Impact of armed conflict on maternal and reproductive health in sub-Saharan Africa

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Abstract

Background
Armed conflict has been described as creating a public health problem and an important contributor to the social and political determinants of health and a driver of poverty and health inequity. Of the armed conflicts that have taken place since World War II, about 90% have been in developing countries, with Sub-Saharan African (SSA) countries experiencing more conflicts than any other region of the world. The impact of these conflicts on health systems often extends beyond the period of active warfare, working its way through specific diseases and conditions, thus indirectly affecting the health of women and children severely. Health systems in conflict and post-conflict countries are therefore faced with huge challenges. One major challenge has been the neglect of MRH resulting in increased maternal mortality; lack of information about and limited access to family planning services; and increased incidence of sexual violence, rape, complications of abortion, sexually transmitted infections, and unwanted pregnancies among others.

Aim of the study
The aim of this study is to assess the impact of armed conflict on maternal and reproductive health (MRH) in sub-Saharan Africa. Specifically, the study seeks to assess the impact of armed conflict on maternal mortality and fertility levels, and stakeholders’ perceptions of the effects of armed conflict on MRH services and outcomes. Additionally, the study seeks to explore the determinants of women’s utilisation of MRH services as well as the barriers to the effective delivery of emergency obstetric and neonatal care (EmONC) services in post-conflict Burundi and Northern Uganda.

Methods
This study is multidisciplinary in nature and uses a multi-method strategy, utilising both qualitative and quantitative research techniques. Quantitatively, a cross-national time-series regression analysis using armed conflict, total fertility, and maternal mortality datasets from the Uppsala Conflict Data Program (UCDP), the United Nations Population Division, and World health Organization respectively was undertaken to determine the relationship between armed conflict intensity (independent variable) and maternal mortality ratio and total fertility rate (dependent variables). The qualitative data includes 63 semi-structured in-depth interviews and eight focus group discussions among 115 key stakeholders involved in the provision and utilization of MRH services to qualitatively explore the perceived effects of armed conflicts on MRH and the current state of MRH in Burundi and Northern Uganda vis-à-vis the past armed conflicts.
Results

Using two global cross-national time-series studies covering 1970–2005 (fertility rates) and 1990 – 2005 (maternal mortality rates) along with the UCDP/PRIO armed conflict dataset, the following findings were observed: Armed conflict does not affect overall total fertility rates, whether it takes place in the country in question or in a neighbouring country. However, in low income countries, armed conflict intensity is positively associated with the total fertility rate (TFR), where increase in battle-related deaths is associated with increase in TFR. Armed conflict is moderately associated with increased maternal mortality rates; an armed conflict of median intensity (2,500 battle-related deaths) is associated with a 10% increase in the maternal mortality rate. Finally, armed conflict in a neighbouring country is associated with a lower maternal mortality rate.

The findings from the qualitative study revealed the following: With respect to the perceived effects of armed conflict on MRH, the main themes that emerged from the study were: armed conflict as a cause of limited access to and poor quality of MRH services; armed conflict as a cause of poor MRH outcomes; and armed conflict as a route to improved access to health care. The main mechanisms through which armed conflict led to limited access to and poor quality of MRH services varied across the sites and included: attacks on health facilities and looting of medical supplies across the sites; targeted killing of health personnel and favouritism in the provision of healthcare in Burundi; and abduction of health providers in Northern Uganda. Overall, there was disruption of infrastructural development and the training of health personnel, and poor retention of health personnel. The perceived effects of the conflict on MRH outcomes included: increased maternal and newborn morbidity and mortality; high prevalence of HIV/AIDS and SGBV; increased levels of prostitution, teenage pregnancy and clandestine abortion; and high fertility levels. Relocation to government recognized IDP camps improved access to health services for many women.

Furthermore, regarding the determinants of women’s utilization of MRH services, a complex and interrelated set of factors cutting across the individual, socio-cultural, and political and health system spheres were observed. The main determinants include women’s fear of developing pregnancy-related complications, status of women empowerment and support at the household and community levels, removal of user-fees, proximity to the health facility, and attitude of health providers. Additionally, exposure to armed conflict affects women’s utilisation of these services mainly through impeding women’s health seeking behaviour and community perception of health services.
Finally, with respect to the barriers in the delivery of EmONC services, the barriers in the delivery of quality EmONC services were categorised into two major themes; human resources-related challenges, and systemic and institutional failures. While some of the barriers were similar, others were unique to specific sites. The common barriers included shortage of qualified staff; lack of essential installations, supplies and medications; increasing workload, burn-out and high turnover; and poor data collection and monitoring systems. Barriers unique to Northern Uganda were demoralised personnel and lack of recognition; poor referral system; inefficient drug supply system; staff absenteeism in rural areas; and poor coordination among key personnel. In Burundi, weak curriculum; poor harmonisation and coordination of training; and inefficient allocation of resources were the unique challenges. To improve the situation across the sites, efforts are ongoing to improve the training and recruitment of more staff; harmonise and strengthen the curriculum and training; increase the number of EmONC facilities; and improve staff supervision, monitoring and support.

Conclusions
The study illustrates that armed conflicts have a substantial negative impact on MRH, including health services and health outcomes that linger well into the post-conflict phase. Additionally, in post-conflict settings women’s utilization of MRH services is affected by a complex set of factors cutting across the socio-cultural and political and health system domains. Finally, the delivery of EmONC services post-conflict health systems is hampered by a series of human resources-related challenges, and systemic and institutional failures. Therefore, MRH in conflict and post-conflict countries requires more global attention. The needs and challenges vary from one setting to another and will require context-specific interventions to effectively address them.
## List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ANC</td>
<td>Antenatal care</td>
</tr>
<tr>
<td>EmOC</td>
<td>Emergency Obstetric Care</td>
</tr>
<tr>
<td>EmONC</td>
<td>Emergency Obstetric and Neonatal Care</td>
</tr>
<tr>
<td>FGD</td>
<td>Focus Group Discussion</td>
</tr>
<tr>
<td>IDI</td>
<td>In-depth Interview</td>
</tr>
<tr>
<td>IDP</td>
<td>Internally Displaced Persons</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goals</td>
</tr>
<tr>
<td>MRH</td>
<td>Maternal and Reproductive Health</td>
</tr>
<tr>
<td>MSRH</td>
<td>Maternal, Sexual and Reproductive Health</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-governmental Organization</td>
</tr>
<tr>
<td>PBF</td>
<td>Performance-based Financing</td>
</tr>
<tr>
<td>SGBV</td>
<td>Sexual and Gender-based Violence</td>
</tr>
<tr>
<td>SRH</td>
<td>Sexual and Reproductive Health</td>
</tr>
<tr>
<td>SSA</td>
<td>Sub-Saharan Africa</td>
</tr>
<tr>
<td>TBA</td>
<td>Traditional Birth Attendant</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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List of original publications
This thesis is based on the following original manuscripts:


**Paper IV**  Chi PC, Bulage P, Urdal H, Sundby J. Barriers in the delivery of emergency obstetric and neonatal care in post-conflict Africa: Qualitative case studies of Burundi and Northern Uganda. (‘revise and resubmit’ offered by PLoS ONE, revision resubmitted and feedback awaited)
CHAPTER ONE

1.0 INTRODUCTION: Global overview of maternal and reproductive health and armed conflict

Maternal and reproductive health (MRH) has received global attention especially since the launching of the millennium development goals (MDGs) by the United Nations in 2000. The fifth goal aims at improving maternal health by reducing by three quarters the maternal mortality ratio, between 1990 and 2015, and achieving universal access to reproductive health, by 2015. While progress has been made in attaining this goal globally, huge disparities exist across different countries (1). For example, between 1990 and 2010 the proportion of pregnant women in the sub-Saharan Africa (SSA) region that receive the recommended minimum of four antenatal care visits declined from 52% to 49% compared to the Northern African region where the proportion almost tripled from 23% to 66%. Furthermore, when compared to other developing regions of the world the outlook of MRH indicators for SSA are more worrisome. For example, by 2010 the average maternal mortality ratio for the developing countries was 240 maternal deaths per 100,000 live births compared to 500 maternal deaths per 100,000 live births for the SSA region. Additionally, in 2013 global maternal deaths were estimated at 289,000, with 62% (179,000) of the deaths occurring in SSA alone, followed by Southern Asia with 24% (69,000) (2). This makes SSA the most dangerous place for a woman to give birth. As measured by lifetime risk of dying during pregnancy and childbirth, the SSA stands at 1 in 40 compared to 1 in 3,300 for Europe (3). While the global decline in maternal deaths between 1990 and 2013 have been largely attributed to improvements in the proportion of deliveries attended by skilled health personnel, less than 50% of deliveries in low-income countries, including the African region are attended by a skilled birth attendant (4).

Armed conflict has been described as a development issue (5), impeding the attainment of the MDGs, including the health MDGs. This is demonstrated by the fact that the status of MRH outcomes are more precarious in conflict-affected countries compared to non-conflict affected countries (6,7). Moreover, war, violence and lawlessness have been claimed to severely harm the well-being of mothers and children (8). It is therefore not surprising that armed conflict has also been described as a public health problem due to its major contribution to ill-health and mortality worldwide (9). There is therefore the need to improve MRH services and outcomes in conflict and post-conflict settings.

This thesis explores the impact of armed conflict on MRH in SSA. It specifically tries to explore a potential explanation for the significant excess mortality in women during and immediately after armed conflicts by assessing the impact of armed conflict on maternal mortality ratio and total fertility rate. It also documents the perceived effects of armed conflict on MRH services and outcomes as well as the
channels through which armed conflict leads to limited access to and poor quality of MRH services in Burundi and Northern Uganda. In a bid to identify potential areas for improving access to and quality of MRH services with the goal of ensuring better MRH outcomes, the thesis equally identifies and elucidates the determinants of women’s utilisation of MRH services in post-conflict Burundi and Northern Uganda from the perspectives of MRH supply and demand stakeholders. Finally, the thesis also documents the barriers in the delivering of quality emergency obstetric and neonatal care (EmONC) services and the strategies on the ground to ameliorate the situation. These are the main issues that this thesis contributes to the public health literature on MRH in conflict and post-conflict. So, in essence, the thesis explores the impact of conflict on health in one area of the world where the situation is marginal even without conflict.

This thesis is divided into eight chapters. This chapter (Chapter one) briefly introduces an overview of maternal and reproductive health and armed conflict as well as the main contributions of the thesis. Chapter two is the background that provides a literature review of the general health and living conditions during conflicts as well as maternal and reproductive health and armed conflict in general, and then narrows down to the study countries of Burundi and Uganda. The research questions and research objectives are presented in Chapter three. Chapter four describes the detailed methodology used to answer the research questions. The main research findings are presented in Chapter five, followed by a discussion of the findings in Chapter six. Chapter seven addresses the main methodological issues arising from the main findings and discussion, while Chapter eight presents the conclusions, and recommendations and future research based on the main findings.
CHAPTER TWO

2.0 BACKGROUND

2.1. Defining maternal and reproductive health and armed conflict
The World Health Organization (WHO) defines maternal health as the health of women during pregnancy, childbirth and the postpartum period (the first six weeks after birth). Reproductive health on the other hand broadly refers “to a state of complete physical, mental and social wellbeing and not merely the absence of disease and infirmity, in all matters relating to the reproductive system and to its functions and processes. Reproductive health therefore implies that people are able to have a satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when and how often to do so. Implicit in this last condition are the rights of men and women to be informed and to have access to safe, effective, affordable and acceptable methods of family planning of their choice, as well as other methods of their choice for regulation of fertility which are not against the law, and the right of access to appropriate health-care services that will enable women to go safely through pregnancy and childbirth and provide couples with the best chance of having a healthy infant” (10). Related to the legal component of the definition is access to legal safe abortion, an important aspect also of maternal health that tends to be aggravated in times of war as a result of increased occurrence of sexual violence and war rape. Furthermore, the Uppsala Conflict Data Program (UCDP) defines an armed conflict as a contested incompatibility which concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths (11). This is different from other forms of violence such as riots, and isolated and sporadic acts of violence like drug-related violence that may pose similar levels of threat to MRH. While the status of MRH is generally assessed through indicators such as maternal mortality ratio, skilled birth attendance, antenatal care (ANC) coverage, contraceptive uptake, and unmet need for family planning, the intensity of armed conflict is largely determined by the battle-related deaths.

2.2. General health and living conditions amidst armed conflicts

2.2.1. Status of health services and outcomes
Regarding the general health situation amidst conflict, many studies highlight that access to quality health care is generally poor, leading to poor health outcomes. For example, during the armed conflict in Chiapas, Mexico, Brentlinger at al. (12) reported that about 87% of the births were at home, and maternal and perinatal mortality ratios experienced a sharp increase. The findings further revealed that those who died experienced difficulty in accessing emergency obstetric care (EmOC). In Nepal, Price and Bohara (13) used count regression techniques, household survey data and sub-national conflict data to analyse the utilisation pattern of ANC services during the armed conflict in the country. They
observed a negative correlation between the number of ANC visits and incidents of conflict-related
violence; women living in areas of high-intensity conflict attended between 0.3 and 1.5 fewer ANC
visits compared to those living in areas of low-intensity or no conflict. Furthermore, a qualitative study
undertaken in the Occupied Palestinian Territories revealed that the conflict in the region has resulted in
severe restrictions on mobility and reduced access to health facilities for both health personnel and
patients (14). As such, many pregnant women living in the region experienced decrease access to ANC
and postnatal care and an increase in the number of home deliveries, induced deliveries and deliveries at
military checkpoints.

A study in the conflicted-affected Northern Province of Sri Lanka reported that during the conflict the
major health problems observed were high maternal mortality, a sharp fall in the human resources for
health, poor access to health facilities, lack of basic health knowledge, insufficient health awareness
programmes for inhabitants, and mental health problems among others (15). Also, a study in Colombia
found that populations exposed to armed conflict experienced different forms of mental illness,
particularly depression, somatization disorder and alcohol abuse (16). Still, another study among
women in six conflict-affected areas in the north and east of Sri Lanka found substantially higher rates
of early marriage, pregnancy and home births, higher levels of maternal mortality and lower levels of
contraceptive use compared to other non-conflict areas (17). Likewise, a study undertaken in Côte
d'Ivoire following the recent armed conflict reported that the conflict was associated with a collapse of
the health system and other public infrastructures, interruption of condom distribution, lack of
antiretrovirals and a significant reduction in the number of health staff in both the public and private
sector (18).

Similarly, a number of retrospective studies on the war in Bosnia and Herzegovina that lasted from
1992-1995 revealed that, during the conflict the number of deliveries reportedly fell (19), while the rate
of perinatal and maternal mortality and preterm deliveries sharply increased compared to the pre- and
post-war levels (19-21). The high maternal mortality was strongly associated with an increased number
of uterine ruptures, sepsis and bleeding due to shell injury of pregnant women, coupled with inadequate
nutrition, and lower adequacy and accessibility of health care (19,21). Specifically, women underwent
significantly fewer examinations during pregnancy (2.4 during, 5.4 before and 6.3 after the war) and
couple deliveries by a skilled birth attendant (75.9% during, 99.1% before and 99.8% after the war)
(20). The authors also reported a breakdown of the perinatal care system, characterised by lack of
medical staff, impossibility of collecting valid health records, particularly perinatal information, and the
destruction of medical buildings (19,20).
With respect to mortality rate in displaced people’s camps, a retrospective study among displaced people in post-emergency phase camps found that CMRs and <5 MRs were higher in recently established camps and these camps tended to have fewer health workers than camps that had been established earlier (22). Additionally, camps that were close to the border or region of the conflict or that had longer travel times to referral hospitals had higher CMRs than those that were located further away or with shorter travel times.

2.2.2. Refugees and internally displaced persons wellbeing versus host population

The literature on displaced people’s health and wellbeing vis-à-vis the local host population is mixed. Among three rural refugee-affected districts in Uganda, Orach et al. (23) found that the per capita cost of health care and cost per reproductive health intervention was substantially higher for the refugees than the host population. Additionally, the proportion of refugees who attended ANC, gave birth in health facilities, and undertook major obstetric interventions were equally significantly greater compared to the host population. In an earlier study in a district in Northern Uganda, Orach and De Brouwere (24) also observed that refugees had better access to health services than did the rural host population, and the maternal mortality was 2.5 times higher in the host population. Similarly, in a study among encamped refugees and the local population in Turkana District in Kenya, Odero and Otieno-Nyunya (25) found that the refugee women had better obstetric care than those from the host population. It is therefore not surprising that in Guinea, Van Damme et al. (26) reported that in areas with high numbers of refugees, the refugee-assistance programme improved the local health system and transport infrastructure. However, a broad literature on the impact on refugee programmes on host populations reported that although refugee hosting improved the quality and accessibility of health services and, in some cases, health outcomes for the host national population, the evidence to support the integration of refugee and host population health services is limited (27).

On the other hand, following the post-election violence in Kenya in 2008, a survey in the Western region found that internally displaced persons (IDPs) aged 15-49 years died at higher rates than regular residents of the surveyed areas (28). Furthermore, they reported that internally displaced children below 5 years of age had higher rates of hospitalisation than resident children. Similarly, a rapid assessment among IDPs living in camps in Ituri in the Democratic Republic of Congo found exceptionally high crude mortality rates (CMRs) and under-five mortality rates (<5 MRs) following a resurgence of violence and further displacements (29). Additionally, a recent assessment of ANC among Syrian refugees in Lebanon found that the standards were not met in terms of the recommended minimum number of visits and the quality of the check-up (30). The findings showed that only 63.8% received three or more ANC check-ups from a skilled professional, while only 31.2% received all the three
recommended ANC interventions of blood pressure measurement, and urine and blood sample analyses. Another study of Syrian refugees in the Zaatri Camp and Irbid City in Jordan reported that refugee women and adolescent girls negatively perceived the available clinical services and complained about the lack of basic necessities (31). These variations in health outcomes across refugee and IDP populations may reflect disparities in humanitarian support and service delivery NGOs in such settings.

Furthermore, a recent published report by the Centre for Research on the Epidemiology of Disasters (CRED) suggests that at least 172 million people were directly affected by armed conflict globally in 2012 and the overwhelming majority of them (87%) were residents of conflict zones rather than refugees or IDPs fleeing from the conflict (32). According to the report Nigeria and Pakistan were the countries with the largest populations affected by conflict, with about 19 million and 28 million people respectively. Of the 28 million people in Pakistan affected by conflict, about one million are IDPs, 1.5 million are refugees, and the rest are conflict-affected residents (CARs), while for Nigeria about 1.5 million of the 19 million affected people are IDPs and the rest CARs, with no refugees. In relative terms Libya and Somalia were most affected with about 90% of the total population affected by the violence and insecurity. The report further emphasises that in countries affected by armed conflict, the IDPs tend to be worst hit in terms of mortality compared to the refugees and CARs. Specifically, the report highlights that the CMR per 10,000/day for IDPs, CARs and refugees are 0.7, 0.54, and 0.36 respectively. Similarly, the <5 MRs per 10,000/day were 1.37, 1.10, and 0.78 for IDPs, CARs and refugees respectively.

2.2.3. The spread of infectious diseases

There is some literature suggesting an association between armed conflict and the spread of infectious diseases. A study in the conflict-affected Somali Regional State of Ethiopia highlights that armed conflict has an impact on the spread of tuberculosis (TB) (33). The authors found that TB patients living in the conflict zones within the study region had a longer delay in receiving their diagnosis for TB and also reported higher levels of self-treatment utilisation prior to diagnosis compared to TB patients living within non-conflict zones.

Likewise, a study in western Côte d'Ivoire, shortly before and after the 2002/2003 armed conflict revealed that during the conflict, the sanitation infrastructure, availability and use of protective measures against mosquito bites, and accessibility to health care infrastructure substantially deteriorated (34). Moreover, the authors found some evidence pointing toward a relationship between an increased risk of suffering from neglected tropical diseases and malaria, and armed conflict.

Additionally, an empirical study assessing the relationship between armed conflict and HIV prevalence found that both domestic and international conflicts are positively associated with increasing HIV/AIDS
prevalence (35). Also, a review by Becker and Drucker (36) suggests that the risk of spread of HIV is higher in the post-conflict period than during the actual conflict period. They assert that the post-conflict period is characterised by a complex web of factors that combine to enhance the quick spread of the infection, including demobilization of combatants, the presence of peacekeeping forces, the return of potentially infected soldiers and refugees, the concentration of populations into cities and urban areas, high-risk behaviours among others. This is a similar concern raised by Strand et al. (37), where they found unexpectedly low prevalence of HIV among women of reproductive age in Luanda, Angola following the end of the protracted armed conflict in the country. They were however concerned that the return of soldiers and refugees in a post-war period could result in increased prevalence. A 2007 systematic review of HIV prevalence in conflict-affected and displaced people in seven sub-Saharan African countries (38) and a 2008 mathematical modelling study (39) revealed that despite wide-scale rape in many conflict-affected countries, there was no data to show that rape increased the prevalence of HIV infection at the population level, or that refugees continued to the spread of HIV in host communities (38,40). However, according to Watts et al. (41), a rape survivor's individual risk of acquiring HIV is determined by the combining effects of genital injury, penetration by multiple perpetrators and the increased likelihood that the sexual violence perpetrators are HIV infected. Furthermore, to better understanding the effect of armed conflict on HIV/AIDS prevalence, Mock et al. (42) have proposed a number of contextual factors that may enhance the transmission and spread of the infection. These include increased interaction among military and civilians; increased levels of commercial or casual sex; decreased availability and utilisation of reproductive health and other health services; decreased use of means to prevent HIV transmission; and increased population mixing following large internal population movements among others. The afore-mentioned factors may account for the varied impact of sexual violence on the incidence and prevalence of HIV across conflict and post-conflict settings in SSA.

2.3. Impact of armed conflict on maternal and reproductive health
Armed conflict affect maternal and reproductive health mainly through a deteriorating effect on the health system, further exacerbated by poor access to clean water supply and sanitation and by under- and malnutrition. These may be further compounded by disruption of the social systems and lack of individual protection, separation of married people due population displacement, and security concerns. A normal functioning health system is characterized by good health services, a well-performing health workforce, equitable access to medical products, vaccines and technologies, a good health financing system, a well-functioning health information system, and effective leadership and governance. However, during an armed conflict the effectiveness of the afore-mentioned health system building blocks are severely disrupted resulting in the following (43):
- failure to provide health services to a large proportion of the population living in urban areas (while recognizing that most rural areas are generally underserved even in normal times) and a lack of infrastructure (including facilities, human resources, equipment and supplies, and medicines) for delivering health services;
- poorly functional or absent referral systems for the critically ill;
- non-existent or insufficient capacity-building mechanisms and systems, such as national clinical training programmes, to address the dearth of clinical and management capacity;
- poor coordination, oversight and monitoring of health services by the prevailing administrative authorities, who may not have the capability to manage;
- inequity in who receives the available health services, resulting in limited public health services for the poor and those in rural areas;
- absence of policy mechanisms for developing, establishing and implementing national health policies;
- absence of operational health information systems for planning, management and disease surveillance; and
- lack of adequate management capacity and systems (such as budgeting, accounting and human resource management systems) for controlling resources.

The amount of maternal deaths in conflict areas is quite glaring. A 2010 review (44) of maternal mortality in 181 countries, spanning 1980-2008 revealed that 50% of all maternal deaths were in only six countries in 2008 (India, Nigeria, Pakistan, Afghanistan, Ethiopia, and the Democratic Republic of the Congo), all of which have experienced recent armed conflict. Furthermore, for over a decade, the bottom 10 countries on Save the Children’s ‘State of the world’s mothers’ ranking have largely been conflict and/or post conflict countries, further highlighting the possible impact of conflicts on the health and wellbeing of women globally (45) (Table 1). This is an index that is determined considering the health, educational, economic and political status of women in each of the countries considered. The 2014 mothers’ index featured the following countries on the bottom 10: Côte d'Ivoire, Chad, Nigeria, Sierra Leone, Central African Republic, Guinea-Bissau, Mali, Niger, DR Congo, and Somalia (45). Similarly, the bottom 10 countries featuring on the UN Human Development index for the last decade are either in conflict or emerging from one (46), a further indication of the destructive effects of conflicts on overall human development.
Table 1: Countries in the bottom 10 of the ‘state of the world’s mothers’ index, 2000-2014

<table>
<thead>
<tr>
<th>Country</th>
<th>No. of years in the bottom 10</th>
<th>No. of years in the index</th>
<th>% of years spent in the bottom 10</th>
<th>Last year in bottom 10</th>
<th>Any conflict between 2000 – 2014?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Niger</td>
<td>13</td>
<td>13</td>
<td>100%</td>
<td>2014</td>
<td>Yes</td>
</tr>
<tr>
<td>Chad</td>
<td>13</td>
<td>14</td>
<td>93%</td>
<td>2014</td>
<td>Yes</td>
</tr>
<tr>
<td>Mali</td>
<td>13</td>
<td>15</td>
<td>87%</td>
<td>2014</td>
<td>Yes</td>
</tr>
<tr>
<td>Guinea-Bissau</td>
<td>12</td>
<td>13</td>
<td>92%</td>
<td>2014</td>
<td>No</td>
</tr>
<tr>
<td>Yemen</td>
<td>12</td>
<td>15</td>
<td>80%</td>
<td>2012</td>
<td>Yes</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>9</td>
<td>15</td>
<td>60%</td>
<td>2008</td>
<td>Yes</td>
</tr>
<tr>
<td>DR Congo</td>
<td>8</td>
<td>8</td>
<td>100%</td>
<td>2014</td>
<td>Yes</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>8</td>
<td>11</td>
<td>73%</td>
<td>2014</td>
<td>Yes</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>8</td>
<td>15</td>
<td>53%</td>
<td>2007</td>
<td>No</td>
</tr>
<tr>
<td>Eritrea</td>
<td>7</td>
<td>13</td>
<td>54%</td>
<td>2012</td>
<td>Yes</td>
</tr>
<tr>
<td>CAR</td>
<td>6</td>
<td>10</td>
<td>60%</td>
<td>2014</td>
<td>Yes</td>
</tr>
<tr>
<td>Angola</td>
<td>5</td>
<td>11</td>
<td>45%</td>
<td>2009</td>
<td>Yes</td>
</tr>
<tr>
<td>Gambia</td>
<td>5</td>
<td>15</td>
<td>33%</td>
<td>2013</td>
<td>No</td>
</tr>
<tr>
<td>Sudan</td>
<td>4</td>
<td>13</td>
<td>31%</td>
<td>2012</td>
<td>Yes</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>3</td>
<td>5</td>
<td>60%</td>
<td>2012</td>
<td>Yes</td>
</tr>
<tr>
<td>Djibouti</td>
<td>3</td>
<td>9</td>
<td>33%</td>
<td>2009</td>
<td>Yes</td>
</tr>
<tr>
<td>Guinea</td>
<td>3</td>
<td>11</td>
<td>27%</td>
<td>2003</td>
<td>No</td>
</tr>
<tr>
<td>Mauritania</td>
<td>3</td>
<td>14</td>
<td>21%</td>
<td>2005</td>
<td>Yes</td>
</tr>
<tr>
<td>Nepal</td>
<td>3</td>
<td>15</td>
<td>20%</td>
<td>2005</td>
<td>Yes</td>
</tr>
<tr>
<td>Somalia</td>
<td>2</td>
<td>2</td>
<td>100%</td>
<td>2014</td>
<td>Yes</td>
</tr>
<tr>
<td>Nigeria</td>
<td>2</td>
<td>14</td>
<td>14%</td>
<td>2014</td>
<td>Yes</td>
</tr>
<tr>
<td>Côte d'Ivoire</td>
<td>2</td>
<td>15</td>
<td>13%</td>
<td>2014</td>
<td>Yes</td>
</tr>
<tr>
<td>Benin</td>
<td>2</td>
<td>15</td>
<td>13%</td>
<td>2002</td>
<td>No</td>
</tr>
<tr>
<td>Burundi</td>
<td>2</td>
<td>15</td>
<td>13%</td>
<td>2001</td>
<td>Yes</td>
</tr>
<tr>
<td>South Sudan</td>
<td>1</td>
<td>3</td>
<td>33%</td>
<td>2012</td>
<td>Yes</td>
</tr>
<tr>
<td>Equatorial Guinea</td>
<td>1</td>
<td>8</td>
<td>13%</td>
<td>2010</td>
<td>No</td>
</tr>
<tr>
<td>Liberia</td>
<td>1</td>
<td>9</td>
<td>11%</td>
<td>2006</td>
<td>Yes</td>
</tr>
<tr>
<td>Cambodia</td>
<td>1</td>
<td>13</td>
<td>8%</td>
<td>2005</td>
<td>No</td>
</tr>
</tbody>
</table>

CAR: Central African Republic. The Conflict data on the last column is from UCDP/PRIO Armed Conflict Dataset (11). Source: Adapted from the State of the World’s Mothers 2014 Report (45).

Additionally, armed conflicts may affect MRH through severing the availability of basic reproductive health services, including accessibility to family planning, safe legal abortion and obstetrical care. Conditions might get unbearable for women due to the destruction of health infrastructure where care is normally provided, killing and fleeing of senior health personnel and a complete cut-off from other basic amenities as was the case with the conflict in Sarajevo (47). Furthermore, a 2011 ICRC report revealed that violent lethal attacks on patients, health care workers and facilities, and on medical vehicles is widespread in many conflict settings and poses a serious concern over access to health care in such settings (48). Moreover, a comparison of the mean value for some important MRH indicators between countries that recently experienced an armed conflict and those that have not experienced a
recent armed conflict shows that the former are hardest hit (Table 2). The situation is even direr in SSA countries that have recently experienced armed conflict. These findings further emphasise the coexistence of armed conflict and poor reproductive, maternal and child health status. Well known factors that affect the maternal mortality ratio are income per head; maternal educational attainment; HIV prevalence; and proportion of skilled attended births (44). Arguably, the most important factor implicated in maternal deaths in conflict and post-conflict settings is poor quality or the complete absence of EmOC services. A study in Uganda (49) has revealed that the availability of basic services such as a midwife in a health facility can reduce case fatality rate by up to 80%. Unfortunately such services are largely absent in a lot of conflict settings. A study by Bartlett et al. (50) among Afghan refugees in Pakistan revealed that 41% of deaths among reproductive-age women were pregnancy-related, due to inaccessibility of EmOC. The United Nations Populations Fund suggests that as many as one-third of maternal deaths worldwide could be prevented if unmet need for family planning were to be eliminated (51), and humanitarian emergencies can contribute to make access to these basic services much harder.

Table 2: Mean value of some maternal and reproductive health indicators between countries that experienced a conflict in the past 5 years and those that did not from 2000 – 2008

<table>
<thead>
<tr>
<th>Variables</th>
<th>All countries</th>
<th>Sub-Saharan Africa countries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Had conflict in the past 5 years</td>
<td>No conflict in the past 5 years</td>
</tr>
<tr>
<td>TFR</td>
<td>4.13 (401)</td>
<td>2.69 (1117)</td>
</tr>
<tr>
<td>MMR</td>
<td>459.18 (127)</td>
<td>159.65 (379)</td>
</tr>
<tr>
<td>Contraceptive prevalence</td>
<td>40.38% (112)</td>
<td>53.62 (175)</td>
</tr>
<tr>
<td>Skilled attended births</td>
<td>62.98% (114)</td>
<td>87.14% (306)</td>
</tr>
<tr>
<td>HIV prevalence</td>
<td>1.65% (365)</td>
<td>2.16% (964)</td>
</tr>
<tr>
<td>Antenatal care coverage</td>
<td>70.67% (6)</td>
<td>78.87% (23)</td>
</tr>
</tbody>
</table>

* Figures in brackets are the number of data points. Source: Urdal & Chi (52).

Generally women are dying while giving birth because “they have no access or limited access to health care, or because the quality of care is poor” (53). It is therefore not surprising that in countries where maternal deaths have been significantly brought down in the past decades, this has largely been associated with availability and access to basic and emergency obstetric care services. These include but not limited to the effectiveness of skilled birth attendance and advances in medical discoveries such as caesarian section, penicillin, blood transfusion, institutional delivery and ANC (54). Many of these services are largely unavailable in conflict settings. Furthermore, although the improvement of maternal and newborn health has been a key global policy issue for over a decade promoted through the MDGs,
investments towards these at national and regional levels varies across the board. For instance, while many countries in Asia (eg. India, Nepal, Pakistan, Bangladesh) that have poor maternal and newborn health indicators comparable to a number of countries in SSA have instituted policies such as the promotion of lay/ community health workers to provide basic maternal and child health services that have the potential of saving the lives of women and children, especially in poorly accessible rural areas, the same cannot be said of many SSA countries.

2.4. Delivery maternal and reproductive health services for populations affected by conflict
As demonstrated above, armed conflict pose serious risks to MRH and therefore need special attention under such situations. In order to respond appropriately to the challenges affecting MRH in crisis, the Interagency Working Group (IAWG) on Reproductive Health in Crises has developed a set of priority practices for healthcare professionals called the Minimum Initial Service Package (MISP) for Reproductive Health in Crisis Situations, designed with the goal of decreasing mortality, morbidity and disability in crisis-affected populations, including IDPs, refugees, and populations hosting them as illustrated in Figure 1. The IAWG is a broad-based, highly collaborative coalition of 18 Steering Committee member agencies – representing UN, government, non-governmental, research, and donor organizations committed to advancing the SRH of people affected by conflict and natural disasters (55).

As illustrated on Figure 1, the key objectives of the MISP are to:

- Ensure health cluster/ sector identifies agency to lead implementation of The MISP;
- Prevent and respond to sexual violence;
- Prevent excess maternal and newborn mortality and morbidity;
- Reduce HIV transmission; and,
- Plan for comprehensive reproductive health services, integrated into primary health care.
The MISP is best implemented in a coordinated manner by appropriately trained staff and comprises a set of priority reproductive health activities, equipment and supplies, and planning activities (56). In order for the MISP to be appropriately implemented, the availability of the following components are essential (56): trained personnel, including a coordinator for reproductive health; protocols and job aids on the implementation of selected interventions; and essential drugs, basic equipment and supplies. When appropriately implemented, the MISP saves lives and prevents illness, especially among women and girls. As such, the IAWG recommends that the MISP is implemented at the onset of every crisis. Additionally, the IAWG advocates that once the acute stage of an emergency has passed and the emergency moves into the post-conflict/recovery phase comprehensive reproductive health services must be implemented.

Delivering MRH and other health system strengthening interventions in crisis settings is a challenging undertaking. In order to improve the effectiveness of interventions in such settings, Marlowe et al. (57) have highlighted the importance of appreciating the historical context and community dynamics. This is because conflict may engender reduced human resource development capacity, distrust of hierarchy, and limited capacity for resource mobilization. In a bid to address some of these delivery challenges that
characterise conflict and post-conflict settings, local governments have been partnering with non-
governmental organisations (NGOs) to enhance the delivery of basic health services. Lee (58) has
reported about such partnerships during the conflict in Maguindanao, Philippines, where the local
government provided space in government health care facilities for the NGOs while the NGOs
furnished the facilities with critical supplies, personnel and contraceptives. Furthermore, in a conflict-
affected region of eastern Burma, Mullany et al. (59) have demonstrated the effectiveness of a three-
tiered collaborative network of community-based reproductive health workers in the delivery of
maternal care services, through the Mobile Obstetric Maternal Health Workers (MOM) Project. In the
project, health workers from local organisations received practical training in basic emergency obstetric
care plus blood transfusion, ANC and family planning at a central facility. Upon returning to their target
communities inside Burma, these first-tier maternal health workers trained a second tier of local health
workers and a third tier of traditional birth attendants (TBAs) to provide a limited subset of these
interventions. An evaluation of the project reported substantial improvements in a wide range of MRH
services and outcomes, including coverage for ANC, postnatal care, contraceptive prevalence and
skilled birth attendance as well as a decline in the unmet need for family planning (60). The success
of the intervention was largely associated to the community-based approach, involving strong supportive
networks for health staff which facilitated staff ownership of the project, community trust, and prompt
delivery of care (61).

Furthermore, an increasingly popular response to improve the delivery of health service in post-conflict
countries is for the country government and international donors to jointly contract NGOs to provide a
Basic Package of Health Services (BPHS) for the entire country’s population (62). Generally, the NGO
providers are contracted through competitive bidding processes to supply specific services against
predetermined performance targets, and are financed, coordinated, and monitored by national
governments with support from international donors (63). In Afghanistan, the initial BPHS was
introduced in 2002 and had seven components: maternal and newborn health, child health and
immunisation, nutrition, control of communicable diseases, mental health, disability and provision of
essential drugs (64). A recent evaluation of the impact of the BPHS programme in Afghanistan from
2004 and 2011 found that there was a dramatic increase in access to and utilisation of primary health
care services in rural areas as the number of BPHS facilities more than doubled; improved access for
women to basic health care; increased proportion of deliveries attended by skilled personnel; increased
supply of essential medicines; and a more functional health information system (65). These findings are
similar to another assessment undertaken by Howard et al. (63) in the country, where they reported
improvements in all health-system components, especially in service coverage and workforce.
However, weaknesses were reported in the areas of service access and usage - particularly in remote areas, staff retention, workload, and community accountability (63). Additionally, a study in Liberia where the BPHS is being implemented found that health workers had limited understanding of the approach and associated it with low salaries, difficult working conditions, and limited support from policy makers (66). Since 2002 when the BPHS-centred approach was introduced in Afghanistan, it has been adopted in several countries, including South Sudan, Liberia, Somalia, Sierra Leone, the Democratic Republic of Congo, Timor Leste (62,63,66).

Another approach in the delivery of services in humanitarian crises is the Cluster Approach. This approach ‘aims to increase the effectiveness of humanitarian response by providing a platform for country governments, United Nations (UN) agencies and non-governmental organisations (NGO) to jointly improve capacity, organisation, co-ordination, leadership and accountability within the different sectors of the humanitarian response both at the global and country level’ (67). Instituted in 2006 as part of the UN Humanitarian Reform process, the cluster approach is considered an important step towards a more effective humanitarian coordination, and aims to improve the predictability, timeliness, and effectiveness of humanitarian response (68). The global health cluster is led by the World Health Organization and is made up of more than 40 international humanitarian health organisations. Implementation of the approach in post-conflict Northern Uganda led to perceived improvement in the co-ordination of sexual and reproductive health (SRH) services and stronger advocacy (69). However, concerns were raised around low prioritisation, limited leadership and capacity, and standard settings for SRH services (69).

2.5. Theoretical frameworks/models for understanding maternal morbidity and mortality

A number of conceptual frameworks/models have been proposed to assess the causes of maternal morbidity and mortality. One of the first models that specifically focused on causes of maternal deaths is the Three Delays Model of Thaddeus and Maine (70). The model identifies three major delays that may lead to maternal mortality: delay in deciding when to seek for care, delay in identifying and reaching a health facility and delay in receiving appropriate care and treatment when in a health facility. This framework also highlights the underlying factors affecting the ‘delays’ and proposes a number of interventions for each stage of ‘delay’ to improve the prevailing situation. For example, major contributing factors to the delay in decision to seek care include lack of knowledge about newborn danger signs and where to seek care, perceived low quality of care at facility, concerns about accessibility and cost of care, and previous poor experience of health care among others (71,72). In the case of second delay, distance to health centres and hospitals, security concerns, poor roads, lack of transport and transport costs may constitute important contributing factors (71,72). For the third delay,
the major contributing factors may include poor facilities and lack of medical supplies, inadequately trained and poorly motivated medical staff, and inadequate referral systems (72). Arguably, armed conflict may have a direct or indirect effect on the afore-mentioned factors affecting maternal health care utilisation and outcome as illustrated on Figure 2 with the red arrows.

![Three Delays Model Diagram]

Source: UNPFA (73)

Figure 2: An adaptation of the Three Delays Model showing the possible effect of armed conflict

A more extensive model; conceptual framework for maternal and newborn mortality and morbidity, identifying the causes of maternal and neonatal morbidity and mortality has also been proposed by the United Nations Children Fund (74) (Figure 3). This framework highlights that maternal and newborn health outcomes (morbidity and mortality) are largely determined by a number of interconnected causes, including basic causes operating at the societal level, underlying causes operating at the household, community and district levels, and direct/proximal causes operating at the individual level.

According to this framework, navigating from the basic to the proximal causes, the operating factor(s) at one level influence other levels. Although this framework is not specifically developed for crisis settings, it can be inferred that the main ‘causes’ of maternal and neonatal morbidity and mortality may be severely exacerbated during a crisis, potentially leading to increased morbidity and mortality. For example, in emergency settings access to basic health care services (including access to EmOC and family planning), utilisation of health services, and access to nutritious food, hygiene and sanitation could be severely disrupted at the societal level as illustrated by the red dotted lines on Figure 3. For example, armed conflict may directly engender political, economic, cultural, religious and social
systems that undermine the societal and basic causes. Additionally, it could lead to discriminating attitudes that affects household’s access to basic social services, further deteriorating the societal and basic causes, eventually translating into increased obstetrics risks, diseases and poor dietary intake at the individual level. It is also important to highlight that a poor state of affairs at the societal and basic levels, may in turn engender an armed conflict. Therefore, while armed conflict may lead to increased poverty, which may in turn undermine the societal and basic causes and consequently poor health outcomes, a deteriorating situation at the societal and basic causes, including high levels of poverty may equally engender the emergence of an armed conflict.
Figure 3: An adaptation of the conceptual framework for maternal and newborn mortality and morbidity showing the possible effect of armed conflict

Source: UNICEF (74)
2.6. The healthcare delivery systems in Burundi and Uganda

The choice Burundi and Uganda as case studies for this thesis is based on the variation in the nature and length of the armed conflicts and the similar duration since the conflicts ended. The recent conflict is Burundi had a strong ethnic character and lasted for about 12 years, while the conflict in Northern Uganda lasted for about 20 years and was not organized along ethnic lines. Additionally, at the time the fieldwork was conducted it had been about 7-8 years since the conflicts ended. This provided an opportunity to compare the impact of the conflicts on the health systems and population health. With such diversity in study sites and yet similar post-conflict duration, a more comprehensive outlook of the impact of the conflict on MRH will be captured.

2.6.1. Uganda (75)

The national health system in Uganda is made up of all institutions, structure and actors whose actions have the primary goal of achieving and sustaining good health. The provision of health services in the country has been decentralized with districts and health sub-districts playing a key role in the delivery and management of health services at the district and sub-district levels respectively. The health services are organized into national referral and regional referral hospitals, general hospitals, and health centres (HC) IV, III, II and I.

The general hospitals provide preventive, promotive, curative maternity, in-patient health services, surgery, blood transfusion, laboratory and medical imaging services as well as provide in-service training, consultation and operational research in support of the community-based health care programmes. The regional referral hospitals (RRHs) offer specialist clinical services such as psychiatry, Ear, Nose and Throat (ENT), ophthalmology, higher level surgical and medical services, and clinical support services in addition to undertaking teaching and research. The two national referral hospitals (NRHs) (Mulago and Butabika) are responsible for providing comprehensive specialist services and are involved in health research and teaching. The HC IV is a mini hospital that provides preventive, promotive, curative maternity, in-patient health services, basic surgery, blood transfusion, and laboratory services. The HC IIIIs provide basic preventive, promotive and curative care, in addition to offering laboratory services for diagnosis, maternity care and first referral cover for the sub-county. The HC IIs provide the first level of interaction between the formal health sector and the communities, and only provide out-patient care and community outreach services. The HC Is have no physical structure but consist of teams of local people known as the Village Health Teams (VHTs) who serve as a link between individual communities and health facilities. As of 2010, there were 2,242 health centres and 56 public hospitals in the country: 2 NRHs, 11 RRHs and 43 general hospitals.
In Uganda, the private sector plays an important role in the delivery of health services, covering about 50% of the reported outputs. The private health system comprises of the Private Not for Profit Organisations (PNFPs), Private for Profit Practitioners (PFPPs) and the Traditional and Complementary Medicine Practitioners. As of 2010, the PNFPs owned 613 health facilities and 46 hospitals while the PFPPs owned 269 health centres and 8 hospitals.

With the abolition of user fees by the government since 2001, curative, preventive, rehabilitative and promotive health services are free of charge in all public health facilities, except in the private wings of public hospitals. However, availability and utilization of services has been hindered by poor infrastructure, lack of medicines and other health supplies, shortage of human resources in the public sector, low salaries, lack of accommodation at health facilities and other factors that further constrain access to quality service delivery. The issue of shortage of human resources in the public sector is quite serious although it is more acute with the lower health facilities like the health centres III and II. For example, in 2011 the public sector vacancy rate was 63%, a situation partly associated with the increase in the number of districts and health facilities without a corresponding increase in human resources for health (76).

Furthermore, although HC IVs are expected to operate like a mini-hospital, many are not functional due to lack medical officers, inadequate infrastructure and lack of local supervision (76). For example, the percentage of HC IVs that provide emergency services such as minor operations, caesarean sections, and blood transfusion has remained low from 2006/07 to the 2009/10 fiscal year as show in Figure 4. In fact, less than 30% of HC IVs were able to provide these services during the afore-mentioned fiscal period.

![Figure 4: Trends in the provision of selected HC IV services, 2006/07 – 2009/10](image)

Source: Uganda Health Assessment 2011(76)

ART: Antiretroviral Therapy; PMTCT: Prevention of Mother-To-Child Transmission of HIV; HCT: HIV Counseling and Testing
2.6.2. **Burundi** (77)

The national health system in Burundi is structured into three hierarchical levels: the central level involving the Office of the Minister of Health and Fighting AIDS, and its associated directorates and programmes; the intermediate level represented by the 17 provincial bureaus; and the peripheral level consisting of 129 towns. The delivery of health services takes place at the peripheral level and its operational unit is the health district. As of 2010, there were 45 health districts consisting of 63 hospitals and 735 health centres. Generally a district covers 2 – 3 towns, with a population of between 100,000 – 150,000 residents. The delivery of health care occurs at three levels: the basic, first referral and national referral levels, and a minimum package of activities exist for each of the levels, covering treatment, prevention, promotion and rehabilitation.

The health centres are the point of entry into the health care delivery system and include both government and privately owned facilities. The health centres are expected to offer a minimum package of health services, including treatment and prevention consultation services, laboratory, pharmacy, health promotion and health education services as well as in-patient observation. Of the 735 health centres that existed in 2010, 423 were government owned/public, 207 were private facilities and 105 were approved religious/faith-based facilities. The first referral facilities are the district hospitals which offer outpatient consultation, emergency services, hospitalization, specialized techniques, diagnosis and support services. Generally, outpatient consultation services at the district hospital only receive new cases that are referred by the health centre. Of the 63 district hospitals, 41 are public, 8 are PNFPs, and 14 are PFPPs. Nine of the 45 districts do not have hospitals, and some of the hospitals are not well-equipped to deal with the referrals. At the national referral level there are two categories of referral facilities: the second and third referral facilities. There are three second level referral facilities. In addition to the services provided by the district hospitals, they provide some specialized care such as fistula repair among others. The third level referral facilities comprise of specialized hospitals that in addition to the services offered at the district hospital also offer specialized tests and treatment.

About 80% of the population lives within 5 km of a health facility, although geographical disparities in favour of residents in urban settings exist. With majority of Burundians seeking health care services through out-of-pocket expenses, the government introduced a health insurance system in 1984 but its coverage is limited to specific health facilities. Furthermore, in 2006 the government implemented a policy of free health care for children below 5 years and pregnant women. This was followed by the introduction of a performance-based financing (PBF) scheme; a mechanism by which health providers are, at least partially, funded on the basis of their performance. These series of reforms have resulted in
an increase in the use of health services, better quality of treatment, and greater number of health personnel in rural areas (78).

2.7. Maternal and reproductive health in Uganda and Burundi

2.7.1. Uganda
The state of maternal and reproductive health in Uganda presents a mixed picture. Although substantial improvements in access to maternal and child health have been observed over the past two decades, significant challenges remain in improving the quality of service delivery and addressing the continuing health status issues such as high infant and maternal mortality (76). The 2013 maternal mortality ratio was 360 per 100,000 live births, a 50% reduction from the 1995 levels (79). However, the country is unlikely to meet the MDG five – to reduce by three quarters the maternal mortality ratio between 1990 and 2015 target of 131 per 100,000. The leading direct causes of maternal deaths are haemorrhage (26%), sepsis (22%), obstructed labour (13%), unsafe abortion (8%) and hypertensive disorders in pregnancy (6%) (75). Also, as many as 93% of Ugandan women attend at least one antenatal care visit before delivery, 57% deliver their babies in a health facility with the assistance of a skilled personnel, and 33% of mothers and their newborns receive postnatal care within two days of birth (80). On a less positive note, high fertility and low median age at first marriage appears to be quite persistent. Although the female literacy rate has improved over the years, this does not appear to have significantly impacted on the overall total fertility rate and the female age of first marriage. A snapshot of some health indicators from 1988-2011 is shown on Table 3.
Table 3: Trends in the outlook of maternal and related health indicators for Uganda

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal mortality ratio per 100,000 live births *</td>
<td>740</td>
<td>650</td>
<td>510</td>
<td>410</td>
<td></td>
</tr>
<tr>
<td>Percentage of antenatal care coverage, at least one visit *</td>
<td>91.2</td>
<td>92.4</td>
<td>93.5</td>
<td>93.3</td>
<td></td>
</tr>
<tr>
<td>Percentage of antenatal care coverage, at least four visits *</td>
<td>47.2</td>
<td>41.9</td>
<td>47.2</td>
<td>47.6</td>
<td></td>
</tr>
<tr>
<td>Total fertility rate (children per women)</td>
<td>7.4</td>
<td>6.9</td>
<td>6.9</td>
<td>6.7</td>
<td>6.2</td>
</tr>
<tr>
<td>Percentage of married women currently using any method of family planning</td>
<td>4.9</td>
<td>14.8</td>
<td>22.8</td>
<td>23.7</td>
<td>30.0</td>
</tr>
<tr>
<td>Percentage of married women currently using any modern method of family planning</td>
<td>2.5</td>
<td>7.8</td>
<td>18.2</td>
<td>17.9</td>
<td>26.0</td>
</tr>
<tr>
<td>Percentage of married women with an unmet need for family planning</td>
<td></td>
<td></td>
<td>30.0</td>
<td>35.0</td>
<td>38.0</td>
</tr>
<tr>
<td>Median age at first marriage for women age 25-49 (years)</td>
<td>17.0</td>
<td>17.4</td>
<td>17.8</td>
<td>17.6</td>
<td>17.9</td>
</tr>
<tr>
<td>Median age at first sex for women age 25-49 (years)</td>
<td>15.6</td>
<td>16.0</td>
<td>16.6</td>
<td>16.4</td>
<td>16.8</td>
</tr>
<tr>
<td>Infant mortality rate (per 1,000 live births)</td>
<td>98</td>
<td>81</td>
<td>88</td>
<td>71</td>
<td>54</td>
</tr>
<tr>
<td>Under-five mortality rate (per 1,000 live births)</td>
<td>177</td>
<td>147</td>
<td>151</td>
<td>128</td>
<td>90</td>
</tr>
<tr>
<td>Percentage of live births delivered at a health facility</td>
<td></td>
<td></td>
<td>36.6</td>
<td>41.8</td>
<td>57.4</td>
</tr>
<tr>
<td>Percentage of women who are literate</td>
<td></td>
<td></td>
<td>57.8</td>
<td>56.3</td>
<td>64.2</td>
</tr>
<tr>
<td>Percentage of respondents with secondary or higher education</td>
<td>9.9</td>
<td>13.5</td>
<td>18.4</td>
<td>21.3</td>
<td>27.7</td>
</tr>
</tbody>
</table>

Source: Country Quickstats, DHS; * Data from UN MDG Monitoring database

Furthermore, compared to the 1988-89 levels, the contraceptive prevalence rate has substantially improved although overall the uptake is still low. With a health workers to residents ratio of 1.8 health workers per 1,000 residents, the country falls short of the World Health Organization recommendation of 2.5 health workers per 1,000 residents (80). Also, with a current government expenditure on health equalling 10.8% of total government expenditure (81), Uganda is yet to meet the 15% budget allocation for health as required by the Abuja declaration to which the country is a signatory.

Additionally, the nationally met need for emergency obstetric care (EmOC) is 40% and only 11.7% of women deliver in fully comprehensive EmOC facilities (75) as opposed to the recommended minimum of 15%. Access to EmOC thus remains a major concern especially as the nearest health facility to the community that can provide basic EmOC services is HC III, but only 14% of these can provide the service (82). More so, comprehensive EmOC services are available only in 8.1% of the facilities, while signal functions such as manual removal of the placenta, removal of retained products, and assisted vaginal delivery are predominantly missing. The national average for caesarean section is also very low.
compared to the recommended minimum (2.7% versus 5%). This unmet need for EmOC services is strongly implicated in the high maternal and neonatal morbidity and mortality in the country. In some districts where the basic infrastructure for the delivery of EmOC services is available, service uptake has been hindered by irregular supply of medication and equipment, inadequate equipment, skill gaps among health care providers, poverty and poor gender relations (82).

The disease burden in the country is predominantly communicable diseases, with a gradually growing burden of non-communicable diseases, including mental health disorders (76). Maternal and perinatal health conditions account for over 20% of the disease burden in the country as well as a significant proportion of the mortality. The leading cause of morbidity in the country is malaria.

2.7.2. Burundi

The health situation in the country is worrisome, with a high burden of communicable and non-communicable diseases. Malaria, acute respiratory infections, diarrheic diseases, malnutrition, HIV/AIDS and tuberculosis are the primary causes of high morbidity and mortality, with pregnant women, children and orphans particularly affected. A snapshot of some key health indicators in 1987 and 2010 (Table 4) shows a mixed but overwhelmingly poor health status, especially for women and children. On a positive note, the uptake of modern methods of family planning, and the infant and under-five mortality rates have witnessed some improvements although still poorer than the SSA regional average. Also, the proportion of births attended by skilled personnel has risen significantly from 19% in 1987 to 60% in 2010 (83). The total fertility rate and the median age at first marriage appear to have stabilized in spite of the current abysmal record.
Table 4: Trends in the outlook of maternal and related health indicators for in Burundi

<table>
<thead>
<tr>
<th>Indicator</th>
<th>1987</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal mortality ratio per 100,000 live births*</td>
<td></td>
<td>820</td>
</tr>
<tr>
<td>Percentage of antenatal care coverage, at least one visit*</td>
<td></td>
<td>98.9</td>
</tr>
<tr>
<td>Percentage of antenatal care coverage, at least four visits*</td>
<td></td>
<td>33.4</td>
</tr>
<tr>
<td>Total fertility rate (children per women)</td>
<td>6.9</td>
<td>6.4</td>
</tr>
<tr>
<td>Percentage of married women currently using any method of family planning</td>
<td>8.7</td>
<td>21.9</td>
</tr>
<tr>
<td>Percentage of married women currently using any modern method of family</td>
<td></td>
<td></td>
</tr>
<tr>
<td>planning</td>
<td>1.2</td>
<td>17.7</td>
</tr>
<tr>
<td>Percentage of married women with an unmet need for family planning</td>
<td></td>
<td>32.4</td>
</tr>
<tr>
<td>Median age at first marriage for women age 25-49 (years)</td>
<td>19.5</td>
<td>20.3</td>
</tr>
<tr>
<td>Median age at first sex for women age 25-49 (years)</td>
<td>19.3</td>
<td>20.0</td>
</tr>
<tr>
<td>Infant mortality rate (per 1,000 live births)</td>
<td>74</td>
<td>59</td>
</tr>
<tr>
<td>Under-five mortality rate (per 1,000 live births)</td>
<td>153</td>
<td>96</td>
</tr>
<tr>
<td>Percentage of live births delivered at a health facility</td>
<td></td>
<td>59.5</td>
</tr>
<tr>
<td>Percentage of women who are literate</td>
<td></td>
<td>61.5</td>
</tr>
<tr>
<td>Percentage of respondents with secondary or higher education</td>
<td>2.2</td>
<td>12.1</td>
</tr>
</tbody>
</table>

Source: Country Quickstats, DHS; *Data from UN MDG Monitoring database

Like Uganda, Burundi is also highly unlikely to meet the MDG 4 and 5 targets for improving child and maternal health. The 2014 maternal mortality ratio is 740 deaths per 100,000 live births and the 2015 target is 330 deaths per 100,000 live births (83). In the case of under-five mortality rate, Burundi currently stands at 105 deaths per 1,000 live births, with a target of 55 by 2015. Among the under-five deaths, 35% are neonatal deaths (83). The high maternal and neonatal mortality is further undermined by a very poor national availability of EmOC services that stands at 27%. The density of health workers to population is also deplorable: 0.03 physicians per 1,000 residents and 0.06 nurses and midwives per 100 residents (78). The caesarean section rate is 4%, with a huge geographical inequality; 12% for urban and 3% for rural areas. A study in one of the major EmOC centres in Burundi found that the main indications for caesarean section were obstructed labour (35.9%), previous caesarean section (26.7%), and malpresentation (11.3%) (84). Furthermore, the general government expenditure on health as a percentage of total government expenditure has increased from 8.1% in 2011 (78) to 14% in 2012 (83). Recent public health reforms in Burundi through the abolition of user fees for health services for under-five and pregnant women coupled with the introduction of a PBF programme have seen an increase in the demand and utilisation of maternal and child health services in the country. Bonfrer et al. (85) found that following the introduction of the PBF scheme, the proportion of women delivering their babies at a facility has increased by 36% while the proportion of women using modern family planning methods...
has increased by 55%. The scheme has also been associated with improved quality of care provided during ANC visits, especially among women in the higher income class (86). Prior to the introduction of the universal health care policy for under-fives and pregnant women, it was not uncommon for women to be detained in facilities after seeking care because of inability to pay their bills. A survey among some major health facilities in 2005 found that 775 patients were detained in four health facilities because they were unable to pay their bills (87). Of these, 267 were in the gynaecology/obstetrics wards and overall, 35% of the insolvent patients were women who delivered their babies by caesarean section.

Another common reproductive health problem in Burundi is the high incidence of obstetric fistula. The annual incidence is estimated at 0.2 - 0.5% of all deliveries, with 1000–2000 new cases per year (88). To address this growing concern, Médecins Sans Frontières (MSF) set up a dedicated fistula facility, the Gitega Fistula Centre, for the management of women with obstetric fistula. The centre is the only permanent referral facility in Burundi specialised in the management of obstetric fistula and has the capacity of performing about 350–450 obstetric fistula surgical repairs per year (89).

Sexual and gender-based based violence (SGBV) is also a worrying phenomenon in the country. The growing problem of sexual violence has been associated with an ‘influx of returning refugees and displaced persons, the presence of large numbers of demobilised ex-combatants, the high prevalence of female-headed households, widespread lack of economic opportunity and general breakdown in social norms’ (90). A recent study reported a prevalence of sexual violence at 3.3% in 2002 and 3.2% in 2005 (91). Falling socio-economic status puts many women and girls at risk of sexual violence, especially for female-headed households. Zicherman (90) also found that poor women without a husband or older son in the household are more likely targets for sexual violence as they are perceived as unprotected. Sadly, the incidence of SGBV that characterized the civil war has continued even after the end of the conflict: “What is worst, and what should draw the attention of those fighting against [SGBV], is that despite the signing of the peace agreements, despite the return of democratic process in Burundi, the situation of women as victims of this violence has not improved” (92).

2.8. Recent armed conflict in Burundi and Northern Uganda

2.8.1. Burundi (91,93)

Burundi has experienced cyclical ethnic violence and killings between the Hutu and Tutsi ethnic groups since 1962 following the country’s independence from Belgium. The most recent civil war was an armed conflict that lasted from 1993 to 2005. This followed the assassination of the country’s first democratically elected and Hutu president, Melchior Ndadaye in a failed coup attempt on October 21, 1993 by Tutsi extremists in the army (94). As the news of the coup and assassination spread to the rural
provinces, Bundervoet (94) asserts that Hutu peasants committed large-scale massacres of Tutsis and moderate Hutus. The massacres occurred in many parts of the country at different intensities but were particularly intense in central and northern Burundi (95). According to Chrétien (96), some districts in certain provinces were “almost completely ‘cleansed’ of all Tutsi elements.” Within days, an estimated 100,000 Burundians were killed in what later became acknowledged as genocide (97). In response to the targeted killing of Tutsis and moderate Hutus, the Tutsi army retaliated against the Hutus, continuing what would become the most severe civil war in Burundi’s history, in terms of both human lives and socioeconomic destruction (98). According to Ndikumana (98), the conflict that ensued after the 1993 coup was more like a traditional war with two opposing armed and organized factions and impacted almost the entire country as opposed to the earlier conflicts that were more localised and began with a local Hutu insurgency followed by severe but random Tutsi army reprisals.

Between August 1996 and August 2000, Major Pierre Buyoya returned to power after a bloodless coup. During this period the intensity of the conflict was lower in most provinces, paving the way for the signing of the Arusha Peace and Reconciliation Agreement in November 2000. A transitional government was implemented in October 2001 which allowed a rotation of the presidency and vice presidency every 18 months between a Tutsi and a Hutu. This was preceded by an unsuccessful coup attempt in April 2001. The peace agreement was however unable to bring any end to the fighting as some main Hutu rebel groups refused to sign a ceasefire agreement and continued attacks against the army and its supporters. By April 2003, Domitien Ndayizeye, a Hutu became the new president while Pierre Buyoya stepped down. Later that year in November 2003, president Ndayizeye signed a ceasefire agreement in Dar es Salaam with the main Hutu rebel group fighting the government and their fighters were later incorporated into the Tutsi-dominated army. In July 2005 Burundians participated in peaceful, free and democratic legislative elections that saw the election of the former rebel group turned political party; ‘Conseil National pour la Défense de la Démocratie – Forces de Défense de la Démocratie (CNDD-FDD)’ as the main political force, with 58% of the seats. The CNDD-FDD leader, Pierre Nkurunziza was sworn in as president in August 2005, marking the formal end of the conflict.

The recent armed conflict in Burundi is estimated to have caused the death of tens of thousands and the displacement of millions of people. According to the UCDP Conflict Encyclopedia (99) 15-20,000 people were killed in the fighting between the armed groups and the government, and another 12,000 were killed in ‘one-sided’ violence (against unarmed civilians). Between 1993 and 2002 about 4 million persons were displaced as a result of the conflict of which 1.3 million were outside the country as refugees and 2.2 million in IDP camps within the country (100). For example, by 1999, the number of
Burundian refugees in Tanzania were estimated at 470,000, representing more than 7% of the population of that country at the time (101). Of the hundreds of thousands that were internally displaced, it is estimated that about 281,000 were living in IDP camps by 2003 (102). The conflict also affected the economic situation of the country, increasing the rural poverty headcount from 40% in 1993 to over 70% in 2003 (103).

2.8.2. Northern Uganda (104,105)

The armed conflict in Northern Uganda started as an insurgency launched by the rebel Lord’s Resistance Army (LRA) against the Ugandan national army, Uganda Peoples Defence Force (UPDF). The war lasted from 1986 until 2006. In 1986, the rebel National Resistance Army (NRA) from southern Uganda led by Yoweri Museveni overthrew a government dominated by northern ethnic groups, including the Acholi (105,106). However, the immediate cause of the rebellion against the Museveni government was arguably the way the NRA soldiers behaved when they reached the northern region of Uganda (107). It is believed that NRA soldiers that were sent to the north of the country perpetrated rapes, looting of cattle, burning of huts, revenge killings and massacres in the northern regions and to escape this, some of the Acholi ex-soldiers joined by other young Acholi men took up weapons and went into the bush to join the newly founded Uganda Peoples Defence Army (UPDA) (106). Between 1988 and 1990, the NRA fought and defeated the following rebel groups: the UPDA; the Holy Spirit Movement (HSM) I and II; and the Uganda People’s Army (UPA). The LRA is believed to have been formed from the ashes of the UPDA and HSM I and II in 1988. According to Annan et al. (105), the decision by the LRA to keep fighting was unpopular and unsupported among the Acholi people. With lack of resources or volunteers, the LRA began the practice of looting homes for supplies and forced recruits. To instil fear and terror in the population and dissuade them from collaborating with the government, LRA fighters killed and maimed civilians (108).

Although the activities of the LRA were initially low scale in nature, by 1994 their operations grew bigger following new military alliances with the Government of Sudan (which supplied arms and other support for the LRA to counter Uganda's arming of the southern-based rebel group, the Sudanese People's Liberation Army, SPLA). With this alliance with Sudan, the LRA was able to get bases and much needed supplies of weapons to continue fighting the Ugandan army. They then stockpiled weapons, trained soldiers and set up expansive base camps from which they fought against the SPLA. Their rate of abductions also surged (109,110), with the primary targets for abduction being adolescent males, although males and females of all ages were also abducted (111). As a response to the growing
situation of insecurity, as early as 1996 some Acholi moved to displacement camps about a few miles from their homes.

In December 1999, a peace agreement (the Nairobi Agreement) was signed between the Presidents of Uganda and Sudan, with a pledge that each would stop supporting the rebel forces of the other. With the improving relations between Uganda and Sudan, by 2002 the Government of Sudan allowed the UPDF to pursue LRA forces across the Sudanese border. In March 2002, the UPDF launched an offensive against the LRA in their bases in Sudan dubbed ‘Operation Iron Fist’. The LRA responded by reinvading northern Uganda, causing havoc and mass destruction, and extended their violent campaign into eastern Uganda. The LRA campaign resulted in a sharp increase in the number of IDPs from 500,000 to 1.7 million, and doubling of the number of abducted Acholi children and youth to an estimated total of 30,000 (112).

By 2003, the government forcibly displaced entire populations to make-shift camps known as ‘protected villages’ as part of their counterinsurgency strategy. These camps were generally devoid of food or clean water, and sanitation and medicine are non-existent (113). By 2004, the LRA had been quite weakened and their campaign of abductions had almost ceased. This followed the announcement by the Chief Prosecutor of the International Criminal Court in January 2004 of his intention to investigate atrocities committed by the LRA and to arrest and try those most responsible. In October 2005, the ICC publicly indicted five LRA commanders including the leader, Joseph Kony. In May 2006 another peace process was initiated by the vice-president of South Sudan, but it collapsed in 2008 without any agreement. Since then, Kony and a few hundred followers have been roaming central Africa, fleeing Uganda and international forces. The LRA has continued to abduct and terrorize populations in southern Sudan, eastern Congo, and the Central African Republic, where they operate in smaller mobile units.

According to Doom and Vlassenroot (114), one of the most striking elements of the conflict in northern Uganda is the brutality and apparent arbitrariness of the LRA violence. They assert that while all rebellions and civil wars by nature make use of violence, the actions of the LRA seem to be based on blind terror, and at a glance appear counterproductive and unrelated to a long-term political aim. A Human Rights Watch report (113), documented that many former captives of the LRA ‘if not forced to participate in crimes, were forced to watch helplessly the beatings, tying of abductees, killings, abductions, rape, and slaughtering of others, sometimes their closest relatives’.
2.9. Effect of conflict on health in Burundi and Northern Uganda

This section presents a brief literature review of the effect of armed conflict on health outcomes in Burundi and Northern Uganda.

2.9.1. Burundi

Relatively little research has been published on the effect of the Burundian civil on general population health. However, the few published studies point to substantial negative consequences of the conflict on the population health. The civil war severely damaged the country’s health sector coupled with limited government capacity to invest in the health sector, a situation further compounded by an economic crisis (115). The health system was plagued by lack of medical staff, destruction of infrastructure, and increased inaccessibility of health care to many due to insecurity in certain regions (116). Furthermore, excess mortality rates were substantially higher than those associated with an emergency situation (117). The ensuing conflict was also directly linked to scarcity of goods and services, difficulties in supply and transport of basic commodities, increase in violence and the destruction of properties (115).

A study conducted by the International Organization for Migration, quoted by Caihol et al. (118) revealed that between 1993 and 2002, 150 physicians fled the country because of the civil war, low remunerations, and poor working conditions. The study also found that the distribution of nurses varied across the provinces based on the level of security and donor funding. One major impact of these occurrences was a generalized vulnerability of the population (115).

In addition to the breakdown of the health system, the conflict also had a major impact on violence against women. The incidence of sexual violence against Burundian women was alarming during the conflict as a large number of rebels and Burundian armed forces occupied villages and towns across the country (90). While reliable statistics on the specific incidence during the conflict is unavailable, anecdotal evidence suggested that it was quite disturbing. A survey among women by CARE, an NGO in Bujumbura Rurale province in 2005 found that over 90% had personally experienced sexual violence or knew someone who had (90).

Furthermore, the civil war had a heavy toll on the health of children. Bundervoet et al. (119) found that early childhood exposure to the civil war had a significant adverse effect on children's health outcomes and the longer the exposure, the larger the impact. This was particularly the case for the height for age z-scores, HAZ (which describes how far a child's weight is from the median weight of a child at the same height in the reference value), where they found that an additional month exposure to war decreased the HAZ by 0.047 standard deviations. Verwimp (103) also found that a one year exposure to the conflict translated into a 0.15 decrease in the HAZ and resulted in a 10% increase in the probability
of dying. The impact was more severe on boys, where he found a 0.34 decrease in HAZ per year of conflict exposure and a 25% increase in the probability of dying.

2.9.2. Northern Uganda  
One immediate impact of the conflict on health was a growing burden of injury in the region. In the population Lett et al. (120) reported that about 14% of people were injured annually, with an annual death rate from war injury of 7.8/1,000 and a disability rate of 11.3/1,000. The authors found that gunshot injuries were the leading cause of death.

Another major and widely reported impact of the Northern Ugandan conflict was a growing burden of post-traumatic stress disorder (PTSD) and other related mental health problems. A survey among IDP camps found that 54% of the respondents met the symptom criteria for PTSD and 67% met the criteria for depression (121). Furthermore, four years after the war, McMullen et al. (122) reported that 57% of students still had clinically significant levels of PTSD symptoms and the occurrence and severity of the PTSD was associated with whether they experienced abduction and the number of types of traumatic events exposed to. Okello et al. (123) also observed that in the region, psychiatric disorders are more common among war-abducted than non-abducted adolescents.

Additionally, violence against women and children was and continues to be a major consequence of the conflict. The levels of gender-based violence, especially intimate partner violence remains very high in Northern Uganda. Using the ‘neighbourhood method’, Stark et al. (124) recorded an incidence of 51.7% in the past year among 299 households across four IDP camps in the area. A cross-sectional survey among two IDP camps in Kitgum, Northern Uganda in 2005 (when the conflict was ongoing, with an extremely precarious security situation), found that over a quarter of women in a sample of 573, reported suffering from at least one form of war related sexual violence (125). The major forms reported included defilement, abduction with sex, attempted rape, forced marriage and heterosexual rape. The conflict has equally contributed to family violence against children, exacerbated by female guardians’ re-victimization experiences and male guardians’ psychopathological symptoms (126). Patel et al. (127) also observed that exposure of adolescent girls to the conflict heightened their sexual vulnerability and subsequently enhanced their risk of contracting HIV/AIDS. They associated this with the erosion of local protective traditional practices, collapsed livelihoods, unsupervised and idle lifestyle in the IDP camps, and inadequate access to appropriate sexual health information. Schlecht et al. (128) observed that the conflict also engendered the practice of early relationships and marriage among adolescents, exacerbated by poverty, splintering of family, and lack of education. Furthermore, Roberts et al. (129) reported that the conflict and displacement was strongly associated with increased adultery, defilement and theft within the population.
The conflict also had an enormous toll on the well-being of health workers. Namakula et al. (130) reported that a number of health workers lost their lives or witnessed the death of their friends and colleagues, coupled with disconnection from social and professional support systems, displacement, limited supplies and equipment, increased workload and long working days, and lack of pay. National humanitarian health workers also experienced chronically high levels of anxiety, depression, PTSD, and burn-out (131).

Additionally, the conflict was strongly associated with high levels of alcohol abuse and alcohol-induced suicide in the region (132), probably due to high levels of idleness and unemployment in IDP camps. Sadly, the phenomenon continues to date and the chronically high levels of SGBV in the region have also been associated to some extent to the high levels of alcohol abuse. Throughout the conflict, the disease profile of the region was significantly affected, with a greater risk of persistent emerging and re-emerging infectious diseases, malnutrition and war-related injuries, partially associated with the prolonged nature of the conflict, population displacement, collapse of social structures, and breakdown of the health system (133).

2.10. Rationale for the study

Armed conflict has been described as a public health problem (9) and an important contributor to the social (129,134,135) and political (136) determinants of health and a driver of poverty (137) and health inequity (137,138). Of the armed conflicts that have taken place since World War II, about 90% have been in developing countries (139), with SSA countries experiencing a relatively higher number of conflicts than any other region of the world (140,141). The impact of these conflicts on health systems often extends beyond the period of active warfare, working its way through specific diseases and conditions, and under particularly adverse conditions disproportionately affecting women and children (142,143). Health systems in conflict and post-conflict countries are therefore faced with huge challenges. One major challenge has been the neglect of MRH (144-146) resulting in increased maternal mortality (147); lack of information about and limited access to family planning services (144,148); and increased incidence of sexual violence, rape, complications of abortion, sexually transmitted infections, and unwanted pregnancies (148-150) among others.

In responding to this precarious situation, there has been a growing level of advocacy for prioritizing reproductive health of women and girls in crisis settings (151,152). In order to respond to this call, reliable data and information on the welfare of women and girls in such settings is needed. However, data from such settings is sparser and of doubtful quality (153) or even completely unavailable (140). It is therefore not surprising that Article 16 of the UN Security Council Resolution 1325 on Women,
Peace and Security calls for more research on the impact of armed conflict on women and girls (154). Through such studies, reliable data and information can be gathered that will help the relevant stakeholders in effective policy development and implementation.

Some important steps in improving the demand and supply of MRH services in conflict and post-conflict settings are to determine the factors that affect women’s utilisation of these services, and the barriers affecting the supply of the services. In addition, data and information on the impact of the conflict on MRH outcomes and services will also be crucial in the development and roll-out of potential interventions to improve MRH in such settings. These are the areas this thesis seeks to contribute in.
CHAPTER THREE

3.0 RESEARCH QUESTIONS AND RESEARCH OBJECTIVES

3.1. Research questions
The overarching research questions were:
- What are the impacts of recent armed conflict on maternal mortality and total fertility rates? (Paper I)
- What are the effects of armed conflict on maternal and reproductive health outcomes and services? (Paper II)
- How do armed conflicts lead to limited access to and poor quality of maternal and reproductive health services? (Paper II)
- What are the determinants of women’s utilisation of maternal and reproductive health services in post-conflict settings? (Paper III)
- What are the barriers to effective delivery of emergency obstetric and neonatal care (EmONC) services in post-conflict settings? (Paper IV)
- How do health systems in post-conflict settings ensure the availability of lifesaving emergency and obstetric care services? (Paper IV)

3.2. Research objectives
- To assess the impact of exposure to recent armed conflict on maternal mortality and total fertility rates.
- To describe the perceived effects of armed conflict on maternal and reproductive health services and outcomes.
- To document how armed conflict may lead to limited access to and poor quality of maternal and reproductive health services.
- To determine the factors that affect women’s utilisation of maternal and reproductive health services in post-conflict settings.
- To document the barriers to the delivery/supply of EmONC services and how local health systems strive to overcome these barriers in post-conflict settings.
CHAPTER FOUR

4.0 METHODOLOGY
This thesis is multidisciplinary in nature and uses mixed research methods to address the study objectives and research questions. The design and methods cut across the fields of public health and social sciences, utilising both qualitative and quantitative research techniques.

4.1. Quantitative study

4.1.1. Study design
The design is a cross-national time-series regression analysis. Regression analysis is a quantitative research method which is used when the study involves modelling and analysing several variables, where the relationship includes a dependent (outcome) variable and one or more independent (explanatory) variables (155). The outcome variable is presumed to depend in some way or be systematically predicted by the explanatory variables, while the explanatory variables are thought to independently affect the outcome variable. Generally, ‘the goals of regression analysis are to predict or explain differences in values of the outcome variable with information about values of the explanatory variables’ (155). The specific regression analysis used is ordinary least squares (OLS) regression. In our study, we used this method to determine the relation between armed conflict (our main independent variable) and the following health outcomes (dependent variables): maternal mortality ratio and total fertility rate.

4.1.2. Independent variable
Armed conflict is defined as a contested incompatibility which concerns government and/or territory where the use of armed force between two organized parties, of which at least one is the government of a state, resulting in at least 25 battle-related deaths in any given year (11,141). In our study, armed conflict is measured as aggregate ‘battle-related deaths’, measured as the log of the count of battle-related deaths due to fighting in the 5 years preceding the observation period (156), where periods with no battle-related deaths are coded ‘0’ on the log-transformed variable. The battle-related deaths include both civilian and military deaths. Additionally, a separate variable is coded to measure the number of conflict-years in neighbouring countries in the previous five-year period, with a neighbouring country defined as any country within 500 km of the borders of the country in question. The conflict data spans from 1946 to recent years, and comes from the Uppsala Conflict Data Program (UCDP). It is the most comprehensive and widely-used data source on global armed conflicts.
4.1.3. Dependent variables

Our first dependent variable, the total fertility rate (TFR), is defined as “the average number of children a hypothetical cohort of women would have at the end of their reproductive period if they were subject during their whole lives to the fertility rates of a given period and if they were not subject to mortality” (157) and it is expressed as the number of children per woman. Estimates of TFR are provided by the United Nations Population Division, covering the period 1970–2005 (158). The second dependent variable, the Maternal Mortality Rate (MMR) and maternal death is defined as “the death of a woman while pregnant or within 42 days of completion of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes” (159). It is expressed as maternal deaths per 100,000 live births, and is log-transformed for the purpose of our analysis. For the study, we use panel data on national annual maternal death estimates from the WHO, covering the years 1990–2005. Other details related to the dependent variables are discussed in the article (Paper I).

4.1.4. Control and other variables

To account for some important causes of cross national variation in TFR and MMR, several control and other variables were included in the regression model. These included the following: infant mortality rates, per capita income (GDP), proportion of the total population living in urban areas, proportion of females aged 15–24 years with completed secondary or higher education, share of population that is urban, and prevalence of HIV/AIDS. Details are also described in the paper.

4.1.5. Model specification

We used fixed-effect regression models, which remove between-countries differences in the outcome variables and concentrate on the within-country effect (5). The use of this model is based on the assumptions that all the countries included in the analysis are functionally identical, and that the individual specific effect is correlated to the independent variable. Developed countries were excluded from the analysis. Additional information on the model specification is described the paper.

4.1.6. Scope of the study

Although the main focus of this PhD thesis is on sub-Saharan African countries, the analysis for this paper is global in nature. Our main reason for undertaking a global analysis is because data for some of the dependent and control variables are incomplete or unavailable for some of the SSA countries. Additionally, we assume that a global analysis will provide more robust and reliable findings that can be generalisable also to the SSA.
4.2. Qualitative studies

4.2.1. Study settings

Field studies were conducted in two provinces in Burundi (Bujumbura Marie and Ngozi) and a district in Northern Uganda (Gulu). As of 2008 the populations of the provinces of Bujumbura Marie and Ngozi were projected at 411,385 and 761,569 respectively, while the national population was just over eight million (160). According to the UN Population Division, the population of Burundi in 2013 was projected at 10.16 million (161). In Burundi participants were recruited from the cities of Bujumbura and Ngozi and the rural and semi-urban communes of Ruhororo in Ngozi Province and Kinama in Bujumbura Marie province respectively, while in Gulu district, our participants were recruited from the rural sub-counties of Koro, Bobi and Bungatira along with Gulu municipality, made up of four sub-counties (Pece, Layibi, Bar-dege, and Laroo). The Gulu district is made up of 3 counties, 16 subcounties, 70 parishes and 279 villages, with a population of 374,700 (162). The 2013 population for Uganda was estimated at 37.58 million (161).

![Source: Political Map of Burundi](http://www.ezilon.com/maps/africa/burundi-maps.html)

**Figure 5: Map of Burundi (showing Bujumbura and Ngozi provinces).**
4.2.2. Study Participants

Study participants were recruited from among non-governmental organizations (NGOs), local health providers and women. The NGOs included local, national and international organizations working in the domain of MSRH, be it at the level of policy support, technical assistance, health system support and strengthening, or delivery of health services. The international NGOs included UN and non-UN-affiliated organizations. The local health providers were purposely selected from clinics, health centres and hospitals and included nurses, midwives and doctors working on MSRH issues in their institutions, mainly in the maternity, antenatal care, and obstetric and gynecological units. Others also included senior administrators at ministries of health at the provincial, regional or district levels. The women were mainly in their reproductive age and settled in rural or semi-urban areas. In this regard, all women interviews and FGDs were undertaken only in the communes of Rohororo and Kinama in Burundi and the sub-counties of Koro, Bobi and Bungatira in Northern Uganda. Since we were interested in also capturing the effect that conflict had on MSRHS, the NGOs and health providers invited to participate in the study had developed, supported and/or provided MSRHS during the conflict or shortly after the conflict, while the women had sought or attempted to seek for such services as well during such periods.

Figure 6: Map of Uganda showing the administrative units (districts) and map of Gulu District

Sources: United Nations Map of Uganda by Districts (http://www.ugandamission.net/aboutug/map1.html) and Map of Gulu (Reliefweb, http://reliefweb.int/sites/reliefweb.int/files/resources/448E0F1621FD03A685257533006930D2-map.pdf)
4.2.3. Characteristics of study participants

Across the study settings in Burundi and northern Uganda we had 63 individual interviews (21 women, 21 local health providers and 21 NGOs) and 8 FGDs (4 with women, 2 with local health providers and 2 with NGOs) as shown on Table 6. In total 115 participants took part in the interviews and FGDs, with 46 from the ‘women’, 32 from the ‘local health provider’ and 37 from the ‘NGO’ categories.

Table 5: Number of interviews and FGDs, by study site and participant category

<table>
<thead>
<tr>
<th>Country</th>
<th>Study areas</th>
<th>Participants/ Informants</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Women</td>
<td>Local Health Providers</td>
</tr>
<tr>
<td>Burundi</td>
<td>Bujumbura Marie and Ngozi provinces</td>
<td>11 Interviews &amp; 2 FGDs</td>
<td>9 Interviews &amp; 1 FGD</td>
</tr>
<tr>
<td>Uganda</td>
<td>Gulu district</td>
<td>10 Interviews &amp; 2 FGDs</td>
<td>12 Interviews &amp; 1 FGD</td>
</tr>
<tr>
<td></td>
<td>All countries</td>
<td>21 interviews &amp; 4 FGDs</td>
<td>21 interviews &amp; 2 FGDs</td>
</tr>
</tbody>
</table>

In Burundi, we held a women’s FGD with rural women living in the commune of Ruhororo in the Province of Ngozi and the second with women living in semi-urban areas in the commune of Kinama in Bujumbura Marie province. In Gulu, we had the first FGD with women at Lapainat East parish in Labora sub-county where there is no existing health facility (except for regular weekly outreaches by some local NGO-health providers) and the second at Paidwe parish in Bobi sub-county where there is a local health centre III. Most local health providers and NGOs were based at the main cities of Bujumbura and Ngozi (in Burundi) and Gulu (in Uganda), although they frequently had work-related field visits to rural areas out of town. Some of the NGOs were also involved in the provision of specialized health services. The local health provider participant category was sub-classified into local health providers, LHP (those working at health facilities) and local health provider-policy makers, LHP-Policy makers (senior administrative officials working at the local ministries of health). The latter category included provincial health inspector, provincial coordinator for reproductive health, and district health officer. The local health providers included providers with public, religious/mission and private-for-profit facilities. Within the NGO domain we had three sub-categories of respondents: NGO, NGO-Health providers (NGOs that also provider health services such as MSF and RHU) and NGO-
Policy makers (mainly UN-based NGOs such as UNFPA and WHO). Participants from the NGO category were also drawn from local, national and international organizations.

4.2.4. Data collection method
The main data collection methods were semi-structured in-depth interviews (IDIs) and focus group discussions (FGDs) for data. Interviews and FGDs were conducted in the local languages, French or English (where applicable) by the principal investigator (PCC) or trained local research assistants. A total of 63 IDIs and 8 FGDs, involving 115 participants were conducted. During the interviews and FGDs field notes were taken. These mainly captured observations such as the physical setting, human and social environment, informal interactions and unplanned activities, nonverbal communication, formal interactions, and other information of interest. The field notes were used to better appreciate the context in which the interviews and FGDs were undertaken.

4.2.4.1. Semi-structured in-depth interviews
The dramaturgical model of interviewing was adopted for the IDIs. This is an approach whereby ‘the interviewer will display his or her own feelings during the interview as well as elicit those of the interviewee’ (163). The interview was not one-sided but rather ‘active interviewing’. In this context, ‘the interview will be viewed as a meaning-making occasion in which the actual circumstance of the meaning construction is important’ (163). The interview type adopted was the semi-structured (semi-standardized) and was aimed at achieving the implementation of a number of predetermined questions and special topics. While the interviewer may pose the questions in a systematic and consistent order, he or she was allowed some freedom to probe far beyond the answers to the prepared semi structured questions (163). In all the contexts where the interviews were undertaken, all attempts were made to formulate the questions in words familiar to the people being interviewed. This involved consulting local experts on the ground for advice and recruiting interviewers from the countries of origin with previous experience from such exercises.

The interview guidelines were developed following a review of existing literature on maternal and reproductive health in emergency settings in general, while also exploring country specific issues. Following a review of the literature, specific themes that cover the domain of maternal and reproductive health in emergency settings was developed. Under these broad themes, specific sub-themes were outlined, which were then finally utilized to develop specific questions under those themes.

4.2.4.2. Focus group discussions
The FGDs consisted of a group of participants/informants guided by a facilitator/moderator. For the purpose of effectively eliciting the breadth of responses; easy management of the groups; avoidance of a
situation where a few highly motivated participants monopolize the discussion; and facilitating the process of transcribing the audio recordings, the groups involved between 5-8 participants, drawn from a similar participant category. In this respect, separate FGDs were held for women, local health providers, and staff of NGOs working in the domain of maternal and reproductive health. The moderators of the focus groups were selected taking into consideration the following qualities (164):

a. familiarity with the topic  
b. ability to speak the language of the area  
c. cultural sensitivity, including not acting as a judge, a teacher, not looking down on respondents, not agreeing or disagreeing with what is said, and not putting words in the participants’ mouths  
d. genuine interest in people  
e. sensitivity to men and women  
f. politeness  
g. empathy  
h. respect for participants

4.2.5. Issues discussed

A range of issues were explored in the interviews and FGDs (Figure 7), in the process equally delving into how the conflict affected these issues. The detailed guides for the interviews and FGD for each of the participant categories can be found on the appendix section (Appendix I).

**Key issues explored during interviews and FGDs**

1. Knowledge of obstetric danger signs among pregnant women  
2. The role of traditional birth attendants in early recognition and timely referral of women  
3. The state of the communication and transport network to referral health facilities  
4. The existence of community finance and transport schemes to ease referral of women to health facilities  
5. The state of existing Emergency Obstetric and Neonatal Care (EmONC) services  
6. A descriptive account of the effects of the conflict on the accessibility, affordability and quality of MRH services in their specific area/ region  
7. Eyewitness accounts of specific negative consequences of the conflict on MRH  
8. Strategies put in place to ameliorate the prevailing situation/ coping strategies  
9. The main causes of maternal deaths and strategies to reduce maternal mortality

**Figure 7: Key issues explored during interviews and FGDs**
4.2.6. Collaborative partnership

Prior to arrival in the study area, we undertook an internet search of potential NGOs working in the domain of MSRH in the area. We also approached prominent organizations and institutions working in the domain of MSRH in the area for a list of existing relevant local organizations working on the ground. In Burundi, our local partners were UNFPA-Burundi and the Burundi University Research Centre for Economic and Social Development (CURDES) while in Uganda we worked closely with Reproductive Health Uganda (RHU). These partner organizations are involved in health systems strengthening and support in the various settings and will serve as veritable platforms for dissemination of study findings. In each of the settings, research assistants (RAs) were locally recruited.

4.2.7. Recruitment of research participants

Purposive sampling was the main sampling method employed. For the women, we mainly approached those who had had some experience of the conflict or the period immediately after the conflict. We were particularly interested in those who had given birth during any of those periods in order to capture the challenges they experienced in order to seek health care. For the NGOs and local health personnel, we were also keen to recruit those working in the domain of MSRH and whose interventions/activities are designed with the conflict or post-conflict challenges in mind. The NGO and local health provider personnel were recruited specifically for the role as health professionals involved in the support and delivery of health services to women. As such, their responses were based on what factors they considered affected women’s uptake of the MSRHS they provided or supported.

Upon arrival at a local health institution (hospital, health centre or clinic) and NGO office with a letter of support from the local administrative or health office, permission was further obtained from the institutional head to approach an appropriate staff to participate in the study. Most often, the institutional heads choose the most appropriate staff to approach based on the criteria we provided. At health institutions, our participants were mainly drawn from the maternity, antenatal care, and obstetric and gynecological units while at NGOs our participants were mainly maternal or reproductive health programme coordinators or advisors.

Recruitment of women participants was mainly done within communities in rural and semi-urban areas. Upon arrival in each community, the research team presented themselves to the local council office or community head, usually with letters of support from the district or provincial health office and local collaborating partner. The council or community then approved our entrance into the community, where
we could approach local households and invite local women to participate in our study. Participants were informed about the study goal and procedure in the local language and were requested to ask questions for clarity. Only those that provided their consent following the information session participated in the study. At any point in time, we made an effort to clarify that we were independent researchers and not an NGO and as such were not involved in any way in the provision of MSRHS in the area.

4.2.8. Conducting interviews and FGDs

All individual interviews and FGDs with women were held within the community, mainly in their homes or nearby in some community space. Interviews and FGDs for NGO staff and local health personnel were held mainly at their places of work, and on the lawn of a local hotel. All interviews in French and the local languages were undertaken by the trained local RAs while all the English interviews were undertaken by the principal investigator (PCC).

4.2.8.1. Semi-structured in-depth interviews

Each interview was preceded by an extensive informed consent process, where informants were briefed on basic information about the study. The following issues were addressed during the informed consent process amongst others:

1. Research purpose and procedures (including the approximate time the informant will spend with the interviewer)
2. Risks and discomforts
3. Potential benefits
4. Provisions for confidentiality
5. Contacts for additional information
6. Voluntary participation and the right to discontinue participation without penalty

Across the study sites written and oral informed consent was appropriate and approved by the various local ethics committees. All oral consents were audio-recorded.

The specific ordering, phrasing, level of language, adherence to subject matter, and general style of questions were largely depend on the background, educational level, age, and other relevant characteristics of the interviewees (163). With maternal and reproductive health in most conflict/post conflict settings a humanitarian emergency, the interview began with the easier and less deep-thinking or emotional issues such as the demographics (e.g. age, occupation, educational background, family structure, religious affiliation). These ‘easy’ questions helped create some rapport between the
interviewer and the interviewee and set the pace for the more deep-thinking and emotional questions. As suggested by Berg and Lune (163), the order in which the questions were posed was as follows:

i. Questions on demographics
ii. Some important questions that are not the most sensitive and that are within a single theme
iii. More sensitive questions related to the initiated theme
iv. Questions re-stating important or sensitive questions that are worded differently from the previous ones. These are asked for the purpose of validating the previous responses
v. Questions that are more sensitive and cut across more than one theme
vi. A repeat of step ‘iv’ above
vii. A repeat of steps ‘v’ and ‘vi’ for the most sensitive questions
viii. Conclude by allowing informants to address any issues of interest to them pertaining to the issues discussed
ix. Thanking informants for accepting to participate in the study and reassuring them that their privacy and confidentiality shall be respected and information gathered shall be published in an anonymous format.

From one theme of questions to the next some transition was made to alert the interviewee of such transition and also to allow room for some questions of clarity. The informed consent process continued after the interview as any questions or concerns harboured by the participants concerning the research project were continuously addressed as need arose.

4.2.8.2. Focus group discussions
The role of the moderators for the FGDs was to draw out information from the participants regarding the topics of interest for the study. The topics covered in the semi-structured interviews were broadly the same for the FGDs. In a bid to ensure that all participants were provided an opportunity to participate in the discussion, the moderator used a number of moderating tactics to attain this objective (164):

- Stimulate the participants to talk to each other, not necessarily to the moderator
- Encourage shy participants to speak
- Discourage dominant participants through verbal and nonverbal cues. The following were used when the situation permitted:
  - Call on other participants
  - Politely intervene by saying, “Maybe we can discuss that in another occasion...”
  - Look in another direction
• Take advantage of a pause and suggest that the subject can be discussed in detail in another session
  - Pay close attention to what is said in order to encourage that behaviour in other participants
  - Use in-depth probing without leading the participant

The FGDs were equally preceded by a similar informed consent process with the participants. Soft drinks, tea or coffee was provided to FGD Participants during the discussion. We also provided transport reimbursement to FGD participants.

4.2.9. Research assistants and guides
In each of the settings, RAs and guides were recruited locally. A total of 6 RAs and guides were recruited and trained across the study sites. All RAs understood the local language(s) plus English and/or French and were educated up to the university level. In Burundi interviews and FGDs were mainly held in the French or Kirundi language, while in Northern Uganda they were held in the English or Luo language.

4.2.10. Data management and analysis
All interviews and FGDs were audio-recorded and later transcribed and translated into English (where applicable). The English transcripts were the imported into the QRS NVivo (QSR International, 2012). Considering the multidisciplinary nature of the research team and given that the data are mainly made up of semi-structured interview transcripts, the framework method (165) was used to manage and analyse the data. The Framework Method is an analytical technique within the broad family of analysis methods known as thematic analysis or qualitative content analysis (165). The framework is “a matrix based analytic method which facilitates rigorous and transparent data management such that all the stages involved in the ‘analytical hierarchy’ can be systematically conducted. It also allows the analyst to move back and forth between different levels of abstraction without losing sight of the ‘raw’ data” (166). This approach identifies commonalities and differences in qualitative data, before focusing on relationships between different parts of the data, thus seeking to draw descriptive and/or explanatory conclusions clustered around themes (165).

Three team members open-coded the transcripts on NVivo and Microsoft® Word (where the texts of interest are highlight and the code first labelled using the ‘New Comment’ sub-menu under the ‘Review’ menu). Microsoft® Word was used for coding and analysis by one of the co-authors who did not have access to NVivo. The codes were descriptions or labels of specific ideas as the transcripts were read. Two team members reviewed the codes that were developed and the inter-coder reliability was high.
Inter-related or similar codes were then clustered into different categories, and the categories were subsequently grouped into specific themes. The themes were inductively and deductively developed. Inductive means that they were anticipated from the design of the interview and FGD guides and consciously explored in the interviews and FGDs. Deductive means that they were not anticipated during the design and identified during the review of the transcripts. There was therefore a constant interplay between data collection, analysis and theme development, with new and dominant ideas that emerged in earlier interviews and FGDs being explored deeper in subsequent and later interviews and discussions. The themes for the paper on determinants of women’s utilisation of maternal health services (Paper II) were also developed taking into consideration the main factors affecting women’s utilisation of maternal health services proposed by Wild et al.’s [167] multi-layered explanatory model. According to the model, the utilisation of maternal health services is affected by different layers of influences ranging from individual, social, cultural, political to health system spheres. The theme development was jointly undertaken by three team members.

4.2.11. Ethical considerations

The implementation of the study was guided by the ethical principles of autonomy and respect for persons, beneficence, non-maleficence and justice (168). The proposal was submitted to the appropriate Research Ethics Committees and Institutional Review Boards prior to commencement of the study. Ethics approval for the study was obtained from the Regional Committee for Medical and Health Research Ethics, South-East (Norway); le Comité National d’Ethique pour la Protection des êtres Humains Participant à la Recherche Biomédicale et Comportementale (Burundi); and Gulu University Institutional Review Committee (Uganda). All the ethics approvals are found in Appendix II. We also received permission from local administrative and health authorities.

The informed consent of the participants in the IDIs and FGDs was obtained prior to their enrolment in the study and their privacy and confidentiality shall be respected. Informed consent was either oral or written, depending on the preference of the participant and the research context. The informed consent process was undertaken in a culturally appropriate manner. For instance, the “spheres of consent,” ranging from village elders to leaders of the extended family or heads of households, were occasionally required before the researchers invited individuals to participate in the study (169,170). Community and household consent/permission however did not supersede individual consent; the family or community only gave permission to invite individuals to participate (170). Summarily, the consent process addressed the following (170):

- Involving the community in establishing recruitment procedures and incentives
- Disclosing information in culturally and linguistically appropriate formats
• Implementing supplementary community and familial consent procedures where culturally appropriate
• Obtaining consent in culturally and linguistically appropriate formats
• Ensuring the freedom to refuse or withdraw

Written or oral consent were appropriate and acceptable for our settings and approved by the relevant ethics committees. All oral consents were audio-recorded. All signed informed consent forms and recorded audio-tapes of IDIs and FGDs were kept in a save and secured location, accessible only to members of the research team. Publications emanating from the study withheld any personal identifiable information. The complete informed consent document is available in Appendix III.

Additionally, prior to the fieldwork we developed a list of possible ethical and methodological challenges that could be faced while undertaking the fieldwork and strategies to address them should they arise. These greatly facilitated any related challenges that emerged during the fieldwork and ensured that our limited time in the field was well utilised. The list can be found in Appendix IV. The entire fieldwork was undertaken from June to September 2013.
CHAPTER FIVE

5.0 MAIN FINDINGS

5.1. What is the impact of recent armed conflict on maternal mortality and total fertility rates? (Paper I)

Using two global cross-national time-series studies covering 1970 – 2005 (fertility rates) and 1990 – 2005 (maternal mortality rates) along with the UCDP/PRIO armed conflict dataset, we observe the following:

I. Globally, armed conflict intensity (measured as the number of battle-related deaths) does not affect overall total fertility rates, whether it takes place in the country in question or in a neighbouring country. However, in low income countries, armed conflict intensity is positively associated with total fertility rates; low income countries with higher numbers of battle-related deaths also had higher total fertility rates.

II. Armed conflict intensity is moderately associated with increased maternal mortality rates. An armed conflict of median intensity (2,500 battle-related deaths) is associated with a 10% increase in maternal mortality rate. Furthermore, armed conflict in a neighboring country is associated with lower maternal mortality rate; the higher the battle-related deaths in a conflict-affected country, the lower the maternal mortality rate in a neighbouring non-conflict-affected country.

5.2. What are the perceived effects of armed conflict on maternal and reproductive health services and outcomes (Paper II)

This descriptive and explanatory qualitative study aims at documenting the perceived major effects of armed conflict on MRH services and outcomes in Burundi and Northern Uganda. The main themes that emerged following the analysis of the data were: armed conflict as a cause of limited access to and poor quality of MRH services; armed conflict as a cause of poor MRH outcomes; and armed conflict as a route to improved access to health care. We found that the effects of the conflict on MRH services and outcomes were substantial. The conflict disrupted infrastructural development and the retention of human resources for health, resulting in limited access to and poor quality of MRH services. The main MRH outcomes most affected as a result of exposure to the conflict included: increase in maternal and newborn morbidity and mortality, primarily through poor access and availability of quality emergency obstetric care services; surge in the prevalence of HIV/AIDS and SGBV; high levels of prostitution, teenage pregnancy and clandestine abortion; and uncontrollably high level of fertility. A proportion of respondents in northern Uganda reported that exposure to the conflict improved access to basic health services for some women. This was associated to the fact that during the conflict many people had to be
relocated from distant places into centralised government-recognised official IDP camps or ‘protective villages’, which were better resourced with basic health services from a number of humanitarian organisations. As such, access to basic health services was substantially improved for a proportion of the women living in those camps.

5.3. How do armed conflicts lead to limited access to and poor quality of maternal and reproductive health services? (Paper II)

Armed conflicts may lead to limited access to and poor quality of health care through a number of channels. We found that most of the channels were similar across the sites in Burundi and Northern Uganda but some were limited to either of the sites. The major channels common to both sites included: destruction of health facilities, looting of medicines and other medical supplies, closure of health facilities, fleeing of local health providers from conflict zone, restricted movement to operational health facilities due to insecurity, irregular opening hours of health facilities, disruption of supply of medicines and other medical supplies, and displacement of population away from health facilities. The channels specific for Burundi were the targeted killing of local health providers and favouritism in the provision of health services based on ethnic differences. The channel unique for Northern Uganda was the abduction of health providers by the rebel Lord’s Resistance Army.

5.4. What are the determinants of women’s utilisation of maternal and reproductive health services in post-conflict settings? (Paper III)

This is a qualitative study that used semi-structured IDIs and FGDs to capture the factors affecting women’s uptake of basic MRH services in the post-conflict settings of Burundi and Northern Uganda. The main research participants were women of reproductive age living in rural and semi-urban settings that were exposed to the conflict and/or who experienced the immediate post-conflict period, local health providers and staff of NGOs working in the domain of MRH. The study found that women’s utilisation of MRH services are influenced by a complex and inter-related set of factors, operating at the individual, socio-cultural, political, and health system levels.

The most important individual level factors among the women category of respondents included: difficulties to cater for existing children, encouraging the uptake of family planning services; previous experience or fear of a complicated or abnormal delivery and the development of an obstetric danger sign, encouraging the uptake of ANC and facility delivery services; the desire to ensure that the newborn was registered and granted a birth certificate which facilitated free access to healthcare in Burundi; previous unpleasant experiences or fear of such experiences at the health facility, discouraging some women from seeking services; and past experience of severe side effects of contraceptives,
discouraging continuous uptake of modern contraceptives. Additionally, local health providers and staff of NGOs also noted the following individual level factors: availability of contraceptive methods that could be concealed from the male partners/husband; a deep sense of trust that their privacy and confidentially shall be respected by the health providers; and desire for HIV positive women to protect their unborn child from HIV infection.

The main socio-cultural level factors raised by women were poverty, community and male partner perceptions about modern contraceptives, limited land resources for cultivation that has encouraged the uptake of family planning services by women; and the ease of reaching the health facility. More so, local health providers and NGO staff also raised the following factors: a great respect and availability of traditional birth attendants (TBAs) to undertake deliveries in some rural areas; a desire to replace family members lost during the war; the cultural desire for large family size; strong position of the Catholic Church against the use of modern contraceptives; and cultural perception of pregnancy as a normal condition that may discourage some women from seeking ANC and facility delivery services.

The major political and health system level factors raised by the women included: a policy of universal access to health care for pregnant women and children; the attitude of health providers towards clients; the construction of more health facilities, reducing the travel distance, and the recruitment of more health personnel; and the irregular presence and frequent absence of personnel at some facilities, and the policy of insisting that pregnant women must be accompanied by the male partner during some ANC consultations if they are to receive prompt service delivery in Northern Uganda. The increasing level of community sensitization on health issues; the prohibition of TBAs from undertaking deliveries; and the delivery of some services at the level of the community were other factors raised by the local health provider and NGO respondents. Respondents in Burundi also noted the introduction of the PBF programme as a key health system factor.

Furthermore, women’s exposure to armed conflict appears to affect their utilisation of these health services, mainly through worsening their health seeking behaviour (making health service seeking less desired) and community perception of health services. This was partially associated to conflict-engendered low literacy levels among the population.

5.5. What are the barriers to effective delivery of emergency obstetric and neonatal care (EmONC) services in post-conflict settings? (Paper IV)

This qualitative case study of Burundi and Northern Uganda employed 42 face-to-face semi-structured IDIs and four FGDs, comprising of 32 local health providers and 37 staff of NGOs working in the
domain of MRH. We found that availability, quality and geographical distribution of EmONC services were problematic across the study sites. Analysis of the data revealed two major themes and 16 sub-themes on the barriers to effective delivery/supply of quality EmONC services. The two major themes were human resources-based challenges, and systemic and institutional failures. About 40% of the barriers were common to both study sites and the rest unique to each of the sites.

In Burundi, the human resources-related challenges were found to be: acute shortage of trained personnel, high turnover, and increasing workload and burn-out; and perceived poor living conditions and poor remuneration for personnel. The systemic and institutional failures were found to be: poor allocation of limited resources, lack of essential installations, supplies and medications; poor harmonisation and coordination of EmONC training, and weak curriculum; and poor data collection and monitoring system, and inequity in the distribution of EmONC facilities.

For Northern Uganda, the human resources-related challenges were found to be: shortage of trained personnel, demoralised personnel, high turnover, and increasing workload and high burn-out; poor living and working conditions, and high levels of staff absenteeism in rural areas; poor level of coordination among key EmONC personnel resulting in delays to provide emergency services. On the other hand, the systemic and institutional failures were found to include poorly operational ambulance service and a generally inefficient referral system; inefficient drug supply system and lack of essential installations, supplies and medications; and poor data collection and monitoring system, and inequality in the distribution of EmONC facilities.

5.6 How do health systems in post-conflict settings ensure the availability of lifesaving emergency and obstetric care services? (Paper IV)

Acknowledging the challenges affecting the effective delivery of EmONC services across the study sites, the local health providers and NGO staff in Burundi and Northern Uganda identified a number of strategies currently employed to address the barriers. In a bid to address human resources-related challenges in Burundi, the key EmONC stakeholders are involved in the training and re-training of essential personnel. Furthermore, the systemic and institutional failures are being addressed by harmonising and strengthening the EmONC curriculum and training, and improving the referral system.

On the other hand, in Northern Uganda, the relevant EmONC stakeholders are supporting the training of EmONC personnel and providing incentives for staff in rural areas; and undertaking regular personnel supervision, monitoring and support in rural areas, in a bid to address the human resources-related challenges. With respect to addressing the systemic and institutional failures, there is improvement in the referral system, and an increase in the number of facilities conducting deliveries in rural areas. The
strategies identified across the sites were not exhaustive compared to the challenges identified in the effective delivery of EmONC.
CHAPTER SIX

6.0 DISCUSSION

The four papers in this thesis provide a summary of the impact of armed conflict on maternal and reproductive health in two conflict-affected sub-Saharan African countries and a global assessment of the impact of armed conflict on maternal mortality and fertility rates. The studies employ a multidisciplinary approach, using both quantitative and qualitative research methods in the data collection and analyses. The four papers can be grouped into two main categories: the effects of armed conflicts on maternal and women’s reproductive health; and the state of maternal and women’s reproductive health in post-conflict settings. The former comprises of the following papers: impact of armed conflict on fertility and maternal mortality (Paper I) and the perceived effects of armed conflict on maternal and reproductive health services and outcomes in Burundi and Northern Uganda (Paper II). The latter consists of the following papers: determinants of women’s utilisation of maternal and reproductive health services in Burundi and Northern Uganda (Paper III), and the state of EmONC services in Burundi and Northern Uganda (Paper IV).

6.1. The effects of armed conflicts on maternal and women’s reproductive health

The key issues revealed by our findings are that the armed conflicts in Burundi and Northern Uganda had severe consequences on the local health systems, mainly through limited access to and poor quality of health services, especially maternal and women’s reproductive health services. This effect on MRH services and overall breakdown of societal functioning was translated into poor MRH outcomes such as high maternal and newborn morbidity and mortality; and high levels of SGBV, HIV/AIDS, unintended pregnancies, clandestine abortion, total fertility, to name a few. The findings also suggest that the impact of the conflict on the health local system is so extensive, long-term, and appears to affect the ability of the state to effectively and consistently provide quality MRH services, especially EmONC services.

6.2. Determinants of women’s utilisation of maternal and reproductive health services

We find that in post-conflict Burundi and Northern Uganda, women’s utilisation of MRH services is affected by a number of individual, socio-cultural, political, and health system factors. The most policy-relevant finding from the study is the importance of removal/abolition of user-fees for maternal and related health services on women’s uptake of maternal and reproductive health services. The universal health policy on access to maternal and child health services in the study settings appears to be the single most important factor encouraging women’s uptake of these services across the study sites. However, the implementation of such a policy requires effective and long-term planning, coordination,
monitoring and support as it may come at the cost of the quality of health services and other exploitative or extortionist tendencies at the level of some local health providers as was observed in our study. Another major policy-relevant finding from the study is that removal of financial barriers to the access of maternal and reproductive health services are not enough on their own to stimulate and sustain the demand and uptake of these services. Our findings suggest that a wide range of non-financial barriers cutting across the individual, socio-cultural, political and health system landscapes continue to affect the uptake of these services. Some of the major non-financial barriers observed included poor male-partner support and involvement in maternal and child health; negative community and societal perceptions of women’s uptake of modern family planning services; poor attitude of health providers; and societal perception of pregnancy as a normal condition as well as lack of support of pregnant women with household chores. These are important non-financial barriers that are not addressed by the implementation of a universal healthcare policy. As such, for effective stimulation of women’s demand and uptake of maternal and reproductive health services in post-conflict settings, policy makers must concurrently pursue the elimination or easing of both financial and non-financial barriers to access for MRH services. Potential non-financial barriers to explore include community sensitization on the importance of these health services; sensitization of men on the importance of male partner support and involvement in maternal and child health; and dialogue with key socio-cultural and religious organisations and authorities that command respect within communities and that may facilitate the uptake of some MRH services. These may include village traditional councils, churches, traditional birth attendants, and men’s groups among others. Furthermore, improving the transport network between rural areas and health facilities and encouraging health providers to develop a more positive and supportive attitude towards clients who visit the health facility to seek for services will also be steps in the right direction.

6.3. Delivery of EmONC services and women’s utilisation of MRH services
Our findings in papers III and IV which focused on the current state of MRH in our study sites identifies important challenges on the demand and supply sides of MRH services. We observed that some of the barriers to women’s uptake of MRH services described in paper III are a direct response to some of the shortcomings in the delivery of EmONC services shown in paper IV. For example the problem of acute shortage of skilled EmONC personnel and irregular supply of critical EmONC medications and other supplies may result in the delivery of poor quality EmONC services, which may discourage some women from seeking such services. Additionally, the high levels of absenteeism of health personnel in rural health facilities, coupled with the fear of meeting a demoralized and potentially abusive health worker may dissuade some women from seeking services at that specific facility. As such, any interventions to boost women’s demand and utilisation of MRH services in such settings should be
simultaneously accompanied by interventions to improve the supply of such services. Therefore, both
demand and supply side interventions are required to improve MRH in Burundi and Northern Uganda.
While some of these challenges in the delivery of quality EmONC services have been identified in
studies from other crisis settings (171-174), our study goes beyond that and documents the underlying
causes of the specific barriers identified. For instance, we observed that with respect to the barrier of
shortage of trained personnel, the main categories of personnel needed are midwives, general
practitioners and gynaecologists rather than nurses and clinical officers. Also, the geographical
inequality in the distribution of EmONC personnel and facilities disproportionately disfavours residents
in rural areas who arguably have a higher need for those services. The challenges were more acute in
Northern Uganda compared to Burundi, a situation that could be associated to the implementation of the
PBF programme in Burundi that seeks to promote the availability of essential supplies including
EmONC supplies at the facility and the incentivisation of health providers for the number of clients
served and the quality of the services. In the absence of a personnel motivation scheme in Northern
Uganda, concerns around demotivated and demoralised staff as well as high turn-over and burn-out
were more common.

The findings suggests that more effective and better coordinated health system strengthening
interventions are needed to address the huge challenges faced in the delivery of quality EmONC
services in Burundi and Northern Uganda. Arguably, the provision of quality EmONC services will be
the single most effective intervention to reduce maternal and newborn morbidity and mortality in the
post-conflict study settings. Perhaps, the implementation of the PBF programme in Burundi appears to
be the most important factor that differentiates the delivery of healthcare services, including MRH
services between Burundi and Northern Uganda, and probably accounted for the perceived positive and
supportive attitude of health providers in Burundi towards their clients. A recent study in Burundi has
observed that the PBF programme has been associated with improvements in care for clients and quality
of health services delivered (86). Possibly, the extra remuneration in addition to their salaries received
by local health providers based on the quantity and quality of services provided under the PBF
programme has contributed to the perceived positive and supportive attitude of health providers in
Burundi compared to the situation in Northern Uganda, where many of the women participants
perceived the health providers as rude and abusive towards poor rural women. This was corroborated by
the request for financial tips or under-the-table payments among some women respondents in Northern
Uganda, a situation that was almost unheard of in Burundi.
6.4. Exploring the relationship between the effects of armed conflicts on - and the current state of -
maternal and women’s reproductive health

The findings in papers I and II provide some useful information for better understanding of the current poor state of MRH across the study sites. The key message from these papers is that the effects of armed conflicts MRH are not limited only to the period of active warfare but extend far after the end of hostilities. Although the armed conflicts in Burundi and Northern Uganda formally ended in 2005 and 2006 respectively, the impact on the health system in general and MRH in particular still lingers as shown by the poor current state of MRH (papers III and IV). These observations are in agreement with similar studies on the long-term effects of civil wars on public health (142,175,176). For example, the poor state of the rural health infrastructure in Northern Uganda associated with disruption of the general health infrastructure during the over two decade long conflict reported in paper II is closely linked to the current low levels of retention and high levels of absenteeism of health personnel in rural areas in the region reported in paper IV. This is because the general working and living conditions in those settings are very challenging for many health personnel recruited to work there. Furthermore, the findings in papers I and II provide one possible explanation for the reported excess female mortality observed in conflict affected populations. With pregnancy and childbirth occurring only with women, this may increase their likelihood of dying relative to men in such settings, especially as the ability of the health system to address maternal health emergencies may be very weak.

Furthermore, our findings suggest that prolonged exposure to armed conflict may have a negative effect on women’s and communities’ perception of the importance of MRH services. One of the mechanisms through which this may operate may be the negative impact of armed conflict on educational attainment and literacy levels. This was particularly noted in Northern Uganda where an over two decade long conflict confined a huge segment of the population in IDP camps, where the living conditions were largely deplorable and access to basic amenities like educational facilities were problematic. With the rebel LRA campaign of abduction of children that characterised the Northern Ugandan conflict, many schools had to be closed and the result was the creation of a lost generation without access to education. This might have eventually translated to an uninformed population with poor healthcare seeking attitudes. Attacks on schools do not appear to be a new phenomenon during armed conflicts. These have equally been observed during the armed conflicts in Mozambique (177), Nicaragua (178), and Afghanistan (179). Sadly, the phenomenon has taken a more violent pattern in other settings such as Pakistan where schools are not only destroyed but children while in school are deliberately targeted and killed (180). Another possible effect of exposure to armed conflict was the strong desire for replacing family members lost during the conflict that has slowed or discouraged the uptake of family planning services among a segment of the women in our study settings. While many of these women may be
willing to curtail their fertility desires due to a difficult socio-economic environment coupled with the need to recuperate their strength after a birth, this concerns may not be shared by their male partners, especially in a society where many are keen to replace family members lost during the conflict and where a large family size is strongly perceived as a sign of wealth.

6.5. Conflict-associated improvements in health services and outcomes

Two of our major findings were quite surprising at first glance although a deeper appreciation of the literature highlighted some reasons why the results were not as we anticipated. It was interesting to observe that being a non-conflicted affected country neighbouring a conflict affected country may lead to improvements in maternal mortality. A possible reason for this observation is the tendency for humanitarian assistance for conflict settings to be coordinated and delivered from neighbouring non-conflict areas. By so doing, residents in the non-conflict settings tend to benefit from the humanitarian assistance in the form of improved health services. This phenomenon has been observed in other places especially when massive displacement of refugees occurs from a conflict-affected to a non-conflict-affected neighbouring country. These refugees are typically re-settled in areas where access to basic amenities including health facilities are limited and they generally attract a lot of international assistance that tends to strengthen and improve the local health system, resulting in overall improvement in access to basic health services for the local populations. Past studies (24,26,181-183) have found that refugees tend to have better health outcomes compared to the local host populations, a situation that may lead to tensions between refugees and host communities. To reduce the risk of such tensions Orach et al. (184) have argued for the integration of refugee health services with those of local host communities, a trend that many humanitarian organisations have adopted. For example such integration of refugee health services in some rural areas in Guinea that received Liberian and Sierra Leonean refugees in the early 1990s resulted in substantial improvements in maternal health outcomes of the host population (183). The other surprising finding from our study was the perception that access to health services, including MRH services was improved for a segment of the population during the conflict in Northern Uganda. While the general narrative has always pointed to armed conflict associated with limited or no access to MRH services, we observed that living in a government-recognised official IDP camp during the conflict substantially improved access to health services. This observation has largely been associated with better coordination in the delivery of humanitarian support in such settings. Official IDP camps experienced much regular support and supplies compared to non-official IDP camps or settlements in remote rural areas out of reach to government health services. Most official IDP camps actually had health facilities established within, substantially improving access to basic health services to populations relocated from remote rural areas that had limited or no access to such services before. This observation has also been reported among smaller IDP camps in Kashmir, Pakistan following an
earthquake, where the official camps had better access to healthcare services compared to the unofficial ones (185).

6.6. Armed conflict, poverty and health outcomes
The poor state of MRH reported across the study sites in conflict-affected Burundi and Northern Uganda appears to be similar across other low-resource non conflict-affected settings in SSA. For example, the state of MRH in non-conflict affected countries like Malawi, Burkina Faso, and The Gambia are quite comparable to those observed in our study settings of Northern Uganda and Burundi. A similar situation has also been observed in some humanitarian settings caused by disasters. This situation may be linked to high levels of poverty, poorly functional health system, and poor state of governance at the national level. It is therefore not surprising that the occurrence of armed conflict in such settings further exacerbates the effectiveness of the health system, resulting in poor health outcomes.
CHAPTER SEVEN

7.0 METHODOLOGICAL ISSUES

This PhD employed both quantitative and qualitative research and analytical methods to assess, describe and explain the impact of armed conflict on MRH in SSA. In the paragraphs that follow, specific issues concerning the research methods used across the four studies included in this thesis will be explored. It should be highlight that one of the papers (Paper I) is quantitative in design, while three (Papers II-IV) adopt a qualitative design.

7.1. Methodological issues in quantitative research

Paper I is a quantitative analysis, making use of cross-national time-series data. Although the focus of this PhD thesis is on the impact of armed conflict on MRH in SSA, we decided to undertake a global analysis involving all developing countries that have experienced conflict during our study period. This was because the data for the dependent and control variables for the SSA countries was sparse, incomplete or unavailable in some cases. Furthermore, by undertaking a global analysis the results address the generalisability of the overall study findings. Our dataset for the analysis comprised 149 developing countries of which 111 had experienced armed conflict during the period 1970-2005. Of the 111 conflict-affected countries almost a third (36) were SSA countries. The relevance of the SSA countries for the armed conflict - maternal health nexus is underscored by the results displayed in Table 1 of the paper. Comparing the mean values for some key MRH indicators between conflict-affected and non-conflict affected countries globally and in SSA, the difference between the values for the SSA and global conflict-affected countries is considerable. This might point to the fact that SSA countries are less able to cope with the impact of armed conflict on the health system in general, and MRH in particular, compared to countries in other regions of the world.

The other main methodological issues pertaining to this study relate to the reliability and validity of the data. While reliability is the degree to which an assessment tool produces stable and consistent results, validity refers to how well a test measures what it is purported to measure. The data on MMR and TFR are generally obtained from vital registration systems but these systems are poorly developed in many developing countries and tend to breakdown during armed conflicts. As such, reliable data on these indicators is particularly hard to come by in conflict-affected countries. However, improvements in the reliability of data for TFR have been observed in the past decades in many developing countries, following the introduction of demographic surveys that gather retrospective information on the fertility histories of women. On the other hand, data for MMR in many conflict-affected countries are largely derived estimates and projections developed from multilevel regression models (186). Additionally, the
reliability of the various control variables used in our analyses are affected by similar concerns. While acknowledging the concerns related to the reliability of the various datasets used in our analyses, the data they provide appear to be the best and most comprehensive current estimates.

Furthermore, the validity of the TFR as a true measure of fertility has been questioned. This is because the TFR is a measure of fertility that aggregates age-specific fertility at a given point in time, and thus does not give a measure of actual number of births any woman born into a specific cohort will have all through her reproductive years (187). However, the TFR is the best single measure to compare fertility across populations (187) as was the case in our study. The replication data files associated with the article has been posted on the web page of the journal *International Interactions*, and are publically available.

### 7.2. Methodological issues in qualitative research: Rigor and trustworthiness

The rigor and trustworthiness of the data and the findings was ensued by addressing the following four criteria of trustworthiness in qualitative research proposed by Lincoln and Cuba (188): confirmability, credibility, transferability and dependability. These criteria are aimed at addressing the corresponding issues of internal and external validity, reliability and objectivity in quantitative research. While many may question the relevance of a qualitative research validation checklist, Elliot et al. (189) have welcomed the use of such criteria in order to win wider recognition and acceptability of qualitative research methods. More so, Hammersley (190) finds such criteria useful in the assessment of the quality of qualitative research in a more objective manner.

**Confirmability** is a measure of how well the inquiry’s findings are supported by the data and seeks to address the corresponding issue of objectivity in quantitative research. To ensure this, we audio-recorded, transcribed and translated into English (where necessary) all interviews and FGDs. Additionally, all the main findings are supported by quotes from a broad range of research participants as shown in Papers II - IV. Furthermore, the coding of the transcripts was independently undertaken by three members of the research team and the inter-coder reliability was excellent. Also, the final development of the themes was undertaken by three members of the research team. To further enhance the confirmability of the study, we have provided an in-depth methodological description of the study to allow the integrity of the research results to be scrutinised. This has also been the case with all the three qualitative papers (Papers II-IV) in this thesis.

**Credibility** seeks to address the corresponding issue of internal validity in quantitative research. It is an evaluation of whether or not the research findings represent a ‘credible’ conceptual interpretation of the
data drawn from the participant’s original data (188). In other words, this criterion seeks to answer the question (191); ‘How congruent are the findings with reality?’ To achieve this we adopted two appropriate and well recognised research methods - semi-structured in-depth interviews and FGDs - that are open to scrutiny. Additionally, we employed triangulation through the use of different data collection methods, different categories of research participants, and different research sites. The decision to use two different data collection methods was a very important way to improve the credibility of the study. We found that the results obtained from each of the methods were consistently similar, a strong indicator for credibility. Our research participants constituted key stakeholders on the issues under investigation and were recruited across different geographical areas and sectors of work to ensure that a comprehensive picture of the issues is capture. Other strategies to enhance the study’s credibility were the invitation of peers to scrutinise the project, thick description of the phenomenon under investigation, and the examination of previous research findings to frame our study findings, as suggested by Shenton (192).

The criterion of transferability is equivalent to the concept of external validity or generalisability in quantitative research. It is the degree to which the findings of the study can be applied or transferred beyond the study (188). Our findings suggest that the impact of armed conflict on MRH varies from one context to another and as such it will be difficult to generalise our findings to all post-conflict settings. Arguably, the impact of an armed conflict on MRH will depend on a number of context specific factors such as: the nature of the armed conflict (ethnic versus non ethnic; frequency and intensity); pre-conflict status of the health system; public health situation and disease pattern of the area prior to the conflict; impact of the conflict on other sectors such as water, sanitation, and shelter; population displacement; effectiveness of the response to the conflict; and socioeconomic status of the area prior to the conflict (193). With that said, our findings may be applicable to post-conflict settings with similar contextual factors as those of our study sites. For example, while concerns around the barriers to the delivery of EmONC may be similar across most post-conflict sites, the degree of importance of each factor may vary from one setting to another. Furthermore, while the channels through which armed conflicts lead to limited access to and poor quality of health care may be similar across most post-conflict settings, some of the channels may be more relevant in one setting than another. The same could be said on the determinants of women’s uptake of MRH services as well as the effect on MRH outcomes. We will therefore recommend some caution in applying the findings of our qualitative research findings to other post-conflict settings. To facilitate transferability of our findings, we have provided an in-depth description of the study methodology, including the detail interview and FGD guides in this thesis.
Finally, dependability which is the corresponding criterion for reliability in quantitative research, is an assessment of the quality of the integrated processes of data collection, data analysis and theory generation (188). According to Lincoln and Cuba (188) close ties exist between the criteria of credibility and dependability, and in practice, a demonstration of credibility goes a long way to enhance dependability. We achieved this by using two overlapping data collection methods (interviews and FGDs). We have also provided an in-depth description of the study methodology, including the detailed data collection tools (Appendix I) to ensure that future researchers are able to repeat the study, if not necessarily to gain the same results (192). Shenton (192) also suggests that a detailed description of the methodology allows readers of the research work ‘to develop a thorough understanding of the methods and their effectiveness’ (p 71).

With all these measures in place, the rigor and trustworthiness of the qualitative component of the study was greatly improved. However, other recommended strategies such as member checks, prolonged engagement, persistent observation and frequent debriefing sessions between the researcher and his or her superiors could not be undertaken due to the short time we spend in each study site and the limited nature of the project. Also given the research design, we did not adopt a random sampling of research participants as we were keen to recruit a specific profile of potential participants who have rich knowledge and experience of the issues under investigation.

7.3. Strengths and limitations of study
A major strength of this study is its multidisciplinary and mixed method approach to address the research questions. The choice of both quantitative and qualitative research methods in addressing the key questions, with the study findings pointing towards the same direction is a strong indicator of validity and reliability of our findings. This is a form of methodological triangulation, recommended to improve the reliability of research findings. Another major strength of the qualitative component of our study lies in the choice of study sites and research participants. Working with study sites that experienced different forms of armed conflict has provided a richer and more extensive appreciation of the effects of armed conflict on MRH outcomes and services compared to limiting the study to one study site only. Additionally, the choice of research participants to include clients, healthcare providers, policy makers, and staff of organisations involved in health systems support and strengthening provides a more comprehensive picture of how the conflict imparted health outcomes and services. Each of these participant groups contributed their unique experiences to the study that could not have been achieved with only one category of participants.
Several limitations were identified with the qualitative component of the research. The women participants recruited for the study were living within the catchment areas of some local health centres or had regular weekly access to basic healthcare services through mobile outreach clinics. We were unable to recruit women participants in highly disadvantaged remote areas that were not regularly served with basic health services. As such the perspectives of that group of women are not well captured in our study. In addition, being a qualitative study with non-random sampling of research participants in sites with unique contextual factors, it will be difficult to generalise the findings to all conflict and post-conflict settings. We therefore recommend caution in applying our findings to other conflict and post-conflict settings. Another limitation is the lack of pre-conflict and conflict baseline data to enable us to better compare with the current situation. However, with the perennial problem of lack of reliable data in conflict-affected countries and a general poor state of data collection in our study sites, we could only depend of the perspectives of the research participants. Additionally, considering that the time between our interviews and FGDs and the end of the conflict is over eight years, combined with the non-random sampling method to recruit the research participants, any assessment of the effects of conflict on MRH are not very certain.

Considering the strengths and limitation of the study as well as the other methodological considerations discussed above, substantial efforts were taken to minimise any biases associated with the study, and to maximise the appropriate generalisability of the study findings. These issues were achieved through appropriate study design, implementation, analyses, and reporting of the study. I am therefore confident that the findings and discussion presented in this thesis are a reflection of the ‘true’ situation in the field and a non-biased interpretation of the data.
CHAPTER EIGHT

8.0 CONCLUSIONS, AND RECOMMENDATIONS AND FUTURE RESEARCH

8.1. Conclusions

Armed conflicts have had a severe impact on maternal and reproductive health outcomes and services in Burundi and Northern Uganda. They were a major cause of limited access to and poor quality of health services, and subsequently poor health outcomes. The key effects on MRH outcomes included: maternal morbidity and mortality, total fertility, HIV/AIDS, sexual and gender-based violence, unintended pregnancy, and clandestine abortion. The findings suggest that the effects of the conflict are not limited to the conflict period but linger long after the end of conflict. This is supported by the deplorable current state of emergency obstetric and neonatal care services in the countries of study, more than five years following the end of conflict in the respective settings. We observe that a series human resources-related challenges and systemic and institutional failures affect the effective delivery of quality EmONC services, with some of the barriers routed in the past conflict. While some strategies are being explored to improve on the situation, they do not appear to be wide enough when compared to the magnitude of the problem on the ground.

We demonstrate that the most important determinant for women’s demand and utilisation of MRH services in Burundi and Northern Uganda is the implementation of a universal health policy for maternal and related health services. However, improved and sustained demand and utilisation of these services is hindered by a number of non-financial related barriers, including poor male-partner and societal support and perception of women’s uptake of modern family planning services, poor attitude of health providers, and high burden of domestic chores for many pregnant women. This shows that while the implementation of a policy of abolition of user fees for MRH services is important in increasing women’s utilisation of MRH services in post-conflict and other low-resource settings, policies geared towards easing the burden of non-financial barriers to access to such services also need to be addressed.

Furthermore, although armed conflicts are a major cause of limited access to and poor quality of healthcare, the mechanisms through which this happens may vary from one conflict setting to another. For example, we observed that the targeted killing of health providers, and bias in the delivery of health services on ethnic basis were important channels that were common to Burundi, while the abduction of health providers by rebels was a channel observed mainly in Northern Uganda. As such, interventions to improve MRH in conflict settings must pay serious attention to the context-specific mechanisms that cause limited access to and poor quality of health services.
Finally, during armed conflicts, appropriate design and management of refugee or IDP camps can help reduce the impact of the conflict on the delivery, availability and access of health services in general. For example, relocation of displaced populations to government-recognised official IDP camps can improve access to basic health services as was observed in Northern Uganda. Additionally, integration of refugee health services with those of the local host population in a non-conflict country may reduce maternal deaths among the receiving host population and enhance cohesion between the refugee and host populations.

8.2. Recommendations and further research

8.2.1. Recommendations

Armed conflicts are a major contributor to poor maternal and reproductive health outcomes and health services in general. While putting an end to armed conflicts would be the ideal strategy to spare women and girls as well as their families from the serious health consequences that these conflicts bring, I recognise that strategies to reduce armed conflicts include complex and resource-demanding initiatives that are being sought for a number of good reasons. Thus, short of attempting to make recommendations in that domain, to alleviate the immediate and long-term impacts of armed conflicts on maternal and reproductive health, the following is recommended:

8.2.1.1. On alleviating the impact of armed conflict on MRH:

With the impact and consequences of armed conflict on MRH outcomes and services well known, interventions to alleviate the situation should have the overall objective of improving the access to and quality of healthcare. This should, however, be done taking the following into consideration;

- With the intensity of armed conflict strongly associated with higher maternal mortality and total fertility, the most important interventions to improve MRH in such settings arguably should focus on UHC, especially for EmONC services, and unlimited access to reproductive health information and services, especially modern family planning services.
- To maximize the impact of refugee health services, such services should be integrated with those of the local host communities. This would not only lead to improved health outcomes for the local host communities, but equally improve host communities acceptance and support of refugee populations, and better integration and relation between host communities and refugees.
- During humanitarian crisis, the establishment of internally displaced persons camps should be carefully coordinated between the host country government and the relevant humanitarian organisations on the ground. Appropriate planning may help ensure access to and protection of
basic health services for affected populations. Proper planning and coordination in the establishment of IDP camps may serve as a platform for improved access to basic health services for IDPs.

- In order to effectively improve the delivery of health services, including MRH services in conflict settings, attention should be placed on identifying the major channels through which access to and quality of healthcare is disrupted. Identifying such channels should inform the development of interventions to improve access to and quality of health services.

8.2.1.2. On improving women’s utilisation of MRH services:

With Burundi and Uganda lagging behind in the attainment of the MDG 4 and 5 targets, the implementation of a universal health coverage (UHC) policy, especially for pregnant women and young children under five is a step in the right direction to facilitate the utilisation of MRH services. However, for this policy to bear maximum results the relevant stakeholders must improve the planning, coordination and implementation of the policy, otherwise the quality of services may be severely affected. For example, in Northern Uganda the effective implementation of the policy is currently impeded by regular stock-out of basic medication and supplies at some health facilities, and poor conduct and attitude of some healthcare providers towards clients, through acts like demanding unofficial payments, and treating some clients in an undignified manner. Appropriate measures have to be put in place to address these barriers to UHC in Northern Uganda.

The introduction of the PBF programme in Burundi appears to have had a beneficial impact on the UHC policy for pregnant and under-fives. While such personnel motivation programmes have had an overwhelming positive effects on access to and quality MRH services, concerns remain about the sustainability of such schemes. The government of Burundi and her relevant development stakeholders must continuously explore the sustainability of the PBF programme or alternative interventions that will sustain and improve the gains that have been made following the instruction of the programme.

In addition to the easing of the financial barrier to access to healthcare for pregnant women through a universal healthcare policy, interventions should also be explored and implemented to ease the major non-financial barriers to access to healthcare such as poor male-partner support and involvement in maternal and child health; negative community perceptions of modern family planning; more community support for pregnant women; and improved reception and treatment of women at the health facility.
8.2.1.3. On ensuring the delivery of quality EmONC services:

With maternal and newborn morbidities and mortalities still unacceptably high in Burundi and Northern Uganda, the government and other relevant stakeholders should prioritise the delivery of quality EmONC services, especially in rural areas where access and quality remains a major challenge. The increasing in demand and utilisation of this important lifesaving services following the introduction of the universal healthcare policy should be complemented by a corresponding increase in the delivery/supply of the service. To strengthen the delivery of quality EmONC services, the various governments should:

- Train, recruit and retain more key EmONC personnel such as midwives, general practitioners, and gynaecologists and obstetricians.
- Improve the working and living conditions of the personnel, such as provision of basic accommodation in rural areas, and better remuneration.
- Ensure regular availability of essential EmONC medications, supplies and installations.
- Improve the EmONC data collection and monitoring system.
- Reduce the current inequities in access to quality EmONC services between urban and rural settings, and between ethnic groups.

Additionally, the government of Burundi and relevant stakeholders should:

- Improve the allocation and distribution of EmONC resources based on needs.
- Urgently take steps to coordinate the development of strong core and comprehensive EmONC training curriculum to be adopted throughout the country. Such a curriculum must have a strong practical component and key EmONC personnel should be required to undertake regular refresher courses through a continuing professional development programme.

Furthermore, the government of Uganda and relevant stakeholders should:

- Undertake a complete overhaul of the referral system in Northern Uganda, including the human and material components. The first step will be to ensure the proper functioning of the ambulance system, comprising of dedicated drivers and funds for maintenance, repairs and fueling of the ambulance. Also, effective documentation of the referral and counter-referral process, and prompt delivery of EmONC service through better coordination among key EmONC personnel should be the norm. These data may constitute part of the EmONC data collection and monitoring system.
- Review the current drug supply system from a ‘push system’ to a ‘pull system’ that will allow public health facilities to request for medicines and other supplies from the national drug store
according to their needs. This will reduce the problem of regular stock-out of essential medicine, improve the working conditions for healthcare providers, and ultimately enhance the client experience.

8.2.2. Future research

This PhD project also identified a number of areas that need further research, in order to improve the overall delivery, availability, accessibility and quality of maternal and reproductive health services with the goal of improving health outcomes, and a sustainable health system. The areas for further research include the following:

- Individual, socio-cultural, and political and health system interventions to address the non-financial barriers to women’s utilisation of major MRH services in Burundi and Northern Uganda. This may entail in-depth interviews and FGDs with key stakeholders at the community, political, and health systems levels.

- In-depth analysis of the role of male-partners in women’s uptake of MRH services, and strategies to improve male-partner involvement in maternal and child health in post-conflict Burundi and Northern Uganda. This study may include local health providers and couples as main participants. In addition to having in-depth interviews and FGDs with the participants, the design could be such that interviews with couples are first held with each individual and then with the couple together. This will help to strengthen the rigor and trustworthiness of the findings. This may also include an identification and assessment of local initiatives to improve male-partner involvement in maternal and child health.

- The impact of the universal healthcare policy in Uganda, and the selective healthcare policy in Burundi on the attitude of male-partner involvement in maternal and child health. With many health providers in our study suggesting that the UHC policy has had the unintended effect of poor male-partner involvement in maternal health, a mixed method research could be undertaken to assess the strength of the assertion and the way forward.

- The use, effectiveness and sustainability of performance-based financing as a tool to improve UHC in developing country contexts. This may be achieved by undertaking a systematic review on improving universal health coverage through performance-based financing. The main outcomes could be changes in the proportion of the population having access to healthcare, the quality of healthcare services, and the impact of programme on public finance among others.
REFERENCE LIST


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APPENDICES

Appendix I: Data Collection Tools: Interview and Focus Group Discussion Guides in English

Key issues explored included:

1. Knowledge of obstetric danger signs among pregnant women;
2. The role of traditional birth attendants in early recognition of the danger signs and timely referral of women;
3. The state of the communication and transport network to referral health facilities;
4. The existence of community finance and transport schemes to ease referral of women to health facilities;
5. The existence of referral facilities and adequacy of health personnel at the facility;
6. The state of existing Emergency Obstetric Care (EmOC) services (present/absent; basic/comprehensive, etc);
7. The availability, utilization and quality of EmOC (including accessibility and opening hours) and other MSRH services prior, during, and after the conflict;
8. The main causes of maternal deaths (haemorrhage, infection, hypertensive disorders, abortion complications and obstructed labour), classified into the three-delays model (Thaddeus & Maine, 1994), and if the causes were managed in line with the proposed model interventions;
9. Descriptive accounts of the effects of the conflict on the accessibility, affordability and quality of MSRH services in their specific area/region;
10. Eyewitness accounts of specific negative consequences of the conflict on MSRH;
11. Strategies put in place to ameliorate the prevailing situation/coping strategies.
Interview guide: Women of Reproductive Age and women who lived during the conflict era

Introductory questions (creating rapport): Mainly demographic information (area of residence, migration status, exposure to conflict (direct/indirect), occupation, age, educational level, number of children etc.).

Pregnancy danger signs, complications and utilization of healthcare services

1. There are some signs during pregnancy and childbirth that indicates that the health of the woman and/or baby may be in danger. Do you know about these signs?

2. Can you talk to me about some of these signs? (probe if she could describe any of the signs below: Fitting; Swollen feet, hands and/or face; Severe headache; bleeding; High fever after childbirth; Labour lasting more than 12 hours; Hand, foot or cord comes first; Placenta still has not come out after 30 minutes)

3. How can you recognize these signs when they occur? How can you know that a pregnant woman’s health and wellbeing is in danger?

4. When & Where did you learn about these pregnancy danger signs? (probe about these options: health facility; radio; community meetings; community health workers etc.)

5. How was your knowledge about these signs before the conflict?

6. How has the conflict affected your knowledge about these danger signs? (probe if it has improved or not and how).

7. During and after the conflict, did you experience any of these signs when you were pregnant?:
   - Fitting;
   - Swollen feet, hands and/or face;
   - Headache;
   - Bleeding;
   - High fever after childbirth;
   - Labour lasting more than 12 hours;
   - Hand, foot or cord comes first;
   - Placenta still has not come out after 30 minutes.

   - Did you disclose these signs to your care giver or anyone else?
   - What did you/your ‘carer’ do when you experienced this?

   - Were you ever pregnant during and immediately after the conflict?
   - Where did you deliver your baby?
   - How was your delivery? (probe whether she delivered well without any problems etc.)
   - Did you experience any complications? (probe more about the nature of the complication). If yes, were you told the cause of the complication?

   - Around this area, what types of complications do women have in late pregnancy, labour, delivery and the period immediately after birth?
   - How was the situation before the conflict?
   - In your opinion how has the past conflict affected this?
In the past, when women experienced serious complications during pregnancy, delivery or after birth, what did the community do? (probe if there are any community insurance schemes, assistance in transporting the woman to a health facility, contributing funds etc.).

How has this evolved over time, taking into consideration the conflict that happened here? (probe whether the conflict has engendered more community cohesion, participation in joint community activities, created distrust among community members etc.).

In your view are women with complications able to quickly access the care they need?
Why or why not? (probe for possible difficulties in accessing care such as security concerns, distance, difficulty to access transport, funds, terrain etc.).
How has the conflict affected this?

What factors do you think affect women’s utilization of health services during pregnancy and childbirth? (explore possible factors such quality of care/treatment provided by health provider, costs for services, travel distance, lack of knowledge on when to seek care etc.).
Have these factors changed over time? (probe to inquire how?).
Any ideas how the past conflict might have affected this? (probe to inquire how was the use before and after etc.).
In your view, what would be the most effective way to increase the use of health facilities during pregnancy and childbirth?
What are the various maternal and reproductive health services provided at your local health facility (probe about family planning, VCT, PMTCT, screening for STIs and reproductive health-related cancers etc.).
What factors in your view encourage women in this area to use maternal, sexual and reproductive health (MSRH) services in general (family planning, VCT, PMTCT, screening for STIs and reproductive health-related cancers etc.)?
What about factors that discourage the use of these services? (probe about user fees, quality of care, etc.).

Traditional Birth Attendants (TBAs) and community

In some parts of the world many women deliver their babies with the assistance of traditional birth attendants (traditional midwives). What is the situation in this region?

How are they regarded within the community? (probe if they are given more respect and whether many women continue to go to them despite the presence of a health facility nearby etc.).

In addition to assisting in childbirth what other childbirth-related activities do traditional midwives carry out in the community? (probe about their possible role in the early recognition of pregnancy danger signs and timely referral of pregnant women to the health facility etc.).

How has the role of these traditional midwives evolved over time especially during the conflict? (probe whether because of possible difficulties in accessing health facilities during the conflict, many women and their family depended on them for childbirth OR the coming of many organizations/ institutions providing health services as a result of the conflict has reduced the
influence/prominence of traditional midwives OR their role has changed over time from delivery in the past towards early recognition of danger signs and timely referral of women to health facilities etc.).

- Are there any community finance/insurance schemes and transport schemes to assist with birth-preparedness and transport of pregnant women who need medical attention to the health facility?
- How do they operate?
- How do people become members?
- Is such membership opened to all?
- In your view, are these schemes effective and making a difference in the lives of women in the communities?

- In what way do you think the communities could contribute towards improving MSRH of women in this area?

- At the level of the community, are you aware of any activities/initiatives aimed at improving the quality of and access to maternal, sexual and reproductive health services following the end of the conflict? (probe to explore issues like emergency loan funds, transport service, health insurance scheme etc.).
- Can you kindly describe some of these community initiatives?

Impact of conflict
- Can you describe your experience in accessing emergency obstetrics care (EmOC) at your local health facility: (a) before, (b) during and (c) after the conflict?
- How will you describe the quality of the services provided?
- What about the opening hours? Did you find them convenient for somebody like yourself?
- How will you describe the treatment you received at the facility? (probe for quality of care provided etc.).
- How have the services evolved over time? (probe whether the services have improved, deteriorated or unchanged, and how)

- Can you kindly describe some eyewitness accounts of the negative consequences of the war on MSRH? (probe about what happened, who was involved and how widespread were issues like those etc.).

Interview guide: Local Health Personnel (Doctors, midwives, nurses, CHWs etc) AND International NGO staff

General health status
- What role do you play in maternal, sexual and reproductive health (MSRH) services in your district?
- How satisfied are you with the availability of these services in your area? Why?
- How satisfied are you with the overall quality of services in your area? Why?

- What factors do you think affect women’s utilization of health services during pregnancy and childbirth? (explore possible factors such quality of care/treatment provided by health provider, costs for services, travel distance, knowledge on when to seek care etc.).
• Have these factors changed over time? (probe to inquire how?).
• Any ideas how the past conflict might have affected this? (probe to inquire how was the use before and after etc.).
• In your view, what would be the most effective way to increase the use of health facilities during pregnancy and childbirth?

TBAs
• In some regions of the world traditional birth attendants (TBAs) have been formally integrated within the health system. What is the situation in this region? (probe if any relationship/link exists between TBAs and the formal health system; how they are regarded within the formal health system; if they jointly undertake some activities with health personnel within the formal health system etc.).
• Are there any occasions when the TBAs and health personnel work together? (probe the type and nature of the events; the nature of the working relationship during such events etc.).
• What role do the TBAs play in maternal health in this region and the country at large? (probe if apart of delivery in some settings they also play a role in the recognition and timely referral of women with delivery complications to the health facility)
• Do TBAs refer cases to you? How often? And what clinical stage?

Communication network
• How will you describe the state of communication (road network, referral network etc.) between primary health facilities and referral health facilities with respect to maternal health issues?
• How is such communication undertaken between these facilities?
• Is there any dedicated communication network between these facilities?
• How effective is such a network?
• How will you describe the state of the existing transport network: (a) before, (b) during and (c) after the conflict from primary health and referral health facilities?

Impact of war on MSRH
In the next set of questions we wish to capture some information on how the conflict might have affected MSRH in the country in general and specifically in the areas where fighting took place. If you can also explain with some examples that will be greatly appreciated.

• In many parts of the world, many women and their families suffer from delivery complications because they are not aware about some pregnancy danger signs. What is the situation in this region?
• To what extent could this be associated to the conflict?

• In your opinion, how did the conflict/war affect accessibility to MSRH services?
• What about the impact on affordability of these services?
• And impact on the quality of the services? (probe more for examples and any clarifications).

• Can you kindly describe some eyewitness accounts of the negative consequences of the war on MSRH? (probe about what happened, who was involved and how widespread were issues like those etc.).
• As health personnel/ relief workers, what were the key strategies that you people utilized to ameliorate/ lessen the consequences of the war on MSRH?
• What were some of the difficulties that you people encountered and how did you manage to address these difficulties?

• What were the principal causes of maternal deaths during the conflict?
• How did this differ before and after the conflict?
• What strategies were adopted to improve on the situation? (probe some detail description and how the strategies helped to reduce maternal deaths).

• How will you describe the state of EmOC during the war?
• What about their availability for women who needed them?
• What about the rate of utilization/ demand for the services?
• And finally, the quality of the services provided?
• How did these services differ with those before and after the war?

• Around this area, what types of complications do women have in late pregnancy, labour, delivery and the period immediately after birth?
• How was the situation before the conflict?
• In your opinion how has the past conflict affected this?

• Can you kindly recall of any occasion when a woman experienced a complication during pregnancy, childbirth or after delivery? What kind of complication(s) occurred?,
• What steps were taken and by whom to address the problem?
• What was the outcome of the case(s)?
• In your opinion, could the conflict have played a role in the occurrence and management of these complications?

• In the past, when women experienced serious complications during pregnancy, delivery or after birth, what did the community do? (probe if there are any community insurance schemes, assistance in transporting the woman to a health facility, contributing funds etc.).
• How has this evolved over time, taking into consideration the conflict that happened here? (probe whether the conflict has engendered more community cohesion, participation in joint community activities, created distrust among community members etc.).

• Are women with complications able to quickly access the care they need?
• Why or why not? (probe for possible difficulties in accessing care such as security concerns, distance, difficulty to access transport, funds etc.).
• How has the conflict affected this?

• When women with complications reach a health facility, do they get the care they need?
• In your opinion what is the: (a) **quality** and (b) **availability** of care offered to women when they come to the health facility? (probe to know why the quality and availability might not always be the best? ).
- To what extent might the conflict have affected this?
- What factors in your view encourage women in this area to use MSRH services in general (FP, VCT, screening for STIs and reproductive health related cancers etc.)?
- What about factors that discourage the use of these services? (probe about user fees, quality of care, etc.).
- In what way do you think the communities could contribute towards improving MSRH of women in this area?
- At the level of the community, are you aware of any activities/initiatives aimed at improving the quality of and access to maternal, sexual and reproductive health services following the end of the conflict? (probe to explore issues like emergency loan funds, transport service, health insurance schemes etc.).
- Can you kindly describe some of these community initiatives?

**Causes of maternal deaths**
Generally, maternal deaths have been classified as occurring because of 3 major delays (decision to seek care; identifying and reaching a health facility; and reception of appropriate care and treatment at the facility).

- To what extent are these delays implicated in maternal deaths in this region?
- In your view which of the delays is most implicated in maternal deaths in the region? (probe to know why).
- How have these delays evolved in course of the conflict? (probe to check if the main delay associated with maternal deaths has been the same before, during and after the conflict. For instance decision to seek care might have been very common in the past but improved knowledge of danger signs within the communities might have resulted in very few deaths after the conflict associated with such a delay etc.).
- What steps are currently undertaken to reduce maternal deaths from each of these delays in this region? (probe about sensitization of community on pregnancy danger signs, provision of transport, development of community insurance and saving schemes for health emergencies, improved road networks, improved referral system etc.).
Guide for the FGD (for local health personnel and international NGO staff)

I. Introduction about the study (purpose, procedure, potential risks and anticipated benefits, reporting of findings, funder, informed consent, permission to record etc.).

II. Brief introduction of group participants and their roles in maternal, sexual and reproductive health (MSRH) where they work

III. Discussion proper:
A. First set of discussion themes
   - Community (including women’s) knowledge of pregnancy danger signs (current status; evolution before, during and after the conflict; role of health system in community education and advocacy on these signs; etc.).
   - Traditional birth attendants (existence within the communities; nature of services undertaken; integration within the formal health system (?) ; existing link/relationship with health personnel within the formal health system; possible role in the early recognition of danger signs and referral to health facility etc.).

B. Second set of discussion themes
   - Maternal health (current status; trend before, during and after conflict etc.).
   - Main causes of maternal deaths (cause-specific mortality; and mortality with respect to the 3-delays model) (current status; trend before, during and after conflict etc.).
   - Current health system interventions carried out to address the delays in the region
   - Emergency Obstetric Care (EmOC):
     i. current status (main signal functions provided, basic EmOC & Comprehensive EmOC facilities etc.)
     ii. Trend before, during and after conflict
     iii. Accessibility of services to women, especially those affected by conflict
     iv. Availability of services in conflict-affected communities
     v. Utilization of services in the region
     vi. Perception of the quality of services provided
     vii. Opening hours of facilities
     viii. Availability of medical supplies

C. Third set of discussion themes
   - State of communication network (roads, transport system, referral system, ambulance service etc.) between primary health facilities and referral health facilities for maternal, sexual and reproductive health (current status; evolution before, during and after the conflict etc.).
   - Community finance, insurance and transport schemes to ease transport of women and/or baby needing medical attention to health facilities (existence(?) ; coverage; effectiveness; management etc.).

D. Fourth set of discussion themes
   - Impact of conflict on maternal, sexual and reproductive health (with examples):
     i. Individual
     ii. Health system (personnel, infrastructure, resources etc.).
     iii. Accessibility to health services
     iv. Affordability
     v. Quality
     vi. Progress towards MDG 5 (specific channel)
     vii. Resource mobilization
   - Eyewitness accounts of specific negative consequences of conflict on MSRH
- Strategies developed to ameliorate the impact of the consequences of the conflict

IV. Closing of discussion (thanking the participants; reminding them about commitments for confidentiality and privacy from research team; possibility of re-contacting them for an in-depth interview etc.).
Guide for the FGD (for women)

Introductory words about the study (purpose, procedure, potential risks and anticipated benefits, reporting of findings, funder, informed consent, permission to record etc.).

Discussion proper:
First set of discussion themes
Knowledge of pregnancy danger signs and TBAs
- Women’s knowledge of pregnancy danger signs (current status/identification of these signs; when they first heard about the signs (before or after their first childbirth); source(s) of information for these signs; community knowledge of these signs; actions taken when such signs happen; evolution before, during and after the conflict; role of health system in community education and advocacy on these signs etc.).
- Traditional birth attendants (existence within the communities; coverage (how common are they); other childbirth-related activities undertaken in the community; possible role in the early recognition of danger signs and referral to health facility; experiences with childbirth using a TBA (perceived quality of service); preference for TBAs over health personnel?; evolution of the role of TBAs vis-à-vis the conflict etc.).

Second set of discussion themes
Transport network to health facilities
- Current state (nature of roads, access to transportation etc.).
- Evolution before, during and after the conflict
- Community initiatives to facilitate transport of women and children needing medical assistance to the health facility
- Existence of insurance scheme, and birth-preparedness schemes within the community; coverage; effectiveness; management etc.

Third set of discussion themes
Local Health Facility
- Presence of a nurse, midwife, and/or doctor
- Availability of services for pregnant women (ANC, delivery etc.).
- Availability of drugs and medical supplies
- Possibility of a blood transfusion and caesarean section (surgical operation)
- Accessibility from home; Quality of services; Affordability of services; Opening hours: before, during and after the conflict.
- Difficulties in accessing healthcare at the health facility level for MSRH services
- Factors affecting the use of local health facility for MSRH services
- Confidence in the local health system to cater for MSRH needs of women
- Impact of the conflict on the last 3 issues

Fourth set of discussion themes
Impact of conflict on MSRH
- Impact of conflict on maternal, sexual and reproductive health (with examples):
  i. Individual
  ii. Health system (personnel, infrastructure, resources etc.)
  iii. Accessibility to health services
  iv. Affordability
  v. Quality
- Eyewitness accounts of specific negative consequences of conflict on MSRH
- Coping strategies developed to ameliorate the impact of the consequences of the conflict
Appendix II: Regulatory/Ethics Approvals

A. Norway

![Image of REK approval certificate]

Johanne Sundby
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2012/2299 Effekten av konflikten på modrehelse i Afrika

Vi viser til søknad om forhåndsgodkjenning av ovennevnte forskningsprosjekt. Søknaden ble behandlet av Regional komité for medisinsk og helsefaglig forskningsetikk (REK sø-rø) i møtet 10.01.2013. Vurderingen er gjort med hensyn til helseforskningsloven § 10. jf. forskningsetikklovens § 4.

Prosjektleder: Johanne Sundby
Forskningsansvarlig: Peace Research Institute Oslo

Prosjektet

Kunnskap om konsekvensene for reproduktiv helse skal en få ved å samte med lokalt helsespersonell som leger, jordmødre og frivillige medarbeidere, med kvinner i fruktbar alder, ledere i lokalsamfunn og med internasjonale hjelpeselskap som arbeider i konfliktrækket før, under og etter utbruddet av konflikt.

Det skal gjøres 30 semistrukturerde intervjuer og 2 fokusgruppeintervjuer for å få fram informasjon om holdninger, verdier og åttferd hos disse 100 av disse aktørene.

Det er fram av informasjonsskrivet at det ikke vil bli læret informasjon om identitet eller informantenes.

Det skal også hentes inn kvantitative data om demografi og helse fra rapporter og statistikker angående de landene det gjelder.

Komiteens vurdering
I denne studien vil man få kunnskap om konsekvensene av væpnete konflikter spesielt med tanke hæltsituasjonen fun mot og barn. Kvantitative data skal hentes fra tilgjengelige rapporter og statistikker. Gjennom samtaler skal en videre innhente kvalitative data.

Det skal i denne studien ikke innhentes identiifiserte helseopplysninger for å basere forskningsemforber mål angående diagnose eller behandling av sykdom. Samtalen med informantene har som mål å få innsikt i
deres oppfatninger, holdninger, erfaringer og verdier med spesiell tanke på reproduktiv helse i en situasjon preget av konflikt. Deltakerne unnetes heller ikke for risiko eller særlig belastning på grunn av deltakelse og det skal ikke lagres identifiserbare personopplysninger.

Komiteen oppfatter derfor ikke prosjektet som "forskning på mennesker, humane biologiske materiale eller helseopplysninger" jf. §§ 2 og 4 i helseforskningsloven. Prosjektet faller utenfor helseforskningslovens virkeområde og kan gjennomføres uten godkjenning av REK. Det er institusjonens ansvar og sørge for at undersøkelsen blir gjennomført på en forsvarlig måte innenfor gjeldende ordninger i de landene det gjelder.

**Vedtak**

Forskningsprosjektet faller utenfor helseforskningslovens virkeområde, jf. § 2, og kan derfor gjennomføres uten godkjenning av REK.

Komiteens vedtak kan påklages til Den nasjonale forskningsetiske komité for medisin og helsefag, jfr. helseforskningsloven § 10, 3 ledd og forvaltningsloven § 28. En eventuell klage sendes til REK Sorost A. Klagefristen er tre uker fra mottak av dette brevet, jfr. forvaltningsloven § 29.

Med vennlig hilsen

Gunnar Nicolaysen
Professor
Leder

Jørgen Hardang
Komitésekretær

**Kopi til:** chiprinus@gmail.com
Comité National d’Ethique pour la protection des êtres humains participants à la recherche
Biomédicale et comportementale

Bujumbura, le 04/07/2013

A Monsieur Chi Primus Cho
Investigateur Principal
Faculté de Médecine
Université d’Oslo
NORVEGE

Objet : Décision du Comité National d’Ethique

Monsieur,


Toutefois, si des modifications du protocole devraient y être apportées, une demande préalable devra être adressée au Comité National d’Éthique avant application.

Veuillez agréer, Monsieur, l’assurance de ma considération distinguée.

Le Président du Comité National d’Ethique

Pr. Jean Baptiste SINDAYIRWANYA
C. Uganda

GULU UNIVERSITY
P.O. Box 166, Gulu
Emilio.ovuga@gmail.com
Mindra.arnold@gmail.com

INSTITUTIONAL REVIEW COMMITTEE

30th August 2013

Chi Primus Che
Peace Research Institute Oslo
PO Box 9229 Grenland, Oslo, Norway
chiprimus@ri.no
Tel: +257 793 982 82

Dear Mr. Che,

RE: RESEARCH PROJECT, “Qualitative assessment of the impact of armed conflict on maternal and reproductive health in three post-conflict settings in Africa”

The Institutional Review Committee has approved your project proposal for a period of 12 months (from 30th August, 2013 to 29th August, 2014). Extension may be granted upon a written request for continuation.

Your clearance reference number is GU/IRC/03/08/13. This clearance is subject to the Uganda National Council for Science and Technology (UNCST) approval.

You are therefore requested to submit to the council filled copies of the UNCST r6 and rc 1 forms and meet the other requirements of the council. For further details, please refer to the UNCST website: www.uncst.go.ug

By copy of this letter, the Executive Secretary of UNCST is informed of the local IRC clearance and requested to provide you with all the necessary assistance.

Prof. Emilio Ovuga
Chair, Institutional Review Committee

Copy: Executive Secretary,
Uganda National Council for Science and Technology
Appendix III: Information Leaflet and Informed Consent Document in English

Request for participation in a research project
“Impact of armed conflict on maternal and reproductive health in Sub-Saharan Africa”

Background and purpose
This is a request for you to participate in a research study that intends to assess the effect of war on maternal and reproductive health. You have been contacted because you are a mother, health personnel, relief aid worker or an important stakeholder that has experienced the conflict.

What does the study entail?
The study will involve semi-structured interviews (SSIs) and focus group discussions (FGDs) on how the conflict affected maternal and reproductive health and some remedial approaches that were employed to mitigate the impact of the conflict on women and their children. The SSIs are expected to last for about 60 minutes while the FGDs are expected to take about one 90 minutes. The SSIs and FGDs will be undertaken in the language of choice of the participants and participation will be completely voluntary. The SSIs and FGDs will be done anonymously and the privacy and confidentiality of participants shall be respected. To ensure that accuracy of the information gathered, SSIs and FGDs shall be audio-recorded and later transcribed for analyses.

Potential advantages and disadvantages
The potential advantage of the study is that it will provide some useful information, especially to policy makers on the extent to which armed conflict has affected maternal and reproductive health. One key disadvantage is the possibility that some of the themes under discussion may cause discomfort to some participants. In such situations, participants will be free not to engage on discussion on those themes.

What will happen to the information about you?
The audio-taped discussions will be later transcribed, translated (where necessary) and analysed to capture the key themes covered on the issue being discussed. Upon transcription, the SSIs and FGDs will be deleted from the recording device.

The information that are registered about you will only be used in accordance with the purpose of the study as described above. All the data will be processed without name, ID number or other directly recognisable type of information. A code number links you to your data through a list of names.

Only authorised project personnel will have access to the list of names and be able to identify you.

It will not be possible to identify you in the results of the study when these are published.

Voluntary participation
Participation in the study is voluntary. You can withdraw your consent to participate in the study at any time and without stating any particular reason. This will not have any consequences for your further treatment. If you wish to participate, sign the declaration of consent on the final page. If you agree to participate at this time, you may later on withdraw your consent without your treatment being affected in any way. If you later on wish to withdraw your consent or have questions concerning the study, you may contact Primus Che at +243 847272371 or (a local contact of the host organization will be provided).
Further information on the study can be found in Chapter A – *Further elaboration of what the study entails.*

The declaration of consent follows Chapter A.
Chapter A – Further elaboration of what the study entails

Criteria for participation

Women, health personnel (doctors, midwives, nurses, community health workers etc.), aid/relief workers and other key stakeholders involved in maternal and reproductive health (MRH) that have lived through/ experienced an armed conflict.

Background information about the study

This is part of a broader study towards my doctoral degree also involving the use of publicly available quantitative data. This aspect of the research is mainly qualitative in nature. This will involve semi-structured interviews and focus group discussions with key stakeholders involved in maternal and reproductive health in some conflict and post-conflict settings. Key issues to be explored during the SSIs and FGDs include:

1. Knowledge of obstetric dangerous signs among pregnant women;
2. The role of traditional birth attendants in early recognition of the danger signs and timely referral of women;
3. The state of the communication and transport network to referral health facilities;
4. The existence of community finance and transport schemes to ease referral of women to health facilities;
5. The existence of referral facilities and adequacy of health personnel at the facility
6. The state of existing Emergency Obstetric Care (EmOC) services (present/ absent; basic/ comprehensive etc.);
7. The availability, utilization and quality of EmOC (including accessibility and opening hours) and other MSRH services prior, during and after the conflict.
8. The main causes of maternal deaths (haemorrhage, infection, hypertensive disorders, abortion complications and obstructed labour), classified into the three-delays model (Thaddeus & Maine, 1994) and if the causes were managed in line with the proposed model interventions.
9. Descriptive accounts of the effects of the conflict on the accessibility, affordability and quality of MRH services in their specific area/ region.
10. Eyewitness accounts of specific negative consequences of the conflict on MRH
11. Strategies put in place to ameliorate the prevailing situation/ coping strategies.

Venue of SSIs and FGDs

Interviews will be held at the place of choice of the participant. The FGDs will be held at a venue that is convenient for most of the participants.

Duration of participation

Each SSI is expected to last for about 60 minutes while the FGDs will last for about 90 minutes. Separate FGDs shall be held for the women, health personnel and aid/relief agency staff.

Potential advantages

Information gathered from the SSIs and FGDs may help improve current knowledge on the impact of armed conflict on MRH and also provide policy makers some information on developing programmes to improve the health of women in conflict and post-conflict settings.

Potential discomforts or disadvantages
Discussion on the effect of war on women’s health is a very emotional issue and as such some of the issues discussed may cause emotional discomfort to some of the participants, especially women who have undergone some unpleasant experiences as a result of the war. Should some of the participants feel uncomfortable discussing some issues, their decision will be respected. We will also make efforts to identify organizations on the ground that offer professional support in that endeavour and will refer participants requiring such support to them.

Other relevant information
- To ensure accuracy in managing and analysing the information, all SSIs and FGDs will be audio taped for eventual transcription and translation (where necessary).
- Participation in the study shall be free and voluntary and participants may leave the study at any time with any explanation and consequences.
- The information will be gathered anonymously, without the name of the individual used. The privacy and confidentiality of all participants will be respected.
- Participants for the FGDs living further away from the discussion venue shall be compensated for the cost of transportation to the venue.
- Only staff within the research team will have access to the transcripts from the interviews and discussions.
- This study will be submitted for ethics approval for ethics committees in both the sponsoring and the host countries before the study commences.
- For any additional information about the study, you can call the study investigator (Primus Che) at: +243 847272371.

Consent for participation in the study

I am willing to participate in the study.

(Signed by the project participant, date)

I confirm that I have given information about the study.

(Signed, role in the study, date)
Appendix IV: Handling methodological and ethical challenges during fieldwork

1. Informed consent
The study will face lots of challenges around the informed consent process. First, it is anticipated that most of the women to be interviewed as well as those to participate in one of the FGDs will not be very literate. As such their perception, understanding and voluntariness of the consent process might be problematic. The fact that my primary contacts on the ground are NGOs serving the population, some may erroneously perceive me as one of the NGO staff and that might affect their voluntariness to participate in the study. Furthermore, local norms and customs might affect the voluntariness of some potential participants. In many traditional African settings permission is requested from the community head in order to interview people in the community and another permission from the household in order to talk to someone from the household. Acceptance by a household head to interview the wife/daughter might be perceived by these women as an obligation to participate in the study. There is also the risk that some of the participants may perceive the study as an impact assessment by one of the local NGOs in order to roll out interventions to meet the need identified. To mitigate these, the informed consent process will be thorough and interpreters who have a good mastery of the local language shall constitute an integral part of the consent process. At every point in time, the importance of voluntariness will be emphasized as well as the right to withdraw from the study without any penalty.

2. Risk of emotional discomfort
Asking people to talk about experiences that might be frightening, humiliating or degrading can increase the risk of discomfort especially if they have personally undergone through those experiences. In this regard, efforts shall be made to establish contact with local organizations/institutions that can provide professional support should participants need such support in course of the study. More so, participants will be free not to discuss issues there are uncomfortable about.

3. Recruitment of key informants
Without a good mastery of the settings where the study will be carried out, reliance on snowball sampling to recruit key informants might skew the narrative of the interviews and focus groups discussions to a particular direction, reflecting the perceptions and views of the primary informants and affecting the ‘representativeness’ of the sample, leading to selection bias. To overcome this challenge, multiple entry points into the ‘community of key informants’ will be used, choosing as wide a range of people as possible to provide further contacts.

4. Local ethics approval
International ethics requirements stipulate that externally funded research must seek ethics approval from both the sponsoring and the host country. While ethics committees are present in the sponsoring country (Norway), the same cannot be said of our study sites in Africa. The study might therefore be carried out with local ethics approval. In such situations, seeking some sort of permission from the local ministry of health official for the region is generally acceptable.

5. Reportable situations
In studies of this nature, there is the risk of encountering reportable incidents implicating some of the study participants. These may include but not limited to child abuse, gender-based violence, neglect of duty etc. In such situations, reporting some of these incidents might violate the privacy and confidentiality of the key informant. As such, the decision whether to report will be made on a case-by-case basis taking into consideration the severity of the incident. Should such a situation arise in the field, the immediate and long-term rights and welfare of the key informant will be taken into consideration before deciding whether or not to report to the relevant authorities.

6. Consent for audio recording
Although the current plan is to record all interviews and discussions in an audio device in order to loss any important information, it is anticipated that some key informants may object to their interviews being recorded. In such instances, the informant will not be included in the study or notes will be taken during the interview.

7. Others
It is not uncommon to be confronted with some unanticipated challenges while in the field, undertaking the data collection. In such situations, the relevant authorities that could provide some guidance will be prompted contacted. These could include the academic supervisors, the head of the host NGO, head of the local ministry of health etc. Under such circumstances promoting and protecting the rights and wellbeing of potential participants will be paramount in attaining any decision.