant problem with transportation means, as the health center is close to the main road, but transportation cost is the main problem. "Sometimes in such cases the transportation cost is very high and they refuse to take the women to the hospital." He emphasized that this problem could be solved if the *woreda* has an ambulance then the clients only cover the fuel cost 50-60 birr, equivalent to about three Euros, which is affordable to the community. The head of the NHC doesn't remember serious problems occurred due to problems with referral. He thinks that the referred cases get timely and appropriate care in the hospital; but in general, also in the case of the health center it seemed there is not follow up mechanism to determine the outcome for the referred cases.

During observation of the delivery room of the NHC there is no a separate delivery room, and some essential equipments and supplies, like sterilizer, delivery forceps, bed for

delivered mother and the for neonate, rubber sheet and blankets, are missing compared to the health center which is having most of these facilities and equipments sufficiently.

4.3.3. TBAs

Some 28.1 percent of deliveries were assisted by TBAs at a national level, and 14.8 percent in SNNPR (CSA & ORC, 2006). According to the data obtained from the *woreda* health office and the health centers there are two Traditional Birth Attendants in each *kebele* who are trained and recognized to work closely with the HEWs in their respective *kebeles*. The *woreda* health officer believes that the contribution of TBAs is very high. "They are aware of danger signs and they refer women who need special attention to the health centers". The regional health officer also shares the same view about the role the TBAs could play. TBAs reported that they usually help the women during child birth but check the pregnancy only if they report to them that they have problem with the pregnancy and ask them for help. According to the TBAs and the, women go the HEWs for pregnancy checkups and seek the assistance of TBAs during delivery. But one TBA reported that women seek help from TBAs mostly when they think that the delivery is not going well, or when they have problems like retained placenta. According to this TBA, it is common for the TBA to be called for the cases with retained placenta after the birth of the child because the trend in the society is that women deliver without assistance from anyone.

It also came out clearly during interviews with community members and FGD that the trend is that a delivering woman has to manage the delivery by her own as long as there is no problem. During the FGD one participant stated that it used to be intimidating for a woman to give birth at health facility, however, there are some changes now with increasing awareness so women visit health facility for delivery care. "The women usually give birth at home alone without assistances from anyone. The women themselves know the position of the baby. TBAs are called only when there is problem." a statement of one Focus Group Discussant. Out of 16 women interviewed 5 would prefer to give birth at home. The reasons given for giving birth at home include, "no reason to go to the health facility as long as there is no problem", "there is more care and attention from relatives and neighbors", "it is scaring to give birth at health facility unless there is a problem", "there is more privacy at home", and 'it is just my preference".

All of the interviewed women attended ANC, five of them at health center or NHC and 11 of them at health post, and 11 of them delivered at health facility. Five of them delivered at home and they did so because they want it to be that way. The preference for the person to be assisted by during delivery for those who delivered at home varied, but 'self' was frequently mentioned, and the other option was, relatives. TBAs were not mentioned as preference, and this could probably be because the TBAs are called mainly when there is a problem after the birth of the child, mainly for retained placenta. Two women were assisted by TBA during delivery because also had a problem of retained placenta. This coincides with the report of a TBA that they are usually called when there is a problem mainly for retained placenta after delivery of the baby, which is also similarly, came out during the FGD.

During the interview it was established that TBAs do not keep any record because often they are not able to read and write, hence they are not sure about the number of deliveries they have conducted. But they estimated the number of deliveries each of them has assisted in the past year between 8 and 30. The TBAs reported that they refer complicated cases to the health center or to the hospital. Two TBAs from the same *kebele* said that they did not have problems in the process of referring their clients. They said that the neighborhood take quick action if a woman has to be referred. In the other *kebele* transportation means and its cost was mentioned as a cause for delay during referral. However, in this other *kebele* also they borrow money from the neighborhood and pay them back afterwards. So in both cases the neighborhood handles the problem with money. As has been mentioned elsewhere these villages are not very far from the main road. It is possible to visualize how worse the situation would be in the remote villages where it takes hours to get where there is a transportation means.

The TBAs reported problems with supplies and equipments. One TBA stated that she gets only gloves from the HEWs but nothing else. "All the other supplies and equipments I was given from long time, more than 10 years ago are worn out and never been replaced". The TBAs also have a concern about inadequate training and support that limit their performance. They all acknowledge that they have limited knowledge to help the women and not having adequate support, training and follow ups for years. The TBAs reported that they get nothing in return for the service they provide to the community; they just do it for free as it is their commitment to serve the community voluntarily. Two of the TBAs in one of the *kebeles* acknowledged that some of the clients they assist pay them a certain amount between 5-10 birr, which is equivalent to 0.25 Euros to 0.55 Euros, that is, when the outcome is good and some don't; it depends on their good will.

However, TBAs consider the training they received as a benefit and source of motivation to carry out their duty; nonetheless, they think they are not getting enough of it. From the interview all the TBAs seemed to be motivated to undertake the activity and proud of giving such an important service to their society but lack of training and follow up seemed a source of dissatisfaction for them.

In general, at an office level, regional, *woreda* and health center, it seems that there is a common understanding that TBAs could be helpful. It seems there is an initiative to involve the TBAs by letting them work closely with HEWs, but how to empower them seems a problem. TBAs get support from NGOs, while HEWs get equipments and supplies from the *woreda* health office according to the midwife. Likewise, community members acknowledge that TBAs are very helpful in helping women during delivery. However, shortage of trained TBAs was a big concern of community members during FGD. According to the discussants two trained TBAs in one *kebele* are not enough as the area of the *kebele* is very large for them to reach. The TBAs can only help women in their villages and the *kebele* has three large villages. According to the discussants at least three TBAs for each village, which makes it nine

in the *kebele* would be ideal. However, some community members questioned the level of knowledge of TBAs and the fact that the TBAs want to keep women at home till it is too late to get help from other source.

The perception about the contribution of TBAs to ensure safe delivery or improve the coverage of institutional delivery varied among the health professionals. The midwife in health center doesn't believe that TBAs could be useful since they don't have adequate knowledge and skills, especially on the prevention of infection and usage of gloves. "They also tend to keep women at home till the situation gets worse. The TBAs massage their abdomen when women are in labor and they tell them to go to the health center at the last moment when it is too late"

4.3.4. Health extension workers

According to the officer of the *woreda* health office the plan as a solution for the future is to train HEWs to carry out deliveries and five of them have already received in service training recently. The respondent from regional health office shares the same view. According to the midwife in the health center, HEWs get supplies from the health center, however, the women don't have confidence in them to be assisted because they don't think they have the knowledge and skills to assist in deliveries, they prefer to go to the health center.

The same concern was brought up during the interview with HEWs. The HEWs reported that they do not conduct deliveries because they don't have training on how to assist women at birth, hence they are restricted to only give advice to TBAs about clean delivery. The HEWs have high concern that they are constrained by not having the required training on this aspect. One TBA also reported that women are not happy to be assisted by HEWs because they think they don't have the knowledge.

The TBAs in each *kebele* work closely with the HEWs in their respective *kebeles* but it seems there is no much connection between the TBAs and the staff of the health centers. In the health center, HEWs get supplies from the health center but not TBAs. However, according to the HEWs TBAs get supplies such as gloves, blade, cord ties, soap from the health post. The cooperation between TBAs and HEWs is good according to the health extension worker. The TBAs interviewed in this *kebeles* also reported that they get supplies like gloves from the HEWs and that they support each other.

Unlike in health center the NHC does not provide any supplies neither to the HEWs nor to the TBAs. The health center provides technical support to the HEWs. During my visit to a health post under this health center, I met a nurse at the health post who was there to assist the HEWs during home to home visit and vaccination.

4.4. Identified actors

Community members, particularly women who give birth are the primary actors as they are themselves the center of the care. People who assist women during child birth include family members, relatives, neighbors, TBAs and health professionals take part at different levels.

Family members, relatives and neighbors have the leading position in giving care during child birth as majority of births take place at home by these group of people in Ethiopia. TBAs the second position as they account for the proportion of care provided next to the former.

Though the proportion is less, health professionals provide care for six percent of child births that involves women who need a more advanced level of intervention. Furthermore, officials at different levels, at the *woreda*, zonal, regional and national level are involved in planning and resource relocation. Family members and community members are involved in one way or another by performing the household chores while the woman is in labour or also as a source of information about the right place and person to get care from during this period; or as a source of resource when need arises as incase of referral for further care.

The government of Ethiopia has launched a health extension program since 2003 in order to ensure universal primary health care by 2009, through village health posts staffed by HEWs, mainly women who have received one year training on disease prevention and control, hygiene and sanitation, family health services and health education (Wakabi, 2008). However, delivery care is reported to be among the subjects that were not covered in the training of HEWs, and home delivery has been rated as an immediate priority for continuing education by HEWs (Ye-Ebiyo et al., 2007). Nevertheless, HEWs take part in other components of maternal health care, including antenatal care and educating women and act as a link between the community and health professionals. Almost all the actors stated here, were represented in the interviews and FGD. HEWs and TBAs play a linking role between the women and health professionals.

4.5. Public and community resources

One of the factors that hamper the practice of safe delivery in the developing countries is resource scarcity. An attempt was made to identify the existing resource that could be used to improve care at child birth. The findings of this study suggest the existence of potential community and public resources on the area which is underutilized. Among the resources identified are health professionals. The nurse to population ratio in Ethiopia is within the standard set by WHO. Though there is shortage of midwives 1:76212 compared to 1:4300 in Malaysia during the implementation of midwife delivery which has resulted in the reduction of maternal mortality ratios to the level of lower than 50 per 100,000 live births. Nevertheless, there was at least one midwife in each health center in the *woreda* where the case study was conducted.

Surprisingly, there is a total of 14,113 primary care units including health centers, health posts and private clinics for profit and non-profit, which makes the ratio of population to primary care unit 1:5465 and the potential health service coverage 103.2 percent nationally. However, the distribution of the health facilities and their performance level is also what matters. All of the health posts and most of the health centers do not provide delivery care. There is shortage of health centers as one health center serves a population of 111,594 and

yet not all the health centers deliver the service. And a health post serves a population of 7780. The distribution of health centers and health posts could be relatively fair.

Health posts staffed by HEWs are widely available in Ethiopia. During the interview the HEWs have the enthusiasm to assist women during childbirth was clear. But required knowledge and skill lacks. This could be a resource that could be exploited by training the HEWsto assist women during delivery, and equip the health posts with equipments and facilities.

It has been established that there are two trained TBAs in each kebele in the *woreda*. However, this number doesn't meet the need of the community. There are many other untrained and unrecognized TBAs as it came out during the FGD. These TBAs have the motivation and enthusiasm to take part in the service. Recognizing their service in the society could be a valuable resource that can be utilized, only that they need training and a little support to empower and use them as gate keepers.

Readiness of the community members to find a means to cover the transportation and other costs when a woman in labor needs to go to the health facility could be considered as one of the potential resource that can be utilized.

4.6. Identified gaps

Resource scarcity

It is evident that there is lack of resource mainly of physicians, midwives and health facilities that provide basic and emergency essential obstetric care services. Poor infrastructure and lack of transportation means when referral is needed is another dilemma. This is also related to the cost for transportation which tends to be high in this situation where the means for transportation available.

The health facilities lack basic equipments, like delivery sets and sterilizers, supplies, bed for delivered mother and the baby, and facilities including a separate delivery room, electricity, and water source.

Inefficient use of the existing resource

Almost all the resources identified at all levels seem to be used inefficiently due to lack of combination of the right elements at the right place and time. This includes lack of competence and commitment among health professionals, and lack of the equipments to be used by the health professionals in the health institutions where qualified staff is available, which prevents them from undertaking the procedures.

There seems to be high level of motivation among HEWs and the TBAs, however, they lack the knowledge and skills required to provide the service. The TBAs do not seem to have adequate support and recognition for their contribution.

Unfair distribution of the existing resources is also contributes to the less efficient use of them. This has been reflected even among the health centers in the same *woreda*, whereby one health center was having most of the equipments and facilities needed whereas the others don't have even the very basic ones.

Lack of information about the extent of the problem

Information is crucial in drawing attention of different actors and gaining political commitment to the subject matter which eventually results in the development of supportive policy and strategy, and resource allocation, as has been mentioned elsewhere in this paper. The key source of information on this area is registration of vital events where by the number of births and deaths and the cause of death is clearly stated. However, there is no indication of any attempt of registration of birth and death. A means for TBAs to record deliveries they assisted could be thought of.

Differing perception among different actors

The different actors have differing views about how to achieve safe delivery. According to the health professionals the best way to achieve safe delivery is to increase the awareness of mothers to give birth at health facility. None of other options have been mentioned as a means to improve the situation during by health professionals, whereas. On the other hand, the clients view it differently that there is no reason for going to the health facility for child birth as long as they have pregnancy checkups and the pregnancy is going well, as it has been stated clearly during the interview. The discrepancy between antenatal care attendance and institutional delivery supports the idea that came out during the interview that women would like to make sure that the pregnancy is going well so that they prepare themselves for choosing the appropriate place for the delivery to take place. On the contrary, all pregnancies in Ethiopia considered high risk according to the officer from the regional health bureau.

As evidence suggests women choose the place to give birth mainly based on the sociological and psychological aspect of care that they receive. Due to the different perception among clients and health professionals about the process of giving birth that is viewed as a natural process and as a risk management procedure respectively, the care the clients receive at the health facility does not meet the expectation of the clients as one of the interviewee who is community member stated clearly that it is scary to give birth at the health facility. One midwife also shared the same view that the women don't want to give birth at the health facility because they are scared about the procedure. The results of the FGD that women can manage delivery by themselves unless there is a problem suggests that there is a common understanding in the community that deliveries should take place at home in general.

In small parts in Ethiopia including this specific society there is a difference between the care seeking behavior and the expectation of TBAs. The TBAs presume providing care for delivering women regardless of their condition as their role, whereas they are often called

only when there is problem with the pregnancy or delivery. Otherwise, giving birth is perceived as a natural process where no external intervention is needed in this society.

These different in views among the different actors could bear an implication on the effectiveness of the strategy in place hence needs to be considered while designing a strategy.

5. Discussion

It is well recognized that majority of maternal deaths take place during labor child birth and within 24 hours after birth. Thus, intra-partum care is the component of maternal care that is given priority to reduce maternal deaths. The most widely acknowledged strategy for reducing maternal mortality is the skilled attendance at birth. Studies indicate a significant correlation between the percentage of skilled birth attendance and maternal mortality. A study in Sub-Saharan Africa indicated significant correlation between births attended by skilled professionals and maternal mortality ratios. This study recommends structural arrangements to train skilled professionals, mainly midlevel health professionals to provide skilled care at birth and adequate allocation of resources (Bour & Bream, 2004)

Ethiopia has the lowest rates of skilled birth attendance (CSA & ORC, 2006; UNFPA, 2009). Scarcity of resource in the country makes the arrangement to ensure availability of skilled birth attendance to all births a challenging phenomenon. There are several reasons why deliveries take place at home by non trained people including socioeconomic and cultural situations. Therefore, it is important to consider country specific strategy to make all deliveries safer including those that take place at home. This study looked at ways for maximizing the use of existing resources and opportunities to make deliveries safer and reduce maternal mortality in the country.

According to the findings of this study the primary reason for low percentage of skilled birth attendance is scarcity of resources and underutilization of the existing community and public resource including facilities and health professionals. Reports indicate that it is possible to achieve low maternal mortality ratios in low income countries compared to their counterparts. This suggests that it is possible to achieve the reduction of maternal mortality by having a strategy that ensures an efficient use of the existing resources and opportunities.

This study established that there are conditions where availability of health professionals does not match facilities required for the service and vice versa. An example of this is a condition even basic essential obstetric care is not provided at a regular basis in the health facilities where midwives are assigned, due to lack of essential equipments and facilities. Another situation is a health facility staffed with health officers and midwives with equipments like for forceps delivery are available, but none of the health professionals had the skills to use them. Buor and Bream, (2004) in their study suggest training of mid-level health professionals to carryout emergency obstetric care services to address the problem with shortage of physicians (Buor & Bream, 2004). It is highly important to consider training of midlevel health professionals, in this case health officers and midwives to carryout emergency obstetric care procedures.

Besides, there seems to be lack of confidence and commitment among the health professionals to carryout procedures of even basic essential obstetric care, which resulted in

underperformance, as it has been found out that only one to three deliveries have been conducted in a year in a health facility staffed by midwives and nurses and where there are few sets of equipments for carrying out the procedure. Leberghe and Debrouwere,(2001)suggest that commitment and accountability of health professionals is the most important aspect to be considered in making professional care accessible in countries with severe resource constraints (Leberghe & Brouwere, 2001). Evidence suggests that conditions where midwives are trained and supervised resulted in successful reduction of maternal mortalities (Leberghe & Brouwere, 2001; Koblinsky et al., 1999)

HEWs can be resourceful to take part in conducting deliveries as they already have the basic knowledge about prevention of infection and aspects of maternal health care, particularly antenatal care.

With the current situation it is less likely to provide skilled care for deliveries that take place at home in Ethiopia. TBAs seem to be the only means through whom this group of women could be accessed. TBAs in the villages visited are highly motivated to assist women during birth. The community members also acknowledge their service due to their proximity and the experience the TBAs have. It is less costly for the government to involve TBAs as they do not expect any wages or salaries; the community and the TBAs have their own ways of compensating for the service the TBAs provide, either through recognition, in kind or monetary terms. The only cost will be the training cost which makes it much cheaper than any other options whereby the government is expected to pay monthly wages.

In the past, the attempt to involve TBAs was not successful, and it is a common understanding that this is due to inadequate training, support and follow ups. Nevertheless, there is no indication of any attempt to revise the approach of integrating TBAs in the system. It seems the failure has been perceived as the TBAs' failure to perform while it is most likely the failure of the whole approach as well. Studies suggest that training of TBAs did not have effect on reducing maternal mortalities as compared to that of untrained TBAs. On the contrary some intervention studies suggested that training of TBAs and adequate supervision and follow up resulted in less complications and maternal deaths. Therefore, it is worthwhile to revise the whole approach on how to involve TBAs in the service in a productive way perhaps including revising the curriculum and the content of the training.

Studies suggest that a reliable data about the situation used as a source of encouragement to make steps for effective measures. Leberghe and Brouwere, (2001) pointed out that countries with adequate information about the extent of the problem were the leading countries in achieving the reduction of maternal mortalities among the developed countries (Leberghe & Brouwere, 2001). Moreover, it has been indicated that few transitional countries that have achieved a marked reduction in maternal mortality ratios, namely, Sri Lanka, Thailand and Malaysia, obtain their data on maternal mortalities from vital

registration (Graham, 2002). Nevertheless, the situation in Ethiopia is different where no adequate data is available, as there is no vital registration exists. The present health care system in Ethiopia, specially, the health post could be a good setting as starting point of the registration of births and deaths.

Antenatal care has a notable role in early detection of complications that occur or become evident before the onset of labor. However, it has a limited effect unless there is a condition whereby women with identified complication have access for an appropriate measure. During the interviews it has been pointed out that women identified as having risk are told to give birth at the health facility but often they don't do so. This could be due to inaccessibility to the facilities that provide the service.

According to my personal experience from a successful story of Gidole hospital, in southern Ethiopia where antenatal care is provided and supported by the component of essential obstetric care has a meaningful role in reducing maternal deaths. In this specific case an arrangement is made for the identified high risk cases to stay around the hospital that provides both basic and emergency obstetric care services so that they can easily access the service when they are in labor. It is made less costly for the women to stay as there are conditions where the women can prepare their own foods and do not pay for the housing. The fact that the houses built from local materials and arranged in a similar way as the houses in the village allows the women to have the feeling of being at home apart from its reasonable cost. This method is practiced in few hospitals in Ethiopia but would be ideal to adopt it in all hospitals that provide emergency obstetric care services if antenatal care has to produce a positive impact.

6. Conclusion and recommendation

The findings of this study suggest that there is a room to maximize the performance of the health care system by empowering health professionals through in service trainings, supervision and ensuring accountability of health professionals, and matching of the availability of the types of equipments and the qualification of the existing staff.

The public resource including the health facilities and health personnel are not efficiently utilized as majority of the health centers do not provide basic essential obstetric care service despite availability of at least one or more midwife at each health center in the *woreda* in the case study. Lack of confidence and commitment among the health professionals could be one of the possible reasons for health facilities not providing the care. Therefore, it seems important to consider improving the quality of the basic training and providing an in service training to the nursing staff specially those who provide obstetric care services.

There is mismatching between the availability of qualified staff and the equipments and supplies needed for the service. There is also an indication of unfair distribution of equipments and supplies among the health facilities. Therefore, relocation of the existing resources, equipments and supplies, like delivery sets and sterilizers among the health centers is of a great value to let women get the service in the closest health center, eventually increase the rates of attended delivery.

Shortage of nurses is not a big problem in the country according to WHO standard, but the distribution, competence and accountability could be an issue; however, shortage of physicians is obvious. It is important for the Ethiopian government to design a strategy that ensures fair distribution of nurses with in the country and maximize their performance through quality training and supervision. To address the problem of shortage of physicians the Ethiopian government should consider training of midlevel health professionals, particularly the health officers and midwives to provide emergency obstetric care.

Studies indicate that women's choice about place of delivery is mainly based on proximity. It would be less costly to train HEWs to conduct deliveries as they already have some basic knowledge on the area and eagerness to take part. The Federal Ministry of Health Ethiopia should consider the proximity of health posts as an opportunity for accessing the service and invest on equipping the health posts with facilities for basic obstetric care services and training the HEWs.

The role of TBAs' contribution should not be ignored because they are taking part in the service anyways as majority of the births in Ethiopia take place at home in the hands of people who do not have any training on the area. And the community relies on the TBAs in case of any complication because they are the ones available at any time. However, the number of Trained Traditional Birth Attendants is not enough to reach the whole community. Even the trained Traditional Birth Attendants do not have adequate training

support, follow ups. They lack knowledge and skills especially about prevention of infection which is crucial for safe delivery, and the equipments and supplies needed. TBAs have good reputations by the society and they play a linking role between women and the health facilities it seems is better that they are recognized in the health care system but with caution. Therefore, the Federal Ministry of Health Ethiopia should empower the TBAs to enable them to contribute in a positive way through periodical training, close supervision, and regular provision of equipment and supplies. Further study is needed to identify the intervention components to be included in the curricular content of TBAs' training and the appropriate approach for support and supervision.

There is no a functional referral system, as there is problem with availability and cost of transportation even in the health centers close to the main roads. The community has a trend to support each other in situation where a laboring mother has to be taken to the health facility. But looking for solution on spot could be time consuming and delay the woman at home. It is recommended that the local government to strengthen the community support system in a more organized way so that there is readily available fund whenever it is needed for this purpose.

High risk mothers identified during ANC are usually advised to go to the hospital when they are in labor but often they don't have the means to do so. The possible reason for this could be distance of the hospital from their homes and lack of means of transportation at the time when the women are in labor. It is advisable for hospitals that provide essential obstetric care services to take the initiative to arrange waiting homes at a cheaper cost for women who are identified as high risk to stay around.

Evidence suggest that countries with reliable information about the extent of the problem were among the leading to achieve reduction in maternal mortality ratios, and the source of reliable information about maternal mortality ratios is registration of vital events, deaths and births. There is no registration of vital events, births and deaths, hence, not possible to have accurate data especially about maternal deaths, as the number of live births could be estimated from the number of children who received their first vaccination. The Federal Ministry of Health Ethiopia and the local government should facilitate the registration of births and deaths using the community health promoters, TBAs and HEWs.

Commitment and common understanding of actors at all level, political, health professionals and community is crucial to produce the desired result. Health facilities should take into consideration of the interest of the women about the place and type of care.

Based on the findings this study identified six areas of intervention believed to be cost effective and result in the reduction of avoidable death, illness and disabilities that result from childbirth; each might require prior analysis for their effectiveness on how to proceed.

1. Maximizing the effectiveness of the existing services

Maximizing the efficiency of the existing service involves ensuring the professional competence of health professionals on the area through in service training and an effective means of supervision, matching the available equipments and facilities and qualification of the existing staff.

2. Providing basic obstetric care at the health posts

Enabling HEWs to perform basic essential obstetric care under close supervision of health workers of the health facilities under which the health posts operate would produce a meaningful result. This requires training of HEWs on basic obstetric health care including early detection and referral of risk cases, as well as, equipping the health posts with facilities for basic obstetric care.

3. Empowering TBAs to take part in assisting women during delivery

TBAs can be considered to assist deliveries taking place at home anyway under close supervision and follow up of health professionals of the nearest health facility. However, this requires further analysis of the components the training should constitute and a strategy for adequate supervision and follow up mechanisms.

4. A functional referral system

Unless there is a functional referral system in place the effectiveness of all the strategies is questionable. This should involve transportation means which is made available for this purpose at an affordable cost. Also community organizations such as 'idir' as a means to cover the cost needed for transportation could be of importance. The idea of establishing waiting homes at the compound of a facility with essential obstetric care services or even at a point closer to access the available means of transportation when a woman is in labor can be considered.

5. Registration and documentation of vital events

It is important to have an effective registration and reporting mechanisms in place at all levels. It is worthwhile considering vital registration which can also be done without requiring an additional cost at the health posts by HEWs or volunteers in the villages. This will enable to understand the causes of mortality and the extent of the problem and to react accordingly.

6. Commitment of all actors

Public commitment and commitment and sense of responsibility of health professionals and willingness to create a system that functions to reduce avoidable deaths and act accordingly are crucial. This should be reinforced by public policy that encourages research on the area, ensures the functionality of registration and reporting systems and supervision and follow

up that ensures a meaningful contribution and accountability of all actors involved in providing the service.



Figure 5: The recommended areas of intervention to make child birth safer in Ethiopia

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Appendices

Appendix 1: Interview guide for key informants at regional health bureau

Name: _____

Responsibility: _____

1. How is the trend of maternal mortality in the region?
2. Which part of the region is with the highest maternal death report?
3. What do you think could be the reasons?
4. What is the strategy designed to reduce the rate of maternal death by the regional government?
5. WHO strongly advocates for “skilled care at every birth” to reduce the global burden of maternal deaths; what is the rate of skilled birth attendance in the region?
6. What strategy is in place to increase the rate of skilled birth attendants in the region?
7. Who are considered skilled birth attendants?
8. Who are the key stake holders and what are their roles in increasing the rate of skilled birth attendance?
9. What is the role of traditional birth attendants in improving this service?
10. What are the obstacles in increasing the rate of skilled birth attendance?
 - a. Physical distance
 - b. Lack of transportation means
 - c. Cost
 - d. Lack of awareness
11. What would you suggest as a means to overcome the obstacles?
12. What other strategies could be considered to ensure safe delivery?
13. Do you think traditional birth attendants would be helpful? How?

Data required from the regional health Bureau

1. List of Zones and special Woredas
2. Institutional deliveries by Zone and special Woreda for the past five years
3. Attended deliveries by Zones and Special Woredas for the past five years
4. Current health facilities and health professionals in the region

Appendix 2: Interview guide for key informant at woreda health office

Name: _____

Responsibility: _____

1. What is the population of the woreda?
2. What types of health facilities exist in the woreda?
3. How many health centers are there in the woreda?
4. How is the health centers distributed in the woreda?

5. How is the health centers connected to each other?
6. How many health posts are there in the woreda? How is their distribution?
7. How does the staffing of the health centers and the woreda look like?
8. What is the coverage for attended/institutional delivery?
9. How do you see the coverage? What are the possible reasons?
10. Which components of essential obstetric care are provided by the facilities in the woreda?
11. If referral is needed is there a functional referral system in place?
12. What problems are there related to referral of cases? How are they resolved?
13. Are there TBAs in the woreda? How do you see their contribution?

Appendix 3: Interview guide for health professionals at health centers

Name of health center: _____

Number of kebeles: _____

Population: _____

Health posts: _____

Number of health extension workers: _____

1. Title: _____
2. Which of the following services are provided by the health facility?
 - a. Basic maternal services

i. Preconception	1. Yes	2. No
ii. ANC	1. Yes	2. No
iii. Normal delivery	1. Yes	2. No
iv. Postnatal care	1. Yes	2. No
v. Family planning	1. Yes	2. No
 - b. Essential obstetric care

i. Instrumental delivery	1. Yes	2. No
ii. Surgery	1. Yes	2. No
iii. Blood transfusion	1. Yes	2. No
3. If some of these services are not available do you have a functional referral system?

1. Yes _____ 2. No _____
4. If yes, more about the referral system
 - a. Who refers clients to your health facility?

 - b. Where do you refer your clients for further help?

5. Do your clients arrive early enough to the health facility?

If no, what could be possible reasons for late arrival of your clients?

What do you think could be done to solve this problem? Could TBAs be useful to solve this problem? _____

6. Do you have any problem with timely referral of clients for further help? If yes, what are the problems? _____

How could it be solved?

7. How many women needed referral in the past one year? Was it possible to refer all women who needed referral? If not what are the reasons? What would you suggest to solve these problems?

8. Do you think the women referred received appropriate and timely care? If not, what could be the reason? How do you think this problem can be solved?

9. What was the number of women estimated to be pregnant in the past one year in your catchment area? _____

10. What is the coverage in each category in the past one year? (Check record)

a. Basic maternal services

- i. ANC _____
- ii. Normal delivery _____
- iii. Postnatal care _____
- iv. Family planning _____

b. Essential obstetric care

- i. Instrumental delivery _____
- ii. Surgery _____
- iii. Blood transfusion _____

11. What is done for a pregnant woman who is identified as high risk?

12. Which of the villages in your catchment area are served most?

13. Are there villages not represented well in the service provided by the health facility?

14. How do you see the delivery service coverage? _____
If low, what is the reason for low coverage?

What do you suggest to improve it?

15. How do you see the importance of working closely with TBAs, community health workers to improve the service?

How closely do you work with TBAs? Community health workers?

Appendix 4: Observation checklist for the availability of facilities, supplies and equipments needed to conduct delivery

Item/service	Availability Leku/Abela	Remark
A separate delivery room		
A separate waiting room		
Delivery coach		
Adequate light		
Water supply		
Beds for mother		
Bed for neonate		
Person in charge of delivery room		
Delivery registration book		
Equipments		
Sterilizer		
Sphygmomanometer		
Stethoscopes		
Fetoscope		
Weighing scale		
Clinical thermometer		
Vacuum extractor		

Delivery forceps		
Protective/clothes		
Apron		
Drapes		
Gown		
Rubber sheet		
Blanket		
Supplies		
Gloves		
Cord ties		
Gauze swabs		
Cotton		
Disposable syringes and needles		
Disinfectants/antiseptic solutions		
Delivery equipments		
Scissor		
Forceps		
Ambu bag or mask for neonatal resuscitation		
Mucus extractor		
Equipments for uterine evacuation		
Essential drugs		
Antibiotics		
Antimalarial		
Antihypertensives		

Anticonvulsants (Diazepam		
Oxytocin, ergometrine		
IV fluids, set, stand		
Means of transport in case of emergency		

Appendix 5: Interview guide for Health extension workers

1. Do you provide care to mothers during pregnancy and child birth? 1. Yes
2. No
2. If yes, what are the services provided?

Type of service	Number in 2001	Remark
Ante natal care		
Delivery care		
Post natal care		

3. Where do you provide the care?

Place service provided	Number in 2001	Remark
Health post		
Home		

4. What is your role in providing care to mothers during pregnancy and child birth? _____
5. What support do you get from
 - a. Health professionals _____
 - b. Community _____
 - c. Others _____
6. What is the role of Traditional Birth Attendants in assisting women during pregnancy and child birth?

7. How do you work with traditional birth attendants?

8. Where do you refer mothers with problems beyond your scope?

What are these problems? _____
9. Do you have any problems referring the women to a higher level?

10. How do you overcome the problems?

11. Do you have any obstacles in helping women during pregnancy and child birth?
 - a. Distance from health post
 - b. Lack of transport
 - c. Cost
 - d. Lack of awareness about the importance of the service
 - e. Preference of mothers to give birth at home
 - f. Preference of mothers to be attended by Traditional birth attendants
 - g. Others (specify) _____
12. How do you think these problems could be solved?

13. Do you think Traditional Birth Attendants could be helpful? How?

Appendix 6: Interview guide for TBAs

1. What do you do for living?
2. What activities are you involved in to assist women in pregnancy and child birth?
3. What do you get for the service you provide from the community you serve?
4. What support do you get from government and non-government institutions?
5. How many pregnancies and deliveries did you attend in the past one year?
6. Did you have any difficulties or problems in the process of helping pregnant and laboring women?
7. What do you do with pregnant or laboring women beyond your scope of help?
Where do you refer women with complications beyond your scope of help?
8. What are specific conditions that you refer the women for?
9. Did you have any difficulty referring women for further help?
 - a. Distance?
 - b. Cost?
 - c. Women’s preference to be attended and give birth at home/Lack of trust of women on the service provided by the health facility/?
 - d. Lack of commitment of health workers to help the referred clients?
10. What did you do to solve the problem you faced?
11. What other obstacles do you have to make your service effective? What would you suggest to be done to overcome these problems?

- c. TBAs
 - d. Neighborhood
 - e. Mother
7. Did you have any difficulties to follow ANC?
 8. Do you prefer to give birth at home or at the health facility? 1. Home 2. Health facility
 9. Why do you choose the place?
 - a. Home _____
 - b. Health facility _____
 10. If the preference is home, whom do you prefer to be assisted by during pregnancy and child birth? 1. Relative/Neighbor 2. TBA 3. Community health worker 4. Health professionals 5. Other
 11. Where did you give birth to your last child? 1. Home 2. Health facility
 12. Was the place your preference? 1. Yes 2. No
 13. If not, what was the reason for being attended in the place of birth?
 14. Who assisted you during delivery? 1. Relative/Neighbor 2. TBA 3. Community health worker 4. Health professionals 5. Other
 15. Was the person your preference? 1.Yes 2.No
 16. If not, what was the reason for being attended by the person?
-
17. Did you have any problem during delivery? 1. Yes 2. No
 18. What was the problem?
 19. Did you know the problem beforehand? 1. Yes 2. No
 20. What was done to solve it?
 21. What can be done to solve problems related to pregnancy and child birth?
 22. Do you think a Traditional Birth Attendants could be useful in helping women in delivery? How?

Appendix 9: Map of Africa



Appendix 10: Map of Ethiopia

