Why women use traditional birth attendants instead of skilled birth attendants in West Darfur, Sudan

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51st International Course in Health Development
September 22, 2014 – September 11, 2015

KIT (ROYAL TROPICAL INSTITUTE)
Development Policy & Practice/
Vrije Universiteit Amsterdam

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A thesis submitted in partial fulfilment of the requirement for the degree of
Master of Public Health
by

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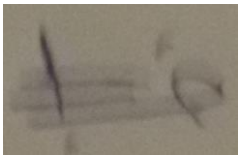
Sudan

Declarations

Where other people's work has been used (either from a printed source, internet or any other source) this has been carefully acknowledged and referenced in accordance with departmental requirements.

The thesis **why women use traditional birth attendants instead of skilled birth attendants in West Darfur, Sudan** is my own work.

Signature: 

51st International Course in Health Development (ICHD)
September 22, 2014 – September 11, 2015
KIT (Royal Tropical Institute)/ Vrije Universiteit Amsterdam
Amsterdam, The Netherlands
September 2015

Organised by:
KIT (Royal Tropical Institute) Health Unit
Amsterdam, The Netherlands

In co-operation with:
Vrije Universiteit Amsterdam/ Free University of Amsterdam (VU)
Amsterdam, The Netherlands

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Acknowledgements

I would like to thank Elsheikh Elajali, sponsor for the Kadbas Charity organizations, for his support during this period of the study and to my family.

Thanks to Mr. Yousif Abdulbagi from West Darfur SMoH.

Special thanks to Doctors Without Borders (MSF) in particular Dr. Annette Heinzelmann, the Director of the Medical department and Dr. Jean Rigal.

I would like to thank the KIT team for their support during the entire study time.

Special thanks to my Supervisor and backstopper for supporting me continuously during thesis writing process.

Abbreviations

BEmOC	Basic emergency obstetric care
CBS	Central Bureau of Statistics
CHWs	Community health workers
EmOC	Emergency obstetric care
FGM/C	Female Genital mutilations/cutting
FMoH	Federal ministry of health
IDPs	Internally displace people
INGOs	International Non-governmental Organizations
MSF	Médecins Sans Frontières/Doctors Without Borders
MW	Midwife
MWH	Maternity waiting home
NGOs	Non-governmental Organization
PHC	Primary health care
SBAs	Skilled birth attendants
SHHS	Sudan household health survey
SMoH	State ministry of health
TBAs	Traditional birth attendants
UN	United Nations
UNDP	United Nations Development Programme
UNFPA	United nations populations fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VMW	Village midwife
WHO	World Health Organizations

Glossary

A trained TBA "A TBA who has received a short course of formal training through the modern health sector to upgrade her skills" (1).

Internally Displaced Person "Persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border" (2).

Maternal mortality ratio (MMR)"Number of maternal deaths during a given time period per 100 000 live births during the same time period"(3).

Maternal mortality rate (MMRate)" Number of maternal deaths in a given period per 1000 women of reproductive age during the same time period"(3).

Midwife "Persons who, having been regularly admitted to an educational programme are duly recognized in the country in which it is located, have successfully completed the prescribed course of studies in midwifery and acquired the requisite qualifications to be registered and/or legally licensed to practise midwifery" (4).

Skilled birth attendants "an accredited health professional – such as a midwife, doctor or nurse – who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns" (4).

Traditional birth attendants "a person who assists the mother during childbirth and who initially acquired her skills by delivering babies herself or through an apprenticeship to other TBAs" (1).

Abstract

Background: West Darfur has a high maternal mortality estimated at 322 per 100,000 people and it has the highest use of traditional birth attendants (TBAs). 62 percent of deliveries were conducted by TBAs. Ten years conflict resulted in two types of populations with different needs to access maternity.

Objective: To identify evidence-based strategies to reduce maternal mortality by improving utilization of skilled birth attendants (SBAs) in West Darfur, Sudan in order to give recommendations to Sudan federal ministry of health, West Darfur State ministry of health and stakeholders.

Method: The method used for this study is literature review using the Anderson model as a conceptual framework.

Result: High use of TBAs by women in West Darfur is due to lack of decision-making, general lack of knowledge, tribal cultures and gender roles. The conflict situation makes it difficult to access maternities for women in the remote settlements as compared with the camp residences. Increased utilization can be achieved through different strategies, such as integrating TBAs in the health system for referral, accept the role of the TBAs, contracting non-governmental organizations (NGOs) to build maternities and create maternity waiting homes. Raising awareness of the community and community participation in maternal health are important to achieve success.

Recommendations: Different comprehensive strategies at different level for long and short term with multisectoral collaborations between the government, NGOs and communities.

Key words: Maternal mortality, traditional birth attendants, skills birth attendants, conflict and post-conflict, West Darfur

Words count: 12373

Introduction

This study aims to discover why women prefer to be assisted during delivery by TBAs instead of SBAs. Working as a Medical doctor, with Save The Children, in Morni camp in West Darfur, Sudan for 3 years in BEmOC (Basic Emergency obstetric care), I observed that women do not come to deliver at the BEmOC facilities. More often women would be brought in critical condition after being in the care of TBAs for more than 24 hours. It was always a question by the team why the maternity is underutilized. After I left Save the Children, I joined MSF (Doctors without Borders) working in low-income countries in Somalia, Malawi, and North of Nigeria. I noticed similar situations of underutilization of the health services by women for delivery and the same situations for TBAs.

I know that skilled attended delivery contributes to progress in reducing maternal mortality. So my general objective is to identify evidence-based strategies to reduce the maternal mortality by improving the utilization of the (SBAs) in West Darfur, Sudan. After identifying the problem, according to the conceptual framework, this study will describe finding on Darfur's context in the 3rd chapter. Chapter 4 will identify the findings from two literature reviews about the choices for women to choose between Traditional birth attendants (TBAs) and skilled birth attendants (SBAs). In the 5th chapter findings will focus on the positive roles that the TBAs can play in women childbirth. Chapter 6 will address strategies for the West Darfur Context in short and long term. The chapter 7th is discussion on the themes from the findings and address the issues related to the strategies. The last chapter will focus on the conclusion and recommendations.

I have learned that health is considered as a right. Women should be treated with dignity and respect based on their decision. I believe that the government, the policy makers and Non-governmental Organizations (NGOs) are obliged to offer decent health services, equitable and fairly distributed for the population. Government and policy makers are obliged not only to address the needs of their populations in their policy papers but to include the communities in implementation, and base their work on the evidence provided through qualified research.

1 Country background

This chapter will give background information about Sudan and briefly about West Darfur.

1.1 Geographic and political administrations

Sudan, situated in north eastern Africa, shares borders with Egypt in the North, Libya in the Northwest, Chad in the east, Central African Republic in the southwest, South Sudan in the south, Ethiopia, Eritrea and the Red Sea in the east (See figure Number 1 map of Sudan). The total surface area is 1,882,000 sq. km.(5). The country is divided into 15 states (6). According to the constitution, the political administrations follows a federal model (7). Khartoum is the capital of Sudan (5).

The Greater Darfur (Darfur) is located in the west of the country and consists of four states; North, South, central and West Darfur. West Darfur's capital city is Elgenina. Greater Darfur has experienced conflict between government and rebels since 2003. In 2011 the signing of a peace agreement between some of the groups led to partial stability in some localities in West Darfur (8).

Figure 1: Map of Sudan/West Darfur State (9).

West Darfur State

1.2 Demographic

Estimated in 2015, the total population of Sudan is 38 million people with 30 percent living in urban areas (10). The fertility rate is 5.1 per 1000 women; the crude birth rate is 31.2 per 1,000 people. The crude death rate is 16 per 1,000 people. In 2008, the life expectancy at birth was 57 (6). The percentage of the female population is 49 percent of the total population, while women in the reproductive age represent 25 percent of the female population (10). The total population of West Darfur being 1.500.000 (41%) is displaced (11).

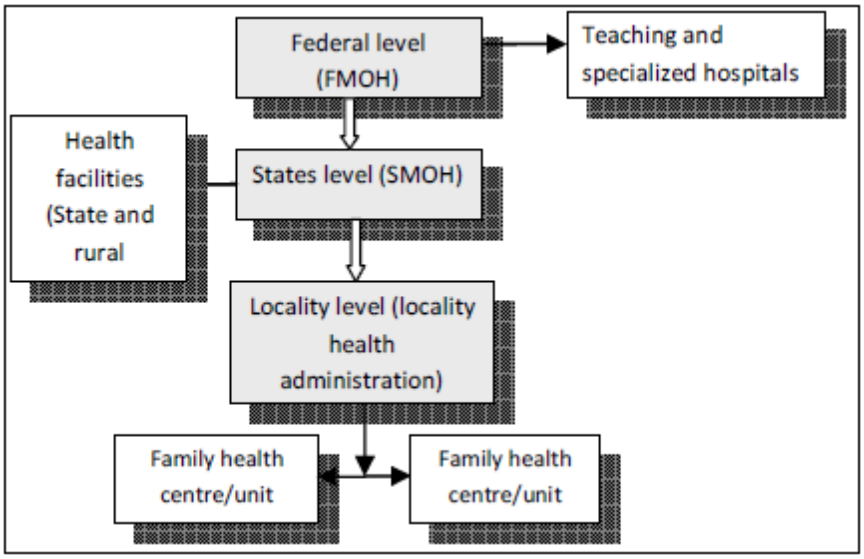
1.3 Ethnic compositions, languages and religion

Sudan has multiple ethnicities, races, languages and cultures. There are more than 114 languages and 500 dialects; the official language is Arabic(12). The culture is a mix of Arab and African cultures. Islam is the dominant religion in Sudan (also in West Darfur) whereas Christianity and other religions are minorities (5)(12). In West Darfur, African ethnicity dominates, Masalit, Fur are African, Gamer and nomad are Arab (8).

1.4 Health System

The health system follows the decentralization model. The health system has three management levels (Figure 2), the federal ministry of health (FMoH), state ministries of health (SMOH) and locality (locality health administration) (13)(14).

Figure 2: Health System in Sudan (14)



The FMoH is responsible for design and planning of the national policies, supervision and monitoring of the health sectors at national level. The SMoH is responsible for designing and monitoring, evaluating and implementing

the state's health policies, while the localities are responsible for implementation of the SMoH plan (13)(15). In conflict and post conflict areas, like West Darfur, Non-governmental international and national organizations (INGOs, NGOs) take the role of implementing with SMoH (13)(16)(15).

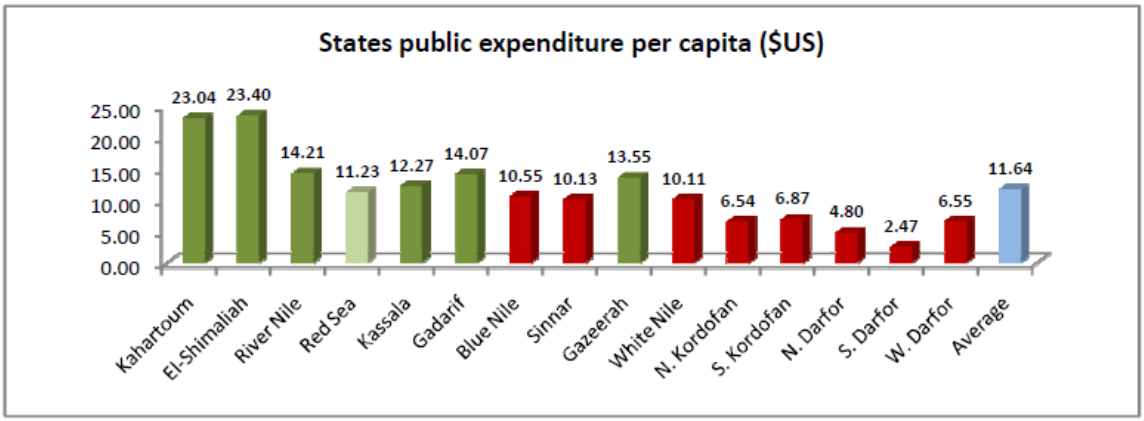
The public health sectors provision has 3 levels: primary health care (PHC), secondary health care, which includes rural hospitals, and the tertiary level, which includes specialized hospitals and teaching hospitals. PHC has different levels: basic health units (health posts), primary health care units (family health units), and rural and urban health centres (family health centre). The health post is run by the community health workers (CHWs) and only provides dressing for mild wounded cases. The family health unit, managed by medical assistants, provides for outpatients consultation (OPD), the extended program of immunizations (EPI), health education and promotion, and antenatal care (ANC)(13) (15).

Rural and urban family health centres have the same components as a family health unit with added laboratories and x-ray machines. Rural and urban health centres are managed by the doctor and act as the referral point to the rural hospital or the teaching hospital according to the national health policy (13)(15). The rural hospital has the same packages of the PHC with added deliveries and operation theatres (OT)(13)(15). Tertiary hospitals and specialized hospitals cater to people in cities and also handle the referral cases from lower units (15)(14)(13). In West Darfur there are mobile outreach clinics additional to the above setup (8).

1.5 Health and Finance

According to the FMoH "health system financing review report 2014" (14), the total health expenditure (THE), as a percentage of the Gross Domestic Product (GDP) is 6.4 percent. The out of pocket expenditure is 70 percent of the total health expenditure. Sudan uses only 8.23 percent for health from General Government Expenditures (GGE) (14). The average of public expenditure on health is 11.64 US dollar per capita. The public expenditure per capita on health is 6.5 US dollar in West Darfur (14). (See Figure 3 for more details).

Figure 3: State public expenditure per capita $ US (14)



1.6 Health and human resources

The country faces challenges for health resource distribution between the states. Seventy percent of health employees work in urban areas and serve only 30 percent of the total population. In Khartoum, the ratio of doctors is 55 doctors per 100,000 people while in South Darfur there are 3 doctors per 100,000 people. There are 103 nurses per 100,000 people in northern states (14). In West Darfur, there are six doctors and three midwives per 100,000 people. There are ten nurses per 100,000 people (8). In Darfur additional to medical national staff, there are international staff, medical and non-medical, to assist with health service delivery (17).

1.7 Education

Sixty two percent of the population aged 15 and above are literate in Sudan. This varies between urban and rural areas for the same age group being 79 percent in urban and 51 percent in rural areas. For example Khartoum, the capital city, has a literacy rate of 81 percent compared to 44 percent in West Darfur. Nationally, male literacy is higher, 73 percent compared to female literacy of 52 percent. West Darfur's percentage of females aged 15 to 24 has the lowest literacy in the country at 17 percent, while in the Northern state (Shimalia) it is 63 percent (18).

1.8 Major health problems

Health problems vary from region to region in Sudan. Malaria, measles, yellow fever and diarrhoea are prevalent diseases. West Darfur suffers from water borne diseases and diseases related to an environment of crowded camps and bad sanitation (9). The high maternal mortality is a dominant health problem in the west of the country. The Sudan household health survey of 2010 (SHHS) estimated the maternal mortality ratio (MMR) at 216 per 100,000 at national level, 194 in urban areas and 225 in rural areas per 100,000 (19). In West Darfur the MMR is 322 (8).

2 Problem statement, justification, objectives and methodology

This chapter describes the problem statement, justifications, general and specific objectives and methods used to achieve this study.

2.1 Problem statement

Maternal mortality and morbidity are a major public health concern. In 2013, the World health organizations (WHO) estimated that worldwide, 800 women die every day because of pregnancy related complications, with around 289,000 maternal deaths a year. Most of the deaths (estimated 62 percent of all deaths) occurred in developing countries especially in Sub-Saharan Africa (20)(21). There is an inequality in the number of deaths and morbidity compared to maternal mortality in developing and developed countries. Furthermore the number of deaths is higher in rural areas (21).

In Sudan, the SHHS in 2010 estimated the maternal mortality at 216 deaths per 100,000 (19), while the WHO estimated this to be around 360 deaths per 100,000 in 2013(22). Irrespective of the differences in estimating and the methods used, maternal mortality remains high. In Sudan, 75 percent of the deaths occur during labour or post-delivery, and the majority of these deaths are preventable(19). Most maternal deaths occurred due to pregnancy complications like postpartum haemorrhage, sepsis, eclampsia, obstructive labour and unsafe abortions (23). Nationally the estimated percentage of delivery at health facilities is only 20 percent in hospitals, 1 percent at PHC facilities. The total deliveries performed by skilled personnel are 73 percent (19).

The situation in West Darfur is even worse in relation to maternal mortality, which is estimated to be 322 death per 100,000 (19). It is the second highest state for MMR among all states in Sudan. According to the SMoH of West Darfur, the percentage of women who delivered at health facilities in West Darfur was only 10 percent in 2014, while SHHS estimated it to be 33 percent(19). As per SHHS 2010, the antenatal coverage is only 59 percent, with 62 percent of deliveries conducted by TBAs in West Darfur. In comparison, deliveries by TBAs are 1.7 percent in Khartoum, 45 percent in South Darfur and 28 percent in North Darfur (see Table 1 for details) (19).

Table 1: MMR and delivery attended by categories in Sudan states in percent (%)(19).

State of the Sudan	Maternal Mortality ratio	% Attended delivery by SBAs	% attended delivery by TBAs	% Not Attended Delivery
West Darfur	322	33.4	62.2	4.4
South Darfur	335	50.3	45.5	4.3
South Kordfan	112	61.4	33.1	5.3
Kasala	245	69.7	29.2	1.1
North Darfur	178	65.2	28.5	5.8
Red Sea	280	72.0	22.6	5.5
Blue Nile	258	45.1	21.9	33
North Kordfan	208	80.2	15.6	4.2
Gedarif	267	63.5	14.3	22.2
Sinnar	106	83.4	10.7	5.6
White Nile	169	86.2	7.5	6.3
River Nile	147	91.2	7.3	1.5
Gazira	185	89.4	3.0	7.5
Khartoum	175	93.3	1.7	5
Northern	127	96.7	0.8	2.4
Sudan	216	72.5	20.3	3.5

WHO defines TBAs as "a person who assists the mother during childbirth and who initially acquired her skills by delivering babies herself or through an apprenticeship to other TBAs"(1). The WHO up to 1997 advocated for training and promoting TBAs to reduce maternal mortality and to fill the shortage of human resources for health (24). Analytical reports showed that the availability, trainings and promotion of TBAs did not lead to a reduction of maternal mortality (25). Following this result, TBAs were excluded from SBA definitions. The new strategy focused on SBAs, and the new target was set to 90 percent of deliveries attended by SBAs by 2015(4)(26).

The national Sudan health policy for reproductive health does not recognize TBAs as health providers and encourages women to deliver by SBAs in the health facilities(15). TBAs in Sudan are mainly old women with no formal training in skilled delivery. They are called Dayat Sabeel (Midwife with robe) (27). TBAs are known and accepted in their communities and the traditional delivery job is transferred from generation to generation (27).

2.2 Justification

Maternal mortality has a negative impact on the economic condition of the family; it causes loss of productivity, creates an increased number of orphan children, a poor quality of the life of the family and also causes a poor education of children because they drop out of school. The morbidity related to the delivery and pregnancy increases the cost of treatment in health (28).

West Darfur has the second highest MMR in Sudan and has also the highest number of TBAs used by women. Despite the shortage of the health staff in West Darfur, the conflict brought a high number of NGOs to provide the services for the internal displaced people (IDPs) in different camps, and made more health services available (17)(29). As for the population outside the camps, the health facilities serving them are few and lacking equipment and staff. This situation makes the women outside the camps more at risk for complications during child birth (8).

Conflict and post conflict situations result in an impact on maternal health in terms of affecting sexual and reproductive health, sexual violence and access to health care. Furthermore the services provided by aid agencies for conflict-affected populations usually do not focus on returnee and non-camps populations (30).

There are many studies done on the use of TBAs, but there are no studies done in Sudan or West Darfur in regards of TBAs where the health providers are INGOs. This study aims to fill the current gaps in understanding of underutilization of delivery services provided by INGOs for West Darfur, and to inform decision makers and programme designers on how best to improve the utilization of delivery services in the current context.

2.3 General objective

To identify evidence-based strategies to reduce maternal mortality by improving utilization of skilled birth attendants in West Darfur, Sudan.

2.4 Specific objectives

- To review the context of Darfur and West Darfur and its impact on utilization of reproductive health services and maternal mortality.
- To describe factors influencing the women's choice for a skilled or traditional birth attendant.
- To explore the potential role of TBAs in reducing maternal mortality or increase the use of the skilled birth attendants.
- To explore strategies to improve the utilization of skilled birth attendants in conflict-affected areas.

- To provide recommendations to the FMoH, SMoH and other relevant stakeholders to increase the utilizations for delivery care facilities in order to reduce maternal mortality in West Darfur, Sudan.

2.5 Research Methodology

The method used for this study is literature review. In order to meet the objectives of this study, Google scholar and Google search engines were primarily used. VU University Library, Wiley, PubMed and Science Direct databases were also searched. Several websites of WHO, UNDP, UNFPA, FMoH, CBS, and different INGOs were also accessed. Grey literature from FMoH, reports, statistical data from central bureau of statistic (CBS), and published and un-published reports were used. A staff member of SMoH in West Darfur was also contacted to provide documents relevant to this study.

In order to answer objective number one, online grey literature and articles were used together with my own knowledge and experience of West Darfur. For the Second and Third objectives, the literature used was limited to low and middle income countries while for the Fourth objective, the literature was limited to conflict affected areas. The search strategy is outlined in detail in Table 2.

The search brought up a list of peer reviewed journals and articles from various low-income countries. Qualitative and quantitative studies, systematic reviews, grey literature with outcomes related to barriers and utilization of health care and maternal mortality were included. Documents referred to TBAs, but did not describe outcomes related with maternal mortality were excluded from the study. In this study, articles related to antenatal care, neonatal care and those that did not discuss skilled birth attendant's barriers of women's behaviour to use the skilled birth attendants for delivery were also excluded. Articles were sorted by title first, then by reading the abstract or reading the whole document. Articles were skimmed or read through. The search literature was only in English language and published between 1990 and 2015 as the WHO policy advocating for TBA training dates in 1990.

Table 2: Search strategy table

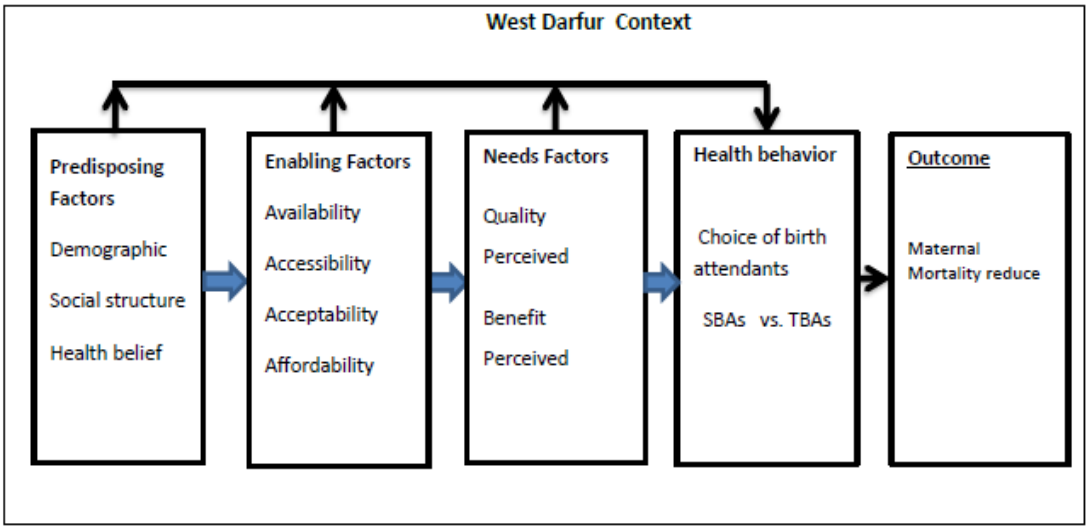
Search strategy	Objective 1	Objective 2	Objective 3	Objective 4
	Key words			
VU library	RH in conflict area	TBAs, SBAs	TBAs, SBAs	TBAs, SBAs
PubMed	Women conflict, SRH conflict IDPs services IDPs community	TBAs, SBAs Maternal mortality, Women educations Darfur, Maternal quality of care. , Utilizations	TBAs maternal mortality TBAs training TBAs referral TBAs maternal mortality	Pregnant women utilizations Conflict area
Science direct		Utilizations, women ,girl, conflict post conflict	Maternal mortality, Midwives SBAs; TBAs	
Wiley	Violence	TBAs	TBAs Maternal mortality	
Google Scholar		Health care use. TBAs, SBAs	TBAs Clean delivery kit	Maternal mortality conflict, post conflict Promising practices
Regular Google for grey literatures, websites of FMoH, SMoH, NGOs, UN	Darfur conflict Sexual reproductive health. Women Humanitarian, women protection	Darfur IDPs women Muslim context	MISP IDPS ,	TBAs, Health educations, Conflict, post conflict
Contact in West Darfur SMoH	Camps, ethnic Women. Maternal mortality. Health facilities	Polygamous Women reproductive age Domestic violence	Health services	
book	Darfur	Women Sudan midwife		

2.6 Conceptual framework

The Andersen "behavioural model for health services use" (Figure 3) (31), was selected and adapted as per the need of this study. Andersen describes individual health seeking behaviour for health services. Health services are used, according to Anderson, by those who believe they can benefit and find effective treatment (31). The model identifies different factors for women's behaviour and helps develop strategies according to the findings (31). The reason for adaptation of the model is that women can primarily choose between modern health services and TBAs in the West Darfur context. Additional adaption includes maternal mortality. It is already known that the use of the SBAs in institutional delivery can reduces mortality in functioning health system (4). An additional goal was to explore from literature, whether

any strategy by using TBAs can contribute to MMR reductions. The reason for adding the West Darfur context as a background variable is to make the context specific for the strategies and recommendations is also taken into account. The adapted Anderson Model (Figure 4) describes predisposing, enabling and needs factors which contribute to women choosing for delivery assisted by either SBAs or TBAs.

Figure 4: Conceptual framework adapted from "Andersen behavioral model for health services use" (31)



Notes to consider in the interpretation of the framework:

- Darfur context refers to the current environment of the conflict and the impact in health of women and maternal mortality.
- Predisposing factors include demographical factors, structural factors and health belief that influences women's choices.
- Enabling factors include availability, accessibility, acceptability and affordability. Enabling factors in this adapted model will refer to both SBAs or TBAs or comparing different factors influencing women's choices
- Need factors include women's perceived quality of care, or benefits by SBAs or TBAs or comparing.
- Skilled birth attendants will refer to accredited skilled health personnel managing delivery care in health facilities run by the NGOs in the West Darfur.
- Maternal mortality will refer to reductions in maternal deaths in West Darfur. The assumption is that increased utilization of SBAs or use of trained TBAs will contribute to MMR reductions.

3 Findings

This section describes the current health and security situations of Darfur and West Darfur and the major impact for women utilizations for delivery and maternal mortality.

3.1 Conflict

The Darfur conflict started in 2003. There are two versions of the beginning of the conflict. One says that it started as a fight between pastoralists (Arabs) and farmers (Africans) about water resources. The other version says it started with rebels who were fighting against the government because of political reasons (32). However, the conflict resulted in the displacement of a huge population. In 2005, the International criminal court (ICC) opened a file investigation for the situation in Darfur as a genocide and a crime against humanity (33).

Even though a peace agreement was signed in 2011, the conflict is still going on between the government, rebels and different ethnic groups in some areas of greater Darfur (34). The years of conflict have destroyed many homes and families. Therefore the majority of the population in West Darfur is based in camps; 41 percent are considered as internally displaced people (IDPs) and are living in camps. SMoH estimated the IDPs to be 50 percent of West Darfur population in 2014 (8)(11). The rest of the population are farmers or are in residence in big towns, which also hosts IDP camps (8).

3.2 Health

Darfur was considered as having the worst humanitarian crisis over the last decade before Syria (35) (36). The health situation in West Darfur is indicated by the highest morbidity and mortality indicators in all states of the Sudan (19). The situation did not change since 2003, although in term of displacement it is adding more IDPs. Women in West Darfur are considered as the most affected group in terms of sexual and reproductive health rights (37). The UN forces protect the camps. Even though the IDPs are protected by the UN force, women face many human rights violations, for example sexual violence (38). In Darfur, 70 percent of rapes of women happen outside the camps, while they are doing daily housework like collecting firewood, and 30 percent face it inside the camp (39).

It was observed, in many countries, that armed conflict has increased levels of pregnancy related complications, sexual violence, sex work and unwanted pregnancy, especially in teenagers as they are sexual active quite early, with the majority being orphans (40). These situations increased the rate of abortions among these specific groups of adolescents, ultimately leading to

pregnancy complications and a high maternal mortality. These studies come from Uganda and Burundi, but the situations of conflict and the associated outcomes could be similar in West Darfur. The high MMR rates there were attributed to disruptions of the health system infrastructure through facilities damage and staff emigration (40). Of the ten countries with high maternal mortality in the world, eight of them had conflicts (41). Due to the consequence of the conflict, Sudan is struggling to achieve the Millennium Development Goals (MDG) specially MDG no five i.e. reducing maternal mortality and achieving universal access to reproductive health (15).

The National Fistula and Urogynecology Centre in Khartoum conducted research in 2008, among women admitted in the centre with vesico-vaginal fistula (VVF), which is defined "as an abnormal communicating tract extending between the bladder (vesico) and the vagina resulting in continuous involuntary discharge of urine into the vaginal vault" (42). The research concluded that 90 percent of the cases of VVF were caused by labour, 53 percent of these cases were assisted by TBAs and 40 percent of the cases came from West of Sudan (Darfur). The study showed that VVF was associated with low socioeconomic status, female genital mutilation, low education status and young age (42).

3.3 Health service provision

The health services provision inside the camps in West Darfur depend on the foreign aid and SMOH (8). Many NGOs provide health services including delivery care and referral to the rural hospital manage by the SMOH and supported financially by the NGOs and UN agencies (43). Despite the shortage of national staffs, like nurses, doctors and midwives, there are many international health personal providing services inside the camp and, through outreach programmes, also outside the camps (43). Annex 1 gives details on the INGOs working in West Darfur in 2014 (8). In 2009, Sudan's Government expelled 13 of the NGOs serving IDPs in Darfur (44). However, from my knowledge, the NGOs expelled like Save the Children US are working in Darfur under another name Save the children International.

The situation of conflict in West Darfur it's similar to many countries around the world with emergencies. Relaying on international staff as the health providers, makes the cost of the health delivery expensive (45) and it raises other issues related to culture and sustainability for the programs (45). Although the maternal mortality is high, there is a high use of the TBAs within the existing service provision.

3.4 Community organization

The communities themselves divided most of the camps into sectors according to their tribe and place of origin. Each tribe has their sheikhs

(leaders) who are responsible for solving the conflict among his people and negotiating services with NGOs(46). Culturally women in Darfur has a woman community leader (46). The rural area the population has the same tribe setup with leaders but there is no aid assistance. The aid assistance targets IDPs camps (29)(45).

4 Factors influencing the choice for skilled or traditional birth attendants

This chapter describes the findings from literature review about factors influencing for choosing skilled or traditional birth attendants.

4.1 Predisposing factors

The predisposing factors include demographical, structural factors and health belief. Demographic factors include age, education and gender.

4.1.1 Demographic Factors

Demographic factors are predisposing factors playing a role in the utilization of the health services (31). Studies from different low-income countries in Africa and Asia show different demographical factors influencing women to choose for delivery assistance describe below;

4.1.1.1 Age

In Sudan, 46 percent of women under the age of 20 are using TBAs (38) while another study from Iraq shows that the women of age 25-34 are more likely to be delivered by the TBAs compared to women of 35 and above (47). There is no data available to show the age breakdown of the women who use TBAs in West Darfur. However, the data in relation to the age in West Darfur shows that 16 percent of women of age 20-24 had experienced childbirth before they reach 15 years (19).

Women's age as factor to use the health services can be related to women's experiences and their ability to make decisions. The older women prefer to be assisted by skilled birth attendants (48), even though they might previously have delivered in the health facilities or have had antenatal care and received information that due to the old age, they could be at high risk and should deliver in the health facility. The young women are also unlikely to use the health services (48). In relation culture, early marriage is predominant in West Darfur as 15 percent of the girls are married before their 15^{th} birthday (19), and research showed that the use of the health services is underutilized in sub-Saharan Africa by teenagers (49). The teenagers prefer to seek care by untrained TBAs (50). Along with age, other

influencing factors described below also play a role in utilizations of the health services (48) (49).

4.1.1.2 Marital status

Marital status is one of the influencing factors for women to choose between delivery in an institution or at home by non-skilled personnel (51)(48)(52). This argument varies from one context to another, however, and is related to the culture. Literature indicates that single women or divorced women are strong decision makers despite of their socio economic status. In some of the cultures, single women may have more "autonomy" to choose the place of child birth (48). It is unlikely that this argument can be applied in the context of West Darfur, as here it might be that single women with unwanted pregnancy are less likely to use the health services and prefer TBAs due to socio cultural aspects and stigma, given that they could be punished by law for adultery as this is the often the case in West Darfur for the victims of sexual violence (53). Other research showed that there was no relation between marital status and use of the health services (54)(55). However this could be contributed to religion.

Research done on women who are in polygamous relationships (husband has two or more than two wives), shows that women in polygamous relations use less skilled birth attendants in some African countries, while another study shows polygamous women used more SBAs in contexts such as Malawi (48)(52). Polygamy is widely spread in Sudan; the SHHS 2010 reports indicate that 20 percent of women of reproductive age (aged 15-49) were in a polygamous marriage. This percentage varies from urban to rural populations, ranging between 15% in urban and 22% in the rural areas. West Darfur has the highest polygamy rate in Sudan, at 42 percent of women in the age category of 15-49 (19).

4.1.1.3 Education

Education is one of the factors that influences the use of the health services and could change health seeking behaviour (56). A study shows a strong association between the level of education of the mother and the utilization of a skilled birth attendant. An increased level of education of the mother will increase the use of SBAs, while illiterate women make less use of SBAs compared to educated women in an African setting (57).

Educated pregnant women show better knowledge about the health services available, including new information about health and modern treatment availabilities and efficacy (48). Education seems to increase the women's decision-making power, and will contribute to the fact that women can manage household resources. Education can also give the women good skills to communicate and negotiate with their husbands (48). Women's education

reduces the knowledge gap between them and the health providers, which will contribute to a better communication with the health personnel and a better health care demand (58). Additionally, education has an effect on the future generation, educated communities are more likely to organize themselves, politically and economically, for the health services required for their communities (48). The use of TBAs by less educated women is more likely when compared to educated women. Studies show that the level of education of women and husbands play a role in the choice of the place of the delivery (51)(59). Women's illiteracy, along with education and enrolments, is linked to the use of the TBAs (60). Additionally the women's educational level is not the only aspect in influencing their use of TBAs and the approach of the health services. The level of education of their husband and the communities also influence the women to use TBAs (60).

West Darfur has the highest illiteracy rate (41 percent) in Sudan (8) The education system in the community faces many obstacles because of the on-going conflict, as some of the schools are destroyed, some are not functioning due to lack of teachers. Existing schools are underequipped or lack necessities like water and sanitation (8). Therefore access to education and knowledge is limited, including access to basic information and education about childbirth.

4.1.2 Structural factors

Structural factors will refer to gender and culture; from literature review, I will describe the use of the TBAs and barriers to using SBAs.

4.1.2.1 Gender

Gender is an important influencing factor linked with other factors, which contribute to the utilization of health services. Gender is considered an issue in Sudan in relation to women's empowerment and decision making for their health (38). The conflict in Darfur made this issue worse (38). The INGOs in West Darfur are trying to involve women in decision making for their needs in the camps (46). In relation to the decision for the place of delivery, women often are economically depended on their husband. Studies show that women are forced by their husband to use TBAs, or due to absence of the husband she cannot get permission to go to the health services centre. Lack of financial support from the head of the family also increased the use of TBAs, and although this study was from a stable country, still the gender issue can be applied to the context of West Darfur (61). The decision making process of women, to choose the place of delivery, the person assisting the delivery, is influenced not only by the husband but also by other family members like the women's mother, mother in law and other extended family members (62). Health care seeking decisions might also be made by the family member, without taking into consideration the women's preference,

no matter if the women is facing any complications or not, as was seen in Somalia (60). The community where decisions of TBAs are highly respected can lead to the TBA overruling women's and family's decisions in seeking health care (63).

Gender in Sudan can also be reflected in a domestic violence aspect; the SHHS of 2010 indicated that 47 percent of Sudanese females in the age between 15-49 years believed it is justifiable that the husband can beat his wife under "various circumstances" (19), such as not seeking permission for going out, food preparations or refusing sex. Eighty four percent of the women believe that it is right for the husband to beat his wife in West Darfur (19). The issue of domestic violence is related to women's education and knowledge about her rights (19). A health consequence for women is that injuries due to violence is one of the factors attributing to Maternal mortality (64).

4.1.2.2 Cultures

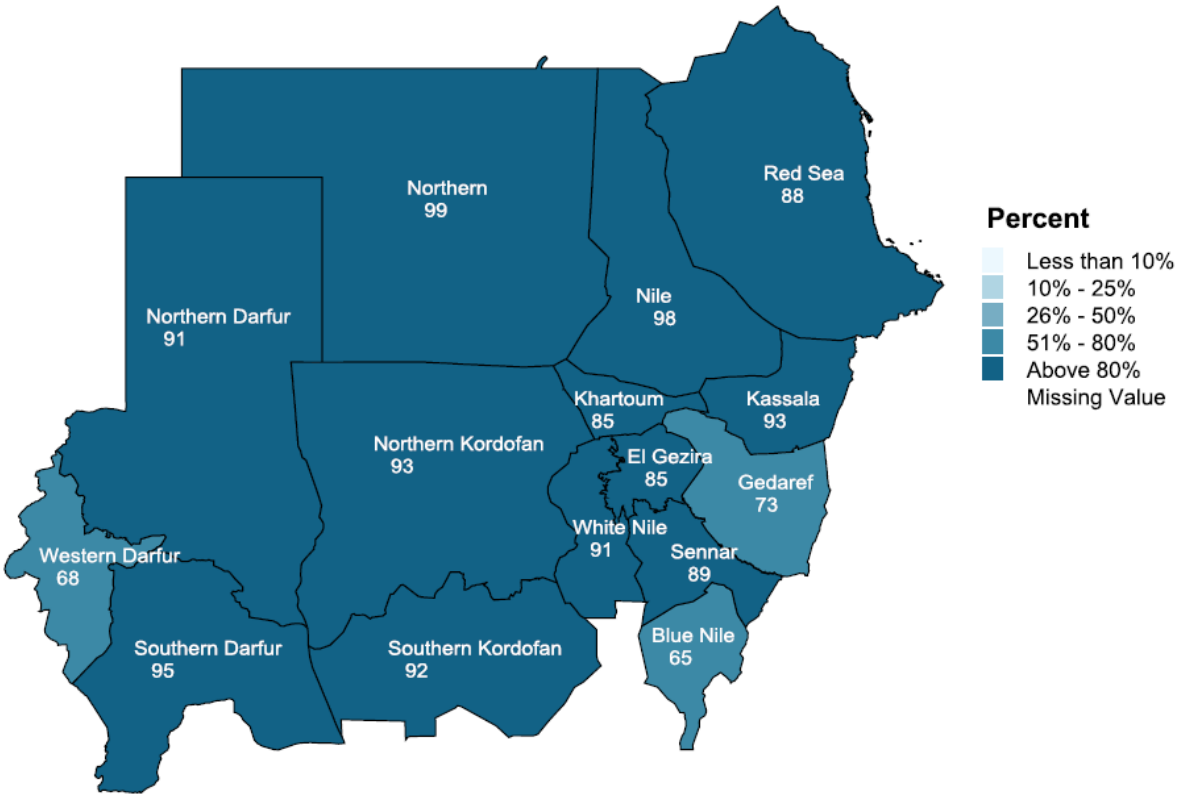
Harmful cultural practices are common among Sudanese women, leading to underutilization of the health services (65). Female Genital mutilations/cutting (FGM/FGC) is one of the harmful practices linked to culture, which is widely practiced in some regions of Sudan, particularly among some ethnic group and tribes in North and South Darfur (66). FGM prevalence rate in West Darfur among female 15-49 years is 68 percent. (See Figure 5 FGM/C geographical distributions in Sudan)(66). Some tribes that were not practicing FGM in the previous, began to exercise after their displacement, pushed by the indigenous populations (66).

The cultural belief is that FGM will enhance the sexual satisfaction for the husband (65), and women without FGMs are consider not suitable for marriage (66). The TBAs play a role in FGM before and after marriage but mainly after delivery. TBAs are considered experts in practising FGM and repair of the perineum after delivery, while the medical personnel prohibit it (66). However a qualitative study in Sudan demonstrated that the midwives are also involved in the re-infibulations "defined as secondary form of FGC performed on women who have had previously undergone infibulation or other severe forms of FGC. It is a re-narrowing of the vaginal introitus by cutting and re-suturing." (67). Such harmful practices are related to the FGM culture and why women prefer TBAs for delivery (65).

Culture is linked with ethnicity and religion, and together they are considered as factors influencing health beliefs, values and norms in relation to delivery and services utilization. Some ethnic groups may use the health services less, this could be due to other factors such as health belief, or cultural practices (51).

Another aspect of the culture in Sudan, from my experiences, is that after delivery, TBAs often call the husband to do Azan for the new baby. This can be done easily if the delivery care is performed at home, while at the health facilities, it's difficult to perform it due to lack of privacy in the ward and inappropriate in culture to mix male with female. The literature search does not specify this as a barrier in Sudan but in another context from a different culture (68). A culture of trust is present for a TBA as she is female and comes from the same ethnic group (in the context of West Darfur in particular), and speaks the same local language which the health providers may not. This was also found in literature from a different country (63).

Figure 5: Geographic distribution of FGM/C in Sudan (2010). (66)



4.1.3 Health Beliefs

Culture, health beliefs and religion are linked. Health beliefs among Sudanese women and lack of information of modern health services could be one of the factors that hamper the use of services offered by skilled health personnel (65). In West Darfur, like other places in Sudan, the disease aetiology, the treatment success and the place of the delivery cannot be seen isolated from religion. Utilization of the health services, and place of

labour and delivery are considered as "God's will" (65). As in most of sub-Saharan Africa, herbal medicine in Sudan is widely used among the educated and non-educated, and even among highly educated people (69). Women believe in herbal medicine provided by the TBAs. The herbal medicine is used for facilitating delivery and for the baby after delivery as a kind of protection against diseases (70)(71). Women who have delivery experience with TBAs believed that the TBAs can provide safety and can guarantee delivery at home despite the symptoms of complications (61). Research shows that women, who are in contact with TBAs from the early months of pregnancy, find that TBAs start to manipulate the uterus with their hand, claiming she is dilating the pathway of the uterus and vagina for the preparation of the delivery. In this study in the Massai region, this led women to believe they were safe to deliver by TBAs (70), although other associated factors cannot be ignored, as access likely contributed to this belief (70).

4.2 Enabling Factors

Enabling factors includes availability, accessibility, acceptability and the affordability for SBAs and TBAs.

4.2.1 Availability

Availability of the health services and health personnel is an important factor for women. Women use TBAs because it could be the "only available option''(47) as in Sudan country wide only 6 percent of primary health care facilities are functioning (14). Sudan's health system suffers from medical staff shortage and migration of staff from rural to urban area (16). In West Darfur, there are 8 hospitals, 37 Family health centres and 54 family units providing maternity services (8). The WHO estimated that the gaps in West Darfur for midwives (MWs) in all the State affected 33 percent of family health centres, while for the health units this was 54 percent (43).The FMoH tried to fill the gaps of the MWs by Village Midwives (VMWs, who were trained for one year), for specific contexts as nomads and remote areas. VMW according to the policy should be attached to health facilities in order to be under supervision and to perform maternal services (15) The new strategy for FMoH is to now upgrade VMWs to MWs, but this strategy is not implemented up today (27). Some gaps are filled because the Darfur conflict brought a number of international staff who provide medical care through INGOs and UN agencies (18).

The health services are provided inside the camps by NGOs, as in the case of the Morni camp, one of the camps in West Darfur. Here the maternal services were being provided by Save the Children and the United Nations Children's Fund (UNICEF) (43) (72). In the Morni camp the delivery care delivery is conducted in BEmOC facilities (72). My experience while working

Functions provided in emergency obstetric care (EmOC) facilities (30)

Basic EmOC

- Administer parenteral antibiotics
- Administer uterotonic drugs
- Administer parenteral anticonvulsants for pre-eclampsia and eclampsia
- Perform manual removal of placenta
- Perform removal of retained products
- Perform assisted vaginal delivery
- Perform basic neonatal resuscitation

Comprehensive EmOC: all of the function provided in basic EmOC, plus

- Perform surgery (caesarean section)
- Perform blood transfusion

in EmOC, managed by Save the children in Morni camp, showed that any complicated case that needed caesarean section, advance management or blood transfusion was referred to the Genina Hospital, which was 90km away and the road is accessible throughout the year.

Armed conflict in general leads to the disruption of the health facilities, and stealing of the equipment can make a health facility unavailable(40). The NGOs are trying to make mobile outreach clinics, for the people outside the camps, if the security permits it (43). Even with the availability of the health care services, many women residing in the camp still choose for assisted delivery by TBAs several times before deciding to give birth with SBAs (72), likely due to another influencing factor.

The camps concentrated in Elgenina locality of West Darfur are Ryad, Ardmat and Morni camps (see Figure 6 which shows camps in Chad and Sudan for refugees of the Darfur conflict). Most of the health services are concentrated in Elginina locality (see Figure 7: Coverage of health facilities West Darfur State in 2014). From my experience, the security can play role in the availability of the services in West Darfur as there are some areas with population settlement but without any camps, and where health services are not available. There are total eight hospitals in West Darfur: Three in Elginana locality, two in Kernik and each in Furbranga, Habila and Kulbs. Additional services like BEmOC is available in Morni. All these places hosted IDPs. Three localities (Serba, Bida, Jabel Moon) with settlement lacks hospital and have only family health centres (8). (See the Text Box for BEmOC services)

Figure 6: Camps in Chad and Sudan for refugees of the Darfur conflict (adapted) (73)

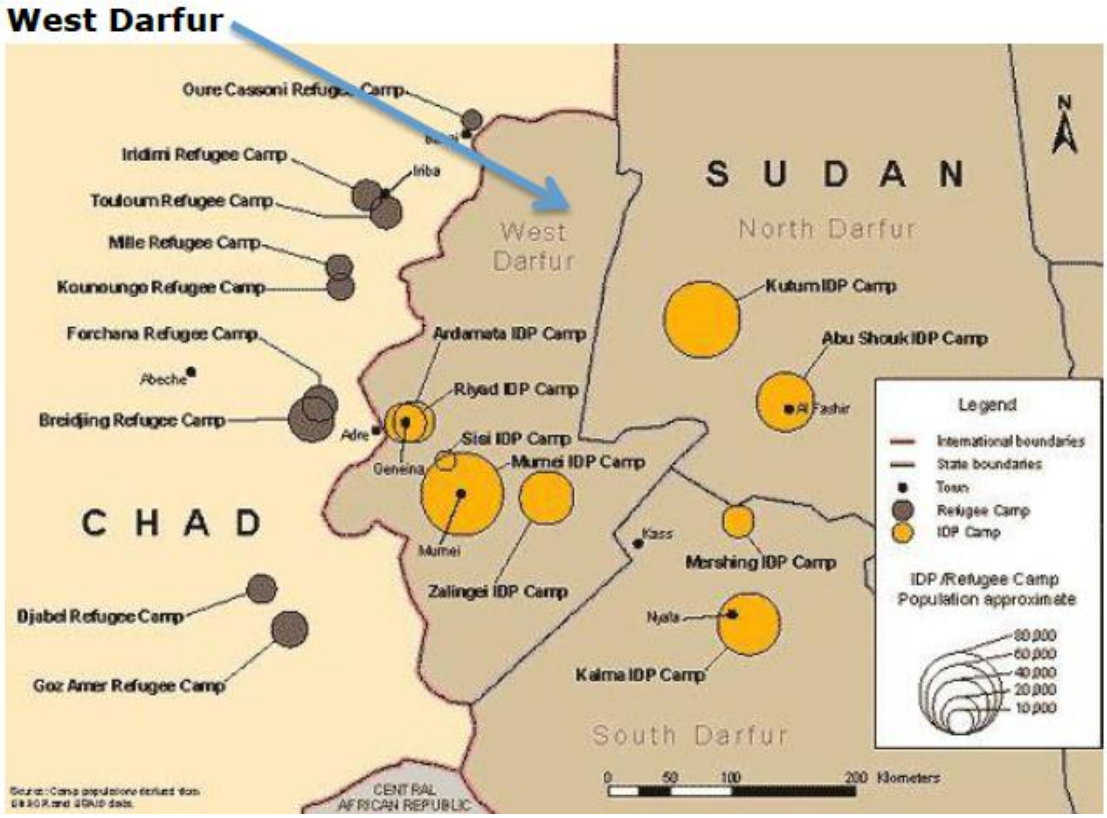
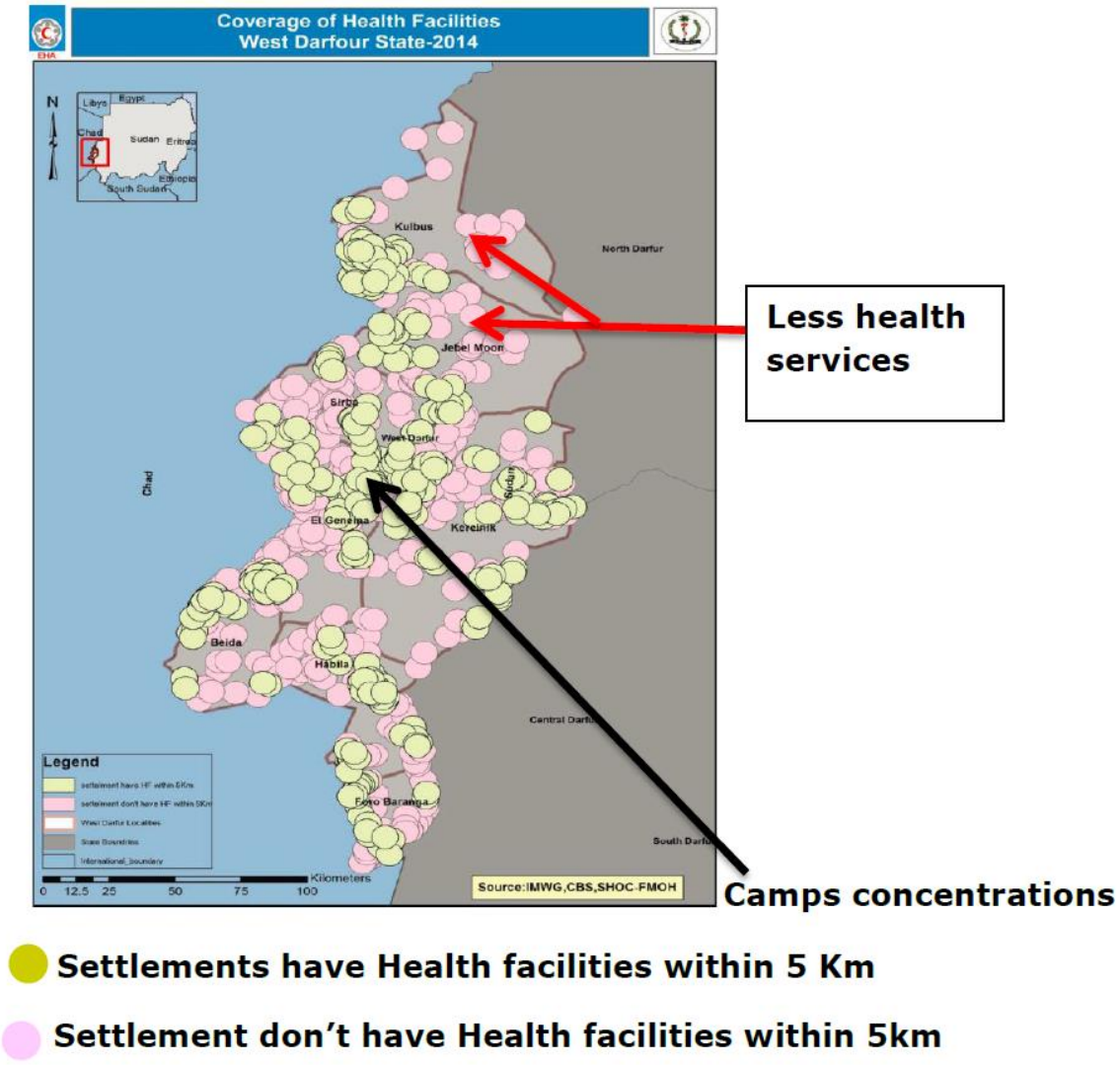


Figure 7: Coverage of health facilities West Darfur State 2014(9)



4.2.2 Accessibility

Access is one of the reasons that could be an influencing factor why women use TBAs and not the institutional delivery. The physical distance to the health facility could be a barrier, especially if the labour starts at night (63)(61). Transport is required to access the health facilities, which is limited because of absence of the public road transport as was also the case in Iraq (47). West Darfur lacks public transport especially in the rural areas due to the poor infrastructure caused by the conflict. Donkeys, camels and donkey carts are commonly used as transport and commercial transport is relatively expensive (27).

The situation in West Darfur is similar to any another Darfur state in terms of access. The population that is outside the camp may face geographical or/and security barriers to access available services, compared to those inside the camp, where the services are easily accessible and available and supported by the NGOs (74). The access problem to basic reproductive health services as in many conflict counties, will increase populations "reliance" on traditional services and potentially harmful practices (30).

4.2.3 Affordability

Financial affordability for transportation, care and food during hospital stay is one of the influencing factors contributing to that women approach TBAs for assistance (61)(50). The cost of TBAs is affordable; it can be presented in kind gifts like meat, soap, sorghum or small amounts of cash and some TBAs also offer "voluntary services" (60)(75).

Poverty is widely spread in Sudan, there are considerable disparities within Sudanese states (14). An estimated 90 percent of the population in West Darfur falls under the category of the "poor" or "extremely poor" (8). The conflict in Darfur affected income, trade and livelihood of the families. The nature of the conflict changed from a political war to isolated incidents of attacks and looting and insecurity in some of the areas (76). This resulted in dependency on humanitarian assistance for the IDPS and a low income for Darfur inhabitants. Despite the free health services, there are some areas controlled by the rebels, like Jabil Moon in the Northern area of the state, which are not accessible to humanitarian agencies (76). The government has imposed an embargo on fuel, trade and goods on Jabil Moon (76). Even though the women or the families know that the services provided are free, fuel is expensive so that a family with a low income cannot afford the transport to health services delivered in Government controlled areas.

4.2.4 Acceptability

The power of the TBAs in the communities is derived from their acceptance (77). They are more likely to have more power than the health personnel in the rural areas, as discussed earlier. It is believed by some that TBAs can perform deliveries as doctors (78). Women accept TBAs because they give psychological support, and they are kind towards the women (78). Additionally women might prefer the TBAs because the TBAs are from their community. Women find the home environment to be suitable for delivery in terms of privacy, quality along with the socio economic factors(63). One the factors that push women not to use the health personnel, is their behavioural attitude and perceived rudeness (48), compared with TBAs (62).

Midwives and nurses in Sudan are not accepted in the Sudanese communities. They are often perceived as inferior, even by educated people,

compared to other health professionals (27). This issue has persisted since the introduction of the Nursing and Midwifery school by the British. The Sudanese communities look down both professions upon and they are considered acceptable for only some ethnic groups. Midwife and Nursing jobs are claimed to have more contact with males and need working in night shifts without a husband or a family male member present, and suspicion about their morals is engrained the culture (79).

4.3 Need factors

Need factors will be defined from findings in literature about how women perceive their pregnancy and the care needed for delivery.

4.3.1 Perceived quality of care

The perceived quality of care is one of the factors influencing women to choose the place of delivery. The perceived quality of care is interlocked with the medical quality of the care (48). The quality of services "largely depends on (people's) own experiences with the health system and those of people they know" (58). Women perceive that only those who have obstetrical complications needs health services and therefore will require additional help by the MW. The complicated cases such as bleeding and a retained placenta will generally not be referred unless the TBA decides to do so (63). Despite the quality of care provided by TBAs, the role of the TBAs during the delivery, is not limited to performing delivery only, it also includes cleaning, cooking and the arrangement of the house and taking care of the children and washing (80). This task cannot be performed by the SBAs. Some TBAs returned after deliveries to take care of the baby and perform oil massages (80).

The studies show that important factors that push women not to use the health services, is the quality of care provided by the health personnel at the health facilities. This is explained by the harsh attitude and rude behaviour of the staff towards women in labour, such as demands not to express the labour pain in public (81). Some women perceive that the quality of cleanliness is low, and there is no privacy for using the toilet (48). In Nigeria it was found that although women preferred to deliver in the health facilities, due to the lack of staff and poor health education provided at the hospitals, women delivered at home against their own wish(51). Another study demonstrated the perceptions of the quality of care in relation to the number of doctors available at the health facilities. Other studies brought the availability of drugs and performing the caesarean section on time as a consideration of the quality of care (40). The knowledge of women regarding the quality of care available is interlinked with perceived quality of care, availability of services and decision-making capacity. Fawzia from Morni, a mother with five previous deliveries performed by TBAs, had her sixth

delivery in Morni camp in West Darfur at BEmOC. She said "Delivering in hospital is much better than delivering at home with a traditional birth attendant. The services provided in the centre are good and the midwives took care of me. If Allah allows me to conceive again, I will definitely deliver at this hospital. I know that my baby and I will be in very good hands." (82). The behaviour of women to seek care could therefore also be attributed to other predisposing factors. Women residing in the camp as the case mentioned, are unlikely to have a problem for access, as the services are available.

4.3.2 Perceived benefit

The perceived benefit refers to the benefits women believe they will have from either delivering with SBAs or TBAs. This perception is not only influenced by the women's knowledge of the danger signs and complications, but also by enabling factors (availability, accessibility, affordability, acceptability) which might be affecting the women decision (48). Women claim that TBAs have enough experience to perform delivery if there are no complications, and that the complications, known by TBAs, are if the labour exceeds more than 24 hours (35). Furthermore women prefer TBAs, because the delivery is at home which is a suitable environment for the pregnant women and she feels she has more privacy (83). Women also see benefit from the TBAs because they are from the same community, which means that the TBAs know the culture better and the values and the traditions of the women. TBAs can communicate better in their local language. The TBAs will be available for the women throughout the labour, ensuring "good" nutrition, offering drinks that are claimed to benefit the baby (84), services that are not available from health facilities.

5 Potential role of TBAs in reducing maternal mortality or increase utilizations of SBAs

This chapter reviews evidence on the potential role of TBAs in order to see the best strategies for the west Darfur context.

5.1 Training

5.1.1 Historical attitudes towards TBAs

A trained TBA is "defined as a TBA who has received a short course of formal training through the modern health sector to upgrade her skills" (1). The training of TBAs has been debated over the last decade between supporters and opponents. There are many viewpoints amongst different researchers and countries about whether the training of TBAs can reduce maternal mortality, while their cost effectiveness and efficiency is also questioned (85)(86).

TBA training started in the beginning of 1920 but was not widespread at that time (62). In 1970, decision makers recognized the potential role of TBAs to reduce the maternal mortality rate and to instruct with the family planning. At this time, the first guideline was developed for training TBAs. In 1978, the Alma Ata declarations clearly identified the role of the TBAs as an important part of the society. It would be ideal to involve TBAs in primary health care and provide training "accordingly" (87)(88)(62). The WHO from the 1970s to 1980s supported active training of TBAs, and some countries integrated the TBAs in their health system and developed a special training curriculum (62). Up to 1990, the TBA training focus was the reduction of maternal mortality, ANC and postnatal care improvement. This included training on the prevention of infections and post-partum haemorrhage as these were the two leading causes of deaths in pregnancy and childbirth. However, in 1997 the TBAs training fund was cut as the new strategy focused on skilled birth attendants (4).

The change in focus from TBAs to SBAs had several reasons. The TBAs training guidelines were criticised because the content of the training was a "simplified version of the professional midwives'' (62)(75). Additionally most training guidelines were a direct translation from the WHO guidelines, which did not take into consideration countries' socio economic and cultural contexts (62)(75). The United Nation Fund of Populations (UNFPA) also criticized the TBAs training programmes because of the lack of supervision, inadequate equipment and drug supply to support TBAs (89)(75), although there were different outcomes for TBA programmes, which varied from one

country to another (62) (90). The WHO argued that the TBA training strategies were contributing to the delay by countries to achieve their target of SBAs (4).

5.1.2 Training to perform delivery/increasing knowledge of TBAs

TBA training programmes have met with mixed reviews. In Malawi, due to the severe shortage of midwifery staff, the government started to train TBAs to perform a clean delivery, to recognize the danger sign and to perform ANC. TBAs were provided with clean delivery kits in order to reduce infections and thus maternal mortality. A study conducted in 2008 evaluated the role of trained TBAs and the care provided in reduction of the maternal mortality. It also aimed to assess the utilization of the TBAs by women and evaluated the knowledge of TBAs on delivery and obstetrical complications, danger signs and symptoms (91).

The study showed quite significant good knowledge among trained TBAs on the danger sign; however some issues were identified during the assisting of deliveries. It was observed that some of the TBAs were overconfident; they used a herbal medicine which could induce an early rupture of the membrane and could also rupture the uterus, aggravating the situation of the women and baby. The use of the herb could also result in contraction failure, causing maternal and foetal distress. The study concluded that the direct impact of training in the reduction of maternal mortality could be seen, as it was unlikely that the TBAs reported the deaths that occurred under their care (91).

Wilson and colleagues conducted a systematic review and meta-analysis to evaluate the outcome of the training and support to TBAs in reducing maternal and perinatal mortality(92). The study was focused on morbidity in pregnancy such as bleeding, infection and pregnancy induced hypertension and reviewed different roles for TBAs. They found that successful training of TBAs required support and supply by the formal health system. They also concluded that training and support of TBAs was not contributing to the reduction of maternal mortality, but did contribute to improved prenatal and neonatal care in developing countries (92). The use of maternal mortality indicators to evaluate training of the TBAs outcome was highly criticised because of the absence of proper tools to measure maternal deaths (62).

Another meta-analysis showed that training of TBAs contributed to the improved ‘knowledge’, ‘attitude’, ‘behaviour’ and ‘advice’ compared to the untrained TBAs (90). Additionally to improved behaviour and knowledge, TBA training improved the pregnancy outcomes and reduced harmful practices (93)(90).

Studies from eastern Sudan show that existing TBAs were not aware of the danger signs for pregnancy and potential complications. They did not recognize the place and time when to refer to the hospital, and they used unsterilized materials. Additionally TBAs had a very low knowledge about HIV. The research suggested that TBAs must be trained to improve their knowledge and behaviour and attitude (94).

United States Agency for International Development (USAID) in Liberia, provided clean delivery kit to the TBAs, after a short training. USAID stated that the project increased referral and reduced maternal mortality (95). In Bangladesh, one group of TBAs were given clean delivery kits and educated on preventing post-partum infection and outcomes compared to a group of untrained TBAs. Even though the trained TBAs performed better in hygiene practices, results showed they could reduce the prevalence of infection but not maternal mortality (96).

In emergency situations, NGOs often use some members of the IDPs or refugees as CHWs (97). Systematic reviews in different countries show limited positive impact from training TBAs as CHWs. Among refugees in Myanmar, CHWs and TBAs were trained in treatment and recognition of the danger sign and the mild diseases related to pregnancy. The result showed that CHWs and TBAs are able to diagnose and treat mild diseases according to MSF guideline (97).

5.2 Financial incentive for TBAs

Studies from Pakistan and Kenya revealed that providing financial incentives to TBAs for each woman she refers to the health facilities will improve utilizations of skilled birth attendants (98). In Sierra Leone, Concern Worldwide claimed that stopping the user fees, to provide incentives to TBAs, might lead to discontinuation of referrals by TBAs (99). In contrast in Somaliland, TBAs were receiving five US dollars for each referral, which was cut after a certain period, but the stopping of the incentive did not affect the referral. TBAs said "After the incentives stopped, we didn't stop working with the MCH centre, still we work with the MCH centre and we don't want to stop. The program will not stay with us forever, we know that but they teach us how to work with the community and they teach us a very good system which saves us ourselves and saves the mother." (100).

The financial incentive is not the only motivations for the TBAs to encourage referral, it requires community awareness, respect from health personnel, transport as prescribed in the integration in the health system (98)(99)(100).

5.3 Options to integrate TBAs in the health system

SBAs is currently the key strategy to reduce the maternal mortality by managing the complications and performing safe delivery (48). The fact stays that TBAs are still widely used by women. This makes us think about how to link between TBAs and SBAs. One systematic review mentioned different mechanisms on how to approach this: "training and supervision of TBAs; collaboration skills for health workers; inclusion of TBAs in facility-based activities; systems for communication between TBAs and SBAs; and defining roles for TBAs and SBAs" (101). The effectiveness of these mechanisms depends on the health system functioning, the shortage or availability of staff, and supervision in order to ensure the successful integration of the TBAs in the health system (101). TBAs can contribute to referral and to improving acceptance of care by SBAs.

5.3.1 Referral

Timely referral of pregnant women is crucial in reduction of the MMR (102). The referral aspect should be seen separate from the training. The referral of pregnant women during labour has 2 dimensions: timely decision making and ensuring availability of transport/logistical means (103). The success of the referral depends on the availability of a strong and effective referral system, irrespective of whether the TBAs are trained or untrained (102). The effectiveness of referral also depends on improving the means of communication between SBAs and the TBAs who refer complicated obstetrical cases to the health facilities by Radio. Improving this communication led to good outcomes in Uganda (104)(101). Improve the communications tools can also increase referral if the transport system and quality of the health care provided are both adequate. Additionally, if the communities are aware about the importance of maternal health and collaborate to facilitate the referral process, referral processes are also more successful (60)(104)(101)(105).

In Burma, which is similar to the West Darfur situation in terms of security, diversity of ethnic groups, weak health systems and sexual and reproductive health violations, a pilot project was launched aiming to increase access to reproductive health services for IDPs and refugees in conflict areas. The health workers, from local organizations received practical training in basic emergency obstetric care. Then these health workers first trained maternal health workers, second local health workers and a third TBAs (106). The objectives of the Burma project were to increase access to reproductive care and to implement task shifting. Over a period of time, skilled birth attendants increased tenfold. Successful task shifting and referral functions resulted from community involvement in collaboration with health personnel.

The project showed an increased use of modern family planning, antenatal and post-natal care (107).

5.3.2 Acceptance of the TBAs role by providers

The interpersonal skills of the health providers such as their negative attitude towards TBAs has result in an unwillingness of TBAs to refer women for care (101). However, by allowing TBAs to accompany the pregnant women and accept the local culture during delivery, increased referral to SBAs has taken place (68)(101). It was shown that by promoting positive acceptance of the TBAs by the staff at health facilities, and giving TBAs a defined task during labour to support women, has contributed to increased utilization of SBAs (101). A qualitative study from Zimbabwe quoted one TBA who neglected to refer women due to bad behaviour of health personal as saying "I know we were told to bring them to the clinic. But I do not think it helps, because you go there, they start asking you questions on why you delivered the women, why you didn't bring her before delivery. It becomes a court of enquiry. I do not understand why they do not leave it to the women to decide. Some women will be comfortable with us, the old ladies; because they are used to us and we treat them better than nurses." (78). The acceptance role of the TBAs by the staff will reduce the gaps between the TBAs and providers and release this kind of tension (101). The option to accept a clear role of the TBAs and integrating them into the health system could be one of the suitable options for the West Darfur context.

6 Strategies for improved utilization of Skilled Birth Attendants

This chapter describes strategies to improve the utilization of skilled birth attendants in a conflict-affected area. The strategies in this chapter will address populations in IDPs camps and outside the camp and in remote areas in West Darfur.

6.1 NGO Contracts

Countries that experience conflict in sub-Saharan Africa report high maternal mortality and a shortage of SBAs (40). This high maternal mortality could be attributed to the low number of SBAs and health facilities (40). Availability of SBAs and a full-functioning health system can save the lives of the people in general and outside the camp in contexts of Darfur in particular (101). West Darfur is an NGO-specific context, where most operations and the highest budgets are attributed to NGOs working in the camps. Outside the camps, SMoH is still responsible for some delivery services, although even these are primarily supported by NGOs technically and financially in all of West Darfur (43). Overall, the development of the health care system has been neglected in West Darfur except for a small effort done by some of the INGOs and UN (108).

Afghanistan faced a similar conflict to Darfur for a long time, which resulted in poor health service conditions with a high maternal mortality in 2002. In 2003, the Afghanistan Government made a rapid implementation of a PHC structure possible by contracting NGOs to provide health services under conditions that allowed them to work in relative autonomy. Consequently, in less than a decade, the service utilization rate increased by 400 percent for outpatients and by 136 percent for primary health. This achievement also resulted in decline of maternal mortality. The Ministry of Public Health's commitment and the collaborations with NGOs made this achievement possible even with violence situations (109).

In Sudan, the government is advocating for IDPs in the camps to return back to their place of origin. Some of IDPs retuned back to their original home for short period and then returned to the camps. IDPs not staying in their original home is due to a lack of basic services including the health, disputed land between the farmer and Nomads, and lack of security in some of the areas(29). Different opportunities to address these issues exist for the government; Qatar and other donors made a financial fund available, the UN peacekeepers are in West Darfur and there is a good presence of INGOs. By taking advantage of these opportunities and contracting out health services, the government could achieve conditions for IDPs to return home by once more ensuring that basic services are available in remote settings.

6.2 Maternity waiting home

Since most of the NGOs in West Darfur provide Mobile clinics, some of the areas outside the camps in West Darfur have access to ANC services when security permits(29), but access to delivery care outside the camps is limited. In order to increase access for women outside the camps to SBAs for delivery services, one strategy is to provide maternity waiting homes (MWH). MWH "are residential facilities, located near a qualified medical facility, where women defined as "high risk" during ANC check-ups can await their delivery and be transferred to a nearby medical facility shortly before delivery, or earlier, should complications arise."(110). In the case of West Darfur, MWHs could be located closer to the facilities run by the NGOs inside the camps or in urban areas. MWHs show good outcomes for removing access barriers to health care, which ultimately reduced the maternal mortality in different conflict-affected countries such as Sierra Leone.(111) (110).

6.3 TBAs as health educators

With their influence in communities, TBAs can block women from seeking health care services. Increasing the level of health education, removing cultural beliefs and increasing the knowledge about risk factors for pregnancy and delivery in communities will ultimately increase the utilization of SBAs (112) To tackle this factor the women, their husbands and the communities need to be involved, and in order to achieve this, TBAs can be recruited as health educators along with additional members of the communities (113). A health education package can include information about hygienic practices, but also address the issue of the women's rights related to gender and norms (30). It should advocate for delivery care in the health facilities, and increase awareness about danger signs in pregnancy (113)(111).

There are some promising efforts on-going by NGOs and UN agencies in the area of raising the awareness and increasing knowledge about gender and importance of seeking care (37). The Royal tropical institute (KIT) has a project to increase communities' knowledge about the importance of using available services through a family-centric approach. It focuses on raising the awareness about gender and norms of the husband, hence the husband is involved in the decision making for women who seek health care (114).

Addressing these issues will take time as Anderson mentioned (31). Taking into consideration the duration of the conflict and the delays it can lead to, any progress made now could be "added value" (111) (30).

7 Discussion

This chapter will be two parts. The first part reflects upon the importance of the findings. The second part proposes strategies to engage the TBAs and increase women's utilization of SBAs.

7.1 TBAs or BAs? A complex decision

The choice for women between TBAs and SBAs in West Darfur currently results in a low use of existing maternity services. Women's decision making is influenced by multiple predisposing factors such as age, education, gender norms and culture, all of which are not easily changed. Currently, women seem to accept and practice whatever their community perceives best without questioning the impact on their health. In West Darfur this reliance on tradition is also reflected in how the tribes are organizing themselves into units based on tribal distinctions or their villages/areas of origin both inside and outside the camps; individuals generally conform to collective behavioural patterns largely determined by their tribal chiefs (Sheikhs). In loyalty to the tribe women find themselves obliged to follow potentially harmful practices. Only in case of pregnancy in an unmarried woman will use of the health services be preferable, but even then, because of the fear of punishment and stigma she could face by health centre staff, she may still change her decision and approach the TBAs as there is no alternative.

7.2 An enabling environment for women to use the health services

Enabling access to skilled care for pregnant women in West Darfur needs to take into account that there are two types of populations: those hosted in the camp and those outside the camps. Only the 41 percent of the population residing in the camps and those in the urban areas have access to health care provided by NGOs. Those women living in remote areas generally face the major problems and areas controlled by the rebels, as availability, accessibility and affordability of SBAs in these contexts is limited. The health facilities outside of the camp often lack staff and drugs. Reaching nearby health facilities for delivery is often difficult or unaffordable. This makes TBAs the only option for these women and will lead to low utilization of SBAs especially in these areas.

Inside the camps access to SBAs is relatively easy, and improved quality of care should increase the utilization of maternity services to higher levels. Quality of care in the camps in West Darfur is reflected by the reports of the staff's negative attitude or language. The language used by women in order to express their problems poses further barriers in communication with the health provider. Although NGOs such as MSF are trying to make a balance in

the staff ethnic groups represented in their health facilities to make the services more neutral, TBAs could possibly be actors who bring added value to women's care by facilitating trust and communication. This might be highly applicable in the context of West Darfur, where there are many ethnic groups and tribes

7.3 Strategies

This section explores strategies applicable for West Darfur and reflections on TBA training. There are four feasible strategies for West Darfur derived from literature which could be used for IDPs and populations outside the camps.

7.3.1 NGOs contracting

The government's commitment to the contracting out process and the relative autonomy given to the (I)NGOs to provide health services, as seen in the case of Afghanistan, were key factors in increasing the utilization of health services there. In Sudan, however, there is a lack of government trust towards INGOs. To apply the contracting out experience of Afghanistan in West Darfur can therefore be challenging. It may need close collaboration between the rebels who control access, NGOs who provide the services, and the government. This process of collaborating needs long-term peace building, because the additional constraint of the current armed conflict leads to a poor local economy and contributes to a brain drain of skilled health staff. It also seems to make the government "short-sighted and opportunistic" (115), as they know that the aid assistance cannot last forever. Local recruitment and the provision of motivations could improve staff retention. The process of integrating midwives and village midwives in the health system, in line with the existing policy to do so, should be accelerated. All of these issues can be taken into account when contracts with NGOs are established.

Contracting out of health services as in Afghanistan is a feasible option to increase the availability of maternal health in particular and health services in general. The NGOs currently working mostly in the camps have experience in the Darfur context, have gained acceptance from different parties and are considered to be neutral. NGO involvement could therefore contribute to a better coverage and distribution for the health services. Given that the war in Darfur potentially started because the rebels felt they were marginalized by the central government for basic service compare to the other states in Sudan, contracting to NGOs could also address the root cause of the war, as the gaps could be filled by a perceived neutral party, and lead to fairly distributed services. In order to succeed, the strategy needs to be long term and will require buy-in from all conflict parties, peace building and a comprehensive approach.

7.3.2 Maternity waiting home

Contracting out is a longer-term strategy. Maternal waiting areas could be a suitable short-term strategy to reduce MMR for the population outside the camps as it facilitates utilization of SBAs. The challenge for maternity waiting homes in the context of West Darfur is whether different communities from the rural areas, the camps and the urban areas accept each other. Beyond building the structure, the essential negotiations that need to take place might have a positive impact in building relations between different ethnicities outside and inside the camps. In the context of West Darfur it is important to involve the communities from all sides of the conflict, as well as the IDPS and remote villages. Currently the people outside the camps use the services in the camps with some difficulties of access because of the distances, but this could partially be addressed by allowing women to travel at a time before delivery that is convenient to them.

7.3.3 Integrations of TBAs in the health system

In essence, the current situation indicates that TBAs remain as an integral part of delivery care. Integration of TBAs into the current health system could be a promising practice suitable for West Darfur partially because there are such strong cultural tribes and different languages. Integration of TBAs in health facilities can happen by allowing them to accompany women in labour and attend the deliveries. This will make optimal use of the TBAs social power and might release the tension between communities and health care providers. It will hopefully also improve mutual trust.

Engaging TBAs in a referral from villages and camps to health facilities can have a successful outcome only if the TBAs are made aware of the important maternal complications and causes of mortality. In addition to training of the TBAs, successful referral also requires a means for transport. In the context of the camps, transport to the health facilities is not seen as a problem for IDPs. Outside the camps, the communities need to be engaged. Providing incentives for referral as in Pakistan and Kenya for TABs is not a necessary part of integration. Fund interruptions can lead to a lack of sustainability, and provision of health services in Darfur is currently quite expensive.

7.3.4 TBAs as health educators

Building on the historical leadership role of women in Darfur, INGOs are trying to promote women's leadership in the decision making for humanitarian assistance. As the TBAs are respected in the communities they should be involved in these processes. It is worthwhile to involve them in a health education role, not only towards the communities, but also towards

the "leadership". Engaging the TBAs as health educators at both a community and a leadership level could not only contribute to the increase of the referrals, but could also lead to community support to reduce harmful practices among women such as early marriage and FGM if TBAs can be educated on the risks of these practices. This builds on the current TBAs position in their communities as leaders. Such an approach is also in line with the WHO strategy to involve the communities and to increase the awareness among community members on the importance of empowering women in order to reduce MR (111)(116).

7.4 Reflections on TBAs Training

There is very little evidence to support the fact that training TBAs to perform delivery can reduce maternal mortality. TBA training in the context of Darfur where the health system is fragile could potentially cause more harm for women than benefit. Providing TBAs training on delivery skills risks encouraging them to perform deliveries at home. Especially as timely referral for the populations outside the camps may not always be possible, this is a practice to be discouraged in this context.

7.5 Reflections on the conceptual framework

The Andersons conceptual framework allows evaluating the utilizations of the formal health services. The limitations for the adapted model used is as the MMR outcome has many influencing factors, hence to link all these factors such as antenatal care will dilute the topic. Therefore the focus of the study was in utilizations as its critical factor to reduce MMR.

7.6 Study limitations

This study is a literature review and not based on primary data collection. There is limited literature in West Darfur so literature from a similar context of low-income countries was used. The literature used from other countries/settings generally have a different context than West Darfur, as some of the extracted literature concerns rural areas and not in particular conflict areas or IDPs. I have also used my previous experience in Darfur and other African and Asian countries, which could result in some bias in this study

8 Conclusion and recommendations

This chapter gives a conclusion of major factors for women's choice of TBAs instead of skilled birth attendants, recommended strategies for West Darfur

8.1 Conclusion

The influencing factors for women to choose between the skilled birth attendants and traditional birth attendants are education, culture, and gender roles in relation to decision-making. The position of the traditional birth attendant as leader in their community, the acceptance of the services she provides play an imperative role in "blocking" women's access to skilled health care during delivery. Populations outside of the camps in West Darfur are also more affected by availability, accessibility, acceptability and affordability of the services.

Promoting the TBAs as health educators and integrating them in the health facilities by allowing them to accompany the women during labour, as well as involving them in the referral to skilled care will increase the utilization of SBAs. Community advocacy and awareness to address cultural issues, gender and norms will add value. A Maternity waiting area for the pregnant women will be one of the short-term solutions to increase the utilization for people outside the camps. Contracting NGOs to build the health system outside the camp can be a long-term solution for health system development.

8.2 Recommendations

Policy level

- The government should accelerate the process of upgrading VMW and integrate them in the health system.
- Government should develop a policy to prevent early marriage
- Government should prohibit NGOs to train TBAs to perform deliveries.
- Governments should develop a comprehensive long-term plan to establish accessible maternity services in remote areas, and consider contracting out of service delivery to NGOs as an approach to achieve this.

Intervention level and service delivery

- NGOs and the State ministry of health should integrate the TBAs by giving them access to accompany pregnant women during delivery in the health facilities.
- SMoH and NGOs should create maternity waiting homes close to the facilities as a short-term solution.

- Government and NGOs should work closely together to build and support maternal health facilities outside the camps and settlement areas.

Individual and community level

- Raise the awareness on prevention of maternal mortality among both the IDP and the people outside the camp by health education and address women's needs and gender issue and related harmful practices
- Include the TBAs as health educators for both communities
- Engage the communities in awareness campaigns about safe delivery.

9 References

1. WHO/UNFP/UNICEF. Traditional Birth Attendants: a joint WHO/UNFPA/UNICEF statement. World Health Organization. Geneva; 1992. p. 1–18.
2. IOM. Key Migration Terms | [Internet]. International Organization for Migration. 2015 [cited 2015 Aug 1]. Available from: http://www.iom.int/key-migration-terms
3. WHO. Trends in maternal mortality: 1990 to 2013. Estimates by WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division [Internet]. Geneva; 2014. Available from: http://apps.who.int/iris/bitstream/10665/112697/1/WHO_RHR_14.13_eng.pdf?ua=1
4. WHO. Making pregnancy safer: the critical role of the skilled attendant. A joint statement by WHO, ICM and FIGO [Internet]. World Health Organization. Geneva; 2004. Available from: http://whqlibdoc.who.int/publications/2004/9241591692.pdf
5. UNDP. About Sudan. [Internet]. United Nations Development Programme. 2013 [cited 2015 May 6]. Available from: http://www.sd.undp.org/content/sudan/en/home/countryinfo/
6. Sudan.Central Bureau of Statistics.Sudan in Figures 2008-2012. Khartoum-Sudan; 2013.
7. Sudan.Interim National Constitution of the Republic of the Sudan. Khartoum-Sudan; 2005.
8. Sudan.West Darfur State Ministry of Health |West Darfur state Emergency Profile. Elgenina -West Darfur, Sudan; 2014.
9. UN. Sudan map [Internet]. UNITED NATIONS,Department of Field Support Cartographic Section. 2012. Available from: http://www.un.org/Depts/Cartographic/map/profile/sudan.pdf
10. Central Bureau of Statistics.The total population expected to States for the period 2009-2018. [Internet]. Khartoum -Sudan; 2010. Available from: http://www.cbs.gov.sd/en/files.php?id=7#&panel1-2
11. WHO EMRO | West Darfur Programmes, Sudan [Internet]. [cited 2015 May 14]. Available from: http://www.emro.who.int/sdn/programmes/eha-westdarfur.html
12. Wikipedia.Languages of Sudan - [Internet]. The free encyclopedia. [cited 2015 May 7]. Available from: http://en.wikipedia.org/wiki/Languages_of_Sudan
13. Sudan.Federal Ministry of Health. National Health Policy,. Khartoum-Sudan; 2007.
14. Sudan. Federal Ministry of Health.Health System Financing Review Report. Khartoum-Sudan; 2014.
15. Sudan. Federal Ministry of Health. Reproductive Health Policy 2010. Khartoum-Sudan; 2010.
16. Sudan Federal Ministry of Health. National Human Resources for Health Strategic Plan for Sudan ,2012-2016. Khartoum-Sudan; 2012.

17. UNV. UN Volunteers saving lives in Darfur [Internet]. United Nations Volunteers. [cited 2015 Aug 8]. Available from: http://www.unv.org/en/what-we-do/countries-and-territories/sudan/doc/un-volunteers-saving-lives.html
18. Sudan Central Bureau of Statistics. Sudan National Baseline Household Survey 2009.North Sudan - Tabulation Report. Khartoum-Sudan; 2009.
19. Sudan. Federal Ministry of Health. Sudan Household Health Survey-Round II, National Report 2010. Khartoum-Sudan; 2012.
20. WHO, UNICEF, UNFPA, World Bank, United Nations Population Division.| Trends in Maternal Mortality: 1990 to 2013 [Internet]. World Health Organization; Available from: http://www.who.int/reproductivehealth/publications/monitoring/maternal-mortality-2013/en/
21. WHO | Maternal mortality [Internet]. World Health Organization; 2015 [cited 2015 May 10]. Available from: http://www.who.int/mediacentre/factsheets/fs348/en/
22. WHO | Maternal mortality country profiles [Internet]. World Health Organization; 2015 [cited 2015 Mar 5]. Available from: http://www.who.int/gho/maternal_health/countries/en/
23. Say L, Chou D, Gemmill A, Tunçalp Ö, Moller A-B, Daniels J, et al. Global causes of maternal death: a WHO systematic analysis. Lancet Glob Heal. 2014 Jun;2(6):e323–33.
24. Kruske S, Barclay L. Effect of shifting policies on traditional birth attendant training. J Midwifery Womens Health. 2004 Jan;49(4):306–11.
25. WHO. Revised 1990 estimates of maternal mortality: A new approach by WHO and UNICEF. World Health Organization. Geneva; 1996.
26. UN. Official United Nations Documents for the Twenty-first Special Session of the General Assembly. New York; 1999.
27. Sudan. UNFPA|Assessment of the Effective Deployment , Retention and Performance of the Graduate Village Midwives (VMWs) 2008-2010. Khartoum -Sudan; 2011.
28. Sincox AK. A price too high to pay. Mich Nurse. 2014;79(5):13–5.
29. DJAM. Darfur Joint Assessment Mission (DJAM): Return, Reintegration, and Urbanisation Situational Analysis [Internet]. International Donor Conference for Reconstruction and Development in Darfur. 2012. Available from: http://www.darfurconference.com/sites/default/files/files/5 - Thematic Working Group Returns, Reintegration and Urbanisation Report(1).pdf
30. Black BO, Bouanchaud PA, Bignall JK, Simpson E, Gupta M. Reproductive health during conflict. Obstet Gynaecol. 2014;16(3):153–60.
31. Andersen R. Revisiting the Behavioral Model of Access to Medical Care: Does It Matter?*. J Health Soc Behav. 1995;36(March):1–10.
32. Ardenne-van der Hoeven, A.M.A. van FNI. Explaining Darfur: Four Lectures on the Ongoing Genocide. 18th ed. Amsterdam : Vossiuspers; 2006. 60 p.
33. International criminal court. ICC - Situation in Darfur, Sudan [Internet]. 2005. [cited 2015 Jul 22]. Available from: http://www.icc-cpi.int/en_menus/icc/situations and cases/situations/situation icc 0205/Pages/situation icc-0205.aspx
34. UN. UN News - UN mission in Darfur "seriously concerned" by escalating tensions between tribes [Internet]. United Nations-DPI/NMD - UN News

Service Section; 2015 [cited 2015 Jul 15]. Available from: http://www.un.org/apps/news/story.asp?NewsID=50824#.VaaHHfmqqko
35. UN. Sudan: humanitarian situation in Darfur [Internet]. UN News. United Nations-DPI/NMD - UN News Service Section; 2004 [cited 2015 Jul 17]. Available from: http://www.un.org/apps/news/story.asp?NewsID=10615&Cr=sudan&Cr1=#.Valdv_mqqko
36. OCHA. Syria: 6 facts at the start of the 4th year of Syria's conflict | OCHA [Internet]. 2014 [cited 2015 Jul 17]. Available from: http://www.unocha.org/top-stories/all-stories/syria-6-facts-start-4th-year-syria%E2%80%99s-conflict
37. ReliefWeb. Enhancing the Protection of Women and Girls in Darfur - Sudan | [Internet]. Reliefweb. 2015 [cited 2015 Aug 7]. Available from: http://reliefweb.int/report/sudan/enhancing-protection-women-and-girls-darfur
38. Elnagar S, Ati HA, Eltigani L. An Update of Reproductive Health , Gender , Population and Development Situation in Sudan , 2011. Khartoum -Sudan; 2011.
39. UN. Sudan (Darfur) [Internet]. Office of the Special Representative of the Secretary-General on Sexual Violence in Conflict. [cited 2015 Jul 21]. Available from: http://www.un.org/sexualviolenceinconflict/countries/sudan-darfur/
40. Chi PC, Bulage P, Urdal H, Sundby J. Perceptions of the effects of armed conflict on maternal and reproductive health services and outcomes in Burundi and Northern Uganda: a qualitative study. BMC Int Health Hum Rights. 2015 Jan;15(1):7.
41. Black BO, Bouanchaud PA, Bignall JK, Simpson E, Gupta M. Reproductive health during conflict. Obstet Gynaecol. 2014 Jul 4;16(3):153–60.
42. Mohamed E, Boctor M. Contributing factors of vesico-vaginal fistula (VVF) among fistula patients in Dr. Abbo's National Fistula & Urogynecology Centre-Khartoum 2008. Sudan J public Heal. 2009;4(2):259–64.
43. WHO. [HeRAMS] Health Resources Availability Mapping System Greater Darfur. Khartoum -Sudan; 2014.
44. Sudan | WFP | United Nations World Food Programme - Fighting Hunger Worldwide [Internet]. WFP. 2009 [cited 2015 Aug 1]. Available from: https://www.wfp.org/countries/Sudan/News/Hunger-in-the-news?page=21
45. Ferris E. Internally Displaced Persons in Darfur: Taking Stock. Brookings-Bern Project on Internal Displacement. 2008.
46. De la Puente D. Women's leadership in camps for internally displaced people in Darfur, Western Sudan. Community Dev J. 2011;46(3):365–77.
47. Siziya S, Muula AS, Rudatsikira E. Socio-economic factors associated with delivery assisted by traditional birth attendants in Iraq, 2000. BMC Int Health Hum Rights. 2009;9:7.
48. Gabrysch S, Campbell OMR. Still too far to walk: literature review of the determinants of delivery service use. BMC Pregnancy Childbirth. 2009 Jan;9(1):34.
49. Magadi MA, Agwanda AO, Obare FO. A comparative analysis of the use of maternal health services between teenagers and older mothers in sub-

Saharan Africa: evidence from Demographic and Health Surveys (DHS). Soc Sci Med. 2007 Mar;64(6):1311–25.
50. Keri L, Kaye D, Sibylle K. Referral practices and perceived barriers to timely obstetric care among Ugandan traditional birth attendants (TBA). Afr Health Sci. 2010;10(1):75–81.
51. Onah HE, Ikeako LC, Iloabachie GC. Factors associated with the use of maternity services in Enugu, southeastern Nigeria. Soc Sci Med. 2006 Oct;63(7):1870–8.
52. Stephenson R, Baschieri A, Clements S, Hennink M, Madise N. Contextual influences on the use of health facilities for childbirth in Africa. Am J Public Health. 2006 Jan;96(1):84–93.
53. UN. EMBARGO Access to Justice for Victims of Sexual Violence Report of the United Nations High Commissioner for Human Rights. 2005;(May):1–39. Available from: http://www.ohchr.org/Documents/Countries/darfur29july05.pdf
54. Nwakoby BN. Use of obstetric services in rural Nigeria. J R Soc Health. 1994 Jun;114(3):132–6.
55. Gyimah SO, Takyi BK, Addai I. Challenges to the reproductive-health needs of African women: on religion and maternal health utilization in Ghana. Soc Sci Med. 2006 Jun;62(12):2930–44.
56. Bell J, L.curtis S, Alayon S. Trends in Delivery Care in Six Countries. DHS Analytical studies No.7. ORC Macro Calverton, Maryl USA Int. 2003;(7):1–62.
57. Stephenson R, Baschieri A, Clements S, Hennink M, Madise N. Contextual influences on the use of health facilities for childbirth in Africa. Am J Public Health. 2006;96(1):84–93.
58. Thaddeus S, Maine D. Too far to walk: Maternal mortality in context. Soc Sci Med. 1994 Apr;38(8):1091–110.
59. Chowdhury ME, Botlero R, Koblinsky M, Saha SK, Dieltiens G, Ronsmans C. Determinants of reduction in maternal mortality in Matlab, Bangladesh: a 30-year cohort study. Lancet. 2007 Oct;370(9595):1320–8.
60. Prendiville N. The role and effectiveness of traditional birth attendants in Somalia. Eval Program Plann [Internet]. 1998 Nov [cited 2015 Jul 6];21(4):353–61. Available from: http://www.sciencedirect.com/science/article/pii/S0149718998000263
61. Ryan J, Hamela G, Chome N, Kabondo C, Hosseinipour M, Tang J. Experiences and beliefs of Malawian women who have delivered with a traditional birth attendant. Int J Gynecol Obstet. 2015 Apr;129(1):38–41.
62. Kruske S, Barclay L. Effect of shifting policies on traditional birth attendant training. J Midwifery Womens Health. 2004 Jan;49(4):306–11.
63. Titaley CR, Hunter CL, Dibley MJ, Heywood P. Why do some women still prefer traditional birth attendants and home delivery?: a qualitative study on delivery care services in West Java Province, Indonesia. BMC Pregnancy Childbirth. 2010;10:43.
64. Granja AC, Zacarias E, Bergstrom S. Violent deaths: the hidden face of maternal mortality. BJOG An Int J Obstet Gynaecol. 2002 Jan;109(1):5–8.
65. Serizawa A, Ito K, Algaddal AH, Eltaybe RAM. Cultural perceptions and health behaviors related to safe motherhood among village women in Eastern Sudan: Ethnographic. Int J Nurs Stud. 2014 Apr;51(4):572–81.

66. UNFPA/UNICEF. JOINT EVALUATION UNFPA-UNICEF JOINT PROGRAMME ON FEMALE GENITAL MUTILATION/CUTTING: ACCELERATING CHANGE 2008 – 2012 [Internet]. New York-USA; 2013. Available from: http://www.unicef.org/evaldatabase/files/fgmc_sudan_final.pdf
67. Berggren V, Abdel Salam G, Bergström S, Johansson E, Edberg A-K. An explorative study of Sudanese midwives' motives, perceptions and experiences of re-infibulation after birth. Midwifery. 2004 Dec;20(4):299–311.
68. Gabrysch S, Lema C, Bedriñana E, Bautista M a., Malca R, Campbell OMR, et al. Cultural adaptation of birthing services in rural Ayacucho, Peru. Bull World Health Organ. 2009;87(9):724–9.
69. Mohammed in, Babikir H. Traditional and spiritual medicine among Sudanese children with epilepsy. SudanjpOrg. 2013;13(1):31–7.
70. Pfeiffer C, Mwaipopo R. Delivering at home or in a health facility? health-seeking behaviour of women and the role of traditional birth attendants in Tanzania. BMC Pregnancy Childbirth. 2013 Jan;13(1):55.
71. Imogie AO, Agwubike EO, Aluko K. Assessing the role of traditional birth attendants (TBAs) in health care delivery in Edo State, Nigeria. Afr J Reprod Health. 2002;6(2):94–100.
72. UNICEF Sudan - Real lives - Giving life a leading cause of death for women in Sudan [Internet]. [cited 2015 May 4]. Available from: http://www.unicef.org/sudan/reallives_7257.html
73. USAID. Camps in Chad and Sudan for refugees of the Darfur conflict [Internet]. wikimedia commons. [cited 2015 Aug 10]. Available from: https://upload.wikimedia.org/wikipedia/commons/2/27/Darfur_refugee_camps_map.png
74. MSF USA.Against All Odds: Maternity Care in Rural North Darfur | [Internet]. MSF. [cited 2015 May 4]. Available from: http://www.doctorswithoutborders.org/news-stories/field-news/against-all-odds-maternity-care-rural-north-darfur
75. Saravanan S. TRAINING OF TRADITIONAL BIRTH ATTENDANTS : An Examination of the Influence of Biomedical Frameworks of Knowledge on Local Birthing Practices in India. Public Health. 2008;(October).
76. Buchanan-Smith M, Jaspars S. Conflict, camps and coercion: the ongoing livelihoods crisis in Darfur. Disasters. 2007 Mar 2;31 Suppl 1:S57–76.
77. Choguya NZ. Traditional Birth Attendants and Policy Ambivalence in Zimbabwe. J Anthropol. 2014;2014(Article ID 750240):9.
78. Mathole T, Lindmark G, Ahlberg BM. Competing knowledge claims in the provision of antenatal care: a qualitative study of traditional birth attendants in rural Zimbabwe. Health Care Women Int. 26(10):937–56.
79. Cloudsley A. Women of Omdurman: life, love and the cult of virginity. New York: St. Martin's Press; 1984. 181 p.
80. Kamal IT. The traditional birth attendant: A reality and a challenge. Int J Gynecol Obstet. 1998;63:43–52.
81. Kyomuhendo GB. Low use of rural maternity services in Uganda: impact of women's status, traditional beliefs and limited resources. Reprod Health Matters. 2003 May;11(21):16–26.

82. UNICEF Sudan - Press centre - Giving life a leading cause of death for women in Sudan [Internet]. [cited 2015 May 4]. Available from: http://www.unicef.org/sudan/media_7257.html
83. Adamu YM, Salihu HM. Barriers to the use of antenatal and obstetric care services in rural Kano, Nigeria. J Obstet Gynaecol. 2002;22(6):600–3.
84. Ebuehi OM, Akintujoye I. Perception and utilization of traditional birth attendants by pregnant women attending primary health care clinics in a rural Local Government Area in Ogun State, Nigeria. Int J Womens Health. 2012 Jan;4:25–34.
85. Ana J. Are traditional birth attendants good for improving maternal and perinatal health? Yes. BMJ. 2011;342:d3310.
86. Harrison KA. Are traditional birth attendants good for improving maternal and perinatal health? No. BMJ. 2011;342:d3310.
87. Lawn JE, Lawn JE, Rohde J, Rohde J, Rifk S, Rifk S, et al. Series Alma-Ata: Rebirth and Revision 1 Alma-Ata 30 years on: revolutionary, relevant, and time to revitalise. Lancet, The. 1978;917–27.
88. Fendall NR. Declaration of Alma-Ata. Lancet. 1978;2(8103):1308.
89. UNFPA. Support to traditional birth attendants. Popul (English Ed [Internet]. 1996;(7). Available from: http://web.lb.unfpa.org/monitoring/pdf/n-issue7.pdf
90. Sibley L, Sipe TA. What can a meta-analysis tell us about traditional birth attendant training and pregnancy outcomes? Midwifery. 2004;20:51–60.
91. Bisika T. The effectiveness of the TBA programme in reducing maternal mortality and morbidity in Malawi. East Afr J Public Health. 2008;5(2):103–10.
92. Wilson A, Gallos ID, Plana N, Lissauer D, Khan KS, Zamora J, et al. Effectiveness of strategies incorporating training and support of traditional birth attendants on perinatal and maternal mortality: meta-analysis. BMJ. 2011 Jan 1;343(dec01_1):d7102.
93. Sibley LM, Sipe TA, Barry D. Traditional birth attendant training for improving health behaviours and pregnancy outcomes. Cochrane database Syst Rev. 2012 Jan;8:CD005460.
94. Ali AA, Siddig MF. Poor practice and knowledge among traditional birth attendants in Eastern Sudan. J Obstet Gynaecol (Lahore). 2012;32(8):767–9.
95. USAID. Trained Traditional Midwives Save Lives | U.S. Agency for International Development [Internet]. 2015 [cited 2015 Jul 26]. Available from: http://www.usaid.gov/results-data/success-stories/trained-traditional-midwives-save-lives
96. Goodburn EA. Training traditional birth attendants in clean delivery does not prevent postpartum infection. Health Policy Plan. 2000 Dec 1;15(4):394–9.
97. Ehiri JE, Gunn JKL, Center KE, Li Y, Rouhani M, Ezeanolue EE. Training and deployment of lay refugee/internally displaced persons to provide basic health services in camps: a systematic review. Glob Health Action. 2014 Jan;7:23902.
98. Maternal and newborn care: practices and beliefs of traditional birth attendants in Sindh, Pakistan. 2005 [cited 2015 Jul 4]; Available from: http://apps.who.int//iris/handle/10665/116939

99. Concern Worldwide. Examining the Role of Traditional Birth Attendants in the Continuum of Care in Sierra Leone [Internet]. Innovations for Maternal, Newborn & Child Health.New York; 2013. Available from: http://innovationsformnch.org/uploads/publications/TBA_Policy_Brief_2013,_6-3.pdf
100. Pyone T, Adaji S, Madaj B, Woldetsadik T, van den Broek N. Changing the role of the traditional birth attendant in Somaliland. Int J Gynaecol Obstet. Elsevier; 2014 Oct 10;127(1):41–6.
101. Byrne A, Morgan A. How the integration of traditional birth attendants with formal health systems can increase skilled birth attendance. Int J Gynecol Obstet. International Federation of Gynecology and Obstetrics; 2011;115(2):127–34.
102. Bergström S, Goodburn E. The Role of Traditional Birth Attendants in the Reduction of Maternal Mortality. Reprod Health. 2001;1–21.
103. Sibley L, Sipe TA, Koblinsky M. Does traditional birth attendant training improve referral of women with obstetric complications: A review of the evidence. Soc Sci Med. 2004;59:1757–68.
104. Musoke M. Maternal health care in rural Uganda. World Bank IKI Notes. 2002;40:1–4.
105. Nwakoby B, Akpala C, Nwagbo D, Onah B, Okeke V, Chukudebelu W, et al. Community contact persons promote utilization of obstetric services, Anambra State, Nigeria. The Enugu PMM Team. Int J Gynaecol Obstet. 1997 Nov;59 Suppl 2:S219–24.
106. Mullany LC, Lee CI, Paw P, Shwe Oo EK, Maung C, Kuiper H, et al. The MOM Project: delivering maternal health services among internally displaced populations in eastern Burma. Reprod Health Matters. 2008 May;16(31):44–56.
107. Mullany LC, Lee TJ, Yone L, Lee CI, Teela KC, Paw P, et al. Impact of community-based maternal health workers on coverage of essential maternal health interventions among internally displaced communities in eastern Burma: The MOM project. PLoS Med. 2010;7(8):1–11.
108. European Commission.SUDAN- Darfur Basic Services Project (DBSP) [Internet]. INTERNATIONAL COOPERATION AND DEVELOPMENT. 2012 [cited 2015 Aug 9]. Available from: https://ec.europa.eu/europeaid/sudan-darfur-basic-services-project-dbsp_en
109. World Bank. World Development Conflict, Security and Development Report 2011 [Internet]. World Bank. Washington DC; 2011. Available from: http://siteresources.worldbank.org/INTWDRS/Resources/WDR2011_Full_Text.pdf
110. WHO. Maternity Waiting Homes: A review of experiences. Geneva WHO [Internet]. 1996;96(21):1–44. Available from: http://medcontent.metapress.com/index/A65RM03P4874243N.pdf\nhttp://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Maternity+Waitin+Homes:+A+review+of+experiences#0
111. Herschderfer K, Koning K De, Sam EM, Walker P, Jalloh-Vos H, Detmar S. Barriers and Promising Interventions for Improving Maternal and Newborn Health in Sierra Leone. KIT. Amsterdam –Netherland; 2012.

112. Mayhew M, Hansen PM, Peters DH, Edward A, Singh LP, Dwivedi V, et al. Determinants of skilled birth attendant utilization in Afghanistan: a cross-sectional study. Am J Public Health. 2008 Oct;98(10):1849–56.
113. White RC. Strategies for increasing utilization of maternity services in Njeru, Uganda. Afr J Midwifery Womens Health. 2007;1(1).
114. KIT. Hearing the voice of the community on reproductive health issues in South Sudan - KIT Health [Internet]. Royal tropical institute Amsterdam-Netherland. 2015 [cited 2015 Aug 1]. Available from: http://www.kit.nl/health/kit-news/hearing-voice-community-reproductive-health-issues-south-sudan/
115. H, Hegre. Civil War and Development. Piro-Norway; 2012.
116. WHO. Strategies toward ending preventable maternal mortality (EPMM). 2015;6736(2013):1–4.

10 Annexes

Annex 1: INGOs and NGOs operating in West Darfur, Sudan(8).

No	Name of Organization	Main Activities and Beneficiaries	Coverage Areas (District and Towns)
1	IOM	Common services, coordination, Protection, Return and early reintegration, Water, sanitation and hygiene, Basic infrastructure, Nutrition	Kulbus, Jebel Moon, Sirba, Kereinik, El Geneina, Sirba, Beida, Habila, Foro Baranga
2	UNICEF	Education, Nutrition, Protection, Water, sanitation and hygiene, Return and early reintegration, Health	Kulbus, Jebel Moon, Kereinik, El Geneina Sirba, Beida, Habila, Foro Baranga
3	WFP	Education, Nutrition, Return and early reintegration, Health, Protection, Common services, coordination, Basic infrastructure, NFIs and emergency shelter	Kulbus, Jebel Moon, Sirba, Kereinik, El Geneina, Sirba, Beida, Habila, Foro Baranga
4	SMOE	Education, Health	Kulbus, Jebel Moon El Geneina, Beida, Habila, Foro Baranga
5	FAO	Protection, Common services, coordination,	Kulbus, Sirba, Beida
6	WES	Water, sanitation and hygiene	Kulbus, Jebel Moon, Sirba, Beida, Habila, Foro Baranga
7	Help age International	Protection, NFIs and emergency shelter, Nutrition, Health	Kulbus, Jebel Moon Kereinik, El Geneina Sirba, Beida, Habila, Foro Baranga
8	Concern	Protection, Nutrition, Water, sanitation and hygiene	Kulbus, Jebel Moon, Kereinik,
9	UNDP	Protection, Return and early reintegration, Nutrition,	Kulbus, Kereinik, El Geneina, Beida, Habila
10	SMOA	Protection	Kulbus, El Geneina, Beida, Foro Baranga
11	SMOH	Protection, Health, Nutrition	Kulbus, Jebel Moon, Kereinik, El Geneina Sirba, Beida, Habila, Foro Baranga
12	COSV	Health, Nutrition, Water, sanitation and hygiene	Kulbus Jebel Moon,

No	Name of Organization	Main Activities and Beneficiaries	Coverage Areas (District and Towns)
13	UNFPA	Health, Nutrition, Protection, NFIs and emergency shelter	Kulbus, Jebel Moon, Kereinik, Sirba, Beida, Habila, Foro Baranga
14	World Relief	Health, Protection, NFIs and emergency shelter, Nutrition, Water, sanitation and hygiene	Kulbus, Kereinik, El Geneina, Sirba
15	WHO	Health, Nutrition, NFIs and emergency shelter, Return and early reintegration	Kulbus, Jebel Moon, Kereinik, El Geneina Habila, Foro Baranga
16	SRCs	NFIs and emergency shelter, Water, sanitation and hygiene, Health, Protection,	Kulbus, Jebel Moon, Kereinik, El Geneina Sirba, Beida, Habila, Foro Baranga
17	UNHCR	NFIs and emergency shelter, Protection, Nutrition,	Kulbus, Kereinik, El Geneina, Sirba, Beida, Habila, Foro Baranga
18	ACTED	Return and early reintegration, Protection,	Kulbus, Kereinik, Sirba, Beida, Habila
19	HAC	Return and early reintegration, Common services, coordination,	Kulbus, Jebel Moon Sirba, Kereinik, El Geneina, Beida, Habila, Foro Baranga
20	OCHA	Common services, coordination, Basic infrastructure,	Jebel Moon, Sirba, El Geneina, Beida, Habila, Foro Baranga
21	RCSO	Common services, coordination, Basic infrastructure,	Jebel Moon, Sirba, El Geneina, Beida, Habila, Foro Baranga
22	CRS	Common services, coordination, Protection, NFIs and emergency shelter, Return and early reintegration, Nutrition, Basic infrastructure, Water, sanitation and hygiene	Jebel Moon Kereinik, Beida, Habila, Foro Baranga
23	ADRA	Basic infrastructure, Return and early reintegration, Water, sanitation and hygiene	Sirba, Kereinik, Beida
24	UNDSS	Common services / Coordination, Basic infrastructure,	Sirba, Kereinik, El Geneina, Habila
25	SMOA	Protection	Sirba, Habila
26	Merlin	Health	Sirba, Kereinik, El Geneina
27	Saudi RC	Health	Sirba
28	JASMAR	Water, sanitation and hygiene	Sirba
29	IRW	Basic infrastructure, Protection, Water, sanitation and hygiene, Education, Health	Kereinik, El Geneina El Geneina
30	SC	Education, Protection, Health, NFIs and emergency shelter, Nutrition, Water, sanitation and hygiene	Kereinik, El Geneina Habila, Foro Baranga

No	Name of Organization	Main Activities and Beneficiaries	Coverage Areas (District and Towns)
31	WCC	Education, Protection, Common services, coordination,	Kereinik, El Geneina, Beida
32	ISRA	Health	Kereinik, Beida
33	HI	Health	Kereinik, El Geneina Habila, Foro Baranga
34	INTERSOS	Return and early reintegration, Protection, NFIs and emergency shelter	Habila
35	IFRC	Common services, coordination,	El Geneina
36	Red R	Common services, coordination,	El Geneina
37	VIS	Education,	El Geneina
38	FAR	Protection, Return and early reintegration, Water, sanitation and hygiene	El Geneina, Beida, Habila
39	IRD	Protection	El Geneina
40	Oxfam A	Protection	El Geneina
41	TGH	Protection	El Geneina
42	HRF	Health	El Geneina
43	IMC	Health	El Geneina
44	UK	Health	El Geneina
45	Saudi RC	Health	El Geneina
46	QRCS	Health	El Geneina
47	NLRC	Health	El Geneina
48	ROAD	Return and early reintegration, Water, sanitation and hygiene	Habila
49	IR	Health	Foro Baranga

Source: WHO, WD office, 2013