

**Strengthening the midwifery workforce in  
fragile contexts: a mixed methods study  
from Ituri province, Democratic Republic  
of Congo**

**Thesis submitted in accordance with the requirements of the University  
of Liverpool for the degree of Doctor in Philosophy**

**by Amuda Baba**

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## **Abstract**

Strengthening the midwifery workforce in fragile contexts: mixed methods study from Ituri province, Democratic Republic of Congo

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Skilled and motivated health workers are important to delivering quality healthcare. Ensuring their availability and equitable distribution is a key priority. Low- and middle-income countries are experiencing challenges in relation to the maternal health workforce. This situation is worse in fragile and conflict affected states. The Democratic Republic of Congo (DRC) has very high maternal mortality rates and a serious shortage of qualified skilled birth attendants.

Ituri Province, in North-Eastern DRC is a fragile setting which faces conflict, Ebola outbreaks, the current COVID-19 pandemic and many challenges in attracting and retaining midwives in rural districts. This thesis aims to identify appropriate strategies to attract and retain midwives and related cadres in rural Ituri.

I analysed the availability, distribution and trends relating to doctors, nurses and midwives in Ituri Province from 2013 to 2017 using secondary staffing data within three categories of districts (rural, peri-urban and urban). The analysis revealed an oversupply of doctors and nurses, and a serious shortages of midwives, particularly in rural districts, requiring further analysis to explore this situation in depth. Hence using a life history approach, I then explored midwives' work experiences and challenges in rural Ituri Province. Midwives face immense challenges in their work, including severe shortages of qualified health workers, poor working conditions due to lack of equipment, supplies and professional support, and no salary from the government. These challenges were all exacerbated by fragility, conflict and rurality. Midwives showed bravery and resilience in navigating the interface between under-resourced health systems and poor marginalized communities.

Finally, through a workshop methodology, I engaged with stakeholders in Ituri Province, to review data from these two studies, in order to identify context-specific strategies to improve staffing. Key strategies embedded in the realities of rural fragile Ituri province included: organizing midwifery training in nursing schools located in rural areas; recruiting students from rural areas; and lobbying NGOs and churches to support the improvement of midwives' living and working conditions.

Midwives are key skilled birth attendants managing maternal and newborn health care. Ensuring their availability through effective attraction and retention strategies is essential in fragile and rural settings. Developing a holistic picture of the midwifery workforce using both quantitative and qualitative data is critical. Engaging stakeholders with this data, can facilitate the development of context-specific, feasible and potentially effective strategies to address the challenges of attraction and retention of midwives. Trusting relationships are critical to this co-production of knowledge. By implementing these strategies, only then will midwives, playing the interface between health systems and the communities, be able to provide the critical services that women and their families need, and therefore contribute to achieving Universal Health Coverage.

## **Declaration**

I, Amuda Baba, declare that the work in this thesis is my own under the supervision of Joanna Raven, Sally Theobald, Tim Martineau and Paluku Sabuni. At no previous time was this work submitted for a degree or qualification.

Where information has been derived from other sources, or where co-authors have provided inputs to published papers, this has been indicated in the thesis.

Amuda Baba

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## List of acronyms

A0:	Postgraduate level
A1:	Undergraduate level
A2 :	Diploma level
CRMD:	Centre de Recherche pour le Développement
CRDs:	Centrale de Distribution Régionale des Médicaments
CIA:	Central Intelligence Agency
DFID :	Department for International Development
DHMT:	District Health Management Team
DRC:	Democratic Republic of Congo
F:	Female
FBO:	Faith Based Organisation
FCAS:	Fragile and Conflict Affected States
FGD:	Focus Group Discussion
FIGO :	Fédération Internationale de Gynécologues et Obstétriciens
HIV/AIDS:	Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome
HR:	Human Resources
HRH:	Human resources for Health
ICM :	International Confederation of Midwives
IPASC:	Institut Panafricain de Sante Communautaire
ITM :	Institut de Techniques Médicales



JICA:	Japanese International Cooperation Agency
LH:	Life History
LMICs:	Low and Middle Income Countries
M:	Male
MNH:	Maternal and Newborn Health
MoPH:	Ministry of Public Health
MSP:	Ministère de Sante Publique
NGO:	Non-Governmental Organization
OECD:	Organisation for Economic Co-operation and Development
RDC:	République Démocratique du Congo
SBA:	Skilled Birth Attendants
SDG:	Sustainable Development Goals
UNFPA:	United Nations Population Fund
UNICEF :	United Nations Childern Fund
USD:	United States Dollar
WHO:	World Health Organisation

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# Chapter 1: Introduction

## 1.1. Background to the research

A strong human infrastructure is crucial for the fulfilment of the global health goals (World Health Organization 2016a). A key focus for health sector policy makers is on identifying ways to make this happen, to improve both the number and distribution of skilled health workers, especially in rural and remote areas (World Health Organization 2010). However, low and middle income countries (LMICs) are not only facing challenges in terms of shortages of skilled health attendants; but also in terms of imbalances within the health workforce between urban and rural areas, with serious implications on health indicators (OMS 2010; Tomblin-Murphy 2014). About 800 women die from pregnancy or childbirth-related complications around the world every day (World Health Organization 2016b), and more than 90% of these maternal deaths occur in LMICs (UNFPA 2015; World Health Organization 2019a). This situation is even worse in fragile and conflict-affected states (FCAS) (Haar and Rubenstein 2012). In 2017, according to the Fragile States Index, 15 countries which were considered to be “very high alert” or “high alert” were fragile states: South Sudan, Somalia, Central African Republic, Yemen, Syria, Sudan, Chad, Afghanistan, Iraq, Haiti, Guinea, Zimbabwe, Nigeria, Ethiopia and the Democratic Republic of Congo (DRC). These 15 countries had maternal mortality ratios (MMRs) in 2017 up to 1150 per 100,000 live births (Messner 2017; World Health Organization 2019a). Armed conflicts leave behind devastating health and social system impacts (Thompson and Kapila 2018). FCAS account for almost two-thirds of maternal deaths (UNFPA 2015), and over half of these deaths occur within three countries – Nigeria, DRC and Afghanistan (Ritchie 2020).

Countries which have suffered, or are still suffering from severe crises, need to re-establish destroyed infrastructure and systems (Action for Global Health UK 2011). Human resources are a critical part of this at all levels; since doctors, mid-level health

care providers such as nurses and midwives, health managers and community health workers are all needed to make vital contributions (Action for Global Health UK 2011). The availability of midwives and other skilled birth attendant cadres is limited by the very low levels of health workers in fragile states; as more than half of the FCAS run their health systems with less than one health worker per 1,000 population, compared to the Sustainable Development Goals (SDG) threshold of 4.45 doctors, nurses and midwives per 1000 population (World Health Organization 2016c).

Constant conflict, poor governance, inadequate infrastructure and an unfavourable business environment have left DRC, with its population of 95 million (Population data 2019), its dimension of 2,345,410 km<sup>2</sup> and six billion USD annual budget in 2019 (Radio Okapi 2018), one of the poorest countries in the world. The average Congolese resident is living on less than \$0.75 USD per day (Banque Africaine de Developpement 2013; Ali, Barra et al. 2015). The state of DRC's road infrastructure is severely deficient even by the standards of other low-income countries (Ali, Barra et al. 2015), which also has a greater impact upon rural settings.

MMR in DRC is estimated at 846/100,000 live births, with a huge disparity between urban and rural areas (Ministère du Plan, Ministère de la Santé Publique et al. 2014). MMR in the urban area of Kinshasa is estimated at 250/100,000 whilst in rural areas it can be more than 2,000 per 100,000 live births (CAPAC 2005; World Health Organization 2014a).

DRC suffers from a severe shortage of health care personnel. According to the Global Workforce Alliance, JICA and WHO, in 2014 the numbers of registered physicians and midwives in DRC were estimated to be respectively 6246 and 1555, for a population of 74,880,000 people (Global Workforce Alliance; JICA and WHO 2015, World Bank 2015a). The Ministry of Public Health estimates that there are 0.09 physicians and 0.5 nurses per 1000 population (Durham, Pavignani et al. 2015), and 0.02 midwives per 1000 population (Global Workforce Alliance; JICA and WHO 2015), which is much lower than the Sustainable Development Goals (SDG) threshold of 4.45 doctors, nurses and

midwives per 1000 population (World Health Organization 2016c). 70% of the Congolese population live in rural areas (Moumami 2010), yet 68.4% of doctors work in cities (Moumami 2010; Global Workforce Alliance, JICA and WHO 2015).

The Skilled Birth Attendance rate in DRC is estimated at 74%, but with large disparities between urban areas at 91% and rural areas at 63% (UNFPA RDC 2012). However, there are challenges in obtaining reliable workforce data in DRC (Durham, Pavignani et al. 2015), since only health workers within the public sector are recorded, meaning that many others in the private sector and non-health related sectors are not included (Global Workforce Alliance; JICA and WHO 2015).

To address these challenges and with the technical support of development partners, the Ministry of Public Health prepared the National Health Development Plan for 2011–2015, 2016-2020 and 2019-2022 (Ministère de la Santé Publique RD Congo 2010a; Ministère de Santé Publique RD Congo 2016a; Ministère de la Santé Publique RD Congo 2018), and the National Plan for Human Resource for Health Development for 2011-2015 and 2016-2020 (Ministère de la Santé Publique 2011; Ministère de la Santé Publique RD Congo 2016b). Within all three levels of the DRC health systems, i.e. national (central level), intermediate (provincial) and peripheral (health district), the Ministry of Public Health plans to: strengthen institutional governance and leadership on human resources for health including planning; enhancing the teaching quality; enhancing management and development skills of HRH managers; thus ensuring health workforce motivation and retention (Ministère de la Santé Publique RD Congo 2016a; Ministère de la Santé Publique RD Congo 2016b). However, there are problems with the implementation of these plans and policies, including: weak leadership and governance for human resources for health, poor quality of education of health workers, limited human resources management skills and poor working conditions for health workers (Ministère de la Santé Publique RD Congo 2016a).

During a series of community health interventions in health districts (zones de santé) in Ituri Province, I realised that within the health facilities I visited, there were serious

shortages of midwives. Most midwives, like other skilled health attendants, after having completed their training, prefer to work in urban areas within the Ituri Province, like other provinces of DRC (Division Provinciale de la Santé Ituri 2016; Ministère de Santé Publique RD Congo 2016a). Most of those who do accept a position within the rural and remote areas of the Ituri Province then leave their job in less than three years, with serious consequences on maternal health outcomes.

In view of all the elements described above, there appears to be a need to contextualize human resources for health (HRH) plans to the realities of rural and fragile contexts. In addition, it is also hard to assess this within a country context as large and diverse as DRC. Hence in this thesis, I focus upon the Ituri Province, located in the north-east of DRC, as the problems were observed within the health districts of that province. Although there is ongoing training of midwives and other skilled birth attendant cadres, there is no information on how to best attract and retain them to work in such fragile and rural contexts.

## **1.2. Research aim and objectives**

The overall aim of this thesis is to identify appropriate strategies to attract and retain midwives and related cadres within the fragile contexts of rural Ituri Province, north-eastern DR Congo. To achieve this aim, the following objectives have been set:

1. To identify the characteristics of the midwifery workforce and other SBA (doctors and nurses) in terms of their availability and distribution in Ituri Province. In a context where not much is known about HRH, the rationale for this objective is to understand the current situation of SBAs in the province in terms of their supply and demand
2. To assess the experiences and challenges of midwives (current and former) through time from their initial professional choice to the present day. The rationale for this objective is that not much is known about midwives' experiences and challenges whilst working in these fragile and rural settings. Therefore, listening to both midwives and ex-midwives on their experiences of

the profession in such settings is very important in order to understand the support they need.

3. To explore the policy and practice of the attraction, support and retention of midwives and to engage with stakeholders in order to identify appropriate strategies within the fragile and rural Ituri context.



### **1.3. Structure of the thesis**

This thesis is publication based and subdivided into eight chapters. Chapter one presents the background to the research, research aim and objectives and the structure of the thesis. Chapter two provides the background to the DRC, Ituri Province and the study sites. The literature review for this study is described and presented in chapter three. Chapter four provides a detailed methodology of the study, covering the different methodological components of the study. Being a thesis by publication, there is some repetition of methods in the results chapter, where different papers are presented. In this chapter, I have also developed the trustworthiness on the research process as well as the reflexivity component, as it is sometimes challenging to include the depth and detail that's important here within the word count allowed in papers.

Chapters five, six and seven are results-based chapters, and I have presented them in the form of papers. Chapter five presents findings from secondary data on SBA cadres in Ituri to describe their characteristics within the province, disaggregating data by types of health districts and gender where possible. This paper has been accepted for publication by the Human Resources for Health Journal. chapter six explores through the life history methodological approach, the experiences and challenges of working as a midwife in fragile and rural settings of Ituri province. This paper has been published in Rural Remote Health Journal. In chapter seven, the last paper, based on engaging with different stakeholders in the province, through a participatory workshop methodology to identify appropriate strategies to attract and retain midwives in fragile and rural contexts of Ituri is presented. This paper has been accepted by the Health Research Policy and Systems Journal for publication.

chapter eight brings findings from all the three papers together and discussed their joint contribution to the literature on developing strategies to attract and retain midwives in fragile and rural contexts, through engaging with different stakeholders in a fragile and conflict affected settings, contributing to promoting learning health systems. This chapter ends with a conclusion.

#### **1.4. My role and responsibilities in the research**

In the whole research, my role and responsibilities were as follows:

- I conceived this research, designed the study and developed the research proposal and study tools;
- I submitted the proposal to the ethics committees both in UK and the DRC;
- I collected the data with the support of research assistants, I analysed the data and drafted all chapters of the thesis, and after feedback from the supervisors, revised and finalised the thesis.

My inputs to the published papers are described at the start of chapters 5 (page 121), 6 (page148) and 7 (page 178).

As English is not my first language I used a professional proof-reader (Helena Eynon) to review the thesis. She made corrections to my language and grammar, I checked these to ensure correct meaning, and finalised the thesis.

## **Chapter 2: Background to DRC**

### **2.1. Introduction**

This chapter describes the background information about the Democratic Republic of Congo (DRC) and the specific study areas within Ituri Province. It consists of twelve sections. The first section provides the history, politics and geography of DRC. The demographic features of DRC are described in section 2.3. The socioeconomic development of DRC is covered in section 2.4. Section 2.5 describes key health issues in DRC. The health system of DRC is developed in section 2.6, followed by the decentralization of the DRC health system in section 2.7. Human resources for health in DRC are covered by section 2.8, followed by a discussion of the maternal health care system in section 2.9. The background to Ituri Province and the study sites is described in section 2.10. Finally, a short conclusion closes this chapter.

### **2.2. History, politics and geography of DRC**

The territory of the DRC has been populated from at least 200,000 BC J.C (Congovirtual 2020). Many empires were founded in the area, such as Kongo, Kuba, Songye, Garengaze, Lunda and Luba. Europeans only discovered the region in 1482-1483, when the explorer Diego Cao discovered the root of Congo river (Congovirtual 2020). In 1885, at the conference of Berlin, King Leopold II of Belgium took possession of Congo as a private property and named it the Independent State of Congo, also known as Belgian Congo (BBC 2019). In 1908, the Belgian parliament took possession of Congo. On June 30, 1960, Congo got its independence from Belgium, and Patrice Emery Lumumba played a key role in the independence struggle (BBC 2019; Concern USA 2020). Lumumba was assassinated in 1961, and the country went through many unrests, until 1965 when Mobutu, the army chief of staff, overthrew the first president of Congo, Mr. Kasavubu, in a coup and changed the name of the country from Congo to Zaire (BBC 2019).

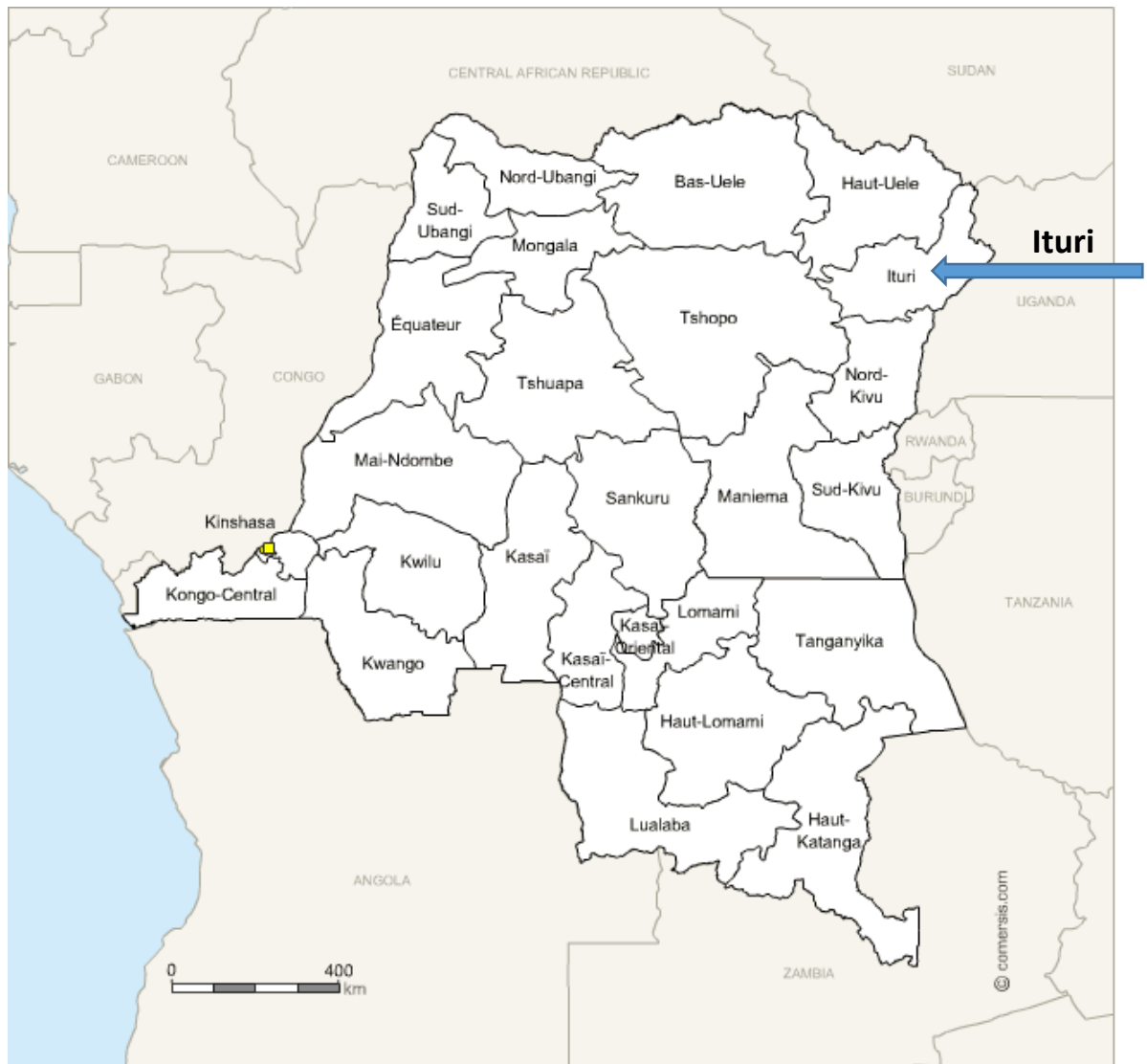
Mobutu then reigned for 32 years, until May 1997 when he was overthrown by Laurent Kabila, who also changed the name from Zaire to the Democratic Republic of Congo, with the support of Rwandan and Ugandan forces (International Coalition for the Responsibility to Protect 2018; Concern USA 2020). The national anthem and the currency were also changed. On 2 August 1998, a new rebellion was started by the Congolese Rally for Democracy, backed by Rwanda and Uganda, whilst the government benefited from the military support of Angola, Namibia and Zimbabwe. This led to what is described as the second Congo war, causing the deaths of over three million people with many millions more displaced both within and outside the country (Council on Foreign relations 2018). In 1999, the United Nations Organization Mission in the DRC (MONUC) was put in place by the United Nations Security Council, in order to supervise the Lusaka Ceasefire Agreement (International Coalition for the Responsibility to Protect 2018) . President Laurent Desire Kabila was assassinated in January 2001, and his son Joseph Kabila was chosen to lead the country during that process of war. It was only in 2003 that a peace agreement was signed by the different groups involved and a transition government was put in place, with a president and four vice presidents, involving different rebel groups and the civil society (Council on Foreign relations 2018; BBC 2019). Even though DRC has a long history with conflict, its recent crisis from 1996 are linked with the aftermath of the 1994 genocide in Rwanda, which caused the Hutu exile in the eastern town of Goma, in DRC (Council on Foreign Relations 2018; International Coalition for the Responsibility to Protect 2018).

Despite the fact that the established transition government led to the first democratic election in the country in 2006 and the second in 2011, the country still experiences instability as there were more rebel groups and other local militia that were established and operational, mainly in the eastern part of the country, which has affected stability and the development process. (Council on Foreign Relations 2018; Reliefweb 2018b; Barry 2019). In relation to the country's number of provinces, this has increased from 11 to 26 by the central government since 2015 (See Figure 1), meeting the requirements of the promulgated constitution by president Joseph Kabila in 2006 (Bruneau 2009; Ngoie

2016). With regard to health districts, there are 515 throughout DRC (Ministère de Santé Publique RD Congo 2016a).

As far as its geographic background is concerned, DRC is located in central Africa, with an area of 2,345,409 km<sup>2</sup>, making it the second biggest country in Africa, after Algeria, and the biggest within Sub-Saharan Africa. DRC lies on the equator, having one-third of the country to the north and two-thirds to the south (UNDP-DRC 2012). It shares 9,165 kilometers with nine neighboring countries; in the north, with the Central African Republic and South Sudan; in the west the Republic of Congo and the Angolan enclave of Kabinda; in the east with Uganda, Burundi, Rwanda and Tanzania and in the south with Zambia and Angola (Ministere de la Sante Publique RD Congo 2018). DRC has a vast hydropower potential (SADC 2012).

Figure 1: Map of DRC showing provinces, and bordering countries.



Source: (Africa Centre for Strategic Studies 2018)

### 2.3. Demographic features of DRC

DRC, with an estimated population of 95,784,841 people in 2019, is the fourth most populous country in Africa (after Nigeria, Ethiopia and Egypt) and the 16<sup>th</sup> in the world (CIA 2019; Population data 2019). It has a population growth rate of 3.3% and a total fertility rate of 6.45 births per woman (Population data 2019). Around 60% of the population are less than 20 years old. The majority of the population are classified as rural, with 55.5% living in the rural areas (CIA 2019). Considering its fertility rate and the

annual population growth rate, the population of DRC will double every 25 years (Ministere du Plan, Ministère de la Santé Publique et al. 2014; Ministère de la Santé Publique RD Congo 2016b). Life expectancy at birth has increased from 49 years in 1990 to 60 years in 2017 (UNDP 2018), and the adult literacy rate rose from 59.3% in 1980 to 89% in 2010 (HBS 2018).

DRC is made up of more than 200 ethnic groups of which the majority are the Bantu group. French is the official language used in administration, and there are also four national languages in the country: i.e. Swahili (mainly spoken in the eastern part), Lingala (in the north and some parts in the west), Kikongo (in the western part) and Tshiluba (in the central part of the country) (CIA 2019).

#### **2.4. Socio economic development of DRC**

Despite the decline in the global prices of the DRC's main export commodities from 2015, the country has managed to emerge from the national economic recession. Its economy has expanded from 2.4% in 2016 to 4.1% in 2018 (World Bank 2019). Gross domestic product has grown from 338 USD in 2011 to 562 USD per capita in 2018, an average growth of 6-8% per year (Population data 2019; Statistica 2019). Despite this economic progression, and despite the country possessing huge quantities of natural resources, DRC is still facing many other challenges (World Poverty Clock 2018). According to the recent World Bank estimates, in 2018, the extreme poverty rate in the DRC was 73% and one of the highest in sub-Saharan Africa (World Bank 2019). In this condition, DRC is among the fourteen African countries where the poverty level is on a steady rise (World Poverty Clock 2018).

DRC has gone through a period of conflicts for over 20 years and unstable governance continues to have a negative effect upon its economy (World Poverty Clock 2018). In relation to the country's economy, minerals such as copper, cobalt, cadmium, petroleum, industrial and gem diamonds, gold, silver, zinc, manganese, tin, germanium, uranium, radium, bauxite, iron ore and coal, along with timber production, continue to be the mainstays of the DRC economy and contribute significantly to the country's Gross

Domestic Product (GDP) (SADC 2012; Kithatu-Kiwekete 2017). At the same time, the strong dependence of the country's economy on extractive industries (nearly a third of GDP) exposes the country to risk as far as international economy context is concerned, since when mineral prices fall in the global arena, this has a negative impact on the DRC economy (PNUD-RDC 2020). Agriculture, which is also a key source of DRC economy, represents more than 20% of national GDP and occupies 60-70% of the population, particularly those living in rural areas. It is predominantly traditional and subsistence (PNUD-RDC 2020). Furthermore, COVID-19 is also having a negative impact on the vulnerable Congolese economy, slowing its economic growth (PNUD-RDC 2020).

## **2.5. Key health issues in DRC**

In DRC, key priorities for action cover the following components: nutrition of the population, reproductive, maternal, newborn, children and adolescent health, communicable diseases, emergencies and disasters, endemic diseases, tropical neglected diseases and non-communicable diseases (Ministère de Santé Publique RD Congo 2016a).

### **2.5.1. Nutrition**

In relation to nutrition status, undernutrition is the most common type of malnutrition in DRC. It includes chronic malnutrition, acute malnutrition and micronutrient deficiencies. The various forms of malnutrition mainly affect children (43% of children under five years), pregnant and breast feeding women, people living with HIV/AIDS and old people (Ministère de Santé Publique RD Congo 2016; Ministère de la Santé Publique RD Congo 2018; Kalonji 2020). Six provinces out of 26 have a malnutrition prevalence exceeding 50%, and 14 provinces count more than 40% of malnourished children (Lezama and Oyewale 2018). One in ten children suffers from acute malnutrition (Ministère de Santé Publique RD Congo 2016a; Kalonji 2020). Underweight affects more than one-fifth of children under five years (Ministère de Santé Publique RD Congo 2016a; Tremeau 2019).



### **2.5.2. Maternal, newborn and child health**

As far as maternal, newborn and child health conditions are concerned, they are characterized by high mortality from preventable causes (Mulumba 2017; Ministère de la Santé Publique RD Congo 2018). Maternal health in DRC is seriously affected by a number of factors and presents poor outcome indicators. Maternal mortality has increased in the DRC from 549 deaths per 100,000 live births in 2007 to 846 in 2014 (Ministère du Plan, Ministère de la Santé Publique et al. 2014). It has also been estimated that 35 percent of all female deaths were attributed to maternal causes (Ministère de Santé Publique RD Congo 2016a; Brunner, Combet et al. 2018). This situation reflects the impact of war and ongoing violence, which have slowed post-conflict rebuilding of the health system and exacerbated gender-based inequities (Brunner, Combet et al. 2018). It should be noted that maternal mortality is strongly influenced by that of adolescent girls, particularly linked to complications from early and unwanted pregnancies (Ministère de Santé Publique RD Congo 2016a; Nzuzi 2017). The Ministry of Public Health of DRC has made maternal and neonatal health one of the key priorities in health in the country (Mulobo 2020).

Maternal mortality is further accentuated by the occurrence of too close pregnancies following the low contraceptive prevalence (8%) coupled with unmet needs for family planning (PNUD 2015; UNFPA DR Congo 2018). In relation to sexual and gender-based violence (SGBV), more than 50% of women have experienced this since the age of 15 years (Ministère de Santé Publique RD Congo 2016a). Maternal health has been identified as a priority in the 2016-2020 national health development plan (Ministère de Santé Publique RD Congo 2016a).

### **2.5.3. Communicable diseases, emergencies and disasters**

DRC is registering the emergence and re-emergence of several communicable diseases with epidemic potential (Ministère de Santé Publique RD Congo 2016a). As well as the increase of communicable diseases, DRC is also experiencing an increase in the incidence of non-communicable diseases (Ministère de Santé Publique RD Congo 2016a). This double burden of communicable and non-communicable diseases has a negative impact

on rates of mortality and morbidity. DRC is being challenged by a series of outbreaks: cholera in the east and west of the country, measles in eastern, southern and northern provinces, yellow fever in the north and centre of the country and Ebola in the north and north-east (Ministère de Santé Publique RD Congo 2016a; OMS 2018; Ministère de la Santé Publique RD Congo 2018; MSF Belgium 2019). Recently, the occurrence of COVID-19 declared in DRC in March 2020 has added more challenges (MSF France 2020). The poor organization of the laboratories network does not allow for the early detection of outbreaks in the country (Ministère de Santé Publique RD Congo 2016a). Due to different crises, wars, conflicts and disasters affecting different parts of the country, DRC finds itself in a permanent emergency situation (MSF France 2018; Makangara 2019).

#### **2.5.4. Endemic diseases control**

DRC experiences a number of endemic diseases which seriously affect the health of the population: malaria, HIV/AIDS, tuberculosis (Ministère de Santé Publique RD Congo 2016a). Malaria remains the main cause of morbidity and mortality in DRC, accounting for over 40% of all causes of infant mortality (Mulumba 2017). In relation to HIV/AIDS, DRC is experiencing a relatively stable HIV epidemic prevalence ranging from 0.9 to 1.2% (Ministère de Santé Publique RD Congo 2016a; Radiokapi 2017; Duhau 2018). HIV is more worrying in urban areas compared to rural areas and more amongst women aged 15 to 49 years compared to men of the same age groups (Ministère de Santé Publique RD Congo 2016a). As for tuberculosis, DRC is among the 30 countries with a high burden of tuberculosis, ranking 11<sup>th</sup> in the world and the third in Africa. DRC is also among the thirteen countries facing challenges related to Tuberculosis-HIV co-infection and drug resistance (Ministère de Santé Publique RD Congo 2016a).

#### **2.5.5. Neglected tropical diseases**

Neglected tropical diseases (NTD) represent serious public health issues in DRC, where there are fifteen in total: Lymphatic filariasis, Geo-helminthiasis, Onchocerciasis, Schistosomiasis, Trachoma, Dracunculiasis, Leishmaniasis, Leprosy, Plague, Yaws, Rabies, Human African Trypanosomiasis, Buruli ulcer, Noma and Loiasis (Ministère de Santé Publique RD Congo 2016a).

## **2.6. Health systems in DRC**

### **2.6.1. Health system organization**

Since June 1960, DRC inherited a health system that relied essentially on hospitals and clinics, backed up by mobile teams for controlling major endemics (Ministère de la Santé Publique RD Congo 2006). The health system in DRC is organized into three levels, as follows: (1) the central level (Ministry of Public Health, with its 13 directorates and 52 vertical national programmes), with a normative and regulatory role; (2) the intermediate level with two main structures: a) the Provincial Health Inspections (Inspection Provinciale de la Santé: IPS with a role of control, audit and inspection, and b) the Provincial Health Divisions (DPS), with a role of coordinating health interventions, planning and technical support; and (3) the operational level, formed by the health districts (zones de santé) (Ministère de la Santé Publique RD Congo 2018; Criel, Waelkens et al. 2020).

The Congolese health system is organized around 26 provinces and 515 health districts. Each health district includes at least one referral hospital, and is divided into health catchment areas covering about 10,000 habitants and usually including one health centre (Ministère de la santépublique RD Congo 2018). In 2006, DRC developed a strategy for strengthening its health systems (SSHS), that covered six strategic priorities and was reviewed in 2010 (Ministère de Santé Publique RD Congo 2016a). These six strategic priorities are described as follows: (Ministère de la Santé Publique RD Congo 2006, Ministère de la Santé Publique RD Congo 2010a):

- Revitalization of the health districts
- Reorganizing the central and intermediate (provincial) levels
- Rationalizing the health financing
- Strengthening both intra and intersectoral partnership
- Development of human resources for health
- Strengthening health systems research

Among the six strategic priorities proposed in the SSHS, the revitalization of the health districts, considered here as imparting new life and vitality to the health districts, is ranked as first. The health district is set as a priority because it is the key administrative and operational entity in the implementation of Primary Health Care in the Congolese health system (Criel, Waelkens et al. 2020).

The 2016–20 National Health Development Plan identifies four main sectors in the health care system in DRC, as described in Table 1: public medical, private medical, private pharmaceutical and traditional sector (Ministère de Santé Publique RD Congo 2016a).

Table 1: Structure of the health system in the DRC

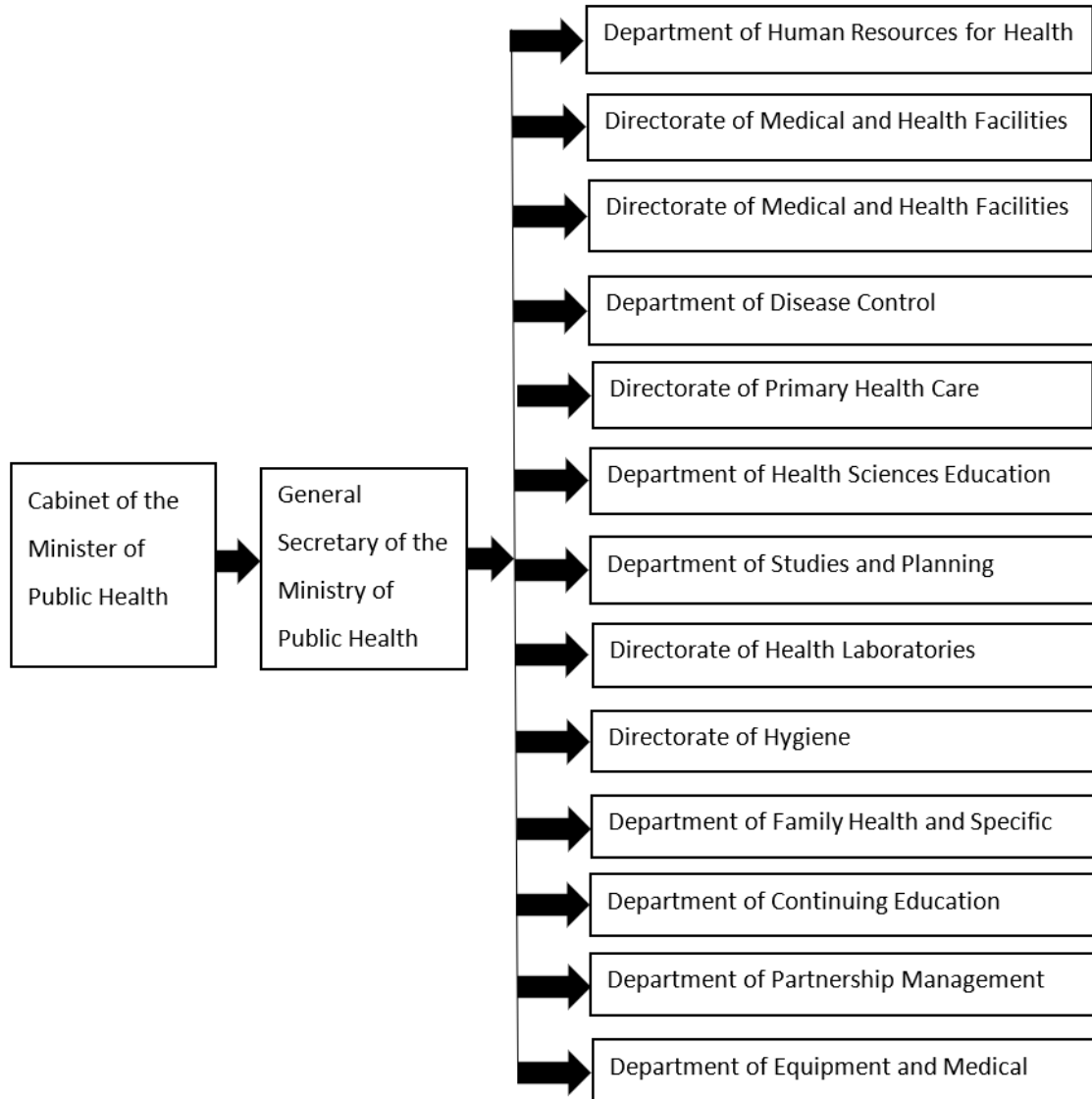
Sectors		Description
Public health sector		Health centres, general referral hospitals, provincial and national hospitals, other state and para-state structures involved in service delivery
Private health sector	Not-for profit	Health centres and hospitals managed by NGOs (including FBOs)
	For profit	Private medical and paramedical practices, clinics, polyclinics, and diagnostic centres
Private pharmaceutical sector		Pharmaceutical companies and authorized wholesale, supply, and distribution structures, including drug stores
Traditional medicine		Traditional healers using plants and traditional practices to diagnose diseases and conditions and provide care for patients

Adapted from (Brunner, Combet et al. 2018)

**2.6.1.1. Public health sector**

The Ministry of Public Health (MoPH) is responsible for the health system and develops national strategies, defines policies and priorities and sets standards and guidelines for service delivery (Brunner, Combet et al. 2018). The MoPH has 13 departments (See Figure 2), which are structured into seven central directorates to oversee Human Resources for Health (HRH), strategic planning, service delivery, pharmacy and medicines, disease control, health education and family health (Brunner, Combet et al. 2018). The MoPH also implements several national vertical programmes (Ministère de Santé Publique RD Congo 2016a).

Figure 2: Different departments of the Ministry of Public Health in DRC



Source: (Ministère de la Santé Publique RD Congo 2016b)

Provincial health divisions (DPS) are in charge of organizing and managing primary health care through provincial hospitals and lower-level clinics. Provincial health inspectorates (Inspections Provinciales de Santé) monitor and oversee these clinics in partnership with provincial governors and provincial ministers of health. The provincial health divisions are also in charge of facilitating the implementation of directives and policies established at the central level (Brunner, Combet et al. 2018). In doing so, they also interact with private providers in their regions.

Health districts (zones de santé) are the lowest operational constituent of the public health sector (Ministère de Santé Publique RD Congo 2016a; Brunner, Combet et al. 2018). There are 516 health districts across the country; each of these is led by a district health management team, covers 100,000 to 150,000 inhabitants and has a general referral hospital. 393 health districts have government-run general referral hospitals, and the remaining 123 have either a faith-based hospital or a private health facility that serves as the referral hospital for the district (Brunner, Combet et al. 2018). Health districts are further divided into 8,504 health catchment areas, each of which operates a health centre covering between 5,000 to 10,000 people. Health catchment areas are managed by a local health centre committee in charge of identifying health needs, managing health centres and organizing community activities (Ministère de Santé Publique RD Congo 2016a).

#### **2.6.1.2. Private not for profit**

The private health sector is an important source of health care across the DRC. While private for profit providers are concentrated in urban areas, Faith Based Organizations (FBOs) and Non-Governmental Organizations (NGOs), being often supported by donors, typically operate in underserved areas (Brunner, Combet et al. 2018). The private sector accounts for 44% of outpatient care and 25% of inpatient care in DRC (Wang, Temsah et al. 2016).

The private sector in DRC owned 46% of the country's 469 hospital facilities in 2017 and a good proportion of lower level facilities (Barroy, Andre et al. 2014). As far as FBOs are concerned, they manage or co-manage with the MoPH approximately 40% of health districts, and half of all facilities within the country belong to FBOs (see Figure 3) (Barroy, Andre et al. 2014). The minimal government involvement in health financing and service provision has contributed to making the not for profit faith-based private sector prominent in DRC (Murru and Pavignani 2012). Not for profit facilities often have an agreement from provincial health authorities allowing them to provide health care services within the province (Bertone, Lurton et al. 2016). For instance, during the Ebola crisis in the north-east of the country, also characterized by insecurity and conflicts, faith-based organizations and faith leaders played important roles in the Ebola response (Balibuno, Badjonga et al. 2020).

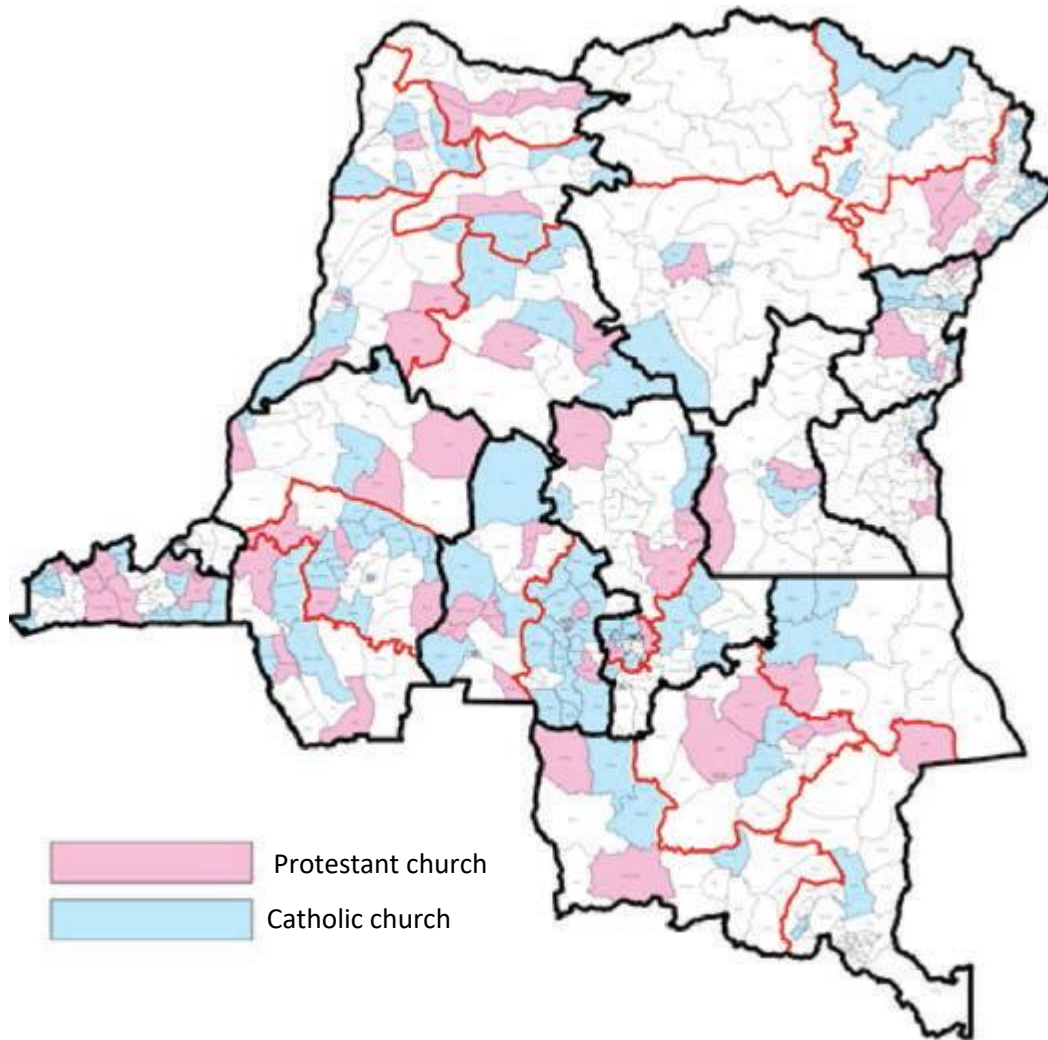
Private health providers are also part of different health workers' corporations along with their colleagues in the public sector, some being professional associations whilst others are considered to be regulatory councils, i.e. the Order of Doctors (Ordre des Médecins), Order of Pharmacists (Ordre des Pharmaciens), Order of Dental Surgeons (Ordre des Chirurgiens-Dentistes), Association of Nurses (Association des Infirmiers), Midwives Association (Association des Sages Femmes et Accoucheuses). Those health workers' corporations are responsible for ensuring that members comply with ethics rules and advocate for the medical profession (Brunner, Combet et al. 2018).

Faith-based organizations, especially catholic and protestant churches, have been very active in the DRC since the colonial period in providing health services, and are responsible for about 50% of health facilities in the country (Hill, Pavignani et al. 2014; Ministère de Santé Publique RD Congo 2016a; Balibuno, Badjonga et al. 2020). As most of the qualified health workers are more likely to concentrate in the DRC's urban areas, FBOs are very active in providing health services in rural and remote areas, where they have also established their churches and schools. For instance, in eastern Congo, where rape is often used as a weapon of war and gender-based violence is commonplace, FBOs



are often the only organizations that are able to help survivors after an attack within such settings (Eberle 2019).

Figure 3: Health districts with referral hospitals belonging to FBOs



Source: (Brunner, Combet et al. 2018)

### **2.6.1.3. Private for profit**

The private for profit sector is made up of the medical and paramedical offices, clinics, polyclinics and private diagnostic centres, concentrated in urban areas and in agglomerations (Brunner, Combet et al. 2018). The number of for profit health facilities

within the country is unknown (Ministère de la Santé Publique RD Congo 2016b). The private for profit installation approvals are granted by the MoPH, whilst their application for opening facilities is approved by the provincial government (Ministère de Santé Publique RD Congo 2016a).

#### **2.6.1.4. Private pharmaceutical sector**

As for the private pharmaceutical sector, the MoPH identifies 30 manufacturing laboratories, 91 authorized and 171 unauthorized wholesalers and 109 authorized pharmacies (Brunner, Combet et al. 2018). Most of those private pharmacies are located in Kinshasa and other urban settings within provinces. There are also private drug shops across the country, both in urban and rural areas, of which the true number is not known. These constitute the source of medicine for the majority of the population, as self-medication is a common practice throughout country.

There are 19 private regional distribution centres of medicine across the country (Centrale de Distribution Régionale des Médicaments, CDRs), which supply both public and private non-profit facilities with pharmaceutical products (Association Régionale d'Approvisionnement en Médicaments Essentiels 2016).

#### **2.6.1.5. Traditional health sector**

The final sector relates to traditional medicine. In some areas, especially within rural settings, the traditional health sector is the first service that is accessed by the population in case of health problems (Ministère de Santé Publique RD Congo 2016a). The number of actors in this sector is not known by the National Program for Promotion of Traditional Medicine and Medical Plants (Ministère de Santé Publique RD Congo 2016a; Brunner, Combet et al. 2018). Due to the accessibility and acceptability of traditional healers in some of the DRC Province, such as Tshopo, as well as their ability to deal with all domains of illness, traditional healers can be de facto considered as community health workers (Dalglish, Straubinger et al. 2019).

However, there are several factors that hinder collaboration among traditional healers and their full integration into the official health system, such as mistrust between

traditional healers and professionals of modern medicine and the lack of structure within the profession itself (Ministère de Santé Publique RD Congo 2016a).

## **2.7. Decentralization in DRC**

### **2.7.1. History of decentralization in DRC**

In November 1908, when Belgium annexed the Belgian Congo as a colony, the country was subdivided into 22 districts. In 1919, the colony was restructured into four provinces: Congo-Kasaï, Équateur, Orientale Province and Katanga (Statoidos 2009). In 1932, the colony was reorganized into six provinces, initially named after their capital cities until 1947, when regional names were adopted (Statoidos 2009).

The idea of decentralization in DRC was rethought following the Round Table Conference negotiations for independence in 1960 where it was agreed to maintain the structure of 6 provinces adopted in 1932, with their own governments and assemblies (Ndaywel è Nziem 1998, Statoidos 2009). This structure was considered as a compromise between unitarism and federalism (Ndaywel è Nziem, 1998).

Then the 1964 Constitution, approved by referendum, increased the number of provinces to twenty-one, plus the capital city, Kinshasa, all of them having strong autonomy. Unfortunately, this Constitution was never implemented, due to the coup d'Etat made by Mobutu in 1965, where a hypercentralized system was again put in place. In 1966, the 21 initial provinces were regrouped into eight provinces (Statoidos 2009). In 1975, the capital city of Kinshasa obtained the status of a province, making a total of 9 provinces in the country. In 1982, due to mounting political crisis, the government promulgated a limited degree of administrative decentralization which unfortunately was not implemented (Balembu 2014, Yetilo 2010). In 1988, the province of Kivu was split into three (North Kivu, South Kivu and Maniema), making 11 provinces in the country (Bandundu, Bas-Congo, Equateur, Kasai-Occidental, Kasai-Oriental, Katanga, Kinshasa, Maniema, North Kivu, Orientale, and South Kivu) (Statoidos 2009, Kibangula 2015). Provinces were given exclusive jurisdiction in some fields of public policy (mostly education, health, agriculture, and rural development) (Kibangula 2015).

In relation to funding sources, according to the constitution of DRC, provinces are allowed to retain 40 percent of government revenue raised within the province and also to levy their own taxes. Unfortunately, that retrocession of 40 percent still does not take place and provinces rely only on their own taxes generated locally (Mantuba-Ngoma 2009, Englebert and Mungongo 2016).

In 1990, due to persistent socio-political crisis, the government agreed to organize a Sovereign National Conference (CNS: Conference Nationale Souveraine). During the CNS, it was agreed to have a system which would give people a voice by bringing them closer to the centre of decision. That is why, delegates proposed to restructure the country into twenty-five provinces, where people would not have to travel a distance more than 300 kilometers to reach the provincial authorities (Ndaywel è Nziem 1998). Unfortunately, it was never implemented.

In 2006, the new constitution of DRC, where the country was restructured into 26 provinces, including the City of Kinshasa, was adopted (Bouvier 2012, Bruneau 2009).

In 2008, donors pushed for a platform of shared governance and public finance reforms in which decentralization was prominent. Donors concentrated their interventions in provinces and decentralized territorial entities (ETDs) in different areas. Those areas include technical and institutional support for provincial revenue collection, developing accounting procedures, supporting legal revisions for proper functioning of provincial institutions, building capacity for human resources and financial services and supporting provincial planning and budgeting (Gareth & Ghonda 2012; World Bank 2013). Unfortunately, despite commitment from both the government and the donors, decentralization did not produce the expected outcome, i.e. the shared governance and public finance reforms (Englebert and Mungongo 2016). An effective implementation of decentralization was considered as a key condition of the success of the expected outcome mentioned previously. But, as only few reforms described in the 2006 constitution were implemented, this did not contribute to the expected effective shared governance and public reforms (Englebert and Mungongo

2016). It was only in 2015 that the 26 provinces (including Ituri province – the study province), as described by the constitution were effectively implemented in DRC (Reliefweb 2019). As explained in more detail below (Section 2.7.2) this new structure established provincial offices for the different government departments, including health. The Provincial Health Division oversaw the management of districts within the province including the management of the workforce and the collection of relevant health workforce data.

### **2.7.2. Decentralization in DRC health system**

In 2006, the DRC's new constitution made several institutional reforms based on the principles of decentralization, allowing provinces more authority and decision-making powers that had previously only been held at the national level, including within the health sector (Ministère de Santé Publique RD Congo 2016a). The National Health Development Plan (Plan National de Développement Sanitaire) is built upon the health sector decentralization that began in 2006 with the National Health System Strengthening Strategy (Stratégie de Renforcement du Système de Santé), promoting the decentralization of health systems and strengthening strategy through health districts, leading to the division of the country's existing 11 provinces into 26 (Ministère de la Santé Publique RD Congo 2006; Rajan, Kalambay et al. 2014; Wright 2015). Through the decentralization process, the MoPH had devolved authority to the 26 new provincial health divisions (Divisions Provinciales de la Santé, DPS) (Brunner, Combet et al. 2018). Administrative decentralization was one of the most pressing objectives of the 2016-2020 national health development plan, with a special focus on the transfer of responsibilities, skills, and resources towards the provinces for both technical and efficiency reasons (Bertone, Lurton et al. 2016; Kabambi 2017). Complying with the constitution was another reason motivating that shift. At the same time, despite the fact that decentralization is gaining credence, in DRC it is only partially implemented, making it look like a "ghost decentralization".

The decentralized health systems strengthening strategy, through health districts, is an integrated health system with two different levels. The first level comprises a network of health centres, whose role is to provide to the population the minimum package of primary health care activities, with their full participation. The second level is the district hospital, whose mission is to provide to the population of the health district a complementary package of health care activities. The two levels are supported by a functioning referral system (Rajan, Kalambay et al. 2014). Unfortunately, this referral system seems not to be functioning well in different health districts of DRC (Vutegha, Mpunga et al. 2019).

### **2.7.3. Management of the health workforce in the decentralised context of DRC**

Health workforce is managed in DRC by the central Directorate of Human Resources for Health (Ministère de la Santé Publique RDC 2016a, Ministère de la Santé Publique RDC 2016b). This directorate is in charge of managing HRH data, advising the Ministry of Public Health on HRH policies and development plan. While at the provincial level, the HRH unit in the Department of Management and Administration is responsible for managing health workforce in terms of their recruitment, deployment, and monitoring HRH related policies' implementation. At the district level, it is the responsibility of the District Health Management Team to oversee HRH in terms of effective supervision and capacity building (Ministère de la Santé Publique RDC 2016a). The daily management of health workforce is organized by heads of facilities.

## **2.8. Human Resources for Health in DRC**

Human resources in the DRC are made up of civil service employees as well as those working in the private for-profit, faith-based and informal sectors as described in subsection 2.7.1.

For all civil servants including health workers, holding a matriculation or employee registration number is one of the main conditions required to be able to access salary from the government (Fox, Witter et al. 2014; Esanga, Viadro et al. 2017). Despite a lower density of doctors, nurses and midwives per 1000 population in DRC (see Table 2),

qualified health workers are more likely to concentrate within the DRC's urban areas and higher-level facilities (Fox, Witter et al. 2014).

In relation to salary, only an estimated one-third of health workers in the civil service benefit from salary from the government (Fox, Witter et al. 2014; Bertone, Lurton et al. 2016). This is probably because most of the health workers in the civil service—many of whom have already been in their posts for several years, have not been given a matriculation number and, as a consequence, cannot benefit from government salary (Fox, Witter et al. 2014; Esanga, Viadro et al. 2017; Maini, Hotchkiss et al. 2017). Getting the matriculation number is often a very time-consuming process, as it takes place at the central level. That is why they are recruited at local level, counting first of all on income generated locally from user fees. Furthermore, even though all civil service health workers should also receive a monthly 'risk allowance' ('prime de risque') from the government, only about 50% actually receive this, and the amount given sometimes varies as it is not stable (Esanga, Viadro et al. 2017; Maini, Hotchkiss et al. 2017). This situation has meant that many civil service health workers obtain much of their income through informal or non-salary channels income (Bertone, Lurton et al. 2016; Maini, Hotchkiss et al. 2017). Table 2 presents statistics of the health workforce in DRC, both within the civil service and the not for profit sector integrated in the health systems.

Table 2: Categorization of different human resources for health in DRC in 2015

Categories	Number	Percentage
Doctors	6341	4,3
Dental surgeons	147	0,1
Nurses	72270	49,1
Midwives	4234	2,9
Pharmacists	404	0,3
Physiotherapists	380	0,3
Lab technicians	2647	1,8
Radiology technicians	415	0,3
Nutritionists	794	0,5
Pharmacy assistants	317	0,2
Sanitation technicians	233	0,2
Dental technicians	5	0,0
Health administrators	2710	1,8
Other health professionals	8028	5,5
Total health workers	98925	67,2
Other administrative personnel	48199	32,8
Total of Human resources for health	147124	100,0

Source: (Ministère de la Santé Publique RD Congo 2016b)



As far as all staff employed in the health sector are concerned, 67.2% are health workers and 32,8% are made up of administrative personnel (Ministère de la Santé Publique RD Congo 2016b). Of the health workers, nearly half of all human resources for health are made up of nurses, whilst physicians represent only 4% and midwives nearly 3%.

In order to support health activities within the health districts, DRC has introduced community health workers (CHWs), who also play key roles in bridging the community with health facilities, and sometimes providing curative services in remote areas (Dalglish, Straubinger et al. 2019; Lowman 2020, Raven, Wurie et al. 2020). The number of CHWs in the country is not known.

In the DRC, due to the proliferation of medical schools and training institutions, there appears to be an oversupply of health workers, mainly nurses, holding substandard healthcare qualifications (Durham, Pavignani et al. 2015; Ministère de Santé Publique RD Congo 2016a).

As far as HRH in DRC is concerned, very little research has been conducted and there are very few papers addressing some of the HRH issues in DRC. These include human resources for health in six healthcare arenas under stress, where problems were identified surrounding the maldistribution of the workforce, the unregulated production of human resources for health, the proliferation of medical schools and training institutes leading to an oversupply of health workers and the number of health workers not being paid by the government. In relation to the remuneration of health workers in DRC, Bertone, Lurton et al. found that health workers have different sources of income, including money from user fees, some receiving risk allowances and others benefiting from salary; along with some other unstructured means of pay(Bertone, Lurton et al. 2016).

The introduction of a human resources information system to mobilize domestic resources for an improved health workforce contributed to avoiding the wastage of paying ghost workers. Some studies have included the challenges of retaining health workers in rural areas, using a human resource management approach to support CHWs,

the identity of the CHWs in DRC, midwives' challenges and the factors motivating them to remain in their work places (Durham, Pavignani et al. 2015; Raven, Akweongo et al. 2015; Bertone, Lurton et al. 2016; Esanga, Viadro et al. 2017; Maini, Hotchkiss et al. 2017; Bertone 2018; Dalglish, Straubinger et al. 2019; Bogren, Grahn et al. 2020).

## **2.9. Maternal health care system in DRC**

Within DRC, the maternal health programme is under the responsibility of the National Programme of Reproductive Health (Ministere de la Sante Publique RDC 2008). In order to help to reduce the high maternal health mortality rate, there are many programmes run or supported by NGOs and other international agencies in the country – including UNICEF, UNFPA and OXFAM (Radio Okapi 2016). Those programmes are focused on the in-service training of midwives (Ngombwa, 2020), and supplying facilities with equipment and medicines (Bakiman, 2013; Meyer, 2016; Radio Okapi 2016). Along with the health system, the maternal health system in DRC is also organized into three different levels, i.e. central level, provincial level and peripheral level, through health district and health facilities. Although deliveries are meant to take place in health facilities under the supervision of skilled birth attendants, about 80% of deliveries take place at health facilities with about 20% taking place at home (Ministère du Plan, Ministère de la Santé Publique et al. 2014; Ministère de Santé Publique RD Congo 2016a). Whilst most births occur at a public facility, about 16% take place within private facilities (Brunner, Combet et al. 2018). Due to their presence in the field, the private sector could contribute more to maternal care, especially prenatal care and emergency obstetric services to reduce maternal mortality (Ntambue, Malonga et al. 2016).

In relation to financing maternal health care in DRC, international donors and NGOs contribute to support the government (Radio Okapi 2016; Reliefweb 2020b), which has a \$4 USD billion budget, to finance a government for a population exceeding 90 million inhabitants, with less than 8% of this affected to healthcare (Ministère de Santé Publique RD Congo 2016a).

## **2.10. Background to Ituri Province and the study districts**

### **2.10.1. Ituri Province: geography and demographics**

Ituri is one of the 26 provinces of DRC and is located in the north east of the country. It has a population of 5,440,021 inhabitants and a density of 83 inhabitants per km<sup>2</sup> (see Figure 4) (Division Provinciale de la Santé Ituri 2016). Ituri is limited in the north with Haut Uele Province and the Republic of South Sudan, in the east with the Republic of Uganda by a land border as well as by Lake Albert and the Semiliki River, in the south with the Province of South Kivu and the west with Tshopo Province, by Avakubi River (Bruneau 2009; Division Provinciale de la Santé Ituri 2016). Nearly half of the population (48%) are aged below 15 years and 51% are female (see Table 3). With an area of 65658km<sup>2</sup>, Ituri, which is the 16<sup>th</sup> province in size within DRC, is located far away (approximately 1700 km) from Kinshasa - the state capital (see Figure 4) (Division Provinciale de la Santé Ituri 2016). Bunia is the capital city of the province, where all provincial authorities are established (Congo Profond 2018). Ituri is made up of the following five administrative territories: Aru: 6740 km<sup>2</sup>, Djugu: 8184 km<sup>2</sup>, Irumu: 8730 km<sup>2</sup>, Mahagi: 5221 km<sup>2</sup> and Mambasa: 36783 km<sup>2</sup> (Division Provinciale de la Santé Ituri 2016; Congo Profond 2018). Djugu and Mahagi territories have more than half of the province population (55%), with a density of more than 180 population per km<sup>2</sup> (Division Provinciale de la Santé Ituri 2016). During the rainy season, there are challenges related to certain activities such as immunisation, supervision and transferring patients from health centres to the referral hospitals, because of the poor road infrastructure (FEWS NET 2019).

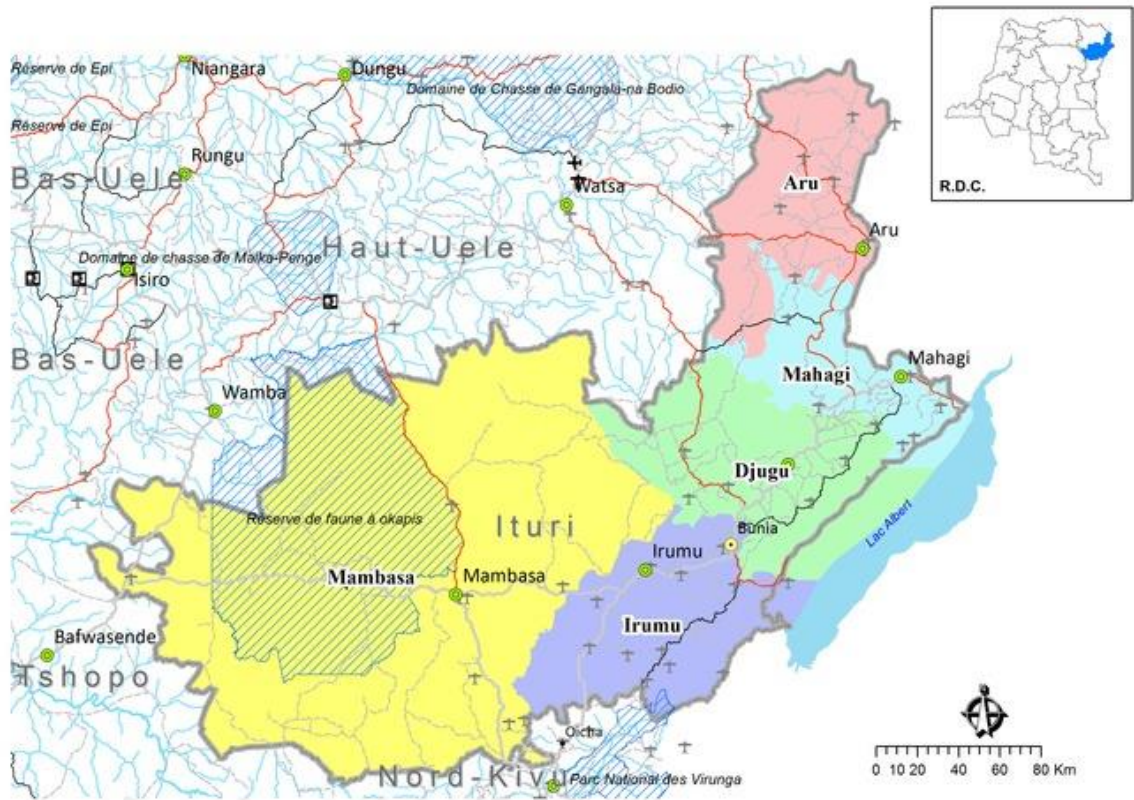
Table 3: Ituri population disaggregated by age groups in 2015

Age groups	Male	Female	Total	%
0-11 months	108800	108800	217600	4.0
12-59 months	408002	402562	810564	14.9
5-14 years	788803	794243	1583046	29.1
15-49 years	1164164	1251205	2415369	44.4
50 -64 years	136001	157761	293762	5.4
65 years and +	59840	59840	119680	2.2
Total	2665610	2774411	5440021	100.0

Source: (Division Provinciale de la Santé Ituri 2016)

Ituri is a region of the highlands (800-2000 meters), with a large tropical forest but also savannah landscapes (Congo virtuel sd). The climate of Ituri is marked by its precipitation, temperature, humidity and the altitude of this region. Ituri has three regions with distinct climatic characteristics, namely a very rainy region around the equatorial basin, an intermediate zone (Bunia, Fataki, etc.) where rainfall decreases during the dry season as in a tropical zone, and a territory with little rain but alternating the two seasons (Congo virtuel sd). Ituri's main agriculture is the growth of rice (in Mambasa Territory), cassava, maize, bananas (throughout the province), beans (in Djugu and Mahagi), peanuts (in Mahagi and Aru), and palm oil (in Mambasa and Irumu). There is also the growth of tobacco in Mahagi and Aru, coffee in Djugu, Mahagi and Aru, and cotton, mainly in Mahagi (Division Provinciale de la Santé Ituri 2016). Natural resources in Ituri include gold, diamonds, wood and coltan (Division Provinciale de la Santé Ituri 2016).

Figure 4: The map of Ituri Province



Source: (Cellule d'Analyse des Indicateurs de Développement 2018)

### 2.10.2. Conflicts in Ituri

The ethnic clashes between the Haut Lendu and Hema tribes in Ituri in 1999 occurred due to land conflict in Djugu Territory, which then developed and spread to almost the entire province and caused the deaths of over 50,000 people (Vircoulon 2005). The ethnic clashes were described as a war within another war of occupation of DRC, with forces from six different countries (Uganda, Rwanda, Burundi, Namibia, Zimbabwe and Angola). The Ugandan People Defence Force (UPDF) was very active in Ituri during that period (Vircoulon, 2005). In late 2017, another cycle of violence started in Ituri, especially in Djugu territory, motivated by interethnic tensions between Lendu and Hema communities. This has so far caused the deaths of thousands of people, mainly Hema, with many others displaced within the province: some in camps for the internally

displaced in the safer part of Djugu territory, others in Mahagi territory and another group in camps in Bunia town (Reliefweb 2020).

### **2.10.3. Health system in Ituri**

#### **2.10.3.1. Health system organization in Ituri**

There are 36 health districts in Ituri Province, as shown in Table 4. The provincial health division has the role of the coordination, supervision, training and monitoring of health districts, which represent the operational level in implementing health policies (Mbeva, Karemere et al. 2014). Within the district, the health system is organized at two levels as described in section 2.7. In each health district, there is one referral hospital and a number of health centres. With 36 health districts within the province, there are also 36 referral hospitals, with a total of 547 health centres integrated to the health districts (see Table 4), and an estimated 479 private for profit facilities providing health services to the population (Division Provinciale de la Santé Ituri 2016).

Table 4: Health districts in Ituri, their population and number of health centres

N	Health districts	Population	Number of health centres
1	Adi	167488	19
2	Adja	130867	17
3	Angumu	172371	19
4	Ariwara	212897	21
5	Aru	187568	24
6	Aungba	163881	19
7	Bambu	154267	14
8	Biringi	126946	15
9	Boga	70183	10
10	Bunia	278067	17
11	Damas	121059	10
12	Drodro	160516	16

13	Fataki	132973	14
14	Gety	193256	16
15	Jiba	141491	14
16	Kambala	128232	14
17	Kilo	57974	10
18	Komanda	191408	15
19	Laybo	146815	16
20	Linga	152960	16
21	Lita	132924	14
22	Logo	249220	26
23	Lolwa	47426	5
24	Mahagi	198302	17
25	Mambasa	99362	16
26	Mandima	143101	15
27	Mangala	961010	11
28	Mongbwalu	138273	12
29	Nia Nia	73931	7
30	Nizi	146901	10
31	Nyankunde	101480	11
32	Nyarambe	241626	20
33	Rethy	207755	22
34	Rimba	218991	20
35	Rwampara	138900	11
36	Tchomia	114477	12

Source: (Division Provinciale de la Santé Ituri 2016)

### **2.10.3.2. Human resources for health in Ituri Province**

#### **2.10.3.2.1. Situation of human resources for health**

The human resources for health situation is described in Table 5. The table reveals that over 50% of HRH are administration staff, and that nurses constitute slightly more than one-third of the personnel, with midwives making less than 5% (Division Provinciale de la Santé Ituri 2016).

Table 5: Human resources for health statistics in Ituri

Categories	Numbers	%
Physicians	231	3.5
Nurses	2382	36.1
Midwives	275	4.2
Lab-technicians	83	1.3
Nutritionists	18	0.3
Anesthesiologists	14	0.2
Radiologists	2	0.0
Physiotherapists	3	0.0
Community health cadres	108	1.6
Administration staff	3487	52.8
Total	6603	100

Source: (Division Provinciale de la Santé Ituri 2016)

#### **2.10.3.3. Training of human resources for health in Ituri**

In the province, there are 17 nursing schools, under the supervision of the Ministry of Public Health, training A2 nurses, midwives, laboratory technicians, pharmacy assistants and other health cadres (10 years of schooling, i.e. 6 years of primary and 4 years of secondary schools + four years in nursing schools), as shown in Table 6. The midwifery training started during the colonial period with a secondary-school level, i.e. A3 level midwives or birth attendants, undertaking two years of midwifery training after ten years of schooling. This training was subsequently abolished and replaced by a four-year



midwifery education programme, at a secondary- school level, recognized as A2 midwives or Auxiliary Midwives (Hatem, Halabi-Nassif et al. 2018; Bogren, Ndela et al. 2020). The nursing schools training A2 nurses and midwives within Ituri Province are presented in Table 6:

Table 6: Nursing schools (A2) in Ituri, their ownership and geographical location

N	Schools	Ownership	Organized courses	Health Districts
1	ITM Bunia	Government	Nursing	Bunia
2	ITM Adventiste Bunia	FBO/Adventist church	Nursing	Bunia
3	IEM Nyankunde	FBO/Protestant	Nursing, Lab, Pharmacy, Dentistry, Physiotherapy	Nyankunde
4	ITM Boga	FBO/Protestant	Nursing	Boga
5	ITM Lolwa	FBO/Protestant	Nursing	Lolwa
6	ITM Mambasa	Government	Nursing	Mambasa
7	ITM Bambu	Government	Nursing	Bambu
8	ITM Drodro	FBO/Catholic	Nursing	Drodro
9	ITM Rethy	FBO/Protestant	Nursing	Rethy
10	ITM Aru	Government	Nursing	Aru
11	ITPASC/Aru	FBO/Protestant	Community Health, Midwifery, Physiotherapy	Aru
12	ITM Ariwara	FBO/Protestant	Nursing, Midwifery	Ariwara
13	ITM Adi	FBO/Protestant	Nursing	Adi

14	ITM Laybo	Government	Nursing	Laybo
15	ITM Logo	FBO/Catholic	Nursing	Logo
16	ITM Nyarambe	Government	Nursing	Nyarambe

ITM : Institut des Techniques Médicales, IEM : Institut d'Enseignement Médical,

ITPASC : Institut Technique Panafricain de Sante Communautaire

Source: (Division Provinciale de la Santé Ituri 2016)

Some of the schools, mostly FBOs, are not registered by the Ministry of Health (37.5%), and operate without any official documents (25%); whilst others experience limited numbers of students, probably due to their location and also a lesser amount of interest from the local communities (Division Provinciale de la Santé Ituri 2016).

In relation to degree programmes, these are under the responsibility of the Ministry of Higher Education. Before 2013, when the education reform took place, the three-year degree programme which was organized in nursing colleges (ISTM: Institut Supérieur de Techniques Médicales), training A1 midwives ("Accoucheuses") (A2 midwives + 3 years of midwifery or 12 years of schools, i.e. 6 years of primary and 6 years of secondary education +3 years of midwifery degree), did not meet the international standard of midwifery described by ICM (International Confederation of Midwives 2017; Bogren, Ndela et al. 2020). Within the province, there are three universities (one public and two FBO), organizing the faculty of medicine (two in Bunia and one in Mahagi), and three nursing colleges (ISTM) (one public and two FBO), training nurses, midwives, laboratory technicians, pharmacists (A1: three years at the college or A0: five years at the college) (two in Bunia and one in Aru) (Division Provinciale de la Santé Ituri 2016).

#### **2.10.4. Maternal health in Ituri**

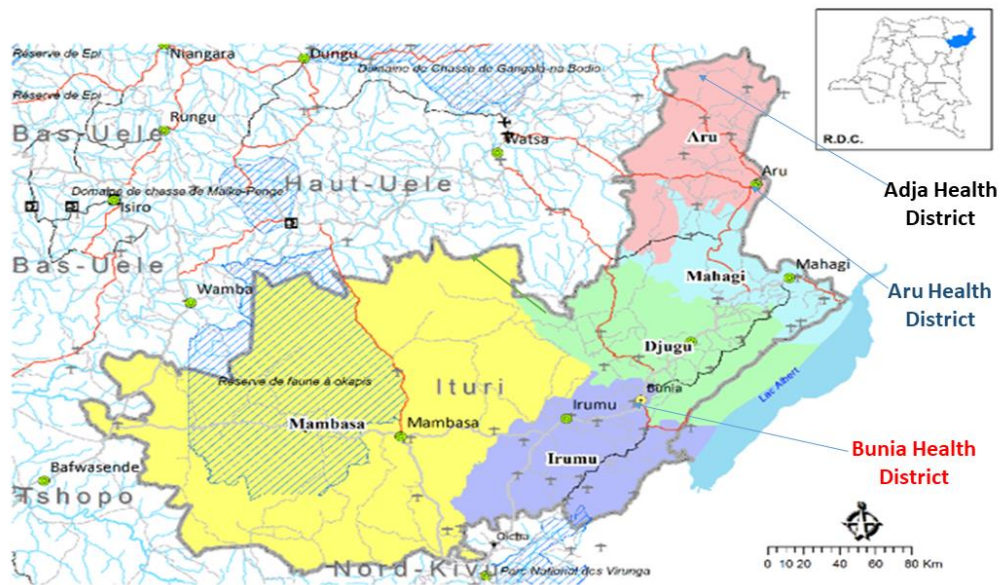
In Ituri, maternal health care, like all other health interventions is under the responsibility of the provincial health division, which delegates that responsibility to district health management teams at district levels. The reproductive health national programme in the province works closely with health districts to deal with maternal health issues (Division Provinciale de la Santé Ituri 2016). Hospitals in Bunia, the capital

of the province, provide emergency obstetrical care (EmOC) services to population, who could access facilities easily (Deboutte, O'Dempsey et al. 2016). There are some maternal deaths in the province occurring outside the EmOC facilities, some not being declared. The estimated maternal mortality rate in Bunia is 345 per 100,000 live births (Deboutte, O'Dempsey et al. 2016). In some rural health districts which have a high maternal mortality ratio, more than half of maternal deaths occur outside health facilities, due to many factors such as financial and geographic accessibility challenges (Ngalili and Malori, 2015). Within the first semester of 2018 for instance, 26 health districts out of the 36 in Ituri Province registered 109 notified maternal deaths (UNFPA DR Congo 2018). Seventy-three of these deaths occurred in the community, outside health facilities. Ten health districts did not officially declare any maternal deaths for the same period (UNFPA DR Congo 2018), although that does not mean that there were no maternal deaths at all. In order to improve maternal health in the province, international and other local NGOs invest in providing in-service training to skilled birth attendants and supplying health facilities with equipment (Radio okapi 2010).

#### **2.10.5. Background to the study sites: Bunia, Aru and Adja health districts**

The study sites are three health districts: Bunia (urban health district) at the centre of the province (278067 population), Aru (peri-urban health district), (187568 population); and Adja (rural health district), (130867 population) in the north of the province (see Figure 5), (Division Provinciale de la Santé Ituri 2016).

Figure 5: Ituri Province Map with the location of the three study districts



Source: Cellule d'Analyse et des Indicateurs de Développement RD Congo (Cellule d'Analyse des Indicateurs de Développement 2018).

### **2.10.5.1. Bunia health district**

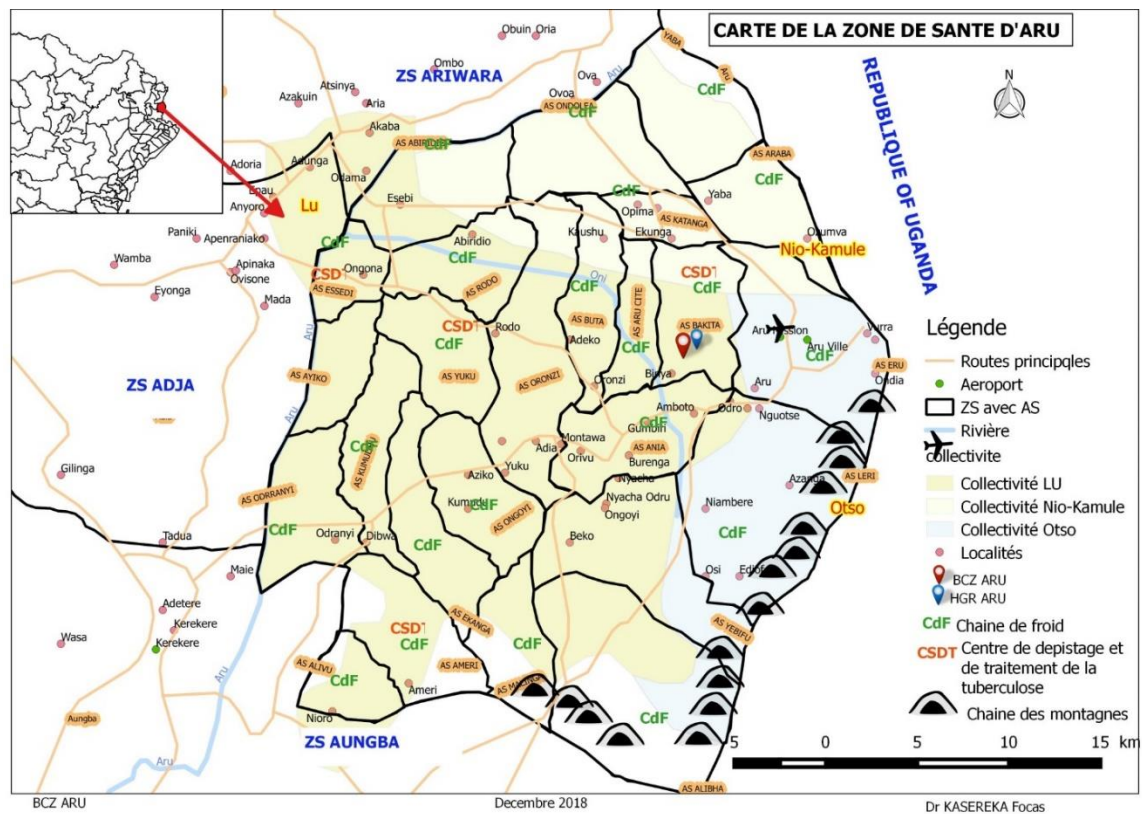
Bunia health district is the only urban health district in the province, where the health district office, the referral hospital and the health centres are located in urban areas (Bureau Central de la Zone de Santé de Bunia 2019). Bunia health district, which is located at the centre of Ituri Province, with its population of 342,736 inhabitants, is made up of 20 health centres and one referral hospital and many private for profit facilities (see Figure 6), (Bureau Central de la Zone de Santé de Bunia 2019). The health district registered 630 health personnel in 2019, with nurses alone covering 50%. In relation to ethnicity, Bunia being the capital of the province, is constituted of different ethnic groups.



### 2.10.5.2. Aru health district

Aru health district is one of the seven districts qualified as peri-urban districts, having both urban and rural characteristics, with the health district office and referral hospitals in an urban area or an agglomeration and most health facilities in rural areas (Division Provinciale de la Santé Ituri 2016). Aru health district, which is located in the northern part of Ituri Province, with its population of 273,712 inhabitants, is made up of 24 health centres and one referral hospital integrated in the health district and a number of private for profit facilities (see Figure 7), (Bureau Central de la Zone de Santé d'Aru 2018). The health district registered 427 health personnel in 2018, with nurses and midwives making up 37% of this workforce (Bureau Central de la Zone de Santé d'Aru 2018). In relation to ethnicity, the more urban part of Aru district is made up of mixed ethnic groups while the rural part of the district has the same ethnic group (Lugbara).

Figure 7: Aru health district with health catchment areas

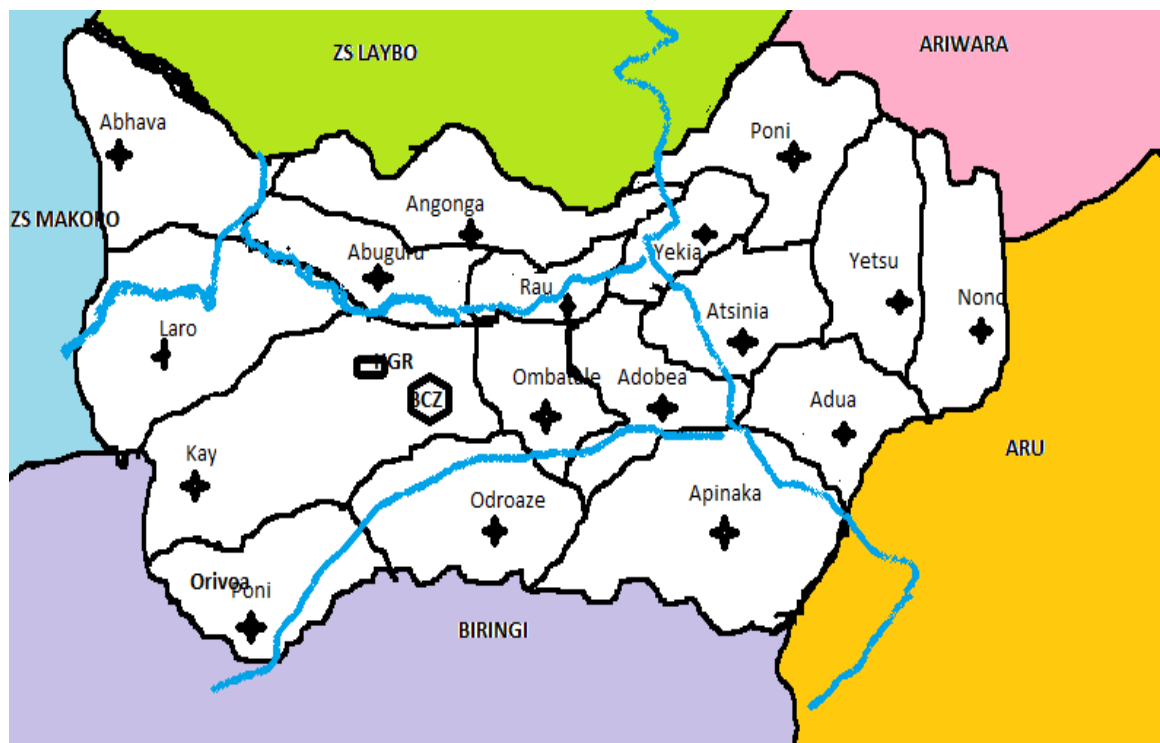


Source: (Bureau Central de la Zone de Santé d'Aru 2018)

### 2.10.5.3. Adja health district with different health centres catchment areas

Adja health district is one of the 28 districts qualified as rural districts, with the health district office, the referral hospitals and all health facilities in rural areas (Division Provinciale de la Santé Ituri 2016). Adja health district, which is located in the northern part of Ituri Province, with its population of 149,239 inhabitants, is made up of 17 health centres and one referral hospital integrated in the health district (see Figure 8) (Bureau Central de la Zone de Sante d'Adja 2019). The health district registered 166 health personnel in 2018, with nurses and midwives making 22% (Bureau Central de la Zone de Santé d'Adja 2019). In relation to ethnicity, the district is made up of the same ethnic group (Lugbara).

Figure 8: Adja health district with different health centres catchment areas



Source: (Bureau Central de la Zone de Sante d'Adja 2019)

+ : Health centre, BCZ : Bureau Central de Zone de Sante (District Health Office)

## **2.11. Conclusion**

This background illustrates the complex context of DRC and that of the study sites. DRC is a massive country both in population and size, the second largest in Africa and the first in Sub-Saharan Africa. It has experienced a number of crises since its independence, and health indicators, including maternal, are still very poor, with one of the highest maternal mortality ratio in the world. The distance between Kinshasa, the capital city, at the extreme west, with some other provinces, including Ituri, in the north-eastern part has serious implications on implementing some policies. Even though there is a promotion of decentralized health systems from the national to the provincial levels, this decentralization remains challenging as it is not made completely operational. Despite the effort invested in strengthening the health systems, not much is known in terms of their performances. The country experiences unregulated production and deployment of human resources for health, both in the country and in the province. The private sector, especially FBOs, play key roles in providing health care services in the country. In relation to remuneration, fewer than half of the health workers receive their salary from the government. Very little is known about HRH in DRC in general, and especially Ituri Province, as well as the constraints that staff face in their profession in such fragile and unstable contexts.



## **Chapter 3: Literature review**

### **3.1. Introduction**

In this chapter, I describe findings from the review of literature in relation to the maternal health workforce crisis in low and middle income countries, as well as the attraction and retention of skilled birth attendants, especially of midwifery cadres in rural and remote settings.

This chapter is divided into five different sections. Section 3.2 presents the methods used for conducting the review. Section 3.3 reviews the health workforce situation, particularly in low and middle income countries. Section 3.4 is a review of the health workforce in rural contexts, and Section 3.5 reviews the health workforce situation in fragile and conflict-affected states. Section 3.6 summarises the literature on the maternal health workforce in low and middle income countries (LMICs). Section 3.7 examines selected human resources management strategies for staffing rural and remote areas. Finally, the chapter concludes with a summary of the literature review and key gaps in section 3.8.

### **3.2. Literature search methods**

This narrative literature review was conducted in order to achieve a clear understanding of the literature surrounding midwifery cadres and the maternal health workforce in rural and remote areas within fragile and conflict-affected states, as well as to inform the design of the study. Peer reviewed papers, reviews, PhD theses, and, given the dearth of published materials, some unpublished materials were included in this review to provide a broader understanding of this theme.

To identify journal articles, an extensive search was conducted. The research process included the following English language databases: PubMed; Science direct; World Health Organisation website and Google Scholar. These databases were searched using the following terms: “maternal health workforce; midwives, midwife, midwifery; skilled

birth attendants”; “maternal health; reproductive health; women’s health”; “developing countries; under developed countries, less developed countries”; “rural areas; remote areas”; “recruitment; attraction; retention; attrition; turnover”; “post conflict, fragile states, conflict affected states”. Both English and French language publications, from 2006-2020 were included. The articles chosen were deemed to have more focus on different issues related to a maternal health workforce crisis in developing countries, skilled birth attendants and especially midwifery cadres in remote and rural areas in fragile and conflict-affected states, as well as different attraction and retention strategies used with skilled birth attendant cadres in rural and remote areas in LMICs.

Further articles were identified through a snowball method where the reference lists of selected articles were searched for publications that were relevant.

### **3.3. Health workforce situation**

#### **3.3.1. Health workforce situation in low and middle income countries**

It is well known that within the health systems, health workers play a key role in different functions of the health systems (Liu, Goryakin et al. 2017). Having the right number and the appropriate mix of health workers, together with the support they need to perform their assigned functions is crucial (Scheil-Adlung, 2013). However, LMICs are being challenged with the shortages, quality and readiness of their health workforce so that they contribute effectively to strengthening the health system (Nicol, Turawa et al. 2019). WHO projects a shortfall of 18 million health workers by 2030, and LMICs seem to be the most affected, with a serious workforce crisis in the following three areas: availability, distribution and performance (World Health Organization 2014a; Azad, Min et al. 2017; Liu, Goryakin et al. 2017; Seifman 2019). This shortage affects the number of SBAs (Beek, McFadden et al. 2019). Different factors that contribute to the health workforce crisis in LMICs include inadequate aspects related to education quality, poor working environments, poor human resources for health management systems and poor incentives, both financial and non-financial (Chen, Evans et al. 2004; Aluttis, Bishaw et al. 2014; Adeloje, David et al. 2017).

Many LMICs face challenges in training, deploying and sustaining a health workforce to meet the community needs or the SDG threshold of 4.45 health workers per 1000 population (Lassi, Musavi et al. 2016; World Health Organization 2016c). Health worker shortages are currently further compounded in this current context of COVID-19, by the lack or absence of equipment (protective, testing equipment, equipment for severe cases) (Banda and Hinlopen, 2020). As far as maternal and newborn health are concerned, 73 countries which account for more than 90% of maternal and newborn deaths only have 42% of health workers with midwifery skills (Roos, 2020).

In relation to both pre-service and in service training, it was found that inadequate training for nurses and other health workers has implications on population health outcomes, especially in LMICs, where there are further challenges relating to availability and infrastructure (Azad, Min et al. 2017). As for solutions to health worker shortages in LMICs, it is proposed that they increase health workforce training, both in terms of pre-service and in service training; they should additionally adopt new evolving knowledge and teaching methods, and allow private institutions to intervene in order to meet reasonable licensing and accreditation standards (Seifman, 2019). On the demand side, countries need to look to their own commitments to produce what they need, as this would be of benefit to them in addressing the specific issues they face in terms of health workforce crisis, especially in terms of availability and accessibility (Seifman, 2019). What is needed is an understanding of the labour market dynamics within the country.

### **3.3.2. Labour market dynamics of SBAs in LMICs**

#### **3.3.2.1 *Introduction to the labour market***

A labour market is the structure that explains labour services in terms of supply of health workforce and demand for that health workforce; also described as “buyers” (those seeking to employ staff), and “sellers” (those seeking employment) (McPake, Maeda et al. 2013). A labour market can be described according to different criteria: geographical (national or international); occupational (specialized or unspecialized); and sectoral (formal or informal) (Sousa, Scheffler et al. 2013). Health labour market dynamics are considered as “the main determinant of the level of employment in a country – not the

health needs of the population or the education sector alone” (Sousa, Scheffler et al. 2013). An analysis of the health labour market dynamics covers different qualified health workers who are employed, unemployed and those working out of the labour force. The availability of health workers is influenced by factors which push them to decide to choose to work outside of the health sector. (Sousa, Scheffler et al. 2013).

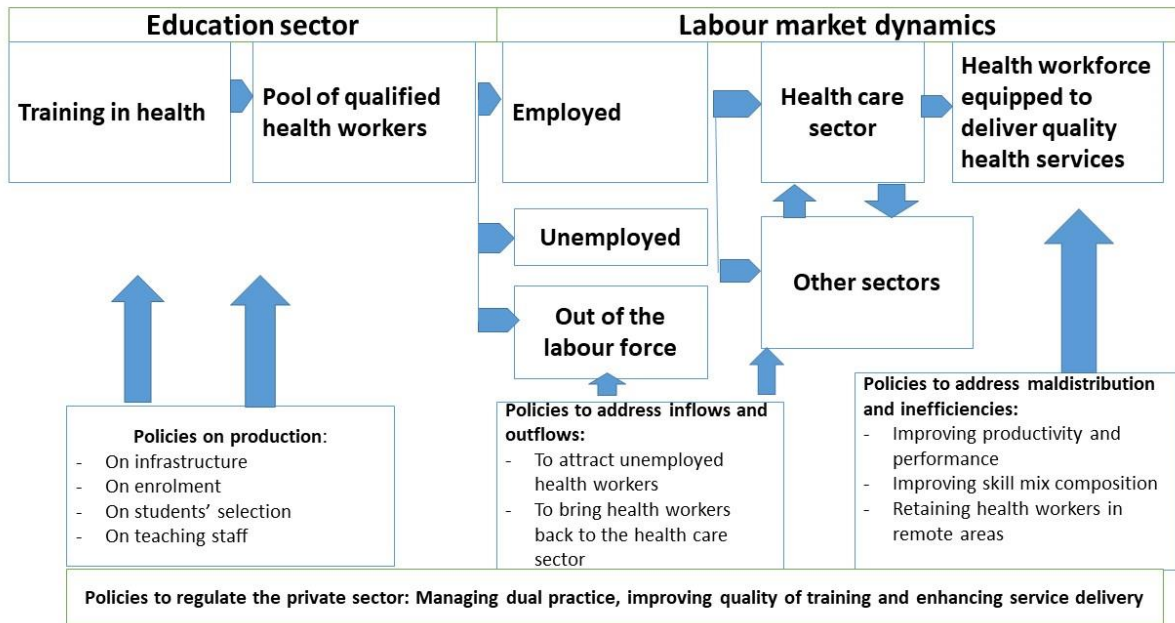
In an analysis of labour market dynamics, it is described that conditions of employment (adequate infrastructure, supportive management, opportunities for professional development and career progression), are important to determine the outcomes, which are driven by the behaviour of employers and workers in response to changes in the terms of employment (wages, compensation levels and working conditions) (McPake, Maeda et al. 2013; Sousa, Scheffler et al. 2014). The health labour market involves the combination of different elements, including population needs, demand, supply, training, health worker governance, and the number of health workers employed including their geographic location, employment setting, productivity and performance (Scheffler, Bruckner et al. 2012).

Prior to investigating the elements described previously, building planning capacity to develop or improve HRH policy and strategies should be developed in order to manage health workforce labour markets and devise effective and efficient policies that respond to population needs and anticipate changing circumstances. HRH plans should be costed, financed, implemented and continuously refined to address different issues, such as (World Health Organization 2016c):

- the estimated number, category and qualification of health workers required to meet public health goals and population health needs;
- the capacity to produce sufficient and adequately distributed qualified workers (education and effective regulation policies); and,
- the government and labour market capacity to recruit, deploy and retain health workers (economic and fiscal capacity, and workforce deployment, remuneration and retention through financial and non-financial strategies).

A comprehensive picture of health labour market dynamics is described in Figure 9, covering the different components involved (Sousa, Scheffler et al. 2013).

Figure 9: Labour market framework



Adapted from Sousa, Scheffler et al. (2013)

### 3.3.2.2. Education sector in the health labour market

The *training of health workers* as defined by the education market is a key determinant of a region's supply of new graduates (Kiambati, Kiio et al. 2013; Sousa, Scheffler et al. 2013).

The training of health workers is an important factor as this provides the supply of new graduates from health sciences schools (Sousa, Scheffler et al. 2013). This is why it is important that policies focusing on different aspects of training in terms of health worker production, such as infrastructure and materials, enrolment, student selection, support and the development of teaching staff, must be clearly developed, as well as the mechanisms for their implementation (Sousa, Scheffler et al. 2013). Unfortunately, in many LMICs, most policies are formulated only in terms of the number of health workers needed to meet the population needs.

The output from the education sector is a *pool of qualified health workers* (see Figure 9), which is the number of individuals who have been trained and are ready to join the labour market. The proportion of qualified health workers willing to join the health sector depends on a number of factors (such as wages, working conditions and career opportunities), all of which need to be addressed by the appropriate policies (Glassman, Becker et al. 2008; Sousa and Flores 2013; Sousa, Scheffler et al. 2014).

### **3.3.2.3. Health workers in the labour market dynamics**

From this *pool of health workers* (see Figure 9), there are several factors that can influence whether or not individuals will join the sector. Private and public institutions, i.e. hospitals, clinics and other facilities, play a key role in attracting health workers, both from the pool of qualified individuals and also from non-health sectors. Based on their competitive approaches in relation to wage rates, other benefits packages and working conditions, these institutions can attract new staff (Glassman, Becker et al. 2008; Sousa, Scheffler et al. 2014).

Addressing inflows and outflows of health workers is possible if employers focus on increasing wages and providing extra allowances, improving working conditions and providing training opportunities. Some of those elements (increasing wages and providing extra allowances), were experienced in some African countries such as Zambia and Kenya (Sousa, Scheffler et al. 2014). That is why the focus should be based on policies that address *inflows and outflows* (see Figure 9), related to attracting unemployed health workers and to enticing those serving in other industries back into the sector; but also to addressing migration and emigration challenges (Sousa, Scheffler et al. 2013).

A health workforce needs to *be equipped in order to deliver quality health services* (see Figure 9). In many cases, this depends on supporting policies that can help address both maldistribution and inefficiency challenges in order to improve productivity and

performance, improve skill mix composition and retain qualified health workers in rural and remote areas (Sousa, Scheffler et al. 2013; Liu, Goryakin et al. 2017).

To make the health sector more attractive, policies to attract health workers back to the sector, discourage them from leaving and mobilize the unemployed to join must be clearly developed, following each country's specific context. With the main aim of attaining equitable access to quality health services, these policies will need to focus on the geographical distribution of the health workforce (prioritising the training of local health workers, innovative recruitment strategies to supply staff in rural and remote areas, the provision of allowances, granting scholarships and effectively matching workers' skills and tasks); health workers' productivity and performance, the skill-mix composition and the allocation of health workers to the public and private sectors (Sousa, Scheffler et al. 2013). Furthermore, as the health workforce is feminised in LMICs (Shannon, Minckas et al. 2019), it is important that the policies also focus clearly on gender components as well.

### **3.4. Health workforce in rural contexts**

#### **3.4.1. Shortage of health workers in rural areas**

There is inequity in the geographical distribution of health workers throughout the world, with rural settings being the most seriously affected. The situation appears to be even worse in LMICs, with serious implications relating to access to healthcare and quality health services (Araújo and Maeda 2013). Despite different interventions being introduced by LMICs to improve health workers' attraction and retention in rural and remote areas, the distribution imbalance of health workers still persists, with the rural areas remaining the most affected (Araújo and Maeda 2013; Haskins, Phakathi et al. 2017). Although nearly half of the global population live in rural areas, they are covered by less than 40% of the total nursing workforce and by less than a quarter of the total physician workforce (Strasser, Kam et al. 2016). This gap is even greater in some LMICs. For instance, in Senegal, the capital Dakar equates to around 23% of the country's population, yet it has about 60% of the country's physicians (Zurn, Codjia et al. 2010),

and the same situation was also described in other countries, including Ghana, Sudan, Guinea and Bangladesh (Dussault and Franceschini 2006; Lemiere, Herbst et al. 2011; Snow, Asabir et al. 2011; Jansen, Codjia et al. 2014).

The maldistribution of the health workforce between urban and rural areas remains a challenge to achieving key development goals such as universal health coverage (Araújo and Maeda 2013).

#### **3.4.2. Factors affecting attraction and retention of health workers in rural areas**

There are a number of frameworks which are used to study the factors affecting the attraction and retention of health staff in rural and remote areas (Lehmann, Dieleman et al. 2008; Mbemba, Gagnon et al. 2016). The latter applied the WHO framework to assess interventions on nurse retention in rural and remote areas, and proposed four major themes in conclusion: financial incentives, supportive relationships in nursing, information and technology support, and career pathways for rural health (Mbemba, Gagnon et al. 2016). The framework described by Lehmann, Dieleman and Martineau proposed five different sets of factors affecting the attraction and retention of health workers in rural and remote areas: the international environment, the national environment, the local environment, the work environment and individual factors (Lehmann, Dieleman et al. 2008).

According to the model developed by Lehmann, Dieleman and Martineau, the international environment includes factors such as high salary, good working conditions and opportunities to develop one's professional career mainly in high-income countries; whilst the national environment includes factors such as general political climate (war, crime, conflicts, etc.), political and social stability, condition of public services, salary levels, and career opportunities within the country. The local environment includes general living conditions (housing, health services, schools, transportation, sanitation, electricity) as well as the social environment (degree of social isolation). The work environment includes the management of the health workforce, professional relationships, leadership practices, professional development opportunities,



infrastructure, equipment and job satisfaction. Finally, individual factors refer to the sociodemographic characteristics of the individual, including their origin, age, gender and marital status (Lehmann, Dieleman et al. 2008; Willis-Shattuck, Bidwell et al. 2008; Mbemba, Gagnon et al. 2016; Belaid, Dagenais et al. 2017).

Some studies describe the 'brain drain' as one of the most important phenomena (at the international level) which affects attraction and retention of health workers in rural and remote areas. In contrast, many studies conducted in LMICs, mainly Africa (Nigeria, Mali, Niger, Libya); highlight the national environment-related factors such as insecurity, poor salary and poor financial compensation as serious factors which affect health workforce attraction and retention in rural and remote areas (Ojaka, Olango et al. 2014; Belaid, Dagenais et al. 2017). Poor living conditions (housing, electricity, water, schools for children) are identified as local environment-related factors (Lehmann, Dieleman et al. 2008; Ojaka, Olango et al. 2014; Belaid, Dagenais et al. 2017).

As far as work environment is concerned, components related to poor working conditions such as poor infrastructure, shortages of equipment and supplies, poor salary and poor professional support are described as the main factors affecting both the attraction and retention of health workforce in rural and remote areas (Lehmann, Dieleman et al. 2008; Ojaka, Olango et al. 2014; Belaid, Dagenais et al. 2017). With regard to individual factors, these are related to some local cultural norms, where for example the gender and marital status of health workers had an effect on whether someone could work in rural and remote areas (Belaid, Dagenais et al. 2017). Some other individual factors are related to the rural background of health workers, which has a positive impact on their attraction and retention within rural areas (Longombe 2009; Trépanier, Gagnon et al. 2013; Mbemba, Gagnon et al. 2016).

In addition to approaches used in the past to address the health workforce imbalances, i.e. increasing training capacity and retraining health professionals, it is important that policies take into account an appropriate set of incentives, that are realistic within the context of their implementation. There is also a need to develop an environment that

will contribute to improved attraction and retention in rural and remote areas (Araújo and Maeda 2013).

Addressing both the shortages and the inequitable distribution of qualified health workers in LMICs is fundamental for improving population health indicators, especially in rural and remote areas, leading to the attainment of global health goals (Tangcharoensathien, Limwattananon et al. 2013). In reflecting on addressing this issue, taking into account the local context is important to make effective the proposed solutions (Zhu, Tang et al. 2019).

### **3.5. Health workforce situation in fragile and conflict-affected states**

Fragile states are described by World Bank as countries with severe development challenges due to weak institutional capacity, unstable governance and political volatility (World Bank 2015a). They are also understood to have limited capacity to providing basic core services such as education, transportation, state financing and administration, justice, and health (Haar and Rubenstein 2012). Conflict-affected states are those which experience conflict based on indicators such as the number of casualties or the extent of fighting (Haar and Rubenstein 2012). Fragile and conflict-affected states experience disease outbreaks and complex humanitarian emergencies in a disproportionate way (Mateen, McKenzie et al. 2018), which compound with government challenges to mobilize, manage and allocate health resources (Witter, Falisse et al. 2015).

Despite the fact that there is a serious shortage of health workforce in low and middle income countries, that shortage appears to be more critical in fragile and conflict-affected states, with serious implications on population health indicators (Haar and Rubenstein 2012; MacKinnon and MaLaren 2012; Mateen, McKenzie et al. 2018). It is well-documented that fragile and conflict-affected settings face challenges related to recruiting health workers after the conflict or crisis, because training institutions have been destroyed and available health workers either died during the crisis or have left the areas (Witter, Namakula et al. 2017a). From a comprehensive report, it is stated that the

health workforce and health facilities were targeted in approximately 80% of countries experiencing armed conflict between 2003 and 2008 (Haar and Rubenstein 2012).

In some FCAS contexts, certain other interventions, such as the introduction of a community midwifery education programme, were experimented with to address the SBA workforce crisis (Evans and Lema 2010; Adegoke, Utz et al. 2012; Mansoor, Hashemy et al. 2013; Turkmani, Currie et al. 2013; Warren, Norr et al. 2013). Despite the successful introduction of that programme in those countries, not only did the ongoing insecurity hinder community midwives' deployment in rural and remote areas, but sufficient supportive supervision was rarely provided (Evans and Lema 2010), and there was also a shortage of potential candidates (Wood, Mansoor et al. 2013). However, implementing that programme in rural settings and involving the community in the students' selection helped to deal with the barriers identified previously (Miyake, Speakman et al. 2016). The other challenge faced by that programme was related to recruitment barriers, since very few potential candidates could meet the minimum requirements (Miyake, Speakman et al. 2016).

Furthermore, although the rural-urban dichotomy of health workforce is a global issue (World Health Organization 2006), its negative impact on rural health care access is particularly devastating in FCAS, associated with various factors such as poor infrastructure and insecurity which obstructs safe travel (MacKinnon and MacLaren 2012).

In some places, NGOs step in to provide health care in circumstances of staff shortages and weak health systems, within settings of fragility and conflict (Bertone, Jowett et al. 2019). In contrast and within some countries, the governments put in place systems that actually prevent NGOs from delivering such services, such as increasing NGO personnel visa fees (Debarre 2018).

Within some FCAS contexts there is the promotion of training and deployment of community health workers (Alonso and Brugha 2006; Simon, Chu et al. 2009; Cometto, Fritsche et al. 2010; Fujita, Zwi et al. 2011; Mumtaz, Salway et al. 2013; Seddiq, Enarson

et al. 2014; Anwari, Shukla et al. 2015). Investing in the health workforce and infrastructure in those settings can be considered as a national security issue, due to the implications on the countries' economy, and in managing conflict or major outbreaks (Snowden and Muoto 2018). In FCAS or post-conflict states, it is proposed to focus on investing in the education and training of other health workers, such as nurses, midwives and community health workers, as their training will require fewer resources than training physicians and other specialities, especially since this aligns with task shifting efforts that are being promoted in many low and middle income countries (Frenk, Chen et al. 2010; Seidman and Atun 2017).

However, certain issues related to the health workforce situation in post-conflict and fragile settings have been broadly developed within the literature, such as pre-service and in service training, pay as a factor of workforce supply and incentives (Roome, Raven et al. 2014). Deployment and the inequitable distribution of different categories of health workforce have been partially developed in the literature. However, some areas such as administrative systems for deployment, performance-related financial incentives, management and supervision and reorganising work, as well as the redesigning of jobs within the health workforce in post-conflict and fragile settings were not effectively covered in the literature (Roome, Raven et al. 2014).

### **3.6. Maternal health workforce in LMICs**

#### **3.6.1. Description of the maternal health workforce in LMICs**

Although there is clear evidence that maternal mortality and morbidity cannot be reduced without midwives and other health workers with midwifery skills, the numbers of these skilled providers remain low in comparison to need (Fauveau, Sherratt et al. 2008; Renfrew 2017). In different regions, the presence of skilled birth attendants has been described to be lower within rural than in urban areas (United Nations 2012; Fekadu and Regassa 2014). Even in countries where there are almost sufficient numbers of providers available in urban areas, severe shortages still exist in rural areas. In Guinea, for example, as well as some other African countries, where fewer than half of the nurses

and one-fifth of the midwives needed for maternal, newborn and child health care are currently available, supply is lowest in rural areas, and demand is expected to grow by 22% after 2020 (Jansen, Codjia et al. 2014).

If the coverage of health care providers is effective in promoting skilled attendants at delivery, it should address the geographical distribution of services and the affordability of such services (Huq, Ahmed et al. 2015). In most low and middle income countries in general, and Sub-Saharan African countries in particular, there is a variety of health workforce cadres that are considered to be “Skilled Birth Attendants” (SBA), ranging from four up to 11 different health cadre categories, making the comparison between countries more complex (Adegoke, Utz et al. 2012).

### **3.6.2. Specific issues related to the maternal health workforce**

#### **3.6.2.1. SBA cadres in LMICs**

A SBA is defined by WHO, in collaboration with the International Confederation of Midwives (ICM) and the International Federation of Obstetricians and Gynaecologists (FIGO) as “a midwife, doctor or nurse—who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns” (World Health Organization 2004, p.1). To deal with some of the challenges of the different SBA cadres in different countries, the proposed definition was updated by WHO in 2018, in collaboration with the International Confederation of Midwives (ICM) and the International Federation of Obstetricians and Gynaecologists, as described in Box 1 (World Health Organization 2018).

The differences between the 2004 and the 2018 definitions of skilled health personnel (also widely known as SBAs) providing care during labour and childbirth are that, under the revised version, they are defined as health workforce who can provide effective, uninterrupted and quality care because of their competency in maternal, newborn health, having identified competencies and as a team, possessing all the MNH

competencies; being educated, trained and regulated to national and international standards; and being supported within an enabling environment comprising the building blocks of the health system. All competent MNH professionals within a team provide a set of quality, sensitive and dignified care to women, newborns and their families (World Health Organization 2018; Hobbs, Moller et al. 2019).

Most Sub-Saharan African countries, having first adopted the agreed international definition of a SBA (World Health Organization 2004), have adhered to the revised version (World Health Organization 2018). Within several low and middle income countries, there is a great variation across the cadre, competence and scope of the practice of birth attendants (World Health Organization 2004; Adegoke, Utz et al. 2012; Utz, Siddiqui et al. 2013; Munabi-Babigumira, Nabudere et al. 2019). That is why, in most LMICs, there is an increasing range of different cadres of health workforce who provide care during pregnancy and childbirth, but it is not clearly established if those providers are considered to be SBAs according to the existing international definition, and applying key signal functions of emergency obstetric care. At the same time, it is also unclear which functions of emergency obstetric care those providers are able or expected to perform (Adegoke, Utz et al. 2012). Within an enabling environment, midwives trained to International Confederation of Midwives (ICM) standards can provide nearly all of the essential care needed for women and newborns (World Health Organization 2018).

## Box 1: Definition of a skilled health personnel

Skilled health personnel, as referenced by SDG indicator 3.1.2, are competent maternal and newborn health (MNH) professionals educated, trained and regulated to national and international standards. They are competent to:

- (i) provide and promote evidence-based, human-rights-based, quality, socio-culturally sensitive and dignified care to women and newborns;
- (ii) facilitate physiological processes during labour and delivery to ensure a clean and positive childbirth experience; and
- (iii) identify and manage or refer women and/or newborns with complications.

In addition, as part of an integrated team of MNH professionals (including midwives, nurses, obstetricians, paediatricians and anaesthetists), they perform all signal functions of emergency maternal and newborn care to optimize the health and well-being of women and newborns.

Source: (World Health Organization 2018, p.2)

In most LMICs, skilled birth attendants are made up of obstetricians, medical doctors, nurses, midwives and nurse midwives, with some additional cadres in certain countries (Adegoke, Utz et al. 2012). In terms of their training, the length differs for different cadres, taking nine or 10 years for obstetrician gynecologists, six or seven years for medical doctors, and between three and four years for nurses and midwives (Adegoke, Utz et al. 2012).

### **3.6.2.2. SBAs occupational hazards**

Skilled birth attendants face a number of challenges in relation to occupational hazards which are summarized into two main categories: infections and awkward postures (Bianchi, Belingheri et al. 2018). These hazards are mainly caused by heavy workloads and limited supplies, which could lead SBA cadres to omit some important aspects of care, such as changing gloves or hand hygiene thus increasing their own infection risk,

to post traumatic disorders and also to burnout (Mathole, Lindmark et al. 2006; Mondywa and Hauck 2007; Hassan-Bitar and Narrainen 2011; Ith, Dawson et al. 2012 Williams 2018).

#### **3.6.2.2.1. Risk of infection**

Risk of infection due to insufficient equipment and supply, as well as inadequate space and amenities on maternity wards, was identified as one of the occupational hazards facing SBAs. These factors were affecting SBAs' morale, increasing their workload and infection risk (Munabi-Babigumira, Glenton et al. 2017; Bianchi, Belingheri et al. 2018). SBAs' permanent and close contact with blood and bodily fluids increases their own risk of contracting hepatitis B and HIV (HealthLink BC 2016; Amiri, Khosravi et al. 2020). Different protective measures such as promoting hygiene, the use of gloves and other protective clothing and the correct use and disposal of sharps and needles are crucial. All of these elements are related to infrastructure conditions, equipment and supplies and training (Bianchi, Belingheri et al. 2018; Peters, Lotfinejad et al. 2020).

#### **3.6.2.2.2. Long working hours**

The SBAs' profession is demanding with long hours of service, since it is in most cases difficult to leave a woman in labour. This has clear implications on burnout, psychological distress, home life and work balance (Bianchi, Belingheri et al. 2018, Williams 2018). Regarding occupational hazards, 33% of midwives experience depression, 83% suffer from personal burnout and 67% suffer from work-related burnout (Moncrieff 2019). Midwives are described to be at a higher risk of burnout compared to other clinicians, probably due to the predominance of female candidates associated with a large range of pressures in this profession (Thorsen, Teten Tharp et al. 2011). This results in tensions between their professional roles and family lives, especially in Africa and some other LMICs (Fauveau, Sherratt et al. 2008). The pressure to fulfill their domestic role as a woman increases with the additional pressure of excessive working hours (Filby, McConville et al. 2016).



#### **3.6.2.2.3.      *Physically demanding profession***

The nature of the SBAs' profession makes it physically demanding – standing for long periods and staying in awkward positions whilst supporting women in labour and during delivery (Bianchi, Belingheri et al. 2018). This can cause musculoskeletal system problems (Nevala and Ketola 2012; Nowotny-Czupryna, Naworska et al. 2012).

#### **3.6.2.2.4.      *High-pressured and responsible job***

Working as midwifery cadres is very stressful, since they care not only for the mother as the mother of a newborn child, but also as the mother of other children of the family (Leinweber and Rowe 2010; Sabzevari and Rad 2019). When they register either maternal death cases or the baby's death during delivery or the death of both, SBA cadres, especially midwives experience occupational trauma, leading to the lack of professional and social concentration (Dartey, Phetlhu et al. 2019). Unfortunately however, they do not benefit from any support in going through such challenges (Dartey, Phetlhu et al. 2019). Furthermore, in a society where the blame culture is very strong, midwives are blamed if there are negative outcomes, such as a woman or a baby dying during childbirth. This can lead to disrespectful and abusive behaviours and the demotivation of staff; with the potential to motivate individuals to leave the profession for good (Rominski, Lori et al. 2017).

#### **3.6.2.3.      *Gender of SBAs***

In most LMICs, amongst different SBA cadres, most doctors are found to be male whilst the nursing and midwifery profession are found to be female dominated (Safi, Naeem et al. 2018; Pendleton 2019). Globally, the 28 million nurses and two million midwives worldwide make up around 60% of the global health workforce (Boniol, Mclsaac et al. 2019; Ramanarayanan 2020). Nurses, being the largest group within the health workforce, are made up of 90% of female workers globally, whilst in Africa, female nurses represent about 75% of the total number (Ramanarayanan 2020). In some LMICs, such as Bangladesh, there is a change in the dynamic of physicians, where there are slightly more female doctors compared to their male counterparts (Hossain, Gupta et al.

2019). The proportion of female medical students and those graduating is also growing in some other LMICs, such as Sudan (Mohamed, Abdelraheem et al. 2012).

#### **3.6.2.4. SBAs' salary**

As far as midwives are concerned, they are mainly female, and concerned exclusively with women and childbirth-related activities (Ezeonwu 2011; Filby, McConville et al. 2016). Health professions which comprise mainly women are experiencing a kind of “gender penalty”, having men assuming the leadership positions with women at the bottom of the occupational hierarchy, facing lower wages. These midwifery skills are not treated as special health-related skills by some professionals, but qualities of “being a woman” (Wirth 2008; Dhatt, Theobald et al. 2017; Boniol, Mclsaac et al. 2019; Kacik 2019; World Health Organization 2019b).

In most low and middle income countries, skilled birth attendants are not satisfied with their salaries and benefits, in relation to their tasks and responsibilities and the personal risks of their profession (World Health Organization 2008; Munabi-Babigumira, Glenton et al. 2017). Across different countries, medical doctors' salaries are higher than those of other skilled birth attendants (World Health Organization 2008). It was also found that although salaries have been increasing over time, there has not necessarily been a corresponding increase in real income (World Health Organization 2008). Compared to the public sector, it was also found in a study conducted in low and middle income countries that private sector salaries are higher (World Health Organization 2008).

Fragile and conflict-affected states find themselves in a challenging context, as far as the remuneration of health workers is concerned, just because their salary payment system performs very poorly, leading to a diverse source of income, making the remuneration very complex (Bertone and Witter 2015; Maini, Hotchkiss et al. 2017). The salary received from diverse sources depends on individual workers' and health facilities' characteristics (Chirwa, Mashange et al. 2014; Witter, Bertone et al. 2015; Bertone, Lurton et al. 2016). In DRC for instance, only one-third of health workers receive any formal salary at all, and about 50% receive risk allowances, with serious implications

since services depend heavily on cost recovery through user fees and also on performance-based payments put in place by some donors in certain areas (Bertone, Lurton et al. 2016; Maini, Hotchkiss et al. 2017; Maini, Mounier-Jack et al. 2018). In most cases, recipients ran out of money before the end of the month. Nurses and some midwives and other health workers regularly request an advance from the health facility, or borrow money from friends and family to cover their different needs (Maini, Hotchkiss et al. 2017). Health workers posted in urban areas were more likely to have dual practices and they were able to earn more income from private practice (Maini, Hotchkiss et al. 2017).

#### **3.6.2.5. Training of midwifery cadres and other SBAs**

Midwifery education is described as “the bedrock for equipping midwives with appropriate competencies to provide high standards of safe, evidence-based care” (Bharj, Luyben et al. 2016). It is well-evidenced that midwives who are educated to the international standards as described by The International Confederation of Midwives (ICM) are able to offer the full scope of midwifery care (World Health Organization 2019b). Well-designed and organized midwifery training in low and middle income countries, that meets the ICM standards, helps to provide sustained results as far as maternal and newborn health outcomes are concerned (Van Lerberghe, Matthews et al. 2014). International standards of midwifery education are very important in humanitarian and fragile settings, as childbearing women and newborns are among the most vulnerable in emergency situations such as military conflicts, natural disasters and outbreaks (Beek, McFadden et al. 2019).

However, despite the fact that SBA training exists across different countries, the duration of this training varies for the range of SBAs, and both between and within countries in relation to similar cadres (Hobbs, Moller et al. 2019). It varies from 15 weeks of training for a maternal and child health worker in Nepal, three to six years for nurses or midwives and up to about 10 years for some other cadres such as obstetricians in Nigeria, Sierra Leone, Gambia, Kenya and Malawi (Carlougha and McCallb 2005; Adegoke, Utz et al. 2012; Dogba, Fournier et al. 2012; Hobbs, Moller et al. 2019). Having

very short training courses can have serious implications on the quality of care for maternal and newborn health, leading to a negative impact on maternal health outcomes.

### **3.6.3. Interventions to solve the maternal health workforce crisis**

Different strategies have been developed in order to improve the attraction and retention of the health workforces in rural areas (Franco, Bennett et al. 2002; Bertone 2018). Whilst salary has been identified by some studies as a key aspect of motivation, some other studies describe non-financial incentives as being more effective for health staff in rural and remote areas (Lehmann, Dieleman et al. 2008; Willis-Shattuck, Bidwell et al. 2008).

In order to ensure a comprehensive approach to address the attraction and retention of the health workforce in rural and remote areas, WHO proposed a set of four categories of interventions (World Health Organization 2010), as described in Table 7. Systematic reviews conducted to analyze selected studies have showed some promising outcomes from these strategies (Buykx, Humphreys et al. 2010; Grobler, Marais et al. 2015; O’Sullivan, Russell et al. 2019).

Table 7: Interventions to improve attraction, recruitment and retention of health workers in rural and remote areas

Categories of interventions	Examples
Education	<ol style="list-style-type: none"> <li>1. Students from rural backgrounds</li> <li>2. Health professional schools outside of major cities</li> <li>3. Clinical rotations in rural areas during studies</li> <li>4. Curricula that reflect rural health issues</li> <li>5. Continuous professional development for rural health workers</li> </ol>
Regulatory	<ol style="list-style-type: none"> <li>1. Enhanced scope of practice</li> <li>2. Different types of health workers</li> <li>3. Compulsory service</li> <li>4. Subsidized education for return of service</li> </ol>
Financial incentives	<ol style="list-style-type: none"> <li>1. Appropriate financial incentives</li> </ol>
Professional and personal support	<ol style="list-style-type: none"> <li>1. Better living conditions</li> <li>2. Safe and supportive working environment</li> <li>3. Outreach support</li> <li>4. Career development programme</li> <li>5. Professional networks</li> <li>6. Public recognition measures</li> </ol>

Source: (World Health Organization 2010)

### **3.6.3.1. Education interventions**

In relation to education interventions, a number of studies have described the effectiveness of the education strategies, by recruiting students from rural backgrounds and also establishing nursing and medical schools in rural areas (de Vries and Reid 2003; Longombe 2009; World Health Organization 2010; Johnson, Fogarty et al. 2013). Due to its success, many countries are now investing in rural-focused medical education

programmes to increase the supply of rural physicians (Henry, Edwards et al. 2009; Longombe 2009; Farmer, Kenny et al. 2015; Chater, Rourke et al. 2016).

However, for rural medical schools to successfully promote the recruitment and retention of health workers in rural settings, they need to be associated with some professional development programmes targeting those working in rural areas (Rural Health Information Hub 2019). Investing more in rural healthcare education, especially in LMICs can contribute to promoting recruitment and retention within rural and remote settings, leading to reduced workforce shortages (Rural Health Information Hub 2019).

The education strategies should also consider the implications of other challenges such as dealing with an ageing workforce. To deal with those challenges, the following strategies were proposed by Cometto et al. (Cometto, Tulenko et al. 2013):

- Investing more in local health professional education
- Aligning government educational spending with employment opportunities
- Adopting new financing mechanisms, involving private entities to provide complementary funding to government subsidies for health worker training
- Promoting more cost-effective ways for the education of the health workforce to respond to population needs
- Planning a more diversified skills mix for health teams
- Promoting the complementarity of different cadres, including mid-level providers

### **3.6.3.2. Regulatory interventions**

As far as regulatory interventions are concerned, many countries such as Ecuador, Congo, Nigeria, Cuba, Bolivia and Ghana have adopted coercive strategies, such as compulsory community service programmes in rural and remote areas (Frehywot, Mullan et al. 2010), although the outcomes of this approach have not been measured. Compulsory rural service is a mandatory deployment for health workers in remote or rural areas for a certain period of time, with the aim of ensuring the availability of services in these areas (Efendi 2012). It has been described that coercive strategies can

be effective for a shorter period, but that in the long term the implications were described as unknown (Behera, Prutipinyo et al. 2017).

### **3.6.3.3. *Financial incentives interventions***

As for financial incentives strategies, many countries introduced a number of elements, including loan payment, scholarships linked to rural service commitments, higher salaries for health workers in rural areas, rural retention grants and rural allowances (Ditlopo, Blaauw et al. 2011; Mbemba, Gagnon et al. 2016; Zhu, Tang et al. 2019). The longer-term implications however still need to be researched. It has been found that financial incentives may not be successful, being insufficient to compensate for longer hours and generally more difficult working conditions. Good working conditions and affordable housing may be more effective (Durey, Haigh et al. 2015).

### **3.6.3.4. *Personal and professional development interventions***

Finally, in relation to personal and professional support strategies, most non-financial incentives such as better health service management, opportunities for further training, professional development, good living conditions and good working conditions were identified as crucial components, which impact positively on the decision to work and remain in rural areas (Kotzee and Couperem 2006; Lehmann, Dieleman et al. 2008; Willis-Shattuck, Bidwell et al. 2008). As far as personal and professional support are concerned, it was found that the effectiveness depends on a number of elements, such as health workers' attitudes towards both personal and professional development and provided services outcomes (Moran, Coyle et al. 2014; Dawson, Nkowane et al. 2015). One of the main incentives used to recruit and retain health workers in remote areas is the offer of continued professional development (Peters, Chakraborty et al. 2010; Smith, Sim et al. 2018). Having support systems and group practices also help to reduce burdens and isolation. It is one of the highest predictors of job satisfaction and retention in rural areas (Smith, Sim et al. 2018).

### **3.6.3.5. Other strategies**

Task-shifting is about using the available health workforce by delegating tasks that do not require high skill levels to those with lower qualification (Okyere, Mwanri et al. 2017). Apart from focusing on training in order to increase the availability of SBAs in LMICs, some other interventions were based on task shifting, as well as promoting SBA retention programmes (Kendall 2015; Okyere, Mwanri et al. 2017; Seidman and Atun 2017). Task shifting can be considered a positive option for health care services delivery in rural areas of LMICs, but the skill mix changes and the quality of the provided services need to be assessed on a long-term basis (Fulton, Scheffler et al. 2011).

## **3.7. Human resources management strategies**

### **3.7.1. Health workforce planning**

In order to deal with some HRH challenges, the WHO has proposed strengthening both the content and implementation of HRH plans, as part of long-term national health and broader development strategies to strengthen health systems (World Health Organization 2016c). Such an integrated approach must consider population and health system needs, adjusting investment volumes, education policies on the intake of trainees and incentive mechanisms as needed. This is important to address prevalent labour market failures, such as shortages, maldistribution and the unemployment of health workers, co-existing with unmet health needs. Health workforce development is a continuous process that requires the regular appraisal of results and feedback loops to inform and adjust priorities, following human resources management strategies.

It is established that due to prevalent labour market failures leading to shortages of health workers, their maldistribution as well as the unemployment of some existing health workers, it is better to develop human resources management strategies that take into account the health workforce needs as a whole, as opposed to treating each profession separately (World Health Organization 2016c).

Therefore, it is important to ensure that there is an adequate balance in the numbers and skills mix of health workers to have a performing health system (OECD 2016).



However, the main challenge is getting relevant skills on the workforce (Dussault, Buchan et al. 2010).

Not only is it important to increase the training numbers, it is also crucial to build the capacity of training institutions so that they provide good quality training. Unfortunately in many countries, the focus is just on increasing training numbers, with less emphasis on the training schools' capacity (Grudniewicz, Hedden et al. 2014).

### **3.7.2. Recruitment of health workforce in LMIC**

In most cases, the challenges related to a lack of funding and the lack of vacancies for new graduates constitute the main barriers to recruitment (Baumann, Hunsberger et al. 2011). Human resource information systems are also essential to support a variety of human resource management practices including recruitment, and to provide health authorities with crucial information to guide effective capacity planning and resource allocation (Tursunbayeva, Bunduchi et al. 2016).

### **3.7.3. Retention of health workers**

To promote the retention of health workers, especially in rural areas, it has been proposed to put in place retention funding that will be allocated under a defined framework to address determinants of poor retention (Buykx, Humphreys et al. 2010; Steinmetz, de Vries et al. 2014). It is also important to understand the context-specific motivation factors. There are various strategies, including ensuring the attractiveness of nursing or midwifery as a career, both financially and in terms of working conditions and easier work and life balance (OECD 2016).

As for nurses, the following strategies are described as fundamental in promoting nursing health workforce retention: increasing the numbers of the nursing workforce to reduce workload; improving staff salary, education and continuing education opportunities; housing subsidization and ensuring professional and private life balance (Albaugh 2003; Baumann, Yan et al. 2006; Peters, Chakraborty et al. 2010; Buchan and Black 2011; You, Aiken et al. 2013).

#### **3.7.4. Deployment of health workers**

To improve the human resources management of health workers, it is also recommended to optimize their motivation, job satisfaction, retention, equitable distribution and performance. This is possible through the 'decent employment' agenda, which promotes strategies to improve both performance and the equitable distribution of the health workforce (World Health Organization 2016c). These strategies include an integrated package of gender-sensitive attraction and retention policies, including job security, a better work and life balance, supportive supervision, organizational management, professional development and continuing education opportunities, enhanced career development pathways, family and lifestyle incentives, hardship allowances, housing and education allowances and grants, adequate facilities and working tools and measures to improve occupational health and safety. The latter includes a working environment free from any type of violence, discrimination and harassment (Buchan, Couper et al. 2013). Ensuring the equitable deployment of health workers can be effective through the selection of trainees from, and the delivery of training in rural and underserved areas, financial and non-financial incentives and regulatory measures or service delivery reorganization (Buchan, Couper et al. 2013). Furthermore, health workers should be equipped with the sociocultural skills to serve as an effective bridge between more empowered communities and more responsive health systems (World Health Organization 2016c).

#### **3.7.5. Decision space in the process of human resources management strategies implementation in LMICs**

Decision space is defined "as the range of effective choice that is allowed by the central authorities (the principal) to be utilized by local authorities (the agents)" (Bossert 1998, p.1518). It is about how much authority for making decisions on different functions is delegated to local authorities from above through official policies (Roman, Cleary et al. 2017). In decentralized health systems, performance human resources management, including HRH, depends on the degree of real power allocated to local authorities, so that they effectively apply different HRM strategies at the regional or sub-regional levels.

In most LMICs, District Health Management Teams (DHMTs) are given the responsibilities of managing the health workforce (Kolehmainen-Aitken 2004; Alonso-Garbayo, Raven et al. 2017).

Within decentralized health systems, although local managers' decision space can be expanded in theory, they still face challenges in effectively using that decision space in practice, in certain key functions such as remuneration and new position approvals (Bonenberger, Aikins et al. 2014, Seshadri, Parab et al. 2016).

### **3.8. Conclusion**

The material included in this literature review covered different types of literature, ranging from peer reviewed academic papers to other documents including reviews, commentaries, policy documents and books.

A number of important points emerge from this review about staffing health services in rural areas in low and middle income countries. These countries are still facing serious challenges relating to the health workforce in terms of their availability, distribution and performance, as well as working conditions; and the rural areas are still seriously affected. Fragile and conflict-affected states are arguably the most adversely affected, with serious implications on health indicators. Skilled birth attendants in such settings seem to be more vulnerable as far as their training, working conditions and occupational hazards are concerned. The literature reports on a set of strategies to attract, retain and support health workers in rural and remote areas, and these have been implemented in some countries. However, there are many evidence gaps in the process of their implementation. In particular, there are limitations in the evidence base regarding how to address SBAs' challenges within rural and remote areas of fragile and conflict-affected settings. Similarly, strategies to engage and promote multi-stakeholder involvement as a way of developing appropriate HRH strategies and learning health systems also seems to be an area not fully covered in the literature.

There is the need for more comprehensive and contextual strategies to strengthen the midwifery workforce within the fragile context of rural DRC. This PhD seeks to answer

the following question: What appropriate strategies can be proposed to attract, support and retain midwifery workforce in fragile contexts such as that of rural Ituri Province, north-eastern DRC?

## **Chapter 4: Methodology**

### **4.1. Introduction**

A detailed version of methods that are relevant to each individual results paper are provided within each of the papers, as presented in the results section. In this chapter, I describe different considerations of the methodological aspects, including the thesis origin in section 4.2, the study approach and design in section 4.3, objectives of the study and study sites. This is followed by an overview of data methods, sampling strategies, data analysis, ethical considerations, and trustworthiness of the study. Throughout the chapter, I also make reflections on my positionality and conclude with a specific section on reflexivity.

### **4.2. Thesis origins**

The Panafrican Institute of Community Health (IPASC), is a faith-based organization in north-eastern DRC, promoting community health in the areas of training health workers, safe motherhood, HIV/AIDS and health promotion. I have worked there since 2002, first as a teacher, then a manager and a researcher. Through my working experiences and interactions, I realized that maternal health indicators in rural Ituri Province are very poor, as rural areas face serious shortages of health workers, and there are no qualified midwives in some facilities. Through supervision of the safe motherhood interventions, supervision of students in field work and also both formal and informal meetings with district health management team members and head nurses, I managed to gather some information on maternal health-related services in some of the rural districts.

After a number of years of observation and discussion it was clear that strategies to better understand and support midwifery cadres in rural Ituri Province are a priority issue, and hence the idea for this PhD was born. This has been a learning journey: even though I am an insider, working in the area for a number of years, I realized that there were still many more things that I had to learn during the process of addressing the

identified issue. So, throughout this chapter, I share my reflections and positionality in relation to different parts of the study.

### **4.3. Study approach and design**

This study addresses the question “how to better attract and retain the midwifery workforce and strengthen this cadre in fragile and rural contexts?” This is not disease-specific, but links to the health workforce and health systems. The thesis is health policy and systems research as described by Alliance for Health Policy and Systems Research (Alliance for Health Policy and Systems Research 2013). According to WHO, Health Policy and Systems Research is problem driven or question driven rather than method driven, as well as being policy relevant and timely. It seeks to understand what health systems are and how they operate, what needs to be done to strengthen health systems in order to improve performance in terms of health gain and wider social value, how to influence policy agendas to embrace actions to strengthen health systems, and how to develop and implement such actions in ways that enhance their chances of achieving performance gains (World Health Organization 2012).

In the context of this research, the health policy and systems research approach was used to support the development of people-centred health systems. People-centred health systems prioritise the needs and preferences of individual actors such as service users, health workers and health managers, and collective groups such as whole communities or community groups in the operation of the health system (Abimbola, Negin et al. 2014). This is possible through the use of participatory approaches, which are approaches geared towards conducting the research process with the groups being concerned by the study (Bergold and Thomas 2012). Considering the inclusion of participatory research components through collaboration is important as it helps to provide a deeper insight into the contextual issues within the study (Bergold and Thomas 2012). This collaboration in the process of participatory research contributes to the co-production of knowledge among different actors involved and at the same time to the learning of health systems (Heaton, Day et al. 2016; Rycroft-Malone, Burton et al. 2016;

Theobald, Brandes et al. 2018; Sheikh, Agyepong et al. 2020). Learning health systems is based on approaches which capture data from health-related components, analyse the data to generate new knowledge and finally apply this knowledge to continuously inform and improve health decision-making and practice (Friedman, Wong et al., 2010).

A mixed methods design was used to conduct this study. A mixed methods design is characterized by the combination of at least one qualitative and one quantitative research component (Schoonenboom and Johnson 2017). The main purpose of mixed methods design is to expand and strengthen a study's conclusions (Schoonenboom and Johnson 2017). Mixed methods design considers the strengths of each of the two approaches used (quantitative and qualitative) making it a methodological innovation increasingly used to address contemporary issues in health services (Lorenzini 2017). One of the advantages of mixed methods is that it allows the researchers the manifestation of the best of each of the methods used, minimizing the possible limitations of a single approach. Normally, this design is recommended when a single data source may not be sufficient to answer the research problem (Creswell 2015; Lorenzini 2017).

In this study, as is the norm in mixed methods design, both quantitative and qualitative methods were used (Schoonenboom and Johnson 2017). I started by using quantitative methods from secondary data analysis to understand the current situation of SBA cadres in the province in terms of labour market dynamics (availability and distribution) and the supply of trained staff from the education sector (chapter five). Then, the qualitative method (life histories, supported by FGDs) was used to explore the different issues related to midwives in terms of their experiences, challenges and opportunities that affect labour dynamics in terms of attraction and retention (chapter six). Finally, based on results from the quantitative and qualitative methods shared with different stakeholders at the province and health district levels in workshops, context-specific policies relating to issues facing midwifery and other SBA cadres within the rural and fragile settings of Ituri were identified by stakeholders (chapter seven). Involving community stakeholders in a community-based participatory approach, such as

participatory workshops with local stakeholders, contributes to the co-production of knowledge with research participants (Mertens 2009; Wisdom and Creswell 2013; Sheikh, Agyepong et al. 2020).

The rationale for using mixed methods design is that the research question of this study can be addressed more comprehensively than by using either quantitative or qualitative methods alone (Tariq and Woodman 2013).

#### **4.4. Study site**

##### **4.4.1. Province selection**

Ituri Province has been selected as the study site for three reasons. Firstly, because the problem related to midwives was observed in rural health zones (health districts) within the Ituri Province, where the organisation I work with (IPASC) organises community health interventions. The second reason is that maternal mortality is very high within the rural health zones of Ituri, far beyond the national average of 846/100,000). Thirdly, Ituri is fragile, and there is a clear need to better understand and develop effective strategies to address the challenges relating to midwifery within such contexts.

Ituri Province covers 65,658 km<sup>2</sup> in north-eastern DR Congo and has a population of 5,281,552 inhabitants (Division Provinciale de la Santé Ituri 2016). Bordering both Uganda and South Sudan, Ituri is made up of the following five different administrative territories: Aru (6,740 km<sup>2</sup>), Djugu (8,184 km<sup>2</sup>), Irumu (8,730 km<sup>2</sup>), Mahagi (5,221 km<sup>2</sup>) and Mambasa (36,783 km<sup>2</sup>) (Division Provinciale de la Santé de l'Ituri 2016). Section 2.10 describes Ituri Province in more detail.

##### **4.4.2. Districts' selection**

There are 36 health zones (similar to districts) within Ituri Province (See Table 8). Three districts were selected: Aru health district, Adja health district and Bunia health district. These districts were selected as they included rural and urban characteristics, which enables an exploration of the range of perceptions and experiences of midwives working in urban and rural areas. These districts were also selected as they were relatively secure and this enabled safe access to the study sites and participants. In addition, since I am



based at IPASC (see section 4.2.), which organizes community health-related interventions within the three health districts, I was able to understand the context and had already built relationships with the district health management, which facilitated access to these areas. These criteria were discussed with the Provincial Health Division, and the three districts selected were: Aru health district (mixed urban and rural characteristics), with the district health office and few facilities in the agglomeration with most facilities in rural areas; Adja health district (rural characteristics), where all the facilities, including the district health office are in rural and remote areas; and, Bunia health district (urban characteristics), where all health facilities are located in urban areas, including the district health office. I used the Provincial Health Division's categorization of districts (table 8) (Division Provinciale de la Santé Ituri 2016), to select the three districts. Apart from the rural, peri-urban and urban criteria as described by Ituri Provincial Health Division, some other criteria which led the districts' selection included security in the area and having had previous interventions in the district through IPASC. The sub-section 2.10.5 provides more details about the study site districts.

Table 8: Categories of health districts in Ituri Province

Urban district	Peri-urban districts	Rural districts		
1. Bunia	1. Ariwara 2. Aru 3. Mahagi 4. Mambasa 5. Mandima 6. Mongbwalu 7. Niania	1. Adi 2. Adja 3. Angumu 4. Aungba 5. Bambu 6. Biringi 7. Boga 8. Damas 9. Drodro 10. Fataki	11. Gety 12. Jiba 13. Kambala 14. Kilo 15. Komanda 16. Laybo 17. Linga 18. Lita 19. Logo 20. Lolwa	21. Mangala 22. Nizi 23. Rethy 24. Tchomia 25. Nyankunde 26. Nyarambe 27. Rwampara 28. Rimba

Source: DPS/Ituri (Division Provinciale de la Santé Ituri 2016), (adapted by author)

Data was collected across three different health districts in Ituri Province: Bunia health district (urban), Aru health district (peri-urban) and Adja health district. The training data was collected from the provincial health division (for diploma level: A2), and from colleges and universities organising nursing, midwifery and medical training (undergraduate: A1, post graduate: A0 and medical doctors).

#### 4.5. Selection of Research Assistants

I recruited three research assistants who would support the data collection process: Marie Muziakukwa, John Kitembo and Ajaruva Alitimango. All of them had experience of working in rural areas in the field of reproductive health in Ituri Province. They have all participated in research activities in the past and have passion and commitment to

work with women and health workers, particularly midwives, within rural settings. Marie Muziakukwa and John Kisémbó supported the Aru and Adja data collection processes, whilst Ajaruva Alitimango supported data collection within Bunia health district. They were recruited for their experience surrounding research data collection, especially qualitative research, as well as their own understanding of the study sites. They all had a good understanding of the French language and other languages spoken in the study areas. Once recruited, they underwent training focused on the background to the study, qualitative research methods; consent seeking process, life history methods, conducting a workshop with different participants; asking questions; how to record information; data analysis; ethics, privacy and confidentiality; and data collection tools with emphasis on the terms used. Their training took place in Aru over two days. The first day was focused on theoretical aspects, with the second more concentrated on practise (See Annex 1). Research assistants had the opportunity to practise different sessions with IPASC students on the campus. This allowed them to understand the different challenges they could face in the field, and how these could be addressed if they arose.

#### **4.6. Frameworks addressing attraction and retention of health workers**

Understanding the workforce is complex because of its many determinants. These have been shown through numerous frameworks in the general human resource management literature. One specific to the health workforce was developed for the World Health Report 2006 (WHO 2006) and then further elaborated as the HRH Action Framework (Management Sciences for Health 2009). The HRH Action framework describes six action fields to be covered for developing and implementing strategies to achieve and sustain the health workforce. The action fields include human resources management systems, leadership, policy, finance, education and partnership (Management Sciences for Health 2013). However, the framework does not address attraction and retention of the health workforce nor does it specifically address the components of labour market dynamics.

WHO has been very concerned about the attraction and retention in the health workforce. It therefore commissioned the development of relevant guidelines (WHO 2010, Dolea, Stormont et al. 2010) for increasing access to health workers in remote and rural areas through improved retention. These guidelines provide a useful framework of four broad areas of intervention: education, regulation, financial incentives and personal and professional support. While these are helpful in deciding on a collection of contextually relevant strategies for improving attraction and retention, they do not provide a framework for understanding what the causes of staff shortages are.

A framework for understanding the causes of staff shortage and indeed the dynamics of the health labour market was first proposed by the labour economists Vujicic and Zurn (2006). Their framework started from secondary school, through initial professional training and on to employment in an outside the health sector. This was further elaborated (Sousa, Scheffler et al. 2013) and now includes the policy levers available for addressing problems at different stages of the workforce flow. Much of WHO's current and recent work is based on this framework, including the 2030 HRH strategy (WHO 2016). Because this study attempts to understand how and why skilled birth attendants enter the health workforce, the supply from training, the use and distribution of graduates and matters of staff retention the framework of Sousa, Scheffler et al. (Sousa, Scheffler et al 2013) was deemed to be the most appropriate for this study.

#### **4.7. Data Collection Methods**

This section provides a comprehensive description of the different methods used as well as providing information about the participants. A summary is provided in Table 9.

Table 9: Study objectives, methods and participants

Objectives	Methods	Participants
1. To identify the characteristics of the midwifery workforce, in terms of their availability and distribution in Ituri	Secondary data analysis	Provincial HRH unit
2. To assess the experiences and challenges of midwives (current and ex) through time from initial professional choice to current day	Life history  Focus group discussion	Midwives, ex-midwives  Midwives
3. To explore the policy and practice of the attraction, support and retention of midwives and partner with stakeholders in order to develop feasible strategies within the fragile Ituri context	Document review  Workshop methods	HRH policy documents and briefs  Provincial health delegates, DHMT delegates, nursing schools' delegates, nurses, midwives, church medical coordination

#### 4.7.1. Secondary data analysis

Secondary data analysis refers to the analysis of existing data gathered by other people for their own purposes, to pursue an interest which is different from that of the original

work (Martins, Araujo et al. 2018). This method was used to collect and critically review secondary data on the availability of human resources for health, in particular midwives and other SBA cadres (doctors, nurses), in the Provincial Health Division of Ituri (See Annex 2).

I collected data on staff in post, vacancies and the distribution of different skilled birth attendants (midwives, doctors and nurses) from all of the thirty-six health districts in Ituri Province, rather than simply the three study sites. It was important to have full provincial data in order to understand the complete picture in relation to the SBA cadre in the province in terms of their availability and distribution, to allow further exploration of what is behind the quantitative data of the midwifery workforce, using qualitative methods in the three selected districts as the study sites. An adaptation of the health labour market framework, as described by Sousa et al. (Sousa, Scheffler et al. 2013), was used to guide the data collection and analysis.

Following the labour market framework described in the literature review chapter, under the sub-section 3.3.2 and also in chapter five, in this study I only considered three areas: the education sector, the pool of qualified health workers and the labour market dynamics. In the education sector, I collected data on recent training outputs (from 2013 to 2018) as this would help in understanding the training outputs trend for the three considered SBA cadres within the province. Data was collected for nurses and midwives from all seventeen nursing schools in the province (data centralized at the provincial health office), the three nursing colleges in the province (ISTM: Institut Supérieur de Techniques Médicales), i.e. ISTM-Bunia and ISTM-Nyankunde in Bunia, and ISTM-Aru in Aru; and for doctors from the Faculty of Medicine of Bunia University (UNIBU: Université de Bunia). I constructed data on the pool of qualified SBAs from the training outputs. Finally, at the labour market dynamics level, I considered SBAs (doctors, nurses and midwives) employed in the health sector (public sector, private not-for profit sector and FBOs).

The Provincial Human Resource for Health Management Unit was contacted in order to gain access to the above-mentioned data. Since the Ituri Provincial Health Division was only created in 2015, the data for 2013 and 2014 was not available in the Provincial Health Division HRH database. In order to obtain the missing data relating to 2013 and 2014, the provincial HRH manager used telephone calls and e-mails to contact all district health officers from within the thirty-six health districts of Ituri, and thus managed to locate the data and integrate this into the database. The data was then disaggregated where available by health district categories, SBA cadre and gender.

#### **4.7.2. Life history interviews**

Life history (LH) is a qualitative method which uses a narrative research approach: whereby participants narrate their own history following a lifeline in order to describe major events that they have experienced (Witter, Namakula et al. 2017b). The rationale of using the life history method is that it helps to grasp the different experiences of research participants on specific issues through time (Goodson and Gill 2011; Witter, Namakula et al. 2017b). As there is limited literature exploring this theme in the DRC, the life history method was appropriate to capture people's experiences of their careers (Ssali, Theobald et al. 2015). In this study it was carried out with both current and ex-midwives.

#### **Participant selection and recruitment**

In both Aru and Bunia health districts, midwives and ex-midwives were recruited using purposive sampling, which is the deliberate choice of participants on the basis of features or characteristics that will enable a detailed understanding of the topic. The researcher sets out to find people who can and are willing to provide the information by virtue of knowledge or experience (Bernard 2002; Etikan Musa et al. 2016). Participants were selected using the following criteria: sex (male and female), working or having worked within rural Ituri Province, place of work (health centres and hospitals), and current or previous employment as a midwife. These criteria helped to consider different categories of midwives for the sake of triangulating their professional experiences of

working in rural Ituri. Both midwives and a smaller number of ex-midwives were included, because apart from other areas explored in the lifeline, current midwives can only talk about *intention* to leave whereas ex-midwives can talk about *actually* leaving. The district health offices hold a list of the midwives working in the facilities around their district. To recruit midwives to this study, I then visited the facilities where they worked and identified potential participants using the criteria described above. I had a face-to-face conversation with each of those identified, to explain the study and to find out if they would be interested. Finally, after giving them the information sheet (see Annex 3) and the consent form (see Annex 4), I took their telephone numbers and called them the following day to ask for their decision on participating in the study. In each of the two districts, 10 midwives were recruited. However, in rural Adja district, there were only six qualified midwives working, all of whom were recruited. The snowball technique for sampling ex-midwives was used, because this technique is appropriate where potential study participants are hard to find (Indriani 2019). Hence, the research team asked the midwives to identify ex-midwives within that area, and then requested that these ex-midwives identify others, and so on. There were six ex-midwives recruited to the study, i.e. three in Aru and three in Bunia health districts. No ex-midwife was identified from Adja health district. Participants in the life history interviews are described in Table 10.



Table 10: Characteristics of life history interview participants

Districts	Midwives								Ex-midwives		
	Total	Gender		Age (years)			Sector of work		Age (years)		
		M	F	20 -29	30 -39	40+	Public facility	Faith-based facility	20 -29	30 -39	40+
Adja	6	0	6	5	0	1	4	2	0	0	0
Aru	10	0	10	0	5	5	5	5	0	1	2
Bunia	10	4	6	1	6	3	4	6	0	0	3
Total	26	4	22	6	11	9	13	13	0	1	5

#### Data collection

The topic guides were developed by the research team following a review of the literature on the attraction and retention of midwives in rural areas. The topic guide covered the following items: how and why they became midwives, descriptions of their career paths, their work experiences in terms of challenges and coping strategies, their career aspirations and their reasons for leaving (for ex-midwives) (See annexes 5 and 6). Topic guides, consent forms and information sheets were all translated into French by a teaching college lecturer of English, and then the translation was checked by another lecturer from the same college. The life history interviews were conducted by myself and the research assistants, and took place at the health facilities for some midwives and at home for others, according to their choice. They lasted between 60 and 120 minutes. At the end of each life history interview, emerging themes were highlighted by the researcher and crosschecked with the participants for accuracy. The interview recordings were kept in a password-protected computer, transcribed verbatim,

translated into English by an external translator from the Teaching College of Bunia and crosschecked by another external translator.

#### **4.7.3. Focus Group Discussions**

A focus group discussion (FGD) is a commonly used method in qualitative research. It involves assembling group of people from similar backgrounds or experiences together to discuss specific issues of interest to them, through a moderated interaction to draw their perceptions, beliefs and attitudes (Stewart, Shamdasani et al. 2007; Nyumba, Wilson et al. 2018). FGD brought midwives together which supported group discussions of the challenges they face and the coping strategies they have adopted (Finch and Lewis 2003).

##### Participant selection and recruitment

Current midwives who were selected for the life histories (as described above), were contacted by telephone and invited to participate in the FGDs. Only current midwives were selected, because learning from their coping strategies was essential, since they are still serving despite the potential challenges they face. In Adja, all six midwives participated; whereas in Aru and Bunia districts only eight from each district were available. The participants in the FGDs are described in Table 11.

Table 11: Characteristics of FGD participants

Districts	Midwives					
	Total	Gender		Age (years)		
		M	F	20 -29	30 -39	40+
Adja	6	0	6	5	0	1
Aru	8	0	8	0	4	4
Bunia	8	2	6	1	5	2
Total	22	2	20	6	9	7

#### Data collection

A topic guide was used to facilitate the focus group discussions organized with midwives, which focused on the challenges that they faced at work and the strategies that supported their work; as well as possible solutions to these challenges (see annex 7). FGDs took place in local church meeting halls in Bunia and Adja, and in an IPASC meeting room in Aru. They lasted between 90 and 120 minutes. The research assistants were observers, responsible for recording and taking notes. At the end of each FGD, emerging themes were highlighted by the researcher and crosschecked with participants for accuracy. The recordings of the FGDs were kept in a password-protected computer, transcribed verbatim, translated into English by an external translator from the Teaching College of Bunia and crosschecked by another external translator.

#### 4.7.4. Document analysis

Document review is a data collection method based on reviewing existing documents, which can be internal to a programme or organization, or external (Centre for Disease Control and Prevention 2009). The rationale for using document review is that not only does this help to provide background information and broad coverage of data; it is also

very useful in contextualizing a piece of research within its field. It additionally helps to identify questions that need to be explored further, leading to a more critical and comprehensive research (Bowen 2009). In the context of this study, it focused more on human resources policy review and analysis on the attraction and retention of health workers, with a focus on midwives in rural and remote areas of DRC, as the results were to be used in the participatory workshop with stakeholders, as described in sub-section 4.6.4. A review guide for policy analysis was developed (see Annex 8).

The documents reviewed were those describing national and provincial policies and plans on HRH in the DRC, with a special focus on skilled birth attendants and especially midwives in the areas of attraction and retention. Documents were searched in the DRC Ministry of Public Health, international NGOs' websites, Google Scholar and also through consulting key informants in the province, at the Ministry of Public Health in Kinshasa and the Kinshasa School of Public Health.

To identify articles and grey literature on human resources for health in relation to skilled birth attendants and especially midwives within DRC, a search was conducted using the PubMed and Science Direct databases as well as the WHO website, using the following key words pertaining to "skilled birth attendants, midwives, recruitment, attraction, retention, rural and remote areas" combined with a Boolean operator 'AND' to search for key words pertaining to DR Congo. In addition, searches were performed through the Ministry of Health of DR Congo website to extract grey literature human resources for health and maternal health. The Google search engine was also used to find French grey literature on human resources for health policies, plans, maternal health and skilled birth attendants. The Provincial Health Division, the Kinshasa School of Public Health, the Department of Human Resources for Health and some other researchers in that area were also contacted to identify more literature. Searches were limited to literature from 2006 onwards.

Studies and documents that reported on human resources for health, skilled birth attendants in DRC were identified. Out of 38 documents identified, 14 were assessed as

being relevant to the theme of this study, and these included both French and English documents. There were few documents on HRH policies and plans, especially focused on skilled birth attendants in DRC. The profile of documents included are presented in Table 12.

Table 12: Details on documents reviewed

No	Type of documents	Title	Authors	Language
1	Provincial plan	Plan provincial de développement sanitaire ( <i>Provincial plan for health development</i> )	Division Provinciale de la Santé de l'Ituri (2016)	French
2	Provincial plan	Plan provincial de développement des ressources humaines de la santé 2014 – 2016 ( <i>Provincial human resources for health development plan 2014-2016</i> )	Division Provinciale de la Santé de Kasai occidental (2014)	French
3	Provincial plan	Plan Provincial de développement des ressources humaines en santé 2015-2017 ( <i>Provincial human resources for health development plan 2015-2017</i> )	Division Provinciale de la Santé de Katanga (2015)	French
4	Provincial plan	Plan provincial de développement des ressources humaines pour la santé 2017-2020 du Kongo Central ( <i>Kongo Central Provincial human resources for health development plan 2017-2020</i> )	Division Provinciale de la Santé de Kongo Central (2017)	French

5	Provincial plan	Plan provincial de développement des ressources humaines en santé 2014-2016 ( <i>Provincial human resources for health development plan 2014-2016</i> )	Division Provinciale de la Santé de Bas Congo (2014)	French
6	Provincial plan	Plan Provincial de Développement de ressources humaines en santé ( <i>Provincial human resources for health development plan</i> )	Division Provinciale de la Santé de Kasai Central (2017)	French
7	National plan	Plan National de Développement Sanitaire. ( <i>Health development national plan</i> )	Ministère de la Santé RD Congo (2010b)	French
8	National plan	Plan national de développement sanitaire 2016-2020 ( <i>Health development national plan 2016-2020</i> )	Ministère de la Santé RD Congo (2016)	French
9	National plan	Plan national de développement des ressources humaines en santé ( <i>National human resources for health development plan</i> )	Ministère de la Santé RD Congo (2011)	French
10	National plan	Plan national de développement des ressources humaines en santé 2016-2020 (National human resources for health development plan)	Ministère de la Santé RD Congo (2016b)	French
11	Report	Cadre d'investissement pour la santé reproductive, maternelle, du nouveau-né, de l'enfant et de l'adolescent en vue de l'atteinte de la	Ministère de la Santé RD Congo (2017)	French

		couverture sanitaire universelle en République Démocratique du Congo. Vers une vision de développement durable d'ici 2030. ( <i>Investment Framework for Reproductive, Maternal, Newborn, Child and Adolescent Health to achieve Universal Health Coverage in the Democratic Republic of Congo. Towards a vision of sustainable development by 2030</i> )		
12	Report	SANTE.UNAAC. Investir dans la Sage-femme : réduire la mortalité mère-enfant Kinshasa ( <i>Health. UNAAC. Investing in Midwifery: Reducing maternal-child mortality Kinshasa</i> )	Omek, E. (2015)	French
13	Report	Profil en ressources humaines pour la santé en République Démocratique du Congo ( <i>Human resources for health profile in the Democratic Republic of Congo</i> )	ONRHSC (2015)	French
14	Report	Rapport annuel 2010 ( <i>Annual report 2010</i> )	Programme National de Santé de Reproduction (2011)	French

#### **4.7.5. Participatory workshops with local stakeholders**

A participatory workshop is an organized event which gathers a group of people who share a common interest or problem to learn, acquire new knowledge, perform creative problem-solving or innovate, in relation to a specific issue concerning them in a collaborative and creative environment (Wakkary 2007; Ørngreen and Levinsen 2017). This methodology is specifically designed to produce reliable and valid data about the issue under study using group interaction (Ørngreen and Levinsen 2017). The rationale for using the participatory workshop method is that in such a collaborative approach where researchers and participants work together, with the researchers facilitating inputs and discussion from participants, this method ensures that solutions proposed to address a specific issue are grounded in the reality of the study participants, are feasible to implement and will have an impact (Macaulay, Jagosh et al. 2011). We used this methodology as it brings people together - in this case, a wide range of health systems stakeholders who are linked to the work of midwives - to learn, acquire new knowledge, perform creative problem-solving, or innovate in relation to a specific issue – the attraction, retention and support of midwives.

##### **Participants of the workshops: selection and recruitment**

In each district, a workshop was held with different groups of stakeholders. A range of decision-makers, managers, nurses and midwives were purposively selected, based on their involvement in managing and supporting midwives, or their experiences of being managed and providing services. In the previous study based on life history with midwives (see chapter six), I had asked the midwives and head nurses if I could contact them again for participation in this study. I then contacted them directly by telephone to recruit them to the workshops. Participants from the Provincial Health Office, Provincial Reproductive Health Coordination, District Health Management Team, Church Medical Coordination, NGOs and nursing schools were invited to the workshops through invitation letters and a participant information sheet that were translated into French. At the start of the workshop, the participant information sheets were shared again and discussed, and written informed consent was obtained from each participant. In total, I



recruited 49 participants to the three workshops (15 in Bunia district, 19 in Aru district and 15 in Adja district). Research participants in workshop methods are described in Table 13.

Table 13: Description of participants at the three workshops

Participant	Rationale for inclusion	Bunia	Aru	Adja	Total
Provincial Health Office Staff	Responsible for recruiting and deploying health workers within the province, including midwives	3 (3M)	0	0	3
Provincial Reproductive Health Coordination staff (PRHC)	Oversee in-service training of midwifery cadres within the province	2 (1M;1F)	0	0	2
DHMT members	Responsible for human resources for health management at district level	1 (F)	3 (3M)	3 (3M)	7
Church Medical Coordination staff	Church own many health facilities in the province, and also employs midwives	0	1 (1M)	1 (M)	2
NGOs focusing on maternal health	Collaborate with PRHC to provide in-service training for midwives and improve their working conditions	1 (F)	1 (F)	2 (1F;1M)	4

Head nurses	Direct managers of midwives	3 (1M;2F)	7 (2M; 5F)	3 (3M)	13
Nursing school staff	Responsible for the training of midwives	0	2 (1M; 1F)	0	2
Midwives	Provide maternal health care services	5 (1M;4F)	5 (1M;4F)	6 (6F)	16
Total		15	19	15	49

(M= Male; F= Female)

#### Data collection

The workshops were held in the health district meeting halls during November 2019. They were facilitated by AB with support from two research assistants (JK and MM in Aru and AA in Bunia), and were designed in order to present and discuss research data and local policies, and then develop strategies (see annexes 9 and 10). Each workshop included the following five steps.

In step 1, the facilitators presented data from the study on midwives' work experiences and challenges through time, from initial professional choice to future career aspirations in rural Ituri Province, north-eastern DRC (Baba, Theobald et al. 2020). Participants discussed these findings, and in particular what they had learnt and what problems the results revealed about SBAs and especially midwives in Ituri Province.

In step 2, data on the availability and distribution of SBAs in Ituri Province was presented, and participants once again discussed this and highlighted the main issues.

In step 3, the current policies relating to the attraction and retention of health workers in rural areas in DRC were presented, by the provincial HRH analyst in Bunia, and by AB in Aru and Adja.

In step 4, participants were divided into groups (Table 14) so that they could discuss in detail the research findings and the policies. These discussions were facilitated by the research team (AB, AA, JK and MM), using a topic guide which focused on policy implementation and the reasons why some policies are implemented and others are not. The group discussions were then summarised and fed back to the plenary for further discussion.

Table 14: Groups for further discussions on the attraction and retention strategies workshops

Number of groups	Bunia workshop	Aru workshop	Adja Workshop
1	District health management team delegate, provincial health division delegates, NGO delegate	District health management team delegates, NGO delegate, church medical coordination delegate, nursing schools' delegates	District health management team delegates, NGO delegate, church medical coordination delegate, head nurses' delegates
2	Head nurses and midwives	Midwives delegates	Midwives delegates
3		Head nurses' delegates	

Finally, in step 5, the groups discussed new and existing strategies to promote the attraction, retention and support of midwives, and how these could be implemented within the districts. They also discussed the challenges relating to each strategy and how these could be overcome. After completion, each group reported to the plenary for

further comments and discussions. All of the discussions were recorded, stored in a password-protected computer, transcribed verbatim and then translated into English by an external translator from the Teaching College of Bunia, before being crosschecked by another external translator.

## **4.8. Data Analysis**

### **4.8.1. Secondary data analysis**

The secondary data collected was compiled in a predesigned tool and a descriptive analysis, disaggregating by health district categories, cadres and gender where available using Excel (See Annex 2). For different SBA cadres, I calculated the percentage of posts filled as the total number of filled posts multiplied by 100, and divided that result by the total number of established positions. Then, the trends for different SBA cadres were analysed from the years 2013 to 2017. In relation to training outputs, the trends of different SBA cadres produced from nursing schools, colleges and the faculty of medicine were also analysed from 2013 to 2018, in order to make possible projections and to match the training outputs to the shortages for different cadres. A special focus was placed upon matching training outputs to shortages of SBAs.

### **4.8.2. Data analysis for life histories, FGDs and participatory workshops**

The thematic framework approach which facilitates rigorous and transparent analysis was used to analyse data (Ritchie, Spencer et al. 2003). It uses both deductive and inductive approaches (Ritchie, Spencer et al. 2003; Fereday and Muir-Cochrane 2006; Gale, Heath et al. 2013). Since all of the interviews, FGDs and workshops were recorded in French, the analysis began immediately during the transcription process, even before the French transcripts were translated in English, as it helped to identify emerging themes. I then developed a coding framework based on the themes emerging from the data and study objectives, and shared this with the supervisory team for further comments on the relevance of different themes and codes. Using this framework, I coded the transcripts and again shared with supervisors to check coherence and meaning. After going through the transcripts many times, along with the research

assistants I reanalysed the developed coding framework in order to make sure that it made sense. Because the supervisory team all have experience in analysing data from life histories, they could ensure that the different areas related to midwives' pathways were covered within the framework, from initial choice to either future career aspirations (for current midwives), or to reasons for leaving (for ex-midwives). In relation to the participatory workshops, as soon as workshop from a district was completed, a report was immediately shared with supervisory team. This helped in the process of developing the coding framework, as well as other components of the analysis. The coding framework was applied to the transcripts and charts were developed for each theme, which were used to describe the themes. NVIVO 11 (for life history and FGD data) and NVIVO 12 (for participatory workshop data) were used to support the analysis. The same analysis procedure was also applied for FGDs and participatory workshops. The coding frameworks can be found within annexes 11 and 12. Examples of the coded transcripts and charts are within annexes 13 and 14.

#### **4.9. Ethical considerations**

Ethics approval for this study was granted by the Ethics Committee of the Liverpool School of Tropical Medicine (Research protocol 17-024) and the "Centre de Recherche Multidisciplinaire pour le Développement, Bunia" (018/2017).

I provided training to the research assistants on the process of taking informed consent and the importance of maintaining privacy and confidentiality (see annex 8). The ways to ensure that privacy and confidentiality are maintained were also discussed. Verbal consent to participate in the study was initially sought through telephone calls, when I explained the nature of the study and asked individuals if they would like to participate. After receiving their verbal consent, I went through the informed consent process on a face-to-face basis before data collection began. Prior to each LH, FGD and participatory workshop, I gave the information sheet to each participant who then verbally agreed to take part, and I read the information provided thereon (see annex 1). Each participant was then asked to sign the consent form if they felt happy to continue (see annex 2). The

sessions with the research participants were audio-recorded only after consent had been provided. All participants were informed of their right to withdraw from the study at any time, with no risk of any associated implications for their ongoing role.

Data collection was conducted at each participant's chosen venue, according to their availability. In relation to life history interviews, some midwives chose to conduct these at their places of work, whilst others preferred to do them at home. FGD with midwives were conducted in private rooms in the district health offices or IPASC office. All participants preferred for the participatory workshops to take place in the health district meeting hall. We made ourselves fully available and ensured that the programme remained as flexible as possible, to minimize any impact on their working lives.

Throughout the research, anonymity and confidentiality were critical priorities. All audio files and transcripts were stored separately from the consent forms and only the research team had access to any files that linked anonymous data codes to participant identity. Despite the fact that the position of certain participants within this study could make them identifiable, an effort was made to protect their confidentiality by removing any information that would make them identifiable, whilst maintaining some descriptive information where possible. During the sessions, we made sure that apart from the research team and the participants, no one else was present at the session sites. Interviews were coded, with names stored separately. During the reporting of findings, we always ensured that that no personal identifiers were revealed. The recordings of the interviews were transferred to a password protected computer and flash drive, and then deleted from the recorder as soon as possible once saved in the computer. The collected paper data was kept in a locked cabinet (including interview transcripts, notes and consent forms), and electronic copies were stored in the password protected computer and flash drive. Finally, only those working in the local research organisation and linked international centres (LSTM) had access to the data.

I registered an ethical issue during a life history interview with one midwife, who was explaining her own experience of losing a child as a motivation for her joining the

profession. When she started describing the situation, she was in tears. At the time I took a moment and told her I was sorry, and that if she was finding it difficult then we could stop the interview, or I could come again another day. However, she said that it was fine; and that she just thought that her son could have been 18 years old today if he had survived. She kept on saying that this was a motivation for her in joining midwifery, and that she would never want another young girl to go through that experience in the area where she works. Another ethical issue occurred in a participatory workshop with stakeholders. Some midwives and nurses felt limited in raising certain issues for which the district health management team or provincial health division could be held responsible. To overcome this, I organized small group sessions that were homogenous in terms of profession, which facilitated free participation. In the plenary, the secretary of the group just gave their ideas, and others could make comments and contributions.

#### **4.10. Trustworthiness**

Trustworthiness for the qualitative part of this research was enhanced through the use of different strategies covering the following four components of trustworthiness criteria: credibility, transferability, dependability and confirmability (Bryman 2004; Nyirenda, Kumar et al. 2020).

##### **3.1.1. Credibility**

In relation to credibility, which is about demonstrating how the findings fit with reality (Merriam 1998), different strategies were used to enhance it. The sample size followed the principle of saturation (Guest, Bunce et al. 2006). Interviews and discussions were organized until no new data was generated. Different forms of triangulation were used to bring different perspectives to enhance credibility (Santos, Ribeiro et al. 2020), in terms of sources (midwives, ex-midwives, provincial health delegates, head nurses, nursing schools' delegates, church medical coordination delegates, district health management team); research sites (urban area: Bunia, peri-urban area: Aru and rural area: Adja); researchers (three research assistants, supervisors and a local supervisor); and methods (life history interviews, FGDs, workshop methods). Holding regular

meetings with supervisors was also useful, since not only did these help in probing certain specific issues; they also identified potential gaps. Furthermore, feedback sessions with the research team helped in the process of uncovering any gaps in the study design, data collection and analysis.

#### **4.9.2. Transferability**

Since transferability is about applying the generated findings to other contexts or groups of people (Korstjens and Moser 2018), a “thick description” of the research context was provided in chapter two, as well as the research methods used in section 4.6. All of these elements can help in applying their transferability to other settings. This is needed not only to display the research process, but also to show the conceptual processes by which meaning or interpretation has been attributed, or theory developed. Such “transparency” or “thick description” as Lincoln and Guba advocate (Lincoln and Guba 1985), will allow the reader/enquirer to verify for themselves that the conclusions reached by the researcher hold validity, and allow others to consider their “transferability” to other settings.

#### **4.9.3. Dependability**

In relation to dependability, as this is about ensuring that the findings would be repeated if the research was replicated with the same participants in a similar context (Golafshani 2003), the following strategies were used: the triangulation of sources, researchers, methods and sites. Organizing the training of the research assistants was also very useful, as this ensured the quality of the data generated. An open and clear description of data collection and analysis methods, as well as the study sites’ context, also contributed to ensure its dependability. Different research topic guides were translated from English to French by an English department lecturer from the teaching college of Bunia, and the cross-checking of the translation was carried out by another lecturer from the same department, which helps to ensure the accuracy of the information. Life history interviews, FGD and participatory workshops were all conducted in French to ensure accurate meaning. In addition, the French versions of the recordings were first transcribed by myself and the research Assistants, before being translated by a lecturer



from the English department of the Teaching College of Bunia, and then checked by another lecturer from the same college. I then went through them carefully to check that everything was clear, before they were checked again several times by myself and two other research assistants against the French transcripts and recordings. Ensuring trustworthiness in translation is important because if someone is conducting cross-language research, particularly in fields relating to health, they may be challenged by misrepresentation of meaning due to either language or cultural differences, which can then jeopardise the quality of translated data (Temple, Edwards et al. 2006; Al-Amer, Ramjan et al. 2014).

#### **4.9.4. Confirmability**

When asking the question of how we can be certain that the findings were determined by the participants and context of the research, rather than the biases, motivations and perspectives of the researchers, we are dealing with confirmability (Lincoln and Guba 1985; Nyirenda, Kumar et al. 2020). The following strategies were used to make sure that confirmability is achieved. Research teams from different backgrounds intervened in the analysis. The methods of data collection and analysis were clearly described and the use of triangulation of sources, sites, methods and participants also contributed to enhancing confirmability. I have also provided an account on my positionality in this research, as an insider, with possible effects on the findings; however, I have also accounted for how I proceeded to reduce any negative effects stemming from this. Keeping the research diary was also a key element in ensuring confirmability as this helped in recalling certain issues and events, as well as the circumstances of such occurrences and how these shaped some of the decisions that I had to take. For instance,

#### **4.9.5. Reflexivity**

Reflexivity is about referring to the examination of one's own beliefs, perceptions and experiences during the research process and how these may influence the research (Hammond 2017). The relationship between the researcher and the research participants is very important in qualitative research. Being someone who was born, educated and has worked in Ituri Province, and having worked in a rural area within a

faith-based organization for over 18 years for an NGO intervening in the field of community health, I consider myself to be an “insider”, a term used when researchers work with populations of which they are also members. This common status often allows access, entry and a common ground from which to begin the research (Darawsheh 2014). However, it is also sometimes challenging to hold the dual role of both researcher and insider; since the researcher’s own opinions and personal experiences can dominate his/her analysis (Darawsheh 2014). My position of executive director within the faith-based organisation where I work could have had an effect upon how I navigated my way through this research journey, as far as the power position is concerned. Apart from supervising students on fieldwork and organising community activities, my organization also provides equipment and supplies to health facilities within the three health districts where the research was conducted, and also provides in-service training to midwives and nurses working in those health facilities. I was very conscious of this challenge throughout the research journey, as I could easily have been considered as the executive director rather than the researcher. In order to overcome this, I made it clear during the introduction that I was not there as the director of IPASC, but as an independent researcher, in the context of my studies. Still, the fact that I was the one conducting life history interviews, leading FGDs and also the workshops could have shaped the way that participants shared their stories and experiences, as they could have had an expectation that they might benefit in some way, from equipment or training for example. I kept on making my position clear to different participants before the beginning of each session, as well as during data collection where appropriate. I used a private motorcycle rather than my organisation vehicle, as a way to de-emphasise my association with IPASC. However, whenever I arrived anywhere with the motorcycle people were surprised, and asked where I had left the organisation car. I told them that I was there not as the organisation’s director, but as a simple independent researcher. This was also the case for research participants, as they were instructed not to mention anything during data collection about the organisation we work for.

## **Chapter 5: Results: Secondary data analysis**

### **5.1 Chapter overview**

This chapter covers the following objective: to identify the characteristics of the midwifery workforce and other SBAs (doctors and midwives), in terms of their availability and distribution in Ituri Province. I begin the chapter by describing the burden of maternal health, since low and middle income countries suffer higher ratios of maternal mortality; with sub-Saharan African countries accounting for more than half of these deaths. I then describe the situation in relation to skilled birth attendants within FCAS. I then draw upon a situational analysis based on secondary data, in order to understand the characteristics of different SBAs in Ituri Province, since within such settings there are sometimes operational challenges in relation to HRH data. Findings are then presented and discussed in relation to key aspects of the labour market framework at provincial level, covering the components of the education sector as well as the labour market dynamics. This discussion focusses upon the following aspects: the need for data in order to understand the situation; the mismatch in the supply and demand of doctors, nurses and midwives; causes of the shortages of midwives; gender norms and security concerns shaping HRH distribution; deployment processes (there are more doctors and nurses in urban and peri-urban health districts); and, the implications of midwife shortages. This chapter is published by Human Resources for Health Journal (Baba, Martineau et al. 2020).

My role in this paper was the conceptualisation of the study with the support from my supervisors, the development of the study design, proposal and data collection tools. Then, I collected and analysed data, and drafted the manuscript, before sharing it with the supervisors for their critical comments.

**Using data to support evidence-informed decisions about skilled birth attendants in fragile contexts: A situational analysis from Democratic Republic of Congo**

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## **5.2. Abstract**

**Background:** Most low and middle-income countries are experiencing challenges in maternal health in relation to accessing skilled birth attendants (SBA). The first step in addressing this problem is understanding the current situation. We aimed to understand SBA's availability and distribution in Ituri Province, North Eastern Democratic Republic of Congo (DRC) from 2013 to 2017.

**Methods:** We used available data on SBAs (doctors, nurses and midwives) from the Ituri Provincial Human Resource for Health Management Unit's database from 2013 to 2017. The current distribution across and within three categories of district (rural, peri-urban and urban) and characteristics of SBAs as well as 5-year trends and vacancy trends were identified. Data on training outputs for SBA cadres was collected from training schools in the province. Descriptive analysis, disaggregating by district, cadre and gender where possible was conducted using Excel.

**Results:** The national ratio of SBAs per 1000 population is 4 times less than the Sustainable Development Goals threshold (4.45) while the Ituri Province ratio, is one of the lowest in DRC. There are more doctors and nurses in urban and peri-urban districts compared to posts, and shortages of midwives in all district categories, particularly in

rural districts. From 2013 to 2017 occupied posts for doctors and nurses in all three categories of districts increases while midwives decrease in peri-urban and rural districts. There is clear gender and occupational segregation: doctors and nurses are more likely to be male; whereas midwives are more likely to be female. The projections of training outputs show a surplus against authorised posts of doctors and nursing increasing; whilst the shortfall for midwives remains above 75%

**Conclusion:** This is the first study to use existing human resource data to analyse availability and distribution of SBAs in a DRC province. This has provided insight into the mismatch of supply and demand of SBAs, highlighting the extreme shortage of midwives throughout the province. Further investigations are needed to better understand the situation and develop strategies to ensure a more equitable distribution of SBAs throughout this province and beyond. Without this, DRC will continue to struggle to reduce maternal mortality.

**Keywords:** skilled birth attendants, nurses, midwives, data, fragile contexts, DRC

### **5.3. Introduction**

Around 300,000 women die from preventable causes related to pregnancy and childbirth every year (World Health Organization 2019a). Low and middle income countries (LMICs) were responsible for 99% of global maternal deaths and sub-Saharan Africa accounted for 66% of those deaths (World Health Organization 2015a; UNICEF 2017). There is a global health workforce crisis with sub-Saharan Africa being severely affected by both availability and distribution of health workers (Tandi, Cho et al. 2015; Portela, Fehn et al. 2017). It is recognised worldwide that skilled birth attendance is one of the most effective strategies to reduce maternal mortality in LMICs, yet there are challenges with accessing qualified health workers and services (Campbell and Graham 2006; Lehmann, Dieleman et al. 2008; Mariani, Kasznia-Brown et al. 2017). A skilled birth attendant (SBA) is defined by WHO as “an accredited health professional — such as a midwife, doctor or nurse — who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the

immediate postnatal period, and in the identification, management and referral of complications in women and newborns.” (World Health Organization 2004, p.1). Doctors, nurses, and midwives are the cadres recognised as skilled birth attendants in most countries, including the Democratic Republic of Congo (DRC) (UNFPA 2014; Ministère de Santé Publique RD Congo 2016a; Amouzou, Ziqi et al. 2017)

Availability of SBAs appears to be particularly seriously affected in fragile and conflict affected settings (FCAS), which are responsible for one-third of maternal deaths worldwide (Global Health Workforce Alliance 2011; MacKinnon and MaLaren 2012). This places a much higher burden on the few SBAs in already demanding environments and limits the availability of quality health care services (MacKinnon and MaLaren 2012).

DRC is characterized by incessant political turbulence from its Post-Independence period in the 1960s (Coghlan, Brennan et al. 2006; Omaamaka and Ogbonna 2015). In the early 1990s, DRC again experienced decades of political instability and conflicts, affecting all sectors, including health (Coghlan, Ngoy et al. 2007; DFID 2008). With a maternal mortality rate of 846 per 100,000 live births as well as facing a series of crises, DRC is classified by the Department for International Development (DFID) as being in a situation of “high fragility” (Bertone, Lurton et al. 2016; Dalrymple 2016). Ituri Province (the study setting) is mostly rural and is going through sustained socio-political crises and wars since 1999. Ethnic clashes and the recent Ebola outbreak make this province particularly fragile (Vircoulon 2005; MONUSCO 2020). Ituri province faces challenges in attracting and retaining midwives in rural districts and has a high maternal mortality rate far beyond the national average as in some rural provinces in DR Congo (Kabuiuku 2007; Matungulu, Kandolo et al. 2015; Division Provinciale de la Santé Ituri 2016).

Skilled birth attendants’ training in DRC is managed by two different ministries: those following the secondary level of nursing school (diploma) (A2), i.e. 4 years after 10 years of education, are managed by the Ministry of Public Health, whereas those studying nursing or midwifery degrees at nursing colleges (A1: undergraduate degree or A0: post

graduate degree) and medical doctors at faculty of medicine at universities are under the management of the Ministry of Higher Education (See Table 15) (Ministère de la Santé Publique RD Congo 2015; Ministère de Santé Publique RD Congo 2016a; Hatem, Halabi-Nassif et al. 2018). Doctors, nurses and midwives spend respectively 25%, 40% and 95% of their time on maternal and newborn health (UNFPA 2014).

Table 15: Training of different SBA cadres in DRC by government ministry

Ministry of Public Health (MoPH)	Ministry of Higher Education (MoHEd)
<p>1. Nursing training</p> <p>A2 nurses (Diploma)</p> <ul style="list-style-type: none"> <li>- 10 years of education (6 years of primary and 4 years in secondary)</li> <li>- 4 years of nursing in nursing schools</li> </ul> <p>2. Midwifery training</p> <p>A2 midwives (diploma level)</p> <ul style="list-style-type: none"> <li>- 10 years of education (6 years of primary and 4 years in secondary)</li> <li>- 4 years of midwifery in nursing schools</li> </ul>	<p>1. Nursing training.</p> <p>A1 nurses (undergraduate degree in nursing)</p> <ul style="list-style-type: none"> <li>- A2 nurses or 12 years of education (6 years in primary and 6 years in secondary schools)</li> <li>- 3 years of nursing in nursing colleges</li> </ul> <p>A0 Nurses (Post graduate degree in nursing)</p> <ul style="list-style-type: none"> <li>- A1 nurses</li> <li>- 2 years of training in nursing for graduate degree</li> </ul> <p>2. Midwifery training</p> <p>A1 midwives (undergraduate degree)</p> <ul style="list-style-type: none"> <li>- A2 midwives or 12 years of education (6 years in primary and 6 years in secondary schools)</li> </ul>

	<ul style="list-style-type: none"> <li>- 3 years of midwifery in nursing colleges</li> </ul> <p>A0 midwives (Post graduate degree)</p> <ul style="list-style-type: none"> <li>- A1 midwives</li> <li>- 2 years of training in midwifery for post graduate degree</li> </ul> <p>3. Physicians training</p> <ul style="list-style-type: none"> <li>- 12 years of education (6 years of primary education and 6 years of secondary schools)</li> <li>- 8 years of medical studies in the faculty of medicine</li> </ul>
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Adapted from Bansele and Hatem, Halabi-Nassif et al. (Bansele 2010; Hatem, Halabi-Nassif et al. 2018).

Despite the fact that DRC produces an average of 2000 doctors and 7000 nurses yearly (Nathe 2015), it is known that there is a general severe shortage of doctors, nurses and midwives, with only 1.05 doctors, nurses and midwives per 1000 population, far below the Sustainable Development Goals indicative threshold of 4.45 doctors, nurses and midwives per 1000 population (World Health Organization 2016c). Whilst the absolute shortages of SBAs are clear, little is known how many SBAs there should be, i.e. number of posts versus posts filled and how they should be distributed between urban and rural areas. We started our investigation using available routine data. This evidence, combined with data on local training output, will help to support evidence informed decisions about doctors, nurses and midwives in fragile contexts and also inform strategies to develop the workforce to address maternal mortality challenges in Ituri province.

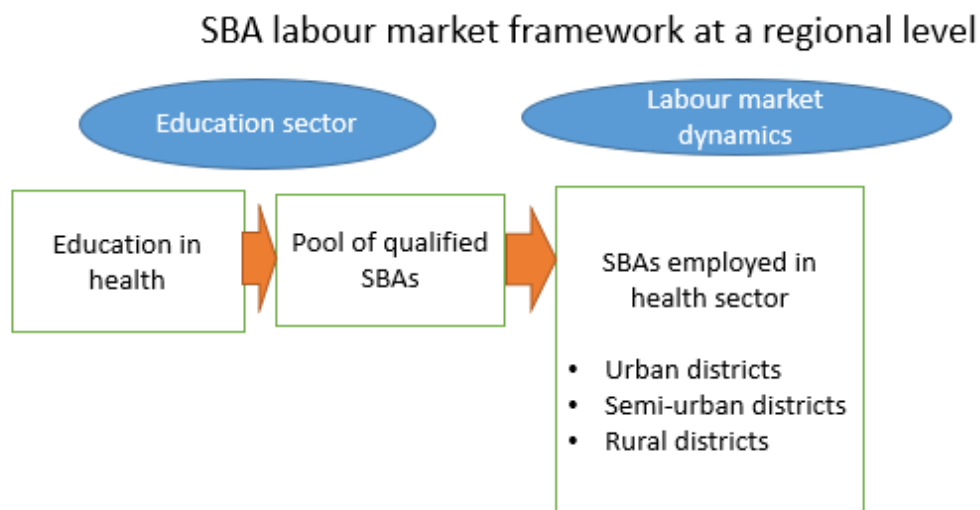


## 5.4. Methods

### 5.4.1. Study design

This study was conducted to understand how data can be used to support evidence informed decisions about doctors, nurses and midwives in fragile contexts in Ituri Province, in North-Eastern DRC. This evidence, or the methods of deriving it using available data, may also be useful for other parts of DRC and other countries. The situation analysis critically reviewed secondary data from Ituri Provincial Health Division. An adaptation of the health labour market framework, as described by Sousa et al. (Sousa, Scheffler et al. 2013) , was applied to SBA flows in the 36 districts in Ituri (see Figure 10). The areas covered: health training and the entry of graduates into a pool of qualified SBAs as part of the 'education sector'; and the distribution of graduates employed in the health sector in Ituri by type of district as part of the health sector labour market. Attrition neither from training into employment in the health sector nor attrition from the health sector could be covered, due to lack of data.

Figure 10: SBA labour market framework at a regional level

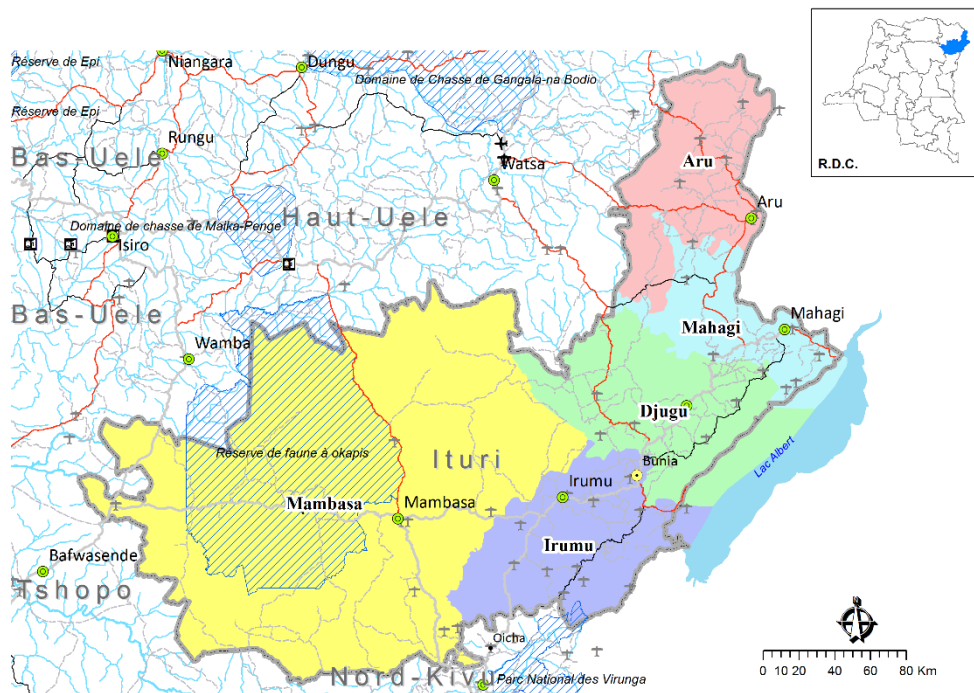


Adapted from Souza, Scheffler et al. 2014

### 5.4.2. Study setting: Ituri Province

Ituri is one of the 26 provinces of DRC, covering an area of 65,293 km<sup>2</sup> and has 36 health districts (See Figure 11). We used the Provincial Health Division's categorisation of districts (Table 16) (Division Provinciale de la Santé Ituri 2016): the urban district, where the Provincial capital is found (1); the peri-urban districts, those located where there are concentrations of people, with some facilities in remote areas (7); and rural districts, those having all facilities in rural and remote areas (28).

Figure 11: Map of Ituri Province



Source: Cellule d'Analyse des Indicateurs de Développement (Cellule d'Analyse des Indicateurs de Développement 2018)

Table 16: Categories of health districts in Ituri Province

Urban district	Peri-urban districts	Rural districts		
2. Bunia	1. Ariwara	1. Adi	11. Gety	21. Mangala
	2. Aru	2. Adja	12. Jiba	22. Nizi
	3. Mahagi	3. Angumu	13. Kambala	23. Rethy
	4. Mambasa	4. Aungba	14. Kilo	24. Tchomia
	5. Mandima	5. Bambu	15. Komanda	25. Nyankunde
	6. Mongbwalu	6. Biringi	16. Laybo	26. Nyarambe
	7. Niania	7. Boga	17. Linga	27. Rwampara
		8. Damas	18. Lita	28. Rimba
		9. Drodro	19. Logo	
		10. Fataki	20. Lolwa	

Source: DPS Ituri (Division Provinciale de la Santé Ituri 2016), adapted by authors.

#### 5.4.3. Data collection

District health officers are required to submit staffing returns to the Provincial Health Office every six months which is then entered into the HRH database. Using a pre-designed tool, we collected data on the number of established posts for doctors, nurses and midwives, and the number of posts filled by cadre and gender from the HRH database for 2015 to 2017 only. As the Provincial Health Office was established in Bunia, the capital of the Province, in early 2015 and the staffing database did not exist prior to this period, there was no data for years 2013 and 2014. Therefore the Provincial Human Resource for Health Management Unit analyst contacted the District Health Officers for this data which they inserted into the tool. Data does not include staffing from private health facilities.

Data on SBA graduates from 17 nursing schools were also collected at the Provincial Health Office to establish the training output. Data for degree graduates were collected from three nursing colleges and the Faculty of Medicine of Bunia University in the Province, to understand the trend of nurses, midwives and doctors trained each year from 2013 to 2018.

Data on SBA cadres joining and leaving each year were not available at the Provincial HRH Management Unit nor the health district level.

#### **5.4.4. Quality assurance**

All the data related to different skilled birth attendants were received from Provincial HRH unit and from different schools producing SBAs. Once received, data from each health district, nursing school, nursing college, and the faculty of medicine of the University of Bunia, were systematically verified by checking the hard copy against the electronic copy in their database. The data was then inserted into the Excel file to prepare for analysis. All data were kept in both a password secured computer and a password secured external drive owned by and only accessed by the first author. The results were shared with provincial and the 3 district health authorities for their comments.

#### **5.4.5. Analysis**

The collected data were compiled in a predesigned tool and a descriptive analysis, disaggregating by health district categories, cadres and gender where available, was conducted using Excel. For different SBA cadres, we calculated the percentage of posts filled as the total number of filled posts multiplying by 100, and dividing that result by the total number of established positions. Then, trends for different SBA cadres were analysed from 2013 to 2017. In relation to training outputs, the trends of different SBA cadres produced from nursing schools, colleges and the faculty of medicine was also analysed from 2013 to 2018 in order to make possible projections, and matching the training outputs to the shortages for different cadres. A special focus was also given to matching training outputs to shortages of SBAs.

#### **5.4.6. Ethics**

Ethical approval was received from the Liverpool School of Tropical Medicine (Research protocol 17-024) and the Multidisciplinary Research Centre for Development in Bunia, DRC (018/2017). No names or identifying characteristics were collected.

### **5.5. Results**

This section starts by placing the data on SBAs in the global and national contexts. It then examines staffing in Ituri Province comparing the authorised posts with filled posts. The data is explored by cadre and type of district, and by gender where possible, especially in relation to posts filled in the districts. Finally, we examine the impact that training output at current rates could have on availability of SBAs.

#### **5.5.1. Global and national picture**

##### ***5.5.1.1. SBA cadres per 1000 population: fewer than required***

DRC has a ratio of 1.05 doctors, nurses and midwives per 1000 population. This is below the Sub Saharan African average of 1.2 per 1000 population, and far below the Sustainable Development Goals threshold of 4.45 doctors, nurses and midwives per 1000 population (Table 17). Neighbouring countries to DRC also experience a low density of health workers for example, Angola and Republic of Congo have higher densities than DRC at 1.5 and 1.8, whereas Central Africa Republic, Burundi and Uganda have lower densities.

Table 17: Doctors, nurses and midwives per 1000 population in selected African countries

Countries	Staff to population ratio (doctors, nurses and midwives per 1000 population)
Republic of Congo	1.8 (2011)
Angola	1.5 (2017)
DRC	1.05 (2015)
Zambia	1.0 (2016)
Rwanda	0.9 (2017)
Burundi	0.8 (2016)
Uganda	0.7 (2015)
Central Africa republic	0.3 (2015)
Sub-Saharan Africa	1.2 (2015)
SDG Threshold	4.45 (2016)

Source: Banque Mondiale (Banque Mondiale 2019a, Banque Mondiale 2019b)

Ituri Province has a density of 0.526 health workers per 1000 population (Table 18), which is almost half DRC's national average density of 1.05. It is far lower than some provinces such as Kongo Central at 1.98 and neighbouring North Kivu (0.85).

Table 18: Doctors, nurses and midwives per 1000 population in selected provinces in DRC

Province	Staff to population ratio (doctors, nurses and midwives per 1000 population)
Kongo Central	1.98 (2013)
Maniema	1.24 (2013)
Kinshasa	0.90 (2013)
North Kivu	0.85 (2013)
South Kivu	0.83 (2013)
Ituri	0.526 (2017)
Average in DRC	1.05 (2015)

Source : Division Provinciale de Santé Ituri, Ministère de la Santé Publique RD Congo (Division Provinciale de la Santé Ituri 2016, Ministère de Santé Publique RD Congo 2016a)

### 5.5.2. Distribution of SBAs within Ituri Province

We now investigate the data on SBAs in Ituri province. We start by reporting on the number of staff in the different SBA cadres there should be by type of district from data collected for 2017 (see Table 5).

#### 5.5.2.1. *Distribution of SBAs in 2017: severe shortage of midwives*

Breaking down the analysis of where the shortages lie shows an intriguing picture (see Table 19). The shortages of midwives are the most extreme, especially in peri-urban (24.9% of posts filled) and rural districts (7.2% of posts filled). This is the cadre whose training, and it can be assumed whose job roles, are almost exclusively focused on maternal and newborn health. In contrast, 88.5% of the posts of nurses in rural districts are filled. Since the number of posts filled for midwives across the 28 rural and 7 peri-urban health districts is comparatively low, respectively 75 in rural health districts (7.2%)

and 67 in peri-urban health districts (24.9%), it can be assumed that if any maternal and newborn health services are being provided, this is being done by nurses.

A second point to note from this data is that although the ratio of SBAs to population is half that of the national average, there is an overall surplus of posts filled versus authorised posts for both doctors (105.7%) and nurses (103.4%). There are more nurses than the authorised posts in peri-urban districts (124.4%) and especially in Bunia, the urban district (188.8%). This corresponds to an 11.5 % shortage of nurses in rural districts. There are also more doctors in urban district (238.9%) compared to the authorised posts and a small shortage in the rural districts (8.7%). In theory, if the extra number of nurses and doctors in urban and peri-urban districts were redistributed to rural districts, the shortage against approved posts would be eliminated.



Table 19: Number of posts by cadre and type of districts in 2017

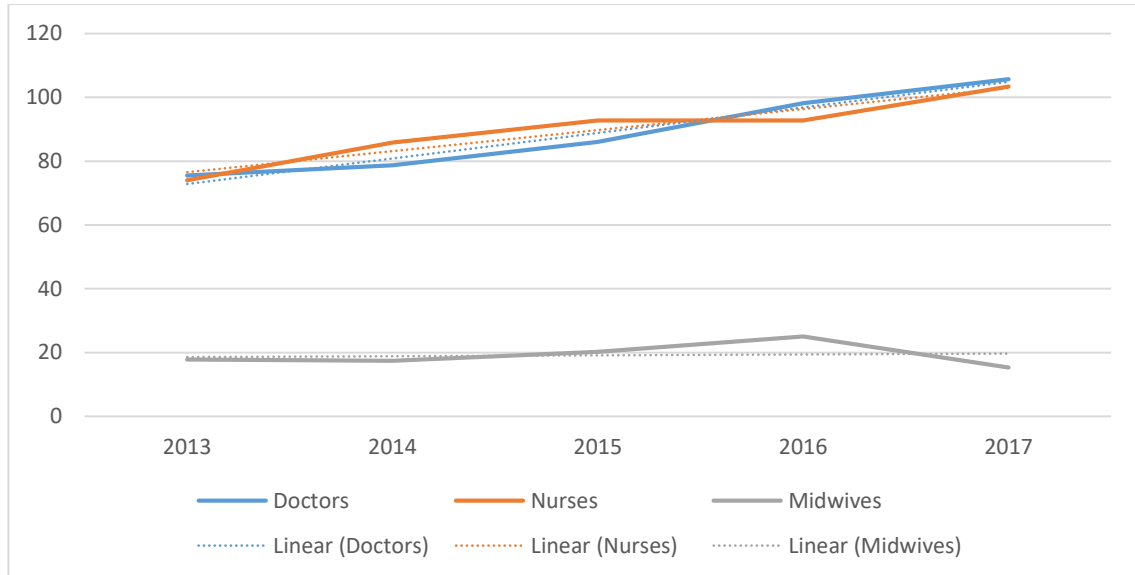
Cadres	Urban district		Peri urban districts		Rural districts		All districts	
	Authorized posts	Posts filled (% of posts filled)	Authorized posts	Posts filled	Authorized posts	Posts filled	Authorized posts	Posts filled
Doctors	18	43 (238.9%)	60	61 (101.7%)	150	137 (91.3%)	228	241 (105.7%)
Nurses	185	348 (188.1%)	508	632 (124.4%)	1776	1572 (88.5%)	2469	2552 (103.4%)
Midwives	75	69 (92.0%)	269	67 (24.9%)	1039	75 (7.2%)	1383	211 (15.3%)
Total	278	460	837	760	2965	1784	4080	3004

**5.5.2.2. Distribution of SBAs over time (2013-17): nurses and doctors are increasing, leaving midwives behind**

In the previous section we looked at a static position on distribution. It is important to examine the dynamic situation to establish whether the situation is getting better or worse. The following charts are derived from the 2013-17 data series. The overall

picture in Ituri province is that all cadres are increasing, though only very minimally for midwives (See Figure 12).

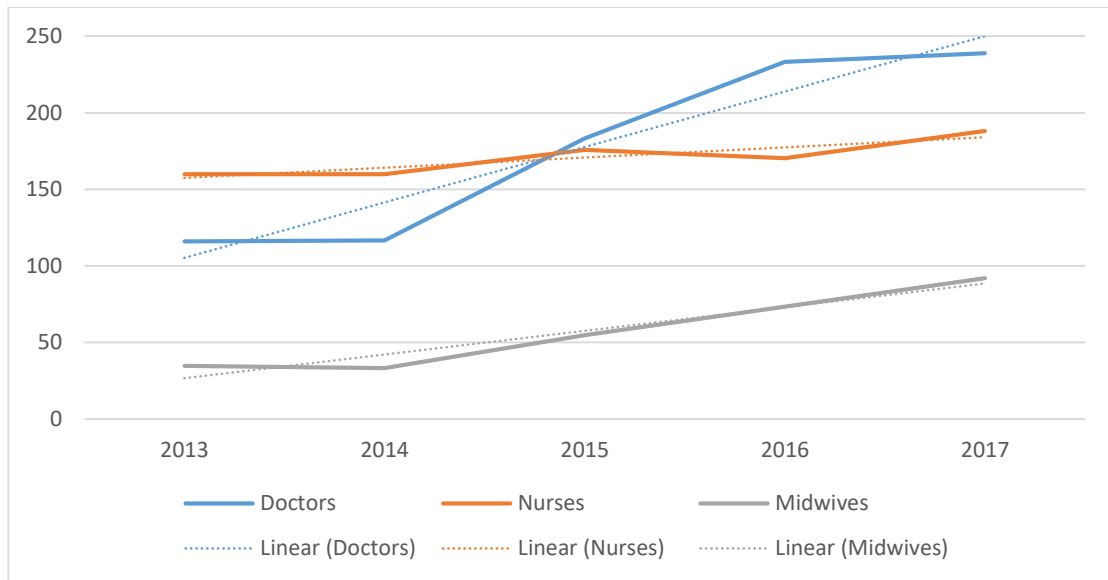
Figure 12: Percentage of SBA posts filled in Ituri Province from 2013 to 2017



**5.5.2.3. Distribution of SBAs across the categories of districts: filled posts are lowest in rural districts**

In Bunia, the only urban health district, the increase for midwives from 2014 to 2017 has been quite steep (from 25 to 69 making an increase of 176%) – see Figure 13. The increase for nurses has been more modest (17.6%), though there was already more nurses compared to the number of authorised posts (160%) in 2013. The number of authorised posts for doctors in Bunia has remained at 18 since 2013 but the actual number of filled posts has risen from 21 to 43 (104.8% increase) since then.

Figure 13: Percentage of SBA posts filled in urban district from 2013 to 2017



Filled posts for doctors and nurses rose slightly in the 7 peri-urban districts (see Figure 14) and in 28 rural districts (see Figure 15). The number of authorised posts for doctors also rose by 14.5% from 131 in 2013 to 150 in 2017, while the percentage of filled posts rose from 66.4% to 91.3% in the same period. The contrast, however, is with midwives. The serious shortfall reported above in these districts appears to be part of a slight downward trend from 69 posts filled in 2013 to 67 posts filled in 2017 in peri-urban health districts and from 147 posts filled in 2013 to 75 posts filled in rural health districts, though there was a peak of 94 in peri-urban and 197 in rural health districts in 2016.

Figure 14: Percentage of SBA posts filled in peri-urban districts from 2013 to 2017

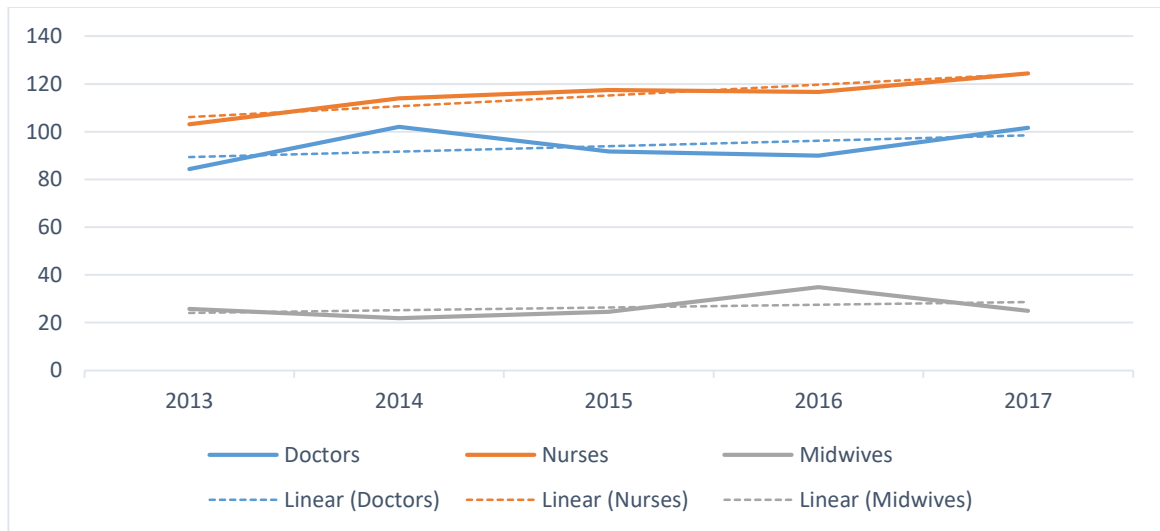
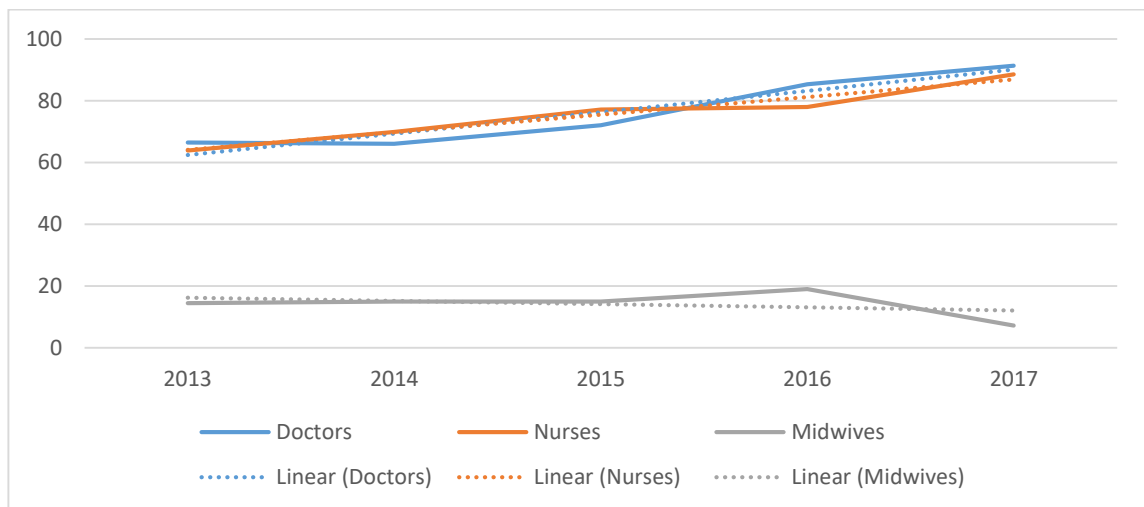


Figure 15: percentage of SBA posts filled in rural districts from 2013 to 2017



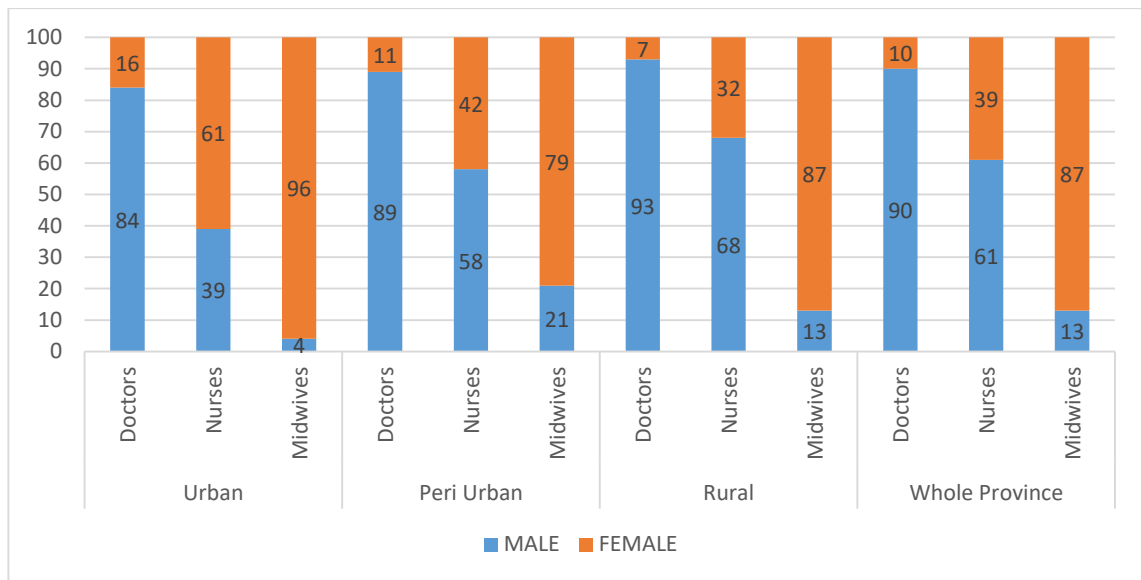
#### 5.4.2.4 Distribution of SBAs in 2017 by gender

More male doctors and nurses

Another dimension of distribution of health workers is gender, with female health workers less likely to work in rural areas as described in some countries affected by conflict (Safi, Naeem et al. 2018). The routine data allowed for an analysis of the three cadres by gender and location (see Figure 16). In all three categories of district, there are more male doctors and female midwives. The picture for nurses is more complicated.

Despite 61% of nurses being male in the province (See Figure 16.), a situation different from other countries, where most nurses are female (Zurn, Dal Poz et al. 2004), less than 1/3 of nurses in rural health districts are female, while in the urban health district they make up 61% of nurses. As you move from urban to peri-urban and rural districts, the proportion of female nurses reduces.

Figure 16: Ituri SBA cadres disaggregated by district categories and gender (percentage)



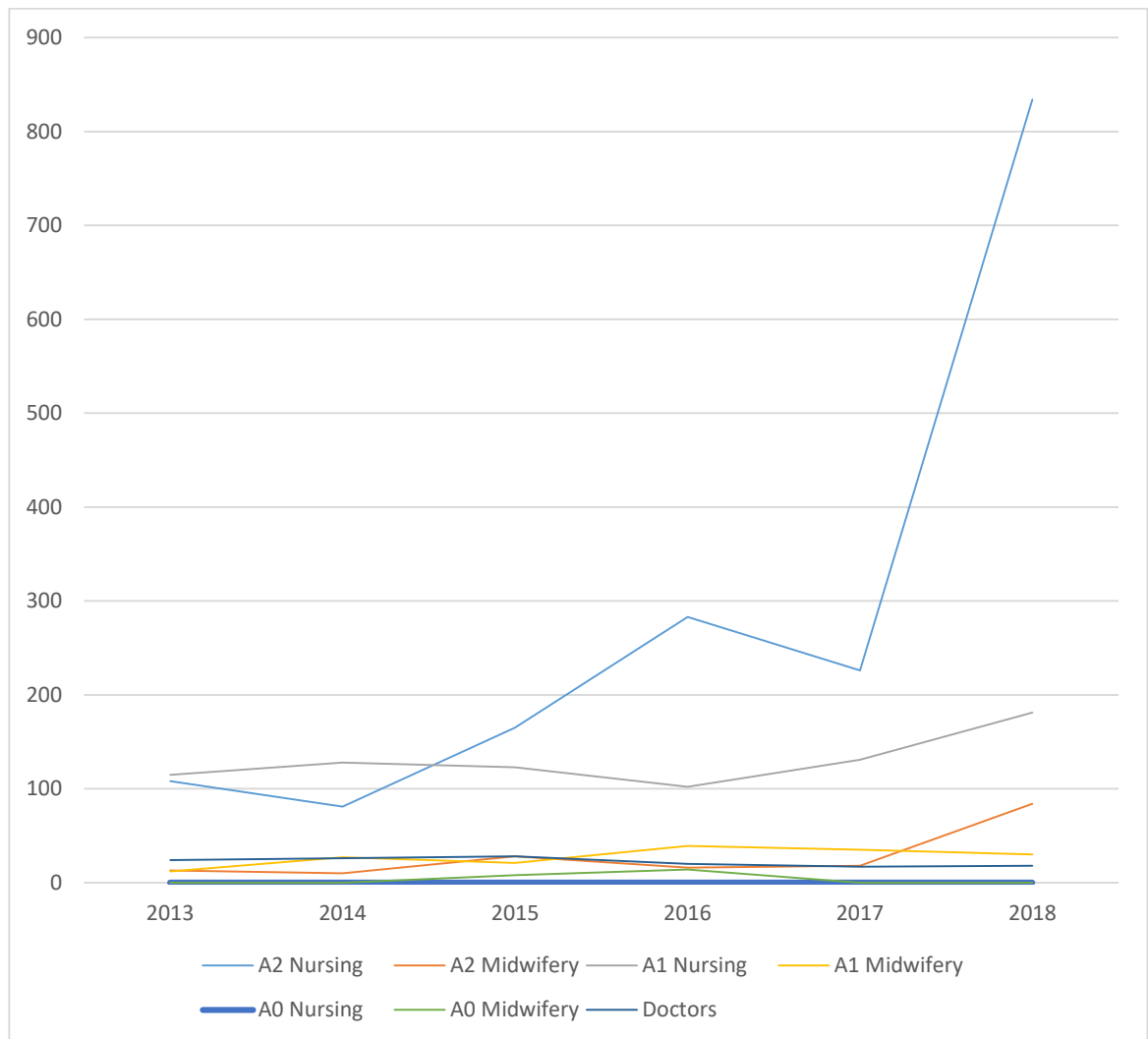
### 5.5.3. Potential supply of SBAs in Ituri

While the production of A2 nurses, A1 nurses and A2 midwives in Ituri Province shows an increase in 2018, that of A1 midwives, A0 nurses, A0 midwives and doctors remains almost static (See Figure 17).

Working from the available data, which does not include how many graduates trained in Ituri enter service in the province, we can only make crude observations. Assuming no attrition from the pool of graduates to employment nor from the existing stock of health workers, we can estimate the impact of the training output from 2018. The number of doctors would increase by 17 increasing the surplus (versus authorised posts) to 107.5% and the number of nurses would increase by 1,015 increasing the surplus (versus authorised posts) to a massive 144.5%. In contrast, the additional 114 midwifery

graduates would only reduce the shortfall of posts filled from 84.7% to 76.5%. It would require the same training output for another three years, assuming no attrition from training or the existing stock of midwives to fill the full number of authorised positions.

Figure 17: Graduates from nursing schools, colleges and the faculty of medicine 2013 to 2018



## **5.6. Discussion**

This situation analysis was based on data from Ituri Provincial Health Division in North-eastern DRC to understand how data can be used to support evidence informed decisions about nurses and midwives in fragile contexts. This study reveals that the national ratio of doctors, nurses and midwives per 1000 population is 4 times less than the Sustainable Development Goals threshold (4.45) while the Ituri Province ratio, is one of the lowest in DRC at half of the national and hence 8 times less than the SDG threshold. The shortages of midwives are the most extreme, especially in peri-urban and rural districts. While the number of doctors and nurses has increased in all three district categories from 2013 to 2017, the number of midwives has decreased in peri-urban and rural districts. There are more male doctors and nurses, and more female midwives in the whole province; and this trend applies for doctors and midwives in all three district categories, but there are more female nurses in the urban district (61%). The supply of nurses (A2 and A1) and midwives (A2) is increasing, whilst the production of doctors, A1 midwives and A0 midwives remains static.

### **5.6.1. The need for data to understand the situation**

When trying to address staffing problems you need data as this will inform appropriate strategy development. Sometimes, and especially in FCAS, good data is difficult to get (Roome, Raven et al. 2014) , because of damage to ministries and health facility infrastructure, and challenges in collecting this data. However, you have to start with what data is available. In this study, the HRH unit managers took initiative to get further years of data which supported our trend analysis. Without data on recruitment and retention, we were not able to fully understand the workforce dynamics. Further data is needed to better understand the HR situation in the province. We recommend some improvements on data collection, as suggested in the WHO minimum data set for health workforce registry, including estimation of workforce needs, pre-service and in-service training, information about exit e.g. retirement, death, transfer, resignation, turnover (World Health Organization 2015b)

### **5.6.2. The mismatch in supply and demand of doctors, nurses and midwives**

Even though the filled posts rates for doctors and nurses are beyond 100% at the provincial level, nursing schools and colleges, and the faculty of medicine continue to produce more nurses and doctors every year. Overproduction of doctors and nurses is a challenge throughout DRC (Longombe 2009; Fujita, Zwi et al. 2011; Ministère de Santé Publique RD Congo 2016a). For instance, in 2013, 94% of students admitted to nursing schools in DRC followed nursing courses, and only 6% followed other courses, including midwifery, laboratory, pharmacy, hygiene and sanitation) (Ministère de Santé Publique RD Congo 2016a). There are 406 nursing schools registered in DRC, yet only 16 provide midwifery courses (Ministère de Santé Publique RD Congo 2016a) contributing to the shortage of this cadre. The number of graduating doctors has tripled from 2004 to 2015 (from 6000 to more than 18000) (Ministère de Santé Publique RD Congo 2016a). The number of nursing schools and universities providing medical training has increased without regulation, which has implications for the quality of training (Ministère de la Santé Publique RD Congo 2010; Fujita, Zwi et al. 2011; Ministère de Santé Publique RD Congo 2016a). This situation in the education sector (see Figure 1) has contributed to the oversupply of nurses and doctors and the shortages of midwives in Ituri province. Having established this situation from the routine data, it is now necessary to go beyond the numbers to get an in-depth understanding of why only few institutions provide midwifery courses and the reasons students select nursing rather than midwifery.

### **5.6.3. Causes of shortage of midwives**

The shortages of midwives are the most extreme, especially in peri-urban and rural districts. Further investigation is needed on the causes of shortages of midwives. A recent study on the lived experiences of midwives in Ituri Province showed that they face multiple challenges in their daily work including poor working conditions due to lack of equipment, supplies and professional support, which is made worse by the insecurity caused by militia operating in some rural districts (Baba, Theobald et al. 2020b). In DRC, only a third of health workers receive salary from the government and half receive their risk allowances (Bertone, Lurton et al. 2016; Ministère de Santé Publique RD Congo



2016a). In addition, salary is only a small proportion of the total remuneration of government health workers. The highest proportion comes from the share of user fees which are higher in urban areas (Bertone, Lurton et al. 2016). Allowances that are targeted to health workers in rural facilities can help attract and retain health workers in rural areas by compensating for the lower earnings from user fees in rural areas (Kwamie, Asiamah et al. 2017). Other studies have found that midwives in rural areas in Sub-Saharan countries face challenges of long working hours as there are few staff in facilities, safety issues as staying overnight in facilities, poor access to in-service training and few opportunities for career progression (Lori, Moyer et al. 2018). Stress and burnout are common amongst rural midwives exacerbated by work overload due to understaffing, inadequate supply of drugs and supplies, insufficient protection from infections, and poor remuneration (Muliira and Ssendikadiwa 2016). These conditions are likely to lead to high levels of attrition, but may also deter school leavers to enrol in midwifery training and prefer training for nurses. The destination of the midwives who leave is unknown, but since the private sector is known to pay well and has better working conditions, they may be joining private-for-profit facilities. In addition, most private-for-profit facilities are located in urban areas or at the centre of peri-urban areas which midwives may find more desirable locations to serve.

#### **5.6.4. Gender norms and security concerns shape HR distribution**

Across all 3 geographical contexts there is clear gender and occupational segregation: doctors and nurses are more likely to be male; whereas midwives are more likely to be female. There are slight differences between districts; in the rural and peri-urban areas there are slightly more male nurses which probably reflects security concerns in these contexts, as described elsewhere (Safi, Naeem et al. 2018). These gendered patterns reflect those elsewhere – more male doctors, more female midwives (Roy, Holmes et al. 2011; Xu, Wuliji et al. 2019). The exception in this context is the prevalence of male nurses. In the DRC, nursing arguably has greater career prospects – nurses can apply for a range of different jobs. Midwifery is also seen as a demanding and elastic role: midwives are expected to remain with women in labour until they deliver, which often

means staying with them through the night. Men too can be put off applying for midwifery which is constructed as a feminized role (“Sage femme”, “Accoucheuse”) and male midwives may be rejected within rural communities as observed in some countries such as South Sudan, Mali, Afghanistan, Ghana (Safi, Naeem et al. 2018)

#### **5.6.5. Deployment processes: More doctors and nurses in urban and peri-urban districts**

The implication of having more nurses and doctors compared to the authorised posts in peri-urban and urban areas is that the deployment systems (initial posting and transfers) are not working properly. Some doctors and nurses appear to be able to select where they work, despite the need for posts to be filled in other areas. This is not unique to DRC, but is happening in many other settings within Sub-Saharan Africa (Abimbola, Olanipekun et al. 2017; Kwamie, Asiamah et al. 2017). The Provincial Health Office can review the human resource policies on deployment and the implementation of the policies to identify what actions could be taken to achieve more equitable staffing.

#### **5.6.6. Implications of shortages of midwives and maldistribution**

The extreme shortage of midwives shown in this study, particularly in the rural areas, suggests that other cadres such as the nurses, doctors (where available) and traditional birth attendants, are providing maternal and newborn health care services in the facilities. Nurses receive limited training on midwifery during their pre-service nursing course and may not receive specific supervision and support on their midwifery work (Hatem, Halabi-Nassif et al. 2018; Baba, Theobald et al. 2020). They are often busy with other work in the facilities such as diagnosis and treatment of illnesses and can spend less time on the midwifery role. This is also the case for doctors. Traditional birth attendants can only take on certain tasks such as assisting trained staff at delivery, health education and supporting women to breastfeed and care for the baby, and need support and supervision from trained staff to carry out these roles. All of these factors have implications for the quality of care that women and babies receive.

It is clear from the analysis of training outputs, that it will take a long time to train enough midwives to fill the gaps in facilities across the province. The question to consider is whether to formally shift midwifery tasks to nurses, especially as there are more nurses compared to the authorised posts. This would require additional midwifery training during the pre-service courses, and for those already in post, regular in-service training and high quality supervision.

#### **5.6.7. Strengths and limitations**

This is the first study to capture the situation of numbers and distribution of SBA cadres in a DRC province. This analysis can help develop appropriate strategies at different levels of the health system to address the HRH challenges in the Province. In many conflict-affected settings, data is often missing and incomplete, so creative ways to gather this data are needed. As explained in section 2.7.1 the provinces were not established until 2015, therefore the data for 2013 and 2014 was not available in the Provincial Health Division HRH database, so the provincial HRH analyst showed resourcefulness in collecting data directly from the districts.

The lack of data on recruitment and attrition in the provincial health division database is another limitation, as this data could be used to better understand the workforce dynamics. However, if the Provincial Health Division can now see the importance of this data, this will help their workforce planning in the future.

#### **5.7. Conclusion**

This is the first study to use existing human resource data to analyse the numbers and distribution of SBA cadres in a DRC province. This has provided insight into the mismatch of supply and demand of midwives, nurses and doctors, and has highlighted the extreme shortage of midwives throughout the province. This is the first step and further investigations are needed to better understand the situation and to be able to develop evidence informed strategies to ensure a more equitable distribution of SBAs throughout this province and other settings. However, based on this study, we suggest two options for consideration. First, the government should consider providing a rural

placement allowance for SBA cadres to improve attraction to and retention in rural areas. Second, provision of additional training and supervision for nurses in rural areas to undertake midwifery tasks. Without ways to get more SBAs in rural areas, Ituri Province and more generally the DRC will continue to struggle to reduce maternal mortality.

#### *Declarations*

#### *Ethics approval and consent to participate*

Ethics approval for this study was granted by the Liverpool School of Tropical Medicine (Research protocol 17-024) and the Multidisciplinary Research Centre for Development in Bunia, DRC (018/2017).

#### *Consent for publication*

No applicable.

#### *Availability of data and materials*

The datasets generated and analyzed during the current study are not publicly available as they are kept in the provincial health division office and schools training health professionals. As for the collected data, they are available from the corresponding author on reasonable request.

#### *Competing interests*

None declared

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#### *Authors' contributions*

AB, ST, TM, PS, JR conceived the study and developed the proposal. AB collected and analyzed the data. AB drafted the manuscript. TM, ST, PS, JR contributed to the

interpretation of the results and provided critical comments on early drafts of the manuscript. All authors approved the final submitted version.

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## Chapter 6: Results: Life history and FDGs

### 6.1. Chapter overview

Within this chapter I draw on life histories with current and ex-midwives, supported by FDGs with midwives, to contribute to answering objective 2: *to explore midwives' work experiences and challenges through time from initial professional choice to future career aspiration in rural Ituri Province, north-eastern DRC*. I have begun by looking at the roles played by midwives in DRC in relation to maternal health services. Subsequently, the results are presented thematically, covering the journey of midwives, the challenges relating to the work of a midwife and the coping strategies that are developed by midwives to overcome these challenges. Finally, the discussion focusses upon the aspirations versus the realities of working as a midwife; the characteristics of a rural midwife in Ituri and the issue of supporting midwives. This chapter is published by *Rural Remote Health Journal* (Baba, Theobald et al. 2020a)

My role in this paper was the conceptualisation of the study, with the support of my supervisors, and the development of the proposal. Then, I collected and analysed data, with support from the research assistants. I drafted the manuscript, before sharing it with the supervisors for their critical comments. My supervisors contributed to the interpretation of the results and provided critical comments on early drafts of the manuscript.

**“Being a midwife is being prepared to help women in very difficult conditions”:  
midwives’ experiences of working in the rural and fragile settings of Ituri Province,  
Democratic Republic of Congo**

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## 6.2. Abstract

**Introduction:** Maternal and neonatal health is a core focus area in fragile and conflict-affected states and midwives are key actors. But there is currently very little evidence on midwives' experiences, the challenges that they face and coping strategies they employ in the challenging and fragile rural areas of Ituri region in the North-Eastern Democratic Republic of Congo. This understanding is critical to developing strategies to attract, retain and support midwives to provide vital services to women and their families. This study aims to explore midwives' work experiences and challenges through time from initial professional choice to future career aspiration in rural Ituri Province, North-eastern DRC.

**Methods:** A qualitative approach using life history interviews with 26 midwives and 6 ex-midwives, and 3 focus group discussions with 22 midwives in 3 health districts of Ituri Province (Bunia, Aru and Adja) was conducted in 2017. Purposive sampling was used to recruit research participants. The transcripts were digitally recorded, and thematically analyzed using NVivo. A lifeline framework was deployed in the analytical process.

**Results:** Problem solving, child aspirations and role models were the main reasons for both midwives and ex-midwives to join midwifery. Midwives followed a range of midwifery training courses resulting in different levels and training experiences of midwives. Midwives face many work challenges: serious shortage of qualified health workers; poor working conditions due to lack of equipment, supplies and professional support; and no salary from the government. This situation is worsened by insecurity caused by militia operating in some rural health districts. Midwives in those settings have developed coping strategies such as generating income and food from farm work, lobbying local organizations for supplies and training traditional birth attendants to work in facilities. Despite these conditions, most midwives want to continue working as midwives or follow further midwifery studies. Family related reasons were the main reasons for most ex-midwives to leave the profession.



**Conclusion:** Midwives play a critical role in supporting women to deliver babies safely in rural Ituri province. They face immense challenges and demonstrate bravery and resilience as they navigate the interface position between under-resourced health systems and poor marginalized rural communities. This situation requires a call to action: donors need to prioritize these contexts; and the government and other stakeholders in DRC need to invest more in improving security conditions as well as working conditions and professional support for midwives in rural Ituri Province. Only then will midwives be able to provide the critical services that women and their families need, and therefore contribute to achieving Universal Health Coverage.

*Keywords:* Midwife, rural and fragile, experiences, challenges, Ituri Province, Democratic Republic of Congo.

### **6.3. Introduction**

Maternal and neonatal health is a core focus area in fragile and conflict-affected states (Miyake, Speakman et al. 2017). More than 30% of maternal deaths worldwide occur in fragile and conflict-affected states and more than half of these deaths occur in three countries – Nigeria, Democratic Republic of Congo (Management Sciences for Health and Ministry of Health - DRC 2018) and Afghanistan (Keith and Cadge 2010). Apart from having disparities in rates of maternal death between countries, there are also large disparities within countries and between women living in rural and urban areas (World Health Organization 2016b).

DRC has one of the highest maternal mortality ratios in the east and central African regions, 846 maternal deaths per 100,000 live births, with huge disparities within the country; in some rural areas the rate is more than 1000 maternal deaths per 100,000 live births (Banque Mondiale 2005, Ministère de Santé Publique RD Congo 2016a). The proportion of deliveries occurring outside health facilities is estimated to be 20% (Ministere du Plan, Ministère de la Santé Publique et al. 2014)

DRC has a long history of conflict and crisis. Ituri Province (the study setting) is mostly rural and is going through sustained socio-political crises and wars. From 1999 to 2003,

Ituri experienced ethnic clashes resulting in the deaths of approximately 60,000 people with displacement of hundreds of thousands of people and severe destruction of infrastructure. In December 2017, a new ethnic clash started in Djugu Territory, causing over 60 deaths, more than 100,000 displaced people, thousands of buildings burnt including health facilities and schools, and disruption of harvest resulting in severe food insecurity (Relief web 2018a; Sweeney 2018). More recently, over the last year an Ebola outbreak has spread across DRC including Ituri Province. Violence and civil unrest have hampered efforts to contain the disease.

Decades of political instability and wars since the early 1990s have resulted in the health system in DRC being severely underfunded. User fees are the main source of financing service delivery. There is a severe shortage of qualified skilled birth attendants (SBAs) with only 1.05 physicians, nurses and midwives per 1000 population in 2012, compared to the Sustainable Development Goals index threshold of 4.45 per 1000 population (World Health Organization 2016b; World Health Organisation 2016c). The shortage of midwives is particularly striking - 0.06 midwives per 1000 population in 2015 (Ministère de la Santé Publique RD Congo 2016b), and especially in rural areas (Durham, Pavignani et al. 2015; Ministère de Santé Publique RD Congo 2016a; Ministère de la Santé Publique RD Congo 2016b; World Health Organization 2016d, Amuda 2018). As a consequence, there is low uptake of health services, including maternal health services (Pavignani, Michael et al. 2013; Bertone, Lurton et al. 2016; Ministère de Santé Publique RD Congo 2016a).

Midwives in DRC play a critical role in providing maternal health services: they are a bridge between the health system and community members in fragile, rural and underserved communities (Management Sciences for Health and Ministry of Health - DRC 2018). In DRC, midwives are deployed in different levels of care settings, from health centres to regional referral hospitals. Nurses are also considered skilled birth attendants in DRC. Their curriculum includes modules on midwifery allowing them to manage pregnancy and delivery (Ministère de la Santé Publique RD Congo 2016b; Hatem, Halabi-Nassif et al. 2018). However, there is very little evidence about midwives' experiences

working in this rural and fragile setting. Understanding what motivates midwives to train, stay in their roles or move to other employment, as well as the challenges they experience and the coping mechanisms that they use is essential in order to develop strategies to better support midwives so that they can continue to provide vital services, and at the same time attract midwives to work in these areas. This paper explores the experiences of current and ex-midwives of their work through time, from initial choice of midwifery to future career aspiration in rural Ituri Province, North-eastern DRC.

## **6.4. Methods**

### **6.4.1. Design**

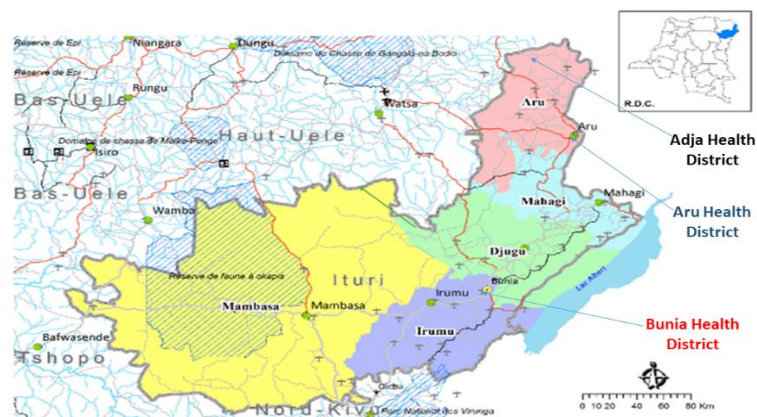
The qualitative research design was used as it enables exploration about experience, meaning and perspective, from participants experiencing a phenomenon (Hammarberg, Kirkman et al. 2016); in this case midwives' experiences and perceptions of their careers. We used two qualitative methods. Life history interviews (LH) enabled midwives and ex-midwives to provide a detailed and chronological personal account using their own words of their life and career over time, from childhood up to the current day (Ssali and Theobald 2016, Witter, Namakula et al. 2017). Focus group discussions (FGD) brought midwives together which supported group discussion of the challenges they face and coping strategies they have adopted (Finch and Lewis 2003).

### **6.4.2. Setting**

The research was carried out in Ituri, one of the 26 provinces of DRC, which is a large province located in North-eastern DRC with a population of 5,440,021 inhabitants (Division Provinciale de la Santé Ituri 2016). It is far (approximately 1700 km) from Kinshasa - the capital of DRC. Ituri is made up of 5 administrative territories and 36 health districts (Division Provinciale de la Santé Ituri 2016). Ituri province faces challenges in attracting and retaining midwives in rural districts, and has a very high maternal mortality ratio far beyond the national average of 846/100,000 (Matungulu, Kandolo et al. 2015; Division Provinciale de la Santé Ituri 2016). Within this province, three study districts were selected by the research team, in collaboration with the Provincial Health

Division, based on rural and urban characteristics as this provides a range of perceptions and experiences of midwives. We used the Provincial Health Division’s categorization of districts (Division Provinciale de la Santé Ituri 2016) to select the three districts: the urban district, where the Provincial capital is found (Bureau Central de la Zone de Sante de Bunia); a peri-urban district, where there is a concentration of people, with some facilities in remote areas (Aru); and a rural district, where all facilities are in rural and remote areas (Bureau Central de la Zone de Sante d'Adja) (See Figure 18). In addition IPASC (Pan African Institute of Community Health), a faith based organization where some of the authors work, organizes community health related interventions in the 3 health districts, and therefore we already understand the context and have relationships with the district health management, which facilitated access to these areas.

Figure 18: Ituri Province Map with the location of the three study districts



Source: Cellule d'Analyse et des Indicateurs de Développement RD Congo (Cellule d'Analyse des Indicateurs de Développement 2018)

#### 6.4.3. Recruitment and participants

Purposive sampling was used to recruit midwives in each of the two districts, Bunia and Aru. The purposive sampling technique is the deliberate choice of participants on the basis of features or characteristics that will enable a detailed understanding of the topic. The researcher sets out to find people who can and are willing to provide the information

by virtue of knowledge or experience (Bernard 2002; Etikan, Musa et al. 2016). Participants were selected using these criteria: sex (male and female), working or having worked in rural Ituri province, place of work (health centres and hospitals) and current or previous employment as a midwife. Both midwives and ex-midwives were included in the LHs. The district health offices hold a list of the midwives working in the facilities in their district. The research team (AB, AP, MMN) visited facilities where they worked and identified potential participants using the criteria described above, and recruited them to the study. In Bunia and Aru, 10 midwives were recruited to the study. In rural Adja district, there are only six qualified midwives working and all were recruited. The snowball technique for sampling ex-midwives was used: the research team asked the midwives to identify ex-midwives in that area, and then the research team asked the ex-midwives to identify other ex-midwives. There were 6 ex-midwives recruited to the study. In Adja district, there were no ex-midwives, probably due to their migration from Adja to another district for employment. Current midwives who were selected for the life histories as described above, were invited to participate in the FGDs. In Adja, all 6 midwives participated, whereas in Aru and Bunia districts, only 8 in each district were available for the FGDs. Study participants are described in Table 20.

Table 20: Characteristics of research participants

Districts	Midwives								Midwives (in Focus Group Discussions)						Ex-midwives (in life histories)		
	Total	Gender		Age (years)			Sector of work		Total	Gender		Age (years)			Age (years)		
		M	F	20-29	30-39	40+	Public facility	Faith Based facility		M	F	20-29	30-39	40+	20-29	30-39	40+
Adja	6	0	6	5	0	1	4	2	6	0	6	5	0	1	0	0	0
Aru	10	0	10	0	5	5	5	5	8	0	8	0	4	4	0	1	2
Bunia	10	4	6	1	6	3	4	6	8	2	6	1	5	2	0	0	3
Total	26	4	22	6	11	9	13	13	22	2	20	6	9	7	0	1	5

#### **6.4.4. Data collection**

Prior to data collection, two research assistants (male and female) were trained about the study. Data collection took place from January to May 2018. The topic guides were developed by the research team following a review of the literature on attraction and retention of midwives in rural areas. The LH topic guide covered: how and why they became midwife, description of their career path, their work experiences, career aspirations, and reasons for leaving (for ex-midwives). They were translated into French, being the language used in administration in DRC. LHs with midwives (n=26) and ex-midwives (n=6) were conducted by the research assistants (MMN, AP) and lead author (AB) in a place chosen by participants such as their homes or a private room in their workplaces.

Three FGDs were conducted, one in each district, respectively with 8, 8 and 6 participants. AB conducted the FGDs in private rooms in the district health offices or IPASC office. A topic guide was used to facilitate the discussion, which focused on the challenges that they faced working as midwives, strategies that supported their work, and possible solutions to these challenges. The research assistants were observers, responsible for recording and taking notes.

At the end of each FGD and LH, emerging themes were highlighted by the researcher and crosschecked with participants for accuracy. The recordings of the LHs and FGDs were kept in a password-protected computer, transcribed verbatim, translated into English by an external translator from the Teaching College of Bunia and crosschecked by another external translator.

#### **6.4.5. Data analysis**

Data were analysed using the thematic framework approach which facilitates rigorous and transparent analysis (Ritchie, Spencer et al. 2003). It uses both deductive and inductive approaches (Ritchie, Spencer et al. 2003; Fereday and Muir-Cochrane 2006; Gale, Heath et al. 2013). A coding framework was developed based on the areas explored in the LHs and FGDs, but also on themes emerging from the data such as insecurity in

rural areas. This coding framework was applied to all transcripts, charts were developed for each theme, and these charts were used to describe the themes. NVIVO 11 was used to support the analysis.

#### **6.4.6. Ethics approval**

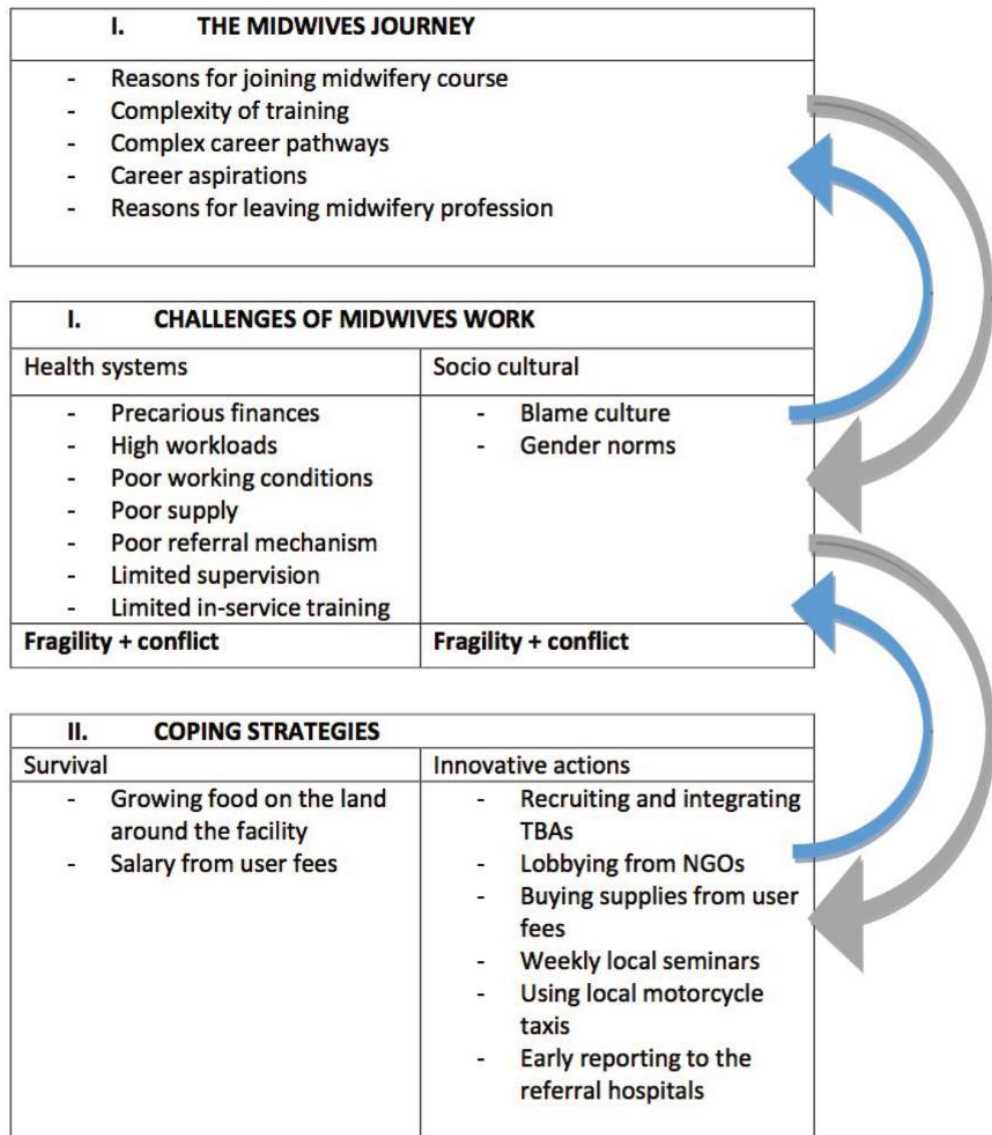
Ethics approval for this study was granted by the Liverpool School of Tropical Medicine (Research protocol 17-024) and the Multidisciplinary Research Centre for Development (Centre de Recherche Multidisciplinaire pour le Développement: CRMD) (018/2017). A rigorous informed consent process was followed: all participants were given verbal and detailed written information about the nature and purpose of the research before taking part; participants were made aware of their right to decline answering questions and were assured that measures are in place to anonymise responses. All participants gave written consent. All data were anonymized.

### **6.5. Results**

The results are presented in three interlinked sections as described in Figure 19. The first section describes the journeys that midwives and ex-midwives make from childhood to the present day, using the narratives from the LHs. The second section presents the key challenges of their work and how these have been exacerbated by conflict and instability, using data from the FGDs and LHs. These challenges affect their journey as midwives. To cope with these challenges, midwives have adopted a range of strategies which are reported in the third section. Despite these strategies, some of these challenges remain.



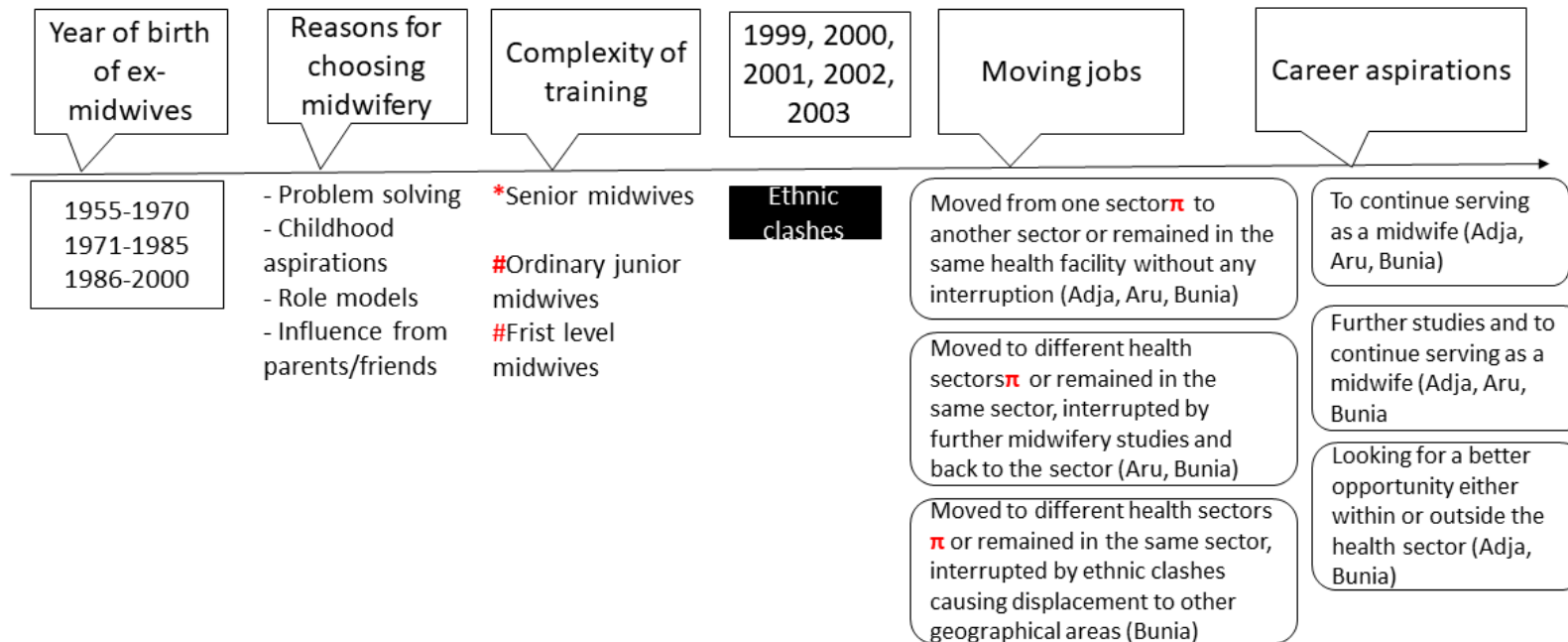
Figure 19: Results outline



### **6.5.1. The midwives' journey**

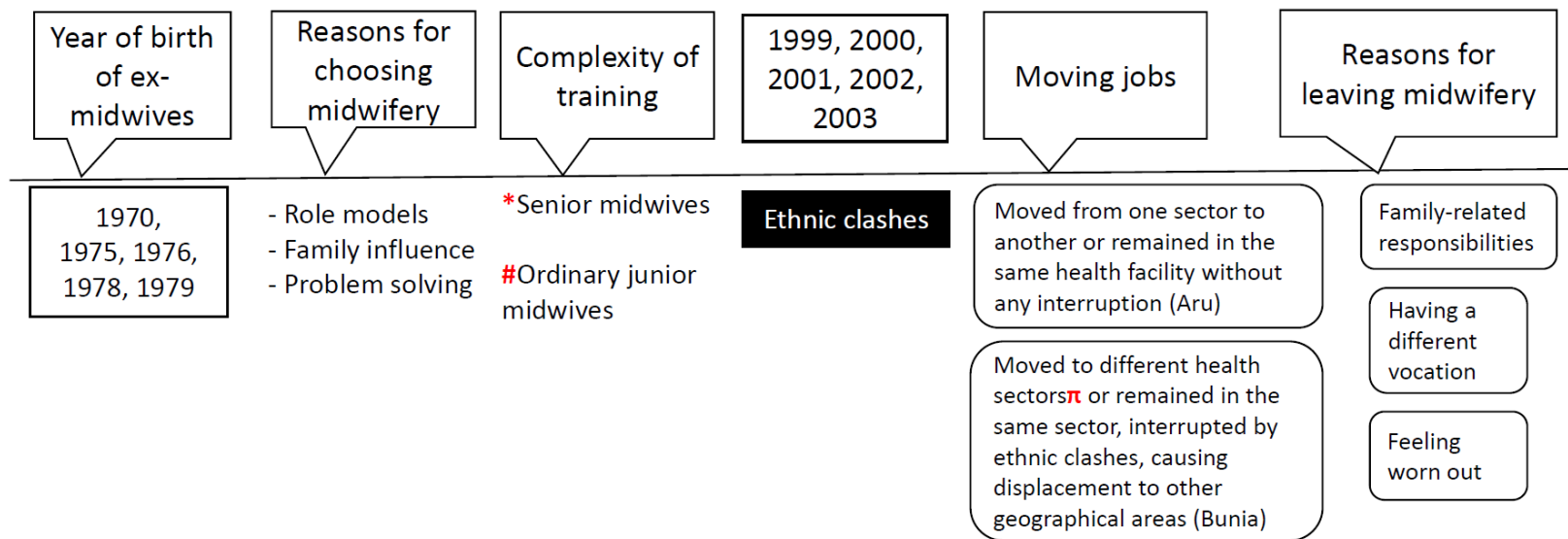
Reasons for joining midwifery, midwifery training, job progression, career aspirations and reasons for leaving midwifery were explored in LHs with midwives and ex-midwives. The lifeline for midwives is summarized in Figures 20 and 21.

Figure 20: Summary lifeline from life histories with working midwives



\*Senior midwives: Studied midwifery in colleges, 3 years (A1) or 5 years (A0), after either 12 years of school or 10 years of school + 4 years of midwifery in nursing school  
 # Junior midwives: Studied midwifery in nursing school, 2 years (A3) (First level junior) or 4 years (Ordinary junior), after either 10 years of school or 12 years of school. The A3 programme no longer exists.  
 $\pi$ Health sectors: Public health facilities, church health facilities, private health facilities, NGOs  
 Data are presented in order of most commonly cited to less commonly cited

Figure 21: Summary lifeline from life histories with ex-midwives



\*Senior midwives: Studied midwifery in colleges, 3 years (A1) or 5 years (A0), after either 12 years of school or 10 years of school + 4 years of midwifery in nursing school

# Junior midwives: Studied midwifery in nursing school, 2 years (A3) (First level junior) or 4 years (Ordinary junior), after either 10 years of school or 12 years of school. The A3 programme never exists.

πHealth sectors: Public health facilities, church health facilities, private health facilities, NGOs

Data are presented in order of most commonly cited to less commonly cited

**Reasons for joining midwifery:** Midwives from Aru and Bunia districts mainly joined midwifery as they wanted to support women and solve health problems. However, those from rural Adja district said they joined because the midwifery profession had always been their aspiration since childhood: they wanted to be able to wear the uniform and help pregnant women during their pregnancy and delivery. They were motivated by practicing midwives who they saw as role models.

*I became a midwife because it has always been in my mind since my childhood (A female midwife, 20-29, LH, Adja).*

Many of the female midwives from the three districts described a role model as being the key motivating factor for becoming a midwife. The male midwives from Bunia district joined midwifery to be able to solve problems.

*My aunt was a midwife, and seeing the way she was working and considered by women in the community, I was inspired and told her that I would like to become a midwife when I grow up (A female midwife, +40 years, LH, Bunia)*

Some female midwives joined midwifery due to personal experiences they went through, such as losing a baby:

*When I completed my secondary school, I decided to have a child, so I got pregnant and I had a child. Unfortunately, after 9 months the baby died. So, I decided to find the answer to that problem, and I needed to know myself as well. (A female midwife, +40 years, LH, Aru).*

Parents and friends influenced some male and female midwives from Bunia district and ex-midwives from both Aru and Bunia districts to choose midwifery as a career.

*...it was with the influence of friends that I had left the teaching, there were friends who came and wanted me to go for health sciences training (A male midwife, 30-39 years, A1, LH, Bunia)*

**The complexity of midwifery training:** There is a range of midwifery training courses in DRC which have been adapted over the last decade, resulting in different levels and training experiences of midwives. There are 'first level junior midwives' (A3) (10 years of school + 2 years of midwifery), 'ordinary junior midwives' (10 years of school or 12 years of school + 4 years of midwifery in nursing school) (A2) and 'senior midwives' (junior midwifery + 3 or 5 years at college) (A1 or A0). The first level junior midwifery programme no longer exists.

While there were more senior midwives in the urban Bunia district, nearly all midwives in Aru and Adja districts were ordinary junior midwives. Two of the three nursing colleges (where midwifery training takes place) in Ituri province are located in Bunia, so Bunia midwives can more easily access the colleges. The college in Aru only opened in 2010.

*So, my parents sent me to Kisangani (A city which is 750km from Bunia) where I studied for 5 years, and completed my midwifery training in 2009. (Male midwife, 30-39 years, LH, Bunia)*

**Moving jobs:** Most midwives from rural Adja and semi-urban Aru districts either moved from different sectors e.g. from public facility to church facility or remained in the same facility for many years. Most midwives in Bunia district started working as midwives in their rural native districts. Conflict broke out in these areas during the period of 1999 and 2004, and their homes and health facilities were looted and burned. They made their own way to Bunia district where it was seen as being safer, and where they have remained to this day.

*... there was war around Jiba, this ethnic war in 1999, I had to leave Jiba (A male midwife, +40 years, LH, Bunia)*

Those midwives who were working in church facilities in the rural conflict affected areas were supported in their move to Bunia district by the Church Medical Coordination Office, as described by this midwife:

*I was affected at Drodro hospital (catholic health facility) where I worked for 3 years as a midwife. Then, the ethnic war started in 1999, we first fled to Bunia where I was transferred to work at Muzi Maria Health Centre (Catholic health facility) (A female midwife, +40 years, LH, Bunia).*

Some midwives from Aru district and many from Bunia district, who had been working as 'ordinary junior midwives' for several years went for further midwifery studies in nursing colleges in Bunia or Aru, and then rejoined the service. Ex-midwives from Aru and Bunia districts worked for 3 to 10 years in either the same facility or in health facilities belonging to different sectors. All ex-midwives in Bunia district originated from rural districts affected by ethnic clashes, which brought about their migration to Bunia district.

*...when I was in Mongbwalu, I worked at the Mongbwalu Referral Hospital... During the events Ituri went through (ethnic clashes), we had to leave Mongbwalu (80 km north of Bunia); we fled to Bunia, as displaced people, my husband and our two boys. (A female ex-midwife, +40 years, LH, Bunia).*

**Career aspirations of midwives:** Most midwives in all three districts would like to continue serving as midwives and provide vital services to their communities.

*My aspiration is to continue working as midwife and helping women in relation to their pregnancy and delivery and health (A male midwife, +40 years, LH, Bunia)*

Midwives reported that it is difficult to change profession as they get older:

*I am very old to have career aspirations. But, I will keep on working as a midwife until my last breath. (A female midwife, +40 years, A1, LH, Bunia)*

Most midwives in the three districts who would like to go for further studies and come back to serve as midwives are ordinary junior midwives and are less than 35 years of age. They reported that this both helps them service the people better and increases opportunities for promotion and being recruited to organizations where they provide better salary.

*I would like to continue with my studies at the college in midwifery and then come back to help women. (A female midwife, 20-29 years, LH, Adja)*

Some male midwives from Bunia district do not want to continue working as midwives and are looking for better opportunities outside the health sector.

*I would like to serve Congolese nation with all the qualities I have. And I think the best way to help this country and yourself, it seems that it is in politics. So I would like to stand as a member of parliament ... (A male midwife, 30-39 years, LH, Bunia)*

**Reasons for leaving midwifery profession:** Some midwives found it difficult to juggle caring for their children, family and sick relatives and work as a midwife and made the difficult decision to give up their work.

*Three years ago, my husband had a very serious stroke that unfortunately left him completely paralyzed. I have to be with him for most of my time, as he cannot help himself. I really have to take complete care of him; you know he is my husband.” (A female ex-midwife, 30-39 years, LH, Aru)*

Some midwives talked about the stress and workload as a midwife became too much and wanted to try a new job that was less demanding and allowed more time for themselves and their family. One midwife described how midwives gave up their jobs, as they were held responsible by the community for the death of a mother.

*...if a woman dies during delivery, then you will be in trouble with the whole community, as everyone in the village will be pointing at you that you are the person who killed their mother, their sister... (A female ex-midwife, 40+, LH, Bunia).*

*... some just leave because they feel that it is time they do something different, less stressful, and you have enough time for yourself and the family. (A female ex-midwife, +40 years, LH, Bunia).*



Insecurity in the area was another reason pushing some midwives to leave their profession in rural areas and to move to Bunia to start something different.

*I left Mungbwalu because of the war, ethnic clashes; otherwise I was happy working as a midwife. When I fled to Bunia with my family, I was working in a private clinic. I left there again because of the war, as bombs were falling over. Then, I started the business of working with NGOs, and I do not wish to work again as a midwife. (A female ex-midwife, 40+, LH, Bunia)*

### **6.5.2. The challenges of working as a midwife**

The midwives identified many health systems and socio-cultural challenges that they face in doing their work. These are problems related to an under resourced health system, but some are clearly exacerbated by fragility and conflict.

#### **6.5.2.1. Health systems challenges**

The midwives reported that there was a severe shortage of midwives; some facilities have one or two midwives, whereas other facilities have none. This created a huge workload for the existing staff, high levels of stress and exhaustion. This has been exacerbated by conflict, as midwives and other staff do not want to work in these areas and where possible move to safer places (see moving jobs section).

*You know in most of our health facilities, apart from the referral hospital where there are two midwives, there is either no midwife or just one....it is massive if you are the only qualified midwife. (A female midwife, FGD, Adja)*

All midwives reported precarious financial situations. They are supposed to receive a monthly salary (estimated at 55 – 80 US\$ per month) as well as a monthly risk allowance (20-50 US\$ per month). None received the salary, and only a few received the risk allowance, which they perceived as being inadequate. This is a key reason why most midwives as well as nurses do not wish to work in these settings.

*...the other challenge is about our financial incentives, we do not receive anything from the government, we are just paid from the income locally generated... (A female midwife, FGD, Adja)*

Midwives and ex-midwives from the three districts described working conditions in the government facilities to be very poor. Most facilities were struggling with basic supplies such as gloves and delivery kits, which exposes women and midwives to infections. There are also no reliable means of transport for pregnant women who need to be transferred to a referral hospital. The shortage of drugs and supplies as well as the referral challenges have been exacerbated by conflict. The midwives reported that the few supplies in the facilities are often looted by the militia. Travelling to and from the facility is fraught with danger as the militia patrol the roads and attack midwives, women and their families. They also reported feelings of helplessness when there are women with complications, as they struggle to manage complications because of lack of medicine, supplies and equipment, and are reluctant to refer them as the roads are so dangerous.

*Sometimes you work with torn gloves, if there are any surgical gloves, I was using it just in case (to protect oneself from infections). There was a problem of transfer of difficult cases, as you know our referral hospital was at Biringi - it's really a distance, and road conditions are not so good. (A female midwife, 40+, A1, LH, Aru)*

*... there were some pregnant women with obstructed labour, and they were to be transferred to the referral hospital, but they could not, as the area before reaching the referral hospital was already occupied by the other militia group. So, the midwife and the nurse who were there tried to help, but as they did not have enough equipment, they lost those women and their babies... (A female ex-midwife, 40+, LH, Bunia).*

In contrast, the faith-based health facilities were reported to be better equipped with staff, supplies and drugs, and midwives felt better supported. The Church Medical Coordination take an active role in supporting health workers in the church facilities.

*Where I have been working, there was not much challenge related to equipment and supports as they were catholic health facilities, and they were really well organized... (A female midwife, 40+, LH, Bunia)*

Midwives, mainly from the rural district, reported that they receive little in-service training and supervision which negatively affects their work. Most training is organized in the urban areas, and they cannot attend as they are asked to pay for their own transport which they cannot afford, and travel is risky given that the militia is patrolling the roads. The scheduled monthly supervision rarely happens, and when it does, it only includes the head nurse of the facility.

*...if there is organized training for midwives, or for capacity building or in-service training, most of it is limited in urban areas and midwives in rural districts are less well trained than midwives in urban areas. (A female midwife, 20-29, LH, Adja)*

Women are reluctant to disclose their pregnancy in the early stages, especially in Adja and Aru districts, as they believe the baby will die during pregnancy or birth, and so they access antenatal care services late in pregnancy. Women in labour often come to the health facility on their own as they do not want others to know that they are in labour, as they believe that this will cause complications and result in the death of the mother or baby. This is challenging for midwives who rely on the family to support the women during childbirth, and particularly if complications arise and referral is needed.

*... Because in our environment here, declaring oneself pregnant is not easy, it must first take time. (A female midwife, 40+, LH Aru)*

Midwives from rural and peri-urban health districts reported that they are held responsible by the local community when a woman dies during childbirth:

*... if a woman dies during delivery, then you will be in trouble with the whole community, as everyone in the village will be pointing at you that you are the person who killed their mother, their sister... (A female ex-midwife, 40+, LH, Bunia)*

Midwives from Bunia and Aru districts described the gender norms of male midwives not being accepted in rural communities (most male midwives work in urban areas), and married female midwives not being allowed to work due to family responsibilities. In addition to this, women are less likely to choose to work in conflict and unstable areas.

*...In a community like ours here, especially in remote and rural areas, having a male midwife in the health facility that means that women will not attend services, as they will feel that they do not respect them. (A female midwife, 30-39, FGD, Aru)*

### **6.5.3. Coping strategies used by midwives**

Despite these resource limitations and difficult conditions, midwives demonstrated agency by developing both survival and innovative strategies to address these challenges. This enabled midwives to continue playing key roles linking communities to health systems. For their survival, in order to look after their family and generate income, some midwives grow food on the land around the health facility. The local authorities allow midwives to use this land whilst they work at the facilities.

*We have got land around the health facility, and we cultivate and grow food, I have for instance a farm which is around 3km<sup>2</sup>. So, we live on the food we grow and sell some, and that money also helps (A female midwife, 40+, LH, Adja)*

As for salary, health facilities in all districts use a percentage of income generated from user fees to pay health workers. They also allow the service users to pay in kind if they have no money.

*...we do not receive anything from the government, we are just paid from the income locally generated, and what we receive does not really help us. (A female midwife, FGD, Adja)*

*Where people cultivate a lot, they bring food, and they estimate the value and nurses consider it. (A female midwife, 40+, LH, Aru)*

Midwives also developed Innovative strategies to address their challenges. To deal with the small number of midwives in rural health facilities in Aru and Adja, traditional birth attendants work in the health facilities. The TBAs play an important role in communities, as they attend nearly 50% of deliveries and are trusted by women and families. The head nurses with the district health officer, identify the TBAs working in their communities, train them in pregnancy, delivery and community awareness, and then integrate them into the health facilities to support the existing health workers. The TBAs escort women in labour into the facilities and assist the staff during labour, delivery and the postnatal period. The TBAs are paid from the income the facility generates from user fees.

*The head nurse, in partnership with the health centre committee, and the midwife organized a census where they identified different traditional birth attendants in their area, recruited them for a training on basic midwifery practices, and after they completed, they were integrated to support the midwife in the health centre maternity services (A female ex-midwife, 30-39, LH, Aru).*

To address the issue of limited equipment and supplies, midwives use the income generated from user fees and lobby local organizations or the district authorities to buy basic equipment and supplies. In addition, midwives ask pregnant women in the antenatal care clinic to bring basic supplies for delivery.

*... from the small amount they generate, they make for instance 15% for buying basic supplies such as gloves, and others, 40% for buying medicine, 40% for financial incentive to staff, "salary" and 5% for administration. (A female ex-midwife, 30-39, LH, Aru)*

*Some women bring their own basic elements, such as razors, and other simple supplies as we normally tell them during antenatal clinic (A female midwife, 30-39, LH, Aru).*

Concerning professional support, midwives, especially from Adja and Aru districts organize local weekly seminars where a topic is presented and discussed.

*...we used to have local sessions here at the health centre once a week where there was a talk on different subjects related to health, it was very good..." (A female midwife, 40+, LH, Aru).*

To deal with transport challenges, midwives and ex-midwives explained that they organize motorcycle taxis to take women with complications to the referral hospital. Relatives are responsible for paying the transport fee. Transport is particularly challenging in the rainy seasons when the roads become difficult to pass, and travel time becomes much longer. Midwives advise women who have signs that they may develop complications to go early to the referral hospital.

*... especially in rainy seasons... we just advised head nurses, once they identify risk factors, they had to organize themselves to transfer those women early enough, as the risk signs would be identified during antenatal care clinic... (A male midwife, 30-39, LH, Bunia).*

## **6.6. Discussion**

Data of this study were presented in two different ways. The first is through a chronological approach which makes sense of the life history approach deployed. This shows through time the aspirations to become a midwife (e.g. service to community, personal experience of losing a baby, vocation and family expectations/role models); the different experiences of midwives (and challenges were particularly pronounced for rural midwives as it is in these contexts where staff shortages are the most severe) and future aspirations. Second, the experiences of these critical frontline midwives who are working in extremely poorly resourced and under supported environments were looked in depth and as such arguably acting as an interface between poor rural/semi-urban and urban communities and the health system. Three areas will now be discussed: how do midwives' working experiences match their initial aspirations to become a midwife; midwives' resilience and coping mechanisms; and how to better support these critical health workers.

### **6.6.1. Aspirations versus realities of working as a midwife**

The aspiration to become a midwife revealed trends identified elsewhere: experiencing personally or witnessing tragic events around pregnancy and childbirth (Moores, Catling et al. 2015); midwife role models (Pilkenton 2008), caring roles, childhood aspirations and family expectations (Cullen, Sideboatham et al. 2016), and the influence of parents/friends (Raven, Wurie et al. 2018),

As the data reveals, the reality of working as a midwife is incredibly challenging and insights from ex-midwives show the difficult choices some made to leave the profession they were initially committed to. Fragility, conflict and rurality exacerbated these challenges and was a key overarching theme. The current Ebola outbreak will bring additional risks and concerns for themselves, their families and their relationships with communities. Moving to safer areas was a decision made by some midwives and this is documented in other studies of health workers in fragile and conflict affected settings (Raven, Martineau et al. 2014; Miyake, Speakman et al. 2017; Witter, Wurie et al. 2017), leaving these communities with even fewer health services. Those who left midwifery did so mainly because of additional family responsibilities and in some cases for personal reasons echoing studies in fragile and conflict affected states (Miyake, Speakman et al. 2017). Those who remained as midwives had aspirations to continue serving, follow further education in the hope that this would provide better salaries and employment opportunities. Others saw this role as stepping stone to other career pathways.

### **6.6.2. Resilient, brave and innovative – the characteristics of a rural Ituri midwife**

It is clear from the data that midwives play a critical interface role between the health system and communities in the challenging contexts of Ituri province. This has parallels with theories of interface positionalities such as street level bureaucracy (Erasmus 2014; Gaede 2016), which places the spotlight on agency and coping strategies of people linking between communities and institutions or systems. The lack of supervision, support and regular remuneration means that the experiences of midwives is more on a par of that of volunteers or community health workers in other contexts (Raven, Akweongo et al. 2015). All categories of midwives (current and ex; all districts and

women and men) found work environments challenging although this was particularly acute in rural contexts and those with active conflict as found in other studies (Witter, Wurie et al. 2017). The key factors shaping their experiences included work environment, social-cultural components, personal belief and family (lack of) support. Despite these challenges, midwives innovated and showed agency in coping like in other rural settings of Africa, for example lobbying local NGOs to buy basic equipment and supplies, and organising motorcycle taxis for referrals (Lema 2011). But, growing food on land provided by the facility, organising local weekly seminars to update knowledge were specific innovations of these groups. It is important to understand midwives' coping strategies to recognise their resilience but importantly to find ways to better support them within the realities of the challenging contexts in which they work. Within DRC, Ituri province experiences very high number of maternal deaths; and DRC has one of the highest maternal mortality rates in the world. It is critical to hear these stories in order to address the constraints midwives experience and build on supporting them in developing new coping strategies, so that they can fulfil their vital role in addressing maternal mortality.

### **6.6.3. Supporting midwives**

Understanding the career pathways of midwives is important to understand the support they need when they are working in rural, fragile and conflict-affected settings and in poorly resourced health systems. Given the human resources for health shortages, training and development of additional midwives is a key priority; but so is ongoing in-service training for existing midwives to update their skills and demonstrate their value. This is particularly important for rural midwives who are more isolated, find it harder to access materials due to lack of resources and conflict. Improving living conditions, such as housing close to the facilities, and better modes of communication, will help attract and retain qualified midwives in rural and remote health facilities. Supporting midwives with supplies and equipment will enhance their ability to perform well, improve their relationships with communities and build trust. This involves supporting district health teams to be able to negotiate for additional resources from the government or NGOs



and use them wisely. Supervision and support for this critical cadre from both health systems and communities needs further investment particularly in contexts of chronic insecurity. A range of actors such as government, churches, NGOs, civil society, associations of nurses, association of midwives, and nursing training institutes can be brought together at the annual Provincial Health Review to discuss the issues faced by midwives and come up with plans that are context specific.

Midwives are acting as street level bureaucrats who are frontline workers interfacing with very poor and marginalised communities (Erasmus, 2014). They adapt policies and make choices about how to provide services, developing routines and simplifications that help them to deal with dynamics such as the chronic shortage of resources and the often high demand for their services (Gaede 2016, Lema 2011). Midwives innovate and share strategies and resources and these initiatives need to be supported. Initiatives at community level to recognise and value rather than blame this cadre need to be encouraged such as radio announcements, awareness raising at markets, churches, schools or community gatherings. Social media can be used to provide opportunities for peer support and sharing of ideas as seen with health workers during the Ebola outbreak in Sierra Leone (Raven, Wurie et al. 2018). They created a WhatsApp group about Ebola fighters , where they encouraged each other to continue to work, stay safe and follow precautions through daily messages(Raven, Wurie et al. 2018). Health facility committees, which develop plans and budget of the facility, mobilize the community to use health services, ensure the availability of drugs and equipment and make sure that health facilities deliver quality healthcare services (Ifakara Health Institute 2011), can play an important role in fostering support from communities for their health staff. They can explain the important role that midwives play, confirm the challenges that midwives face, and explore possible solutions and support for their staff. The contribution of midwives who continue to serve during periods of conflict should be recognised and celebrated, through for example, awards for “midwife of the year” that is communicated through radio announcements and at community events. (Namakula and Witter 2014). Regular remuneration will also support productivity, reduce the costs and opportunity

costs of finding other ways to survive and means that user fees could then be used to upgrade facilities and directly benefit users.

#### **6.6.4. Strengths and limitations**

The strength of the approach is that research was conducted by a DRC team embedded within the context of fragile rural Ituri, bringing their tacit knowledge to the study. This team was best placed to capture the perspectives of current and ex-midwives through time (using life histories) and explore the coping strategies of this cadre whose voices have never been heard. There were challenges however: in rural Adja district we were not able to get views of ex-midwives living in rural areas as they were no longer within the district. The focus was on the experience of midwives, and it would be important in future studies to include the community perspective.

#### **6.7. Conclusion**

DRC is one of the three countries in the world which constitute 50% of maternal deaths. Rates of death are particularly high in the rural fragile areas such as Ituri province. Midwives play a critical role in attempting to support women to deliver babies safely. Data from this study shows the immense challenges they face and their bravery and resilience as they navigate the interface position between under-resourced health systems and poor marginalized communities. But resilience should not be taken for granted; it should be supported. If women's lives really matter, then this situation requires a call to action: donors need to prioritize these contexts; and the government and other stakeholders such as the churches, civil society, NGOs and association of nurses and midwives, in DRC need to invest more in improving security conditions as well as working conditions and professional support for midwives in rural Ituri Province. Only then will midwives, playing the interface between health systems and the communities, be able to provide the critical services that women and their families need, and therefore contribute to achieving Universal Health Coverage.

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### *Contribution*

AB, ST, TM, PS and JR conceived the study and developed the proposal. AB, MMN and AA collected analyzed the data. AB drafted the manuscript. ST, PS, TM, JR contributed to the interpretation of the results and provided critical comments on early drafts of the manuscript. All authors approved the final submitted version.

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### *Conflict of interest*

None declared

## Chapter 7: Results: Participatory workshop method

### 7.1. Chapter overview

This chapter draws from the findings from papers one and two in order to meet the third objective, specifically: to identify strategies which can help to attract, support and retain midwives in the fragile and rural Ituri Province. Using participatory workshop methodology, this study engaged with different stakeholders in relation to the midwifery profession within the province, to develop strategies to address the challenges relating to the attraction and retention of midwives in Ituri Province. The chapter begins by describing the WHO framework on the attraction and retention of health workers in rural areas which was applied in this study. The findings cover the following elements: midwifery, maternal healthcare and policy implementation in Ituri, and strategies for the attraction and retention of midwives in remote and rural areas. Subsequently, the discussion focusses upon the feasibility of strategies, the need for collaboration between different levels of health systems, collaborative approaches for developing strategies and implementing change. This chapter is published by *Health Research Policy and Systems Journal* (Baba, Theobald et al. 2020b)

I developed the idea for this study with the support of supervisors. I then developed the study design, proposal and data collection tools. Then, I collected and analysed data, with support from research assistants. I then drafted the manuscript, before sharing it with the supervisors for their critical comments. My supervisors contributed to the interpretation of the results and provided critical comments on early drafts of the manuscript.

**Developing strategies to attract, retain and support midwives in rural fragile settings: participatory workshops with health system stakeholders in Ituri Province, Democratic Republic of Congo**

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## 7.2. Abstract

**Background:** Midwifery plays a vital role in quality of care and rapid and sustained reductions in maternal and newborn mortality. Like most other Sub-Saharan African countries, the Democratic Republic of Congo (DRC) experiences shortages and inequitable distribution of health workers, particularly in rural areas and fragile settings. The aim of this study was to identify strategies which can help to attract, support and retain midwives in the fragile and rural Ituri province.

**Methods:** The qualitative participatory research design, through a workshop methodology was used in this study. Participatory workshops were held in Bunia, Aru and Adja health districts in Ituri Province with provincial, district, and facility managers, midwives and nurses, and NGO, church medical coordination and nursing schools' representatives. In these workshops, data on availability and distribution of midwives, as well as their experiences of providing midwifery services were presented and discussed, followed by the development of strategies to attract, retain and support midwives. The workshops were digitally recorded, transcribed and thematically analyzed using NVivo 12

**Results:** The study revealed that participants acknowledged that most of the policies in relation to rural attraction and retention of health workers were not implemented, whilst a few have been partially put in place. Key strategies embedded in the realities of rural fragile Ituri province were proposed: organizing midwifery training in nursing schools located in rural areas; recruiting students from rural areas; encouraging communities to use health services and so generate more income; lobbying NGOs and churches to support the improvement of midwives' living and working conditions; and integrating TBAs in health facilities. Contextual solutions were proposed to overcome challenges.

**Conclusion:** Midwives are key skilled birth attendants managing maternal and newborn health care in rural areas. Ensuring their availability through effective attraction and retention strategies is essential in fragile and rural settings. This participatory approach

through a workshop methodology that engages different stakeholders and builds on available data, can promote learning health systems and develop pragmatic strategies for attraction and retention of health workers in fragile remote and rural settings.

**Keywords:** strategies, participatory workshop, attraction, retention, midwives, rural.

### **7.3. Background**

Maternal and newborn health care remains a particular focus in the Sustainable Development Goals (SDG)a (FIGO 2015; Saraki 2015). Nurses and midwives make up the majority of the health workforce, and play key roles in maternal and newborn health care (George 2007; Boniol, Mclsaac et al. 2019). Midwives are a critical skilled birth attendant (SBA) cadre, and are associated with improved quality care, and rapid and sustained reductions in maternal and newborn mortality (World Health Organization 2016e). Midwives should work within an enabling environment, following guidelines for maternal and newborn care, providing and tailoring care to the social and cultural needs of women living in the community (ten Hoop-Bender, de Bernis et al. 2014). However, the UN report on the progress of SDGs shows that many countries are still facing the challenge of shortages of qualified health workers, i.e. fewer than 1 doctor per 1000 population and fewer than 4 nurses and midwives per 1000 population (United Nations Economic and Social Council 2019). Most Sub-Saharan countries are amongst those countries (Banque Mondiale 2019a; Banque Mondiale 2019b) and within countries, there are serious distribution inequities between urban and rural areas (Oloyede 2017).

To address the inequitable distribution of the workforce, WHO recommended interventions which could help attract and retain health workers in rural areas which include four areas: 1. medical education, where the focus is on the quality of the students, education settings as well as different learning strategies reflecting rural contexts; 2. regulatory interventions - enhancing scope of practice, producing different types of health workers, bonding schemes and compulsory service; 3. appropriate financial incentives; and 4. personal and professional support including working and living conditions, safe and supportive work environment and career development

programmes (World Health Organization 2010). These strategies need to be tailored to each country's context (World Health Organization 2010; Moore, Audrey et al. 2015).

The Democratic Republic of Congo (DRC), which has one of the highest maternal mortality ratios in the world (846 per 100000 live births), is classified as a state of high fragility (World Health Organization 2019a). Thirty years of mismanagement and two decades of conflict and unrest in the country have left DRC among one of the most underdeveloped countries in the world; it is ranked as the third weakest country in the world, after Afghanistan and Somalia, (House of Commons 2017; Aembe and Dijkzeul 2018). DRC experiences poor governance, infrastructure and basic services, with serious implications for its population's living conditions and health indicators (Coghlan, Brennan et al. 2006; Fox, Witter et al. 2014; Bertone, Lurton et al. 2016; Maini, Lohmann et al. 2019). DRC faces a severe shortage of SBAs with only 1.05 physicians, nurses and midwives per 1000 population in 2012, compared to the Sustainable Development Goals index threshold of 4.45 per 1000 population. The shortage of midwives in DRC is particularly striking - 0.06 midwives per 1000 population in 2015 with shortages especially in rural areas (Ministère de Santé Publique RD Congo 2016a; Ministère de la Santé Publique RD Congo 2016b; Amuda 2018), compared to neighbouring countries such as Central African Republic with 0.114, Uganda with 0.200, Republic of Congo with 0.291, Tanzania with 0.435 and Zambia with 0.876 midwives per 1000 population (2012 Figures) (UNFPA 2014b) More details about the midwifery profession in DRC are given in Box 2.



Box 2: Midwifery in DRC

<ul style="list-style-type: none"> <li>- The midwifery profession, as defined by the International Confederation of Midwives (ICM) is new in DRC (since 2013) (International Confederation of Midwives 2017). There is no legal regulatory structure to uphold the midwifery profession. It is therefore not possible to ensure a high-quality workforce of midwives in DRC (Bogren, Ndela et al. 2020).</li> <li>- The midwifery association was established in 2000, is well connected and accepted, with 1700 members and a member of ICM, but needs more resources to function effectively.</li> <li>- Midwifery education is managed by two different government ministries: Public Health and Higher Education</li> </ul>	
Ministry of Public Health (MoPH)	Ministry of Higher Education (MoHEd)
<p>3. Midwifery training</p> <p>A3 midwives: Since the colonial period until late 1980s, midwifery training began at a secondary-school level (Institut de Techniques Médicales: ITM) (Bogren, Ndela et al. 2020)</p> <ul style="list-style-type: none"> <li>- Entry requirements: 10 years of education (6 years of primary and 4 years of secondary)</li> <li>- 2 years of midwifery in nursing schools training A3 level birth attendants (accoucheuses A3)</li> <li>- The A3 midwifery programme was abolished and replaced by a four-year midwifery education programme (A2).</li> </ul>	<p>4. Midwifery training</p> <p>A1 midwives (undergraduate degree) (Institut Supérieur de Techniques Médicales : ISTM) (Bogren, Ndela et al. 2020)</p> <ul style="list-style-type: none"> <li>- Entry requirements: A2 midwives or 12 years of education (6 years in primary and 6 years in secondary schools)</li> <li>- 3 years of midwifery in nursing colleges training A1. Since 2013, when the country's educational reform took place, a three-year midwifery education (sage femme) is conducted at a higher education</li> </ul>

<p>A2 midwives (diploma level) (Institut Techniques Médicales : ITM)</p> <ul style="list-style-type: none"> <li>- Entry requirements: 10 years of education (6 years of primary and 4 years in secondary)</li> <li>- 4 years of midwifery in nursing schools</li> </ul> <p>4. Types of training providers</p> <ul style="list-style-type: none"> <li>- The government</li> <li>- Faith Based Organizations (Not-for-profit private sector)</li> </ul> <p>5. Location</p> <ul style="list-style-type: none"> <li>- Urban areas (in a few schools only) Midwifery programme not organized in most schools)</li> <li>- Rural areas (in a few schools only)midwifery programme not organized in most schools)</li> </ul>	<p>level, which is in line with midwifery international norms and standards</p> <p>A0 midwives (Post graduate degree) (at Institut Supérieur de Techniques Médicales : ISTM)</p> <ul style="list-style-type: none"> <li>- A1 midwives</li> <li>- 2-year post graduate training programme in obstetrics and gynecology (A0) in a few nursing colleges</li> </ul> <p>5. Types of training providers</p> <ul style="list-style-type: none"> <li>- The government</li> <li>- Faith Based Organizations (Not-for-profit private sector)</li> </ul> <p>6. Location</p> <ul style="list-style-type: none"> <li>- Urban areas (nursing colleges: ISTM, concentrated in urban areas)</li> <li>- Rural areas</li> </ul>
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Since 1999 Ituri province (the study setting) has endured sustained socio-political crises and wars. Ongoing ethnic clashes and the recent Ebola outbreak make this province particularly fragile. Ituri, like some other provinces face challenges in attracting and retaining midwives in rural districts and has a high maternal mortality rate far beyond the national average and other rural provinces in DRC (Ministère de Santé Publique RD Congo 2016a; UNFPA DR Congo 2018) (a situation confirmed from a personal communication with Ituri Provincial Health Office). A recent study highlights the availability and distribution of midwives, nurses and doctors in Ituri province and

associated challenges (Box 3). Understanding midwives' experiences in providing services in Ituri province is critical to addressing attraction and retention issues. A recent study documented these experiences including the coping mechanisms deployed by midwives who demonstrate bravery and resilience as they navigate the interface position between under-resourced health systems and poor marginalized communities (Box 4).

Box 3: Availability and distribution of skilled birth attendants in Ituri: key findings  
(Baba, Martineau et al. 2020)

- The shortages of midwives are the most extreme, especially in peri-urban (24.9% of posts filled) and rural districts (7.2% of posts filled), while there is a surplus of doctors and nurses in urban and peri-urban districts (>100%).
- While the number of doctors and nurses has increased in urban, peri-urban and rural districts from 2013 to 2017, the number of midwives has decreased in peri-urban and rural districts.
- There is clear gender and occupational segregation: doctors and nurses are more likely to be male; whereas midwives are more likely to be female. There are more female nurses in the urban district.
- The projections of training outputs show a surplus of doctors and nursing increasing; whilst the shortfall for midwives remains above 75%.

#### Box 4: Midwives work experiences in Ituri Province: key findings

(Baba, Theobald et al. 2020a)

- Midwives joined midwifery for different reasons, including: a wish to solve problems; fulfilling childhood aspirations; and wanting to be role models for their community.
- Midwives faced health systems related challenges, including: severe shortage of qualified co-workers; poor working conditions due to lack of equipment, supplies and professional support; and no salary from the government, apart from risk allowances received by some.
- Midwives also experienced socio-cultural challenges: gender norms of male midwives not being accepted in rural communities (most male midwives work in urban areas); married female midwives not being allowed to work due to family responsibilities; women attending antenatal services late in pregnancy, or coming to the facility on their own for delivery; and a culture of blame when there are deaths or complications.
  - Midwives have developed coping strategies such as: generating income and food from farm work; lobbying local organizations for supplies; and training traditional birth attendants to work in facilities.

The Ministry of Public Health developed strategies to attract and retain different categories of health workers in rural DRC such as improving living and working conditions, increasing financial incentives, registration of health workers, and introducing rural placement allowances - see Box 5 and annex 15 (Ministère de Santé Publique RD Congo 2016a; Ministère de la Santé Publique RD Congo 2016b). Many of these strategies are either not implemented or only poorly implemented, with serious implications on shortages of health workers, especially of midwives and rural areas, including in Ituri Province (Division Provinciale de la Santé Ituri 2016; Ministère de Santé Publique RD Congo 2016a; Ministère de la Santé Publique RD Congo 2016b).

*Box 5: Policies on attraction and retention of health workers in rural and remote areas in DRC*

(Ministère de Santé Publique RD Congo 2016a; Ministère de la Santé Publique RD Congo 2016b)

1. Education
  - Integrating midwifery and other courses in nursing schools
2. Regulatory
  - Registering eligible health workers and including on payroll quickly so that they receive salary and allowances
  - Applying standardized pay rate to health workers having the same qualification both in urban and rural areas.
  - Equitable initial deployment of health workers in health facilities according to needs; and redeployment of surplus health workers.
3. Financial incentives
  - Ensuring regular payment of salary and allowances
  - Implementing rural placement allowances
4. Personal and professional support
  - Improving working conditions of health workers in rural areas by supplying equipment and supplies, providing supportive supervision and in-service training
  - Construction of staff houses at facilities
5. Others
  - Development and sensitization of HRH staffing standards
  - Control of the deployment of registered health workers between facilities
  - Strengthening the HRH information system
  - Organising' payment sites in rural areas close to health work places

This study seeks to answer the question, how can we better attract, support and retain midwives in the fragile and rural Ituri province of DRC? This study engaged with different stakeholders in Ituri Province, through a participatory approach, to review the current midwifery staffing situation in order to identify feasible and context specific strategies which can help to attract, support and retain midwives in the fragile and rural Ituri province.

## **7.4. Methods**

### **7.4.1. Design**

The qualitative participatory research design, through a workshop methodology (Ørngreen and Levinsen 2017), was used to develop appropriate contextual strategies to attract, support and retain midwives in rural and fragile Ituri. Participatory qualitative research enables local people to analyze, share and enhance their knowledge of life and condition, and to plan, prioritize, act, monitor and evaluate (Chambers 2007). Central to participatory methods is creating an empowering environment that places participants at the centre of the research and the facilitators / researchers as learners and enablers (Higginbottom, Mathers et al. 2006; Bergold and Thomas 2012). It requires the establishment of credible and trusting relationships between researchers, individuals, groups and communities (Higginbottom and Liamputtong 2015). We used workshop methodology (see data collection section for details of the workshop) as it brings people together - as in this case, a wide range of health systems stakeholders - to learn, acquire new knowledge, perform creative problem-solving, or innovate in relation to a specific issue – attraction, retention and support of midwives. Furthermore, this methodology is specifically designed to produce reliable and valid data about the issue under study using group interaction (Wakkary 2007; Ørngreen and Levinsen 2017). The workshop methodology uses a collaborative approach, where the researchers and participants work together, with the researchers facilitating inputs and discussion from all participants, ensuring that the strategies that are developed are grounded in the reality of Ituri province, are feasible to implement and will have impact (Macaulay, Jagosh et al. 2011). The authors developed relationships with the participants as part of previous

research (Baba, Martineau et al. 2020; Baba, Theobald et al. 2020) which helped generate collaborative and productive workshops.

#### **7.4.2. Setting**

The research was carried out in three districts in Ituri Province, one of the 26 provinces of DRC, a large province located in North-eastern DRC with a population of 5.4 million inhabitants. Three health districts were purposively selected by the research team, in collaboration with the Provincial Health Office. The following districts were selected: Bunia district, where the Provincial capital is found and where all the facilities are in the urban area, including the district health office (Bureau Central de la Zone de Sante de Bunia); the peri-urban district of Aru, where there is a concentration of people, with some facilities in remote areas (Aru); and the rural district of Adja, where all facilities are in rural and remote areas (Division Provinciale de la Santé Ituri 2016). IPASC (Pan African Institute of Community Health), a faith based organization where some of the authors work, organizes community health related interventions in the 3 health districts, which means we already understand the context and have relationships with the district health management. These relationships facilitated access to these districts which are also relatively secure.

#### **7.4.3. Sampling and recruitment of participants**

Purposive sampling was used for this study. The purposive sampling technique is the deliberate choice of participants on the basis of features or characteristics that will enable a detailed understanding of the topic. The researcher sets out to find people who can and are willing to provide the information by virtue of knowledge or experience (Bernard 2002; Ritchie, Lewis et al. 2003; Etikan, Musa et al. 2016). A range of decision-makers, managers and midwives were purposively selected based on their involvement in managing and supporting midwives, their experiences of being managed and providing services. Table 1 provides details of the different participants including reasons for their selection. In the previous study we had asked the midwives and head nurses if we could contact them again for participation in this study. We then contacted them directly by phone to recruit them to the workshops. Participants from the Provincial

Health Office, Provincial Reproductive Health Coordination, DHMT, Church Medical Coordination, NGOs and nursing schools were invited to the workshops through invitation letters and a participant information sheet. At the start of the workshop, the participant information sheets were shared again, discussed and written informed consent was obtained from each participant. In total we recruited 49 participants to the three workshops, as described in Table 21 (15 in Bunia district, 19 in Aru district and 15 in Adja district).

Table 21: Participants of the workshops

Participant	Rationale for inclusion	Bunia	Aru	Adja	Total
Provincial Health Office Staff	Responsible for recruiting and deploying health workers within the Province, including midwives	3 (3M)	0	0	3
Provincial Reproductive Health Coordination staff (PRHC)	Oversee in-service training of midwifery cadres within the province	2 (1M;1F)	0	0	2
DHMT members	Responsible for human resources for health management at district level	1 (F)	3 (3M)	3 (3M)	7
Church Medical Coordination staff	Church own many health facilities in the province, and also employs midwives	0	1 (M)	1 (M)	2



NGOs focusing on maternal health	Collaborate with PRHC to provide in-service training for midwives and improve their working conditions	1 (F)	1 (F)	2 (1F;1M)	4
Head nurses	Direct managers of midwives	3 (1M;2F)	7 (2M; 5F)	3 (3M)	13
Nursing school staff	Responsible for the training of midwives	0	2 (1M; 1F)	0	2
Midwives	Provide maternal health care services	5 (1M;4F)	5 (1M;4F)	6 (6F)	16
Total		15	19	15	49

(M= Male; F= Female)

#### 7.4.4. Data collection

A workshop was held in each district in November 2019. They were facilitated by AB with support from two research assistants (AA and MM) and were designed so that research data and local policies were presented and discussed and then strategies developed. Each workshop included five steps.

Step 1, the facilitators presented data from the study on midwives' work experiences and challenges through time from initial professional choice to future career aspiration in rural Ituri Province, North-eastern DRC. Participants discussed these findings and in particular what they had learnt and what problems the results reveal about SBAs in Ituri province. In step 2, data on the availability and distribution of SBAs in Ituri province was presented. Participants again discussed this data, highlighting the main issues. In step 3, the current policies on attraction and retention of health workers in rural areas in DRC were presented. In step 4, participants were divided into groups (Table 22) so that they could discuss in detail the research findings and the policies. These discussions were facilitated by the research team (AB, JK and MM) using a topic guide which focused on policy implementation, reasons why some policies are implemented and others are not.

The group discussions were summarised and fed back to the plenary for further discussion. Finally, in step 5, the groups discussed new and existing strategies to promote attraction, retention and support of midwives, and how they could be implemented in their districts. They discussed challenges related to each strategy and how they could be overcome. After completion, each group reported to the other groups for further comments and discussions.

Table 22: Attraction and retention strategy discussion groups by district and membership

Bunia workshop	Aru workshop	Adja Workshop
DHMT delegate, Provincial Health Office delegates, NGO delegate	DHMT delegates, NGO delegate, church medical coordination delegate, nursing schools' delegates	DHMT delegates, NGO delegate, church medical coordination delegate, head nurses
Head nurses and midwives	Midwives	Midwives
	Head nurses	

All discussions were recorded, stored in a password-protected computer, transcribed verbatim and then translated into English by an external translator from the Teaching College of Bunia and crosschecked by another external translator.

#### 7.4.5. Data analysis

We used the thematic framework method to analyse the data from the workshops (Ritchie, Spencer et al. 2003). This method facilitates rigorous and transparent analysis and uses both deductive and inductive approaches (Ritchie, Spencer et al. 2003, Fereday and Muir-Cochrane 2006, Gale, Heath et al. 2013). A coding framework was developed by all authors based on themes emerging from the data and the study objectives. Using this framework, AB coded the transcripts and shared with co-authors (JR, ST) to check coherence and meaning. When there were discrepancies in coding, the issue was

discussed with all authors until a consensus was reached. The coding framework was applied to transcripts of all workshops, charts were then developed for each theme, and these charts were used to describe the themes. NVIVO 12 was used to support the analysis.

#### **7.4.6. Ethics approval**

Ethics approval for this study was granted by the Liverpool School of Tropical Medicine Ethics Committee (Research protocol 17-024) and the CRMD/Bunia (Centre de Recherche Multidisciplinaire pour le Développement) (018/2017). A rigorous informed consent process was followed: all participants were given verbal and detailed written information about the nature and purpose of the research before taking part; participants were made aware of their right to decline answering questions and were assured that measures are in place to anonymise responses. All participants gave written consent. All data were anonymized.

### **7.5. Results**

The results are presented in two sections. Section one presents participants' perceptions and experiences of the midwifery and maternal health care situation in Ituri province, and the implementation of the current policies on attraction and retention of health workers in rural areas. Section two focuses on the strategies developed in the workshop.

#### **7.5.1. Midwifery, maternal health care situation and policy implementation in Ituri province**

All participants reported that most of the elements in the policies are not implemented or are only implemented in some areas in Ituri province. The main reason given was that the policies are developed at central level, and no plans for implementation were made. They also explained that no funds are provided to the provincial level to implement the policies.

*As you may know, policies are developed at the national level, and our roles in the district health level is to implement. But, we cannot implement if there are no funds for the implementation. (DHMT, Male, Aru)*

Many participants from all districts also provided examples of inequitable implementation of policies. The allowance which should be provided to all health workers working in remote rural areas is not being provided. This exacerbates the inequity as the risk allowance, which is an entitlement for all staff, is mainly provided to health workers working in urban areas and rarely reaches rural workers.

*If only they implemented remote and rural placement allowances, things would have changed automatically. It is just on paper, and nothing is really done on that (Midwife, Female, Bunia)*

*...most health workers working in urban areas receive their risk allowances compared to those in rural areas ... (Head Nurse, Male, Adja)*

Many participants in all districts explained that the Provincial Health Office has limited control over recruitment and deployment of health workers which may be partly attributed to the HRH information system being unreliable as it is not updated. This has resulted in inequitable distribution of health workers across the districts.

*At the provincial level, normally they should promote recruitment of different health workers' categories according to the staffing standards, but the way different health workers are being recruited does not help to cover the gaps at the health district level (Provincial Health Office, Male, Bunia)*

The DHMT has responsibility for controlling staffing in all facilities in the districts. However, in reality there are many staff and surpluses in some facilities, mainly in urban areas, and shortages in facilities located in rural and remote areas.

*At the health district level, they should also respect and control HRH staffing in different health facilities, making sure that they do not have plethora of qualified health workers in urban health areas, they should work on convincing qualified health workers to go to serve in rural areas (Head nurse, Male, Aru).*

All participants described a severe shortage of midwives throughout the province – in urban as well as rural areas - and that a key factor contributing to this shortage is that

only three of the 17 schools of nursing in the province provide midwifery training resulting in an insufficient number of graduates.

*As you can realize, in different nursing schools for secondary level, they only had nursing programme, there was none on midwifery (DHMT, Male, Aru).*

In addition, all participants explained that the findings from the previous studies show that the midwifery profession is not attractive in these districts. In particular, they stressed the heavy workload because of a shortage of midwives, difficult working conditions because of limited resources and ongoing conflict, and no provision of salary or rural remote allowance but occasional risk allowance.

Some midwives perceived that their profession, especially in rural areas, receives little attention from the government:

*When I look at all challenges that are described in this study [as described in the workshop], I find them being real realities. When you are a midwife, especially in rural areas, you face all those challenges. My concern is on the profession of midwives. They (the government) should really consider their profession seriously, especially as they deal more with women and babies' lives (Midwife, Female, Aru).*

#### **7.5.2. Strategies for attraction and retention of midwives in remote and rural areas**

We used the WHO framework of recommendations to increase access to health workers in remote and rural area through improved retention to present the strategies (World Health Organisation 2010). To begin this section, Table 23 provides a summary of the strategies, challenges with implementation and possible solutions proposed in the workshops. Each category of intervention is then discussed in-depth.

Table 23: Strategies to increase attraction and retention of midwives in remote and rural areas

Categories of intervention	Proposed strategies		Challenges	Possible solutions
	National	Local /district		
Education	<ul style="list-style-type: none"> <li>- Promotion of nursing schools organizing midwifery in rural areas</li> </ul>	<ul style="list-style-type: none"> <li>- Recruiting and training rural background students</li> </ul>	<ul style="list-style-type: none"> <li>- Poverty</li> <li>- Community ignorance</li> <li>- Lack of children to be recruited</li> <li>- Conflict generated from selection candidates</li> </ul>	<ul style="list-style-type: none"> <li>- Community based education sponsorship scheme for recruited students</li> </ul>
Regulatory	<ul style="list-style-type: none"> <li>- Registration of rural based midwives</li> </ul>	<ul style="list-style-type: none"> <li>- Recruiting and integrating TBAs in facilities</li> </ul>	<ul style="list-style-type: none"> <li>- No salary for TBAs</li> <li>- Continuation of providing home delivery</li> </ul>	<ul style="list-style-type: none"> <li>- Salary from user fees</li> <li>- Local authority involvement to ban home delivery</li> </ul>
Financial incentives	<ul style="list-style-type: none"> <li>- Salary of health workers from the central government</li> </ul>	<ul style="list-style-type: none"> <li>- Increased salary from income generated from user fees</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of fund from the government</li> <li>- Flat rates imposed by NGOs</li> </ul>	<ul style="list-style-type: none"> <li>- Difficult to overcome</li> <li>- Increased local income generated from user fees</li> </ul>

	<ul style="list-style-type: none"> <li>- Implementation of rural placement allowances</li> </ul>		<ul style="list-style-type: none"> <li>- Poverty of the rural population</li> </ul>	
Professional and personal support	<ul style="list-style-type: none"> <li>- Better living conditions</li> <li>- Safe and supportive working environment</li> </ul>	<ul style="list-style-type: none"> <li>- Good relationship at the facility and with the community</li> <li>- Good leadership at different levels (communities, facilities, DHMTs)</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of fund from the central government</li> <li>- Unrest or insecurity</li> </ul>	<ul style="list-style-type: none"> <li>- Community/church mobilization to improve building conditions and houses for health workers</li> <li>- District initiative on fund raising</li> <li>- Lobbying to NGOs</li> <li>- Difficult to overcome insecurity</li> <li>- Strengthening supportive supervision and in-service training by church medical coordination and NGOs in the area</li> </ul>

Other local interventions	-	<ul style="list-style-type: none"> <li>- Promoting interactions and contacts with students at nursing schools and colleges</li> <li>- Promoting local marriage</li> <li>- Recruiting and integrating TBAs in facilities</li> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>- Church regulations</li> <li>- Socio-cultural related challenges</li> <li>- No salary for TBAs</li> <li>- Continuation of providing home deliveries by TBAs</li> </ul>	<ul style="list-style-type: none"> <li>- Community mobilization on the importance of education and midwifery</li> <li>- TBAs salary from user fees</li> <li>- Local authority involvement to ban home delivery</li> </ul>
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### **7.5.2.1. Education strategies**

Participants from rural Adja district proposed investment by the central government and promotion of nursing schools in rural areas to include midwifery training in rural areas.

*... I think it is better that the government invests themselves in covering rural health districts with nursing schools, where they also integrate midwifery (DHMT, Male, Adja)*

Finances to create new nursing schools or integration of midwifery in existing schools was identified as the main challenge by nursing schools' delegates, DHMT delegates, NGO delegates and head nurses from Aru and Bunia districts. To overcome this challenge, participants from peri-urban Aru and rural Adja districts recommended that the government encourage churches to organize midwifery training in their existing schools of nursing or to establish new schools to cover rural areas.

*...at this condition, the government should just encourage churches, with the big number of facilities they have, especially in rural areas, to organize nursing schools (Head Nurse, Male, Adja)*

District level participants from the three districts recommended the selection and training of students from rural areas, who could be supported financially by their community, as this would encourage students to return to their rural communities when they complete their training.

*if the local chief could contribute to send someone, a child from the area, who knows very well the area to study midwifery. When they will complete, they will most likely go back. For instance, there is someone who has just completed her midwifery training in one of the nursing schools, she said that she is from Yekia, and would like to go to serve at Yekia as a midwife (DHMT, Male, Adja).*

Challenges to implementing this strategy were around poverty, gender norms and creating community tensions. Poverty of families and communities and ongoing conflict hinders children's inclusion in school education to a level that they can enroll on

midwifery courses, as well as paying for midwifery training fees and other related costs. In addition, tensions in communities are sometimes created where some members are selected and others are not.

*In relation to identifying local children to send them to train midwifery in nursing schools and colleges could be community ignorance on the importance of schooling their children, especially for some specific courses; there is poverty of the local community, conflict in the community as someone's child can be selected, and those whose children are not selected might end up not being happy (Midwife, Male, Bunia).*

This is also influenced by limited focus placed on education by communities; which is a particular challenge for rural girls/ women, as there are perceptions that they should marry, rather than go for education. This compounds the problem of shortage of midwives in rural areas, as rural communities prefer to have female midwives.

*you know that in Ituri, it maybe all over the place, women get married quickly. You know just when a lady is married, she forgets everything else. In rural areas, ladies just think of marriage while in urban areas, ladies are committed for studies (Provincial Reproductive Health Coordination, Bunia)*

Several solutions were proposed. Participants, mainly from the rural Adja and peri-urban Aru districts, addressed the problem of funding. They suggested a community based sponsorship scheme, where a local committee establishes criteria and processes to ensure that local people are supported financially to attend training and return to serve locally.

*... they could encourage local chief to send at least 1 person from the area to go to study midwifery. If in each health catchment area there is 1 person going to study midwifery, after 4 years, the problems of shortages can be solved, as they are children who grew up in the area (DHMT, Male, Adja)*

Other participants addressed the problem of demand for training, proposing community awareness activities at churches, markets and over the radio, that encourage girls and young women to enroll in school and nursing school education.

*So, it is better in that condition to make sure that they organize community awareness, even in churches to encourage parents to send their children in schools, and also promoting girls' education. (DHMT, Male, Adja)*

#### **7.5.2.2. Regulation**

All participants in Adja and Aru, and head nurses in Bunia proposed that the central government should prioritize civil service registration of midwives working in rural areas. The process for registration is very time consuming, and it is only when midwives are registered that they are included on the payroll and receive salary. Some midwives have been working for 5 years and are waiting to be registered, and one midwife in Adja district was reported to be working for more than 40 years without registration.

*So, there is a real need for the government to register and pay health workers, with a special priority for those working in rural health facilities (Church Medical Coordination)*

#### **7.5.2.3. Financial incentives strategies**

Participants from all districts explained that the best ways to improve attraction and retention of health workers in rural and remote areas is through making sure that they receive their salary, their rural and remote allowance and risk allowance.

*I think that it is better for the government to pay all health workers, instead of being selective [paying only those in urban health facilities], otherwise, those who are not paid [in rural and remote areas] will get discouraged and might decide to leave and that will not contribute to improve attraction, as no one would like to commit themselves to work knowing that they will not receive salary or risk allowances from the government (DHMT, Male, Adja).*

Meanwhile, financial constraint of the government was identified as the main challenge for implementation of this strategy, either because of insufficient budget allocated to health or financial planning for implementing strategies was not carefully thought through.

*I think the major challenge could be weak implication of the government in dealing with some aspects where they are responsible, such as ... making sure that financial motivation of health workers working in rural health facilities are better than that of urban areas. But also, we can consider a poor budget allocated to the health sector, just around 5% of the national budget. And the budget allocated for paying health workers are also very poor, especially for nurses and midwives (Provincial Health Office, Male, Bunia).*

According to participants from all three districts, there are some challenges which are difficult to overcome as they are the responsibility of the central government, i.e. improving financial initiatives.

*At the national level, the government should respect and implement policies they have developed. If the government respected those policies elements, they would have made some changes by now (Nursing School, Aru).*

At the district and facilities levels, participants proposed community mobilization to use health services, as that will increase income generation from user fees, and as a consequence which could be used to support health workers in the absence of salary or allowances.

In Adja district, providing land for cultivating food can help overcome financial challenges, as described by one DHMT member:

*...the local chief could give a piece of land so that the local population cultivates for the midwives working in the health facilities, or they can grow food for all health workers in the health facility as they do not benefit much from the health facilities (DHMT, Male, Adja).*

#### **7.5.2.4. Personal and professional support strategies**

All participants called for the central government to provide more attractive living conditions including close to facility housing, as well as safer and more supportive work environments.

*I think it is important they improve living conditions of health workers, especially building houses for health workers in rural health districts. As health workers coming from urban areas were used to sleeping well in good conditions in their own houses, that is why they should improve their living conditions in relation to their housing (Head Nurse, Male, Aru)*

All participants from Adja district, and nurses and midwives from Aru, and some Provincial Health Office delegates insisted on improving working conditions, through providing equipment and supplies, strengthening supportive supervision and in-service training to midwives and promoting good leadership at the district and facility level.

*Actually, as someone put it, rural health facilities need to be equipped with equipment and supplies, and that can also be a factor which will attract qualified midwives in rural areas (Midwife, Female, Adja)*

The Provincial Health Office delegates described the need for increasing communication between urban and rural areas for both work and personal / family reasons, by improving security in rural areas and also improving road conditions.

*Some more strategies to improve attraction in rural areas could be improving living conditions in rural areas, by ensuring security, and also making sure that road infrastructure conditions are improved, as that will facilitate communication between urban and rural areas (Provincial Reproductive Health Coordination, Bunia).*

Head nurses, midwives, and DHMT delegates recognized that developing and maintaining good relationships within health facilities and with local communities as key to retention.

*I think they should avoid conflicts in the area. Despite the poor salary, if the person works with good relationships with the local population and other health workers in the facility, the person can be happy to continue serving (Midwife, Male, Aru)*

*There were several challenges to implementing these strategies. The central government's role as described by a member of the Provincial Health Office: I think the major challenge could be weak implication of the government in dealing with some aspects where they are responsible (Provincial Health Office, Male, Bunia).*

To overcome this challenge, participants from Aru and Adja proposed some local strategies: lobbying NGOs to supply equipment to facilities; mobilizing churches to improve their health facilities' environments; encouraging local communities to build houses for health workers around facilities; contributing user fees from the first delivery in the month to the district development fund which can be used to improve the facility buildings and purchase equipment or supplies.

*So, lobbying to NGOs intervening in the area so that they contribute with equipment in health facilities, especially for maternity services, that can contribute to retain health workers (Midwife, Female, Adja)*

*We told head nurses to take the first delivery of the month, and that delivery fee is put in the district development fund. So, we keep that money from each health facility in that development fund. Each health facility deposits per month 40000 shillings [US \$11]), they bring that money in the district health office, that money is for the development of our health facilities. At the end of the month, during monitoring meeting attended by all head nurses, head nurses bring that contribution for the month, and they decide to whom to serve that money, according to their health facilities development plan (DHMT, Male, Adja).*

However, even if other strategies are put in place, where insecurity and conflict continue, health workers will leave for safer areas:

*But with these conflicts, and wars, many qualified midwives and other health workers decided to leave rural health facilities and rushed either here in Bunia or in other urban areas which appeared to be safer (Provincial Health Office, Male, Bunia).*

Overcoming insecurity in rural is seen as the responsibility of the provincial and central governments. However, participants proposed raising awareness amongst the community about the consequences of joining militia groups and creating activities to occupy the youth.

*We should also include youth leaders. I think they should also create employment for young people as well as development project, covering different sectors, such as agriculture, training, mechanics, sewing, and so on. Of course, we will need NGOs to support those initiatives (DHMT, Bunia)*

#### **7.5.2.5. Other local strategies**

The participants came up with other strategies to attract and retain midwives to rural areas. First, head nurses identify midwifery or nursing students and encourage them to come to their facilities for placement whilst they are in training, providing them with an enjoyable experience, so that they consider returning to work there.

*I would also like to add that each head nurse could make efforts to identify those who study in nursing schools and colleges, those studying midwifery, at the end of the year, they should do their best to gain their confidence. I have managed to practice that, and some actually came. (Head Nurse, Male, Adja)*

Second, most just-qualified midwives who are deployed to rural facilities are single. Marriage to local men, would ensure that they stay in that area. It was suggested that facilities can organize social events so that young single people meet:

*...you also know that, as we are talking of midwives, most of them are young girls, those who just complete their training. So, they are deployed in the area as single midwife. I would say that another strategy to retain them is that men from the*

*area should make sure they take them for marriage. Young men need to make sure they ask them for marriage as they will contribute to serve their community (DHMT, Male, Adja)*

*You know that recently there were two midwives from the referral hospital who left for marriage, because boys from the area did not make a step towards them, so other men from somewhere else came to ask them for marriage, and they had to leave (DHMT, Male, Adja).*

Third, participants from Aru and Adja districts proposed that the DHMTs integrate traditional birth attendants into the facilities so that they support midwives in providing services:

*they should consider the importance of traditional birth attendants, by recruiting them and integrating them in the health facilities so that they work together with qualified midwives in maternity services very influential (Midwife, Female, Adja).*

Workshop participants discussed several challenges with this strategy which include limited resources for remuneration; and TBAs may continue or even increase home deliveries as they may be perceived by community as “midwives”. To overcome these challenges, TBAs could receive some of the income generated locally from user fees in the facility, like other health workers. Introducing fines to TBAs who do home deliveries, may discourage this practice:

*You know, in one of the areas here in Adja, the local authority has forbidden home delivery. If there is a case of home delivery, both the woman having delivered and the traditional birth attendant have to pay a fine of a goat each (30\$) (Head Nurse, Male, Adja)*



## **7.6. Discussion**

This study aimed to identify strategies, based on research presented, which can help to attract, support and retain midwives in the fragile and rural Ituri province. Using the WHO framework on retention of health workers in remote and rural areas, workshop participants were able to reflect on the midwifery situation in their districts and province and develop strategies that were based on their local context, identifying and solving implementation challenges. The strategies selected are not new and have been well documented in the literature (Chopra, Munro et al. 2008; Dolea, Stormont et al. 2010; World Health Organization 2010; Ebuehi and Campbell 2011; Varpilah, Safer et al. 2011; Prust, Kamanga et al. 2019; Sidibé, Touré et al. 2019). But they have been selected in a way that ensures they are contextually relevant – a process that is not well covered in the literature. The findings go further to consider how, in a multi-stakeholder environment, the strategies can be implemented – again, an area not well covered in the literature. We now discuss three areas: the feasibility of these strategies; the need for collaboration between different levels of the health systems for effective implementation of the proposed strategies; and the collaborative approach in developing the strategies.

### **7.6.1. Feasibility of strategies**

With regard to education, two key strategies were proposed - including midwifery courses in nursing schools in rural areas, and recruitment and training of students from rural areas. Including midwifery courses in rural nursing schools can have impact on improving attraction and retention of midwives in rural areas (Longombe 2009; Sidibé, Touré et al. 2019), but this may be challenging to implement in DRC where only 32% of the schools of nursing are government run, and the government may be reluctant to invest in schools of nursing and midwifery in rural areas (Ministère de Santé Publique RD Congo 2016a). Churches own the majority of health facilities in DRC (Ministère de Santé Publique RD Congo 2016a), and therefore creating church funded nursing schools in remote areas where there are none or including midwifery in the existing nursing schools could be considered as an alternative viable solution. Recruitment and training of

students with rural background can be an effective strategy to improve attraction and retention of health workers in rural areas (Dolea, Stormont et al. 2010; World Health Organization 2010; Sidibé, Touré et al. 2019) and this was an important element of conflict-affected Liberia's workforce rebuilding strategy (Varpilah, Safer et al. 2011). In eastern DRC, most graduates from rural medical schools worked in rural health facilities (Longombe 2009). Involving local community in the selection and support of students is a potentially powerful strategy, however, open and transparent processes for selection, and dialogue and agreement with provincial district health authorities about deployment of the students is crucial (Chopra, Munro et al. 2008). Central to this is the selection of women students as female midwives are more accepted in rural areas; this requires cross sector collaboration and long term support so that girls, their families and their communities are encouraged to support their schooling, delay marriage and focus on education and career (Suuk 2017) .

Providing regular salary and allowances was an important strategy raised by the workshop participants. This has been shown as being significant in fragile settings (Namakula and Witter 2014; Roome, Raven et al. 2014). It is critical that midwives are able to support themselves and their families whilst continuing to serve their communities (Dolea, Stormont et al. 2010; World Health Organization 2010; Ebuehi and Campbell 2011; Bertone 2018; Yakhelef, Codjia et al. 2018). However, it is clear from this study and others that very few health workers in Ituri province receive salary or allowances, and this is particularly the case for those working in rural areas (Baba, Theobald et al. 2020). Ituri province may well be specifically disadvantaged as it is estimated that in the whole country 33% of health workers receive salary from the government and about 65% receive their risk allowances (Bertone, Lurton et al. 2016; Ministère de Santé Publique RD Congo 2016a; Ministère de la Santé Publique RD Congo 2018). The majority of these health workers are based in urban areas (Ministère de la Santé Publique RD Congo 2018). This is one of the reasons why health workers remain in urban areas. So in rural contexts, health workers rely on income generated locally from user fees (Bertone, Lurton et al. 2016). Workshop participants proposed that local

income generation should be continued and strengthened. However, this raises important moral issues – most communities in rural DRC are poor, and asking them to support health workers will place additional burdens on them and push them into more poverty, promoting a situation of inverse equity, whereby those with the most need are expected to pay for services. There are many who will not be able to access services because of these fees.

In a context where the government is limited in providing professional and personal support because of financial constraints and insecurity, the participants came up with strategies that are both resilient and embedded in the local context. These include: lobbying local NGOs to support facilities, as experienced in rural South Africa and Sudan (Yagub and Mtshali 2015; Zihindula, John et al. 2019); organizing district level strategies, such as the district development fund initiated in Adja district which is used to improve facilities and purchase basic equipment and supplies; rallying churches to improve living and working conditions in their facilities; actively approaching students to work in their areas; and mobilizing communities to improve living conditions by building houses at the facilities, to support local marriage of young single midwives, and to discourage youth enrolment in local militia. There is no one single magic bullet to solve the problem of attraction and retention of midwives, but instead a combination of different strategies and at different levels of the health system is needed.

#### **7.6.2. Need for collaboration between different levels of the health systems for effective implementation of the proposed strategies**

There is a range of stakeholders who are responsible for implementation of the proposed attraction and retention strategies, i.e. central government, Provincial Health Office, DHMT, health facilities, community members, and others such as churches, NGOs and nursing schools. Supporting a clear collaboration mechanism between all stakeholders will ensure a better outcome of more midwives working in rural areas (Wong, MacDonald et al. 2017). For instance, recruiting and training rural background students through a community based sponsorship scheme, requires collaboration between the sponsorship scheme managing committee who select and send candidates

for midwifery training, and the Provincial Health Office and DHMT who are responsible for deployment (Ministère de Santé Publique RD Congo 2016a; Ministère de la Santé Publique RD Congo 2016b). Without sustained collaboration, community selected and supported students once graduated, may be deployed elsewhere, creating tension between the different groups and community mistrust of the scheme which will limit its sustainability. Good collaboration and systems and processes that build trust and principles of reciprocity and mutuality between these health systems actors can help promote positive outcomes (Heaton, Day et al. 2016; Glandon, Meghani et al. 2018; Nyström, Karlton et al. 2018; Accoe, Marchal et al. 2020) such as a more informed recruitment and deployment system.

### **7.6.3. Collaborative approach to developing strategies**

This study used an innovative approach to developing the strategies, bringing together a range of stakeholders who are involved in human resource management, service delivery and midwifery and working with researchers to co-produce knowledge and strategies. The approach includes presenting relevant data from routine information systems and research to help ground the discussion in reality. The availability of staffing data is a major strength, as it is often lacking in fragile and conflict-affected contexts (Roome, Raven et al. 2014) and in other parts of DRC (Durham, Pavignani et al. 2015). It used reflection on locally generated evidence and policies, and the rich and detailed knowledge of the local contexts to develop feasible and potentially effective strategies. This is a learning health system in action – stepping back, taking stock of what is happening and why, reflecting on evidence and real-world experience, debating and discussing options, and coming up with solutions. Such an approach can embed learning into all aspects of decision making in health systems (Sheikh, Agyepong et al. 2020). It was facilitated by a research team knowledgeable about the topic and embedded in the context, with strong and trusting relationships with the participants built over several years. Local credibility, a good knowledge of the context, and trust are key components needed for the co-production of knowledge (Heaton, Day et al. 2016; Sadler, Porat et al. 2017) and generally lacking in fragile settings.

#### **7.6.4. Implementing change**

In uncertain environments, managers at the local level need the flexibility and skills in human resource management to effectively implement changes (Mangwi Ayiasi, Rutebemberwa et al. 2019; Mashange, Martineau et al. 2019). The engagement of managers in the workshops show that they are committed to change, though they should be supported somehow. Secondly, such suggestions for changes made in the workshops may well be accepted in principle, but so often organizational inertia prevents them from actually happening until an appropriate ‘window of opportunity’ arises. Such a window became available in Sierra Leone, still recovering from conflict, in 2010 with the introduction of the Free Health Care Initiative in 2010 (Bertone, Samai et al. 2014). In DRC the aftermath of Ebola and COVID-19 may possibly provide the window of opportunity needed in Ituri Province, and elsewhere.

#### **7.6.5. Strengths and limitations**

The strength of this study is based on the participatory research methodology used, where different health systems actors, with a good understanding of the context, came together and reflected on possible solutions in relation to attraction and retention of midwives in rural and remote fragile Ituri Province. Workshops were conducted by a DRC team embedded within the context of fragile rural Ituri. However, there were limitations. One of the limitations is that we only included midwives who have worked in rural areas. Inclusion of midwifery students in their final year, midwives newly recruited and deployed in urban health facilities as well as midwives working in private for profit facilities, would provide views about what strategies would encourage them to opt for rural employment.

#### **7.7. Conclusion**

Rural DRC is severely affected by shortages of health workers, especially midwives. There is an urgent need for contextual strategies to improve attraction and retention of rural midwives. Through a participatory approach using a workshop methodology, health systems stakeholders developed potential strategies on education, professional and

personal support, and finances, to attract and retain midwives. These strategies were based on local evidence, their rich and detailed knowledge and experience and their reflections on the unique context of DRC. This participatory approach can promote learning health systems and develop pragmatic strategies to attract and retain health workers in fragile, remote and rural settings.

#### *Declarations*

#### *Ethics approval and consent to participate*

Ethics approval for this study was granted by the Liverpool School of Tropical Medicine (Research protocol 17-024) and the Multidisciplinary Research Centre for Development in Bunia, DRC (018/2017). In relation to consent to participate in the study, the research team gave the information sheet to the participants to read 48 hours before the sessions. The information was also explained orally. Participants had time to ask any questions. They were given a copy of the information sheet and the signed consent form to keep as a record.

#### *Consent for publication*

Not applicable

#### *Availability of data and materials*

Data are available from the corresponding author on reasonable request.

#### *Competing interests*

The authors declare that they have no competing interests.

#### *Funding*

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#### *Authors' contributions*

AB, TM, ST, JR, PS conceived the study and developed the proposal. AB, AA, JK and MM collected and analyzed the data. AB drafted the manuscript. TM, ST, PS, JR contributed to the interpretation of the results and provided critical comments on early drafts of the manuscript. All authors read and approved the final manuscript.

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## **Chapter 8: Discussion**

### **8.1. Chapter overview**

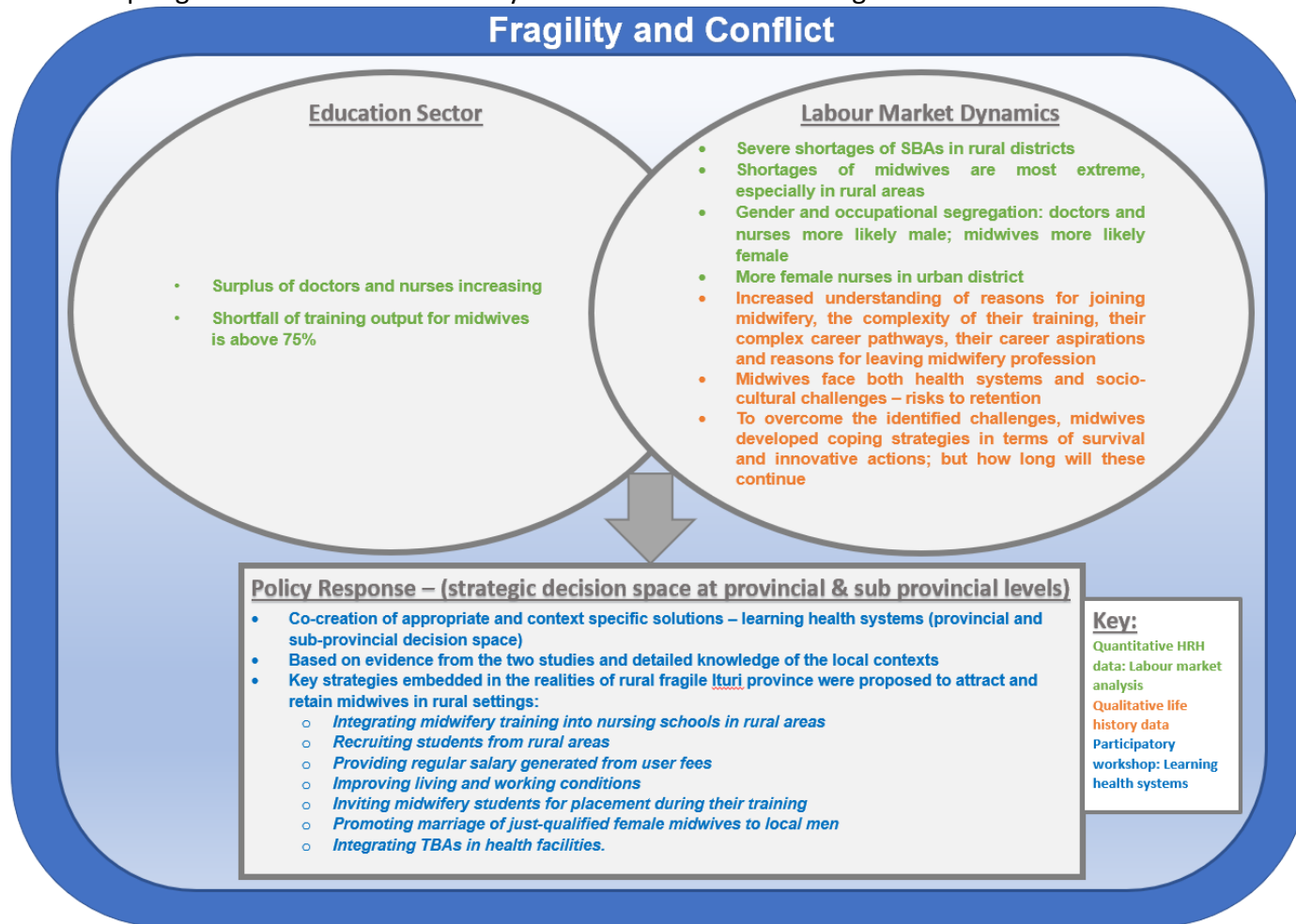
Within this chapter, I describe a summary of the key findings of this thesis, and how the results from different chapters and papers come together to address the main aim of this study, which is to identify appropriate strategies to attract and retain midwifery cadres within the fragile contexts of rural Ituri Province, north-eastern DRC. I describe within section 8.2 the severe shortages of midwives in rural areas, along with their experiences and the challenges that they face in working in this setting; as well as how strategies to attract and retain midwives in such settings using an adapted WHO framework on the retention of health workers in rural areas could be applied (World Health Organization 2010). This is followed by recommendations around the effectiveness of the different strategies identified in the study, as well as some potential interventions for fragile settings. I also present how this research has taken forward what is already known from the literature on HRH and fragility, as well as in relation to the context of DRC in section 8.3. Implications for health systems and policy research thinking are described in section 8.4. Section 8.5 discusses the strengths and weaknesses of the methodological approach that was used in this study, with the broader lessons and implications from the thesis explored within section 8.6. The chapter concludes in section 8.7.



## **8.2. Key findings**

In order to better strengthen the midwifery workforce within fragile contexts, it is important to understand their current situation, as this will inform the way forward. This initially requires access to and analysis of quantitative data on the midwifery workforce. It is important to start with the available data, which is sometimes challenging in fragile and conflict-affected states (Roome, Raven et al. 2014). In the context of this study: to identify strategies to attract and retain midwives in the rural and fragile contexts of Ituri Province; three studies leading to three different papers have been conducted. The key findings from the three studies, how they build upon one other to illustrate the current situation and the ways in which they inform the way forward are displayed in Figure 22. The findings are presented against an adapted Sousa framework (see Figure 9), demonstrating how my findings and the subsequent policy response/strategic decision making need to link to both the education sector and the labour market dynamics.

Figure 22: Adapting the Sousa framework to synthesize dissertation findings



Papers One and Two present new evidence which documents the problems associated with the lack of midwives in Ituri Province. The partial labour market analysis (Paper One) analyses the mismatch of the supply and demand of doctors, nurses and midwives, highlighting the extreme shortages of midwives throughout the province and especially in rural areas, with serious implications for maternal and newborn health. The life histories capture midwives' career experiences and their challenges and opportunities through time (Paper Two). They provide contextual and qualitative information: the voices and experiences behind the figures from Paper One, showing how midwives make decisions about what they do in relation to the labour market analysis in Paper One, as well as whether they decide to remain in post or to leave (retention). The life histories illustrate the reality of life working as a midwife in such an under-resourced setting, characterized not only by a serious shortage of qualified health workers but also by poor working conditions due to the lack of equipment, supplies, professional support and no government salary, and the impact of fragility and conflict upon the situation. Despite these challenges, they have demonstrated resilience, innovation and creativity in how they continued to provide vital services to women and babies.

Paper Three uses an innovative stakeholder workshop approach to problem-solving in response to the evidence and key issues identified through the mixed method research processes and data sources (Papers One and Two). By combining these papers, I have demonstrated that it is not only about the quantitative data on midwives and other skilled birth attendants (doctors and nurses), but also that the message goes beyond the numbers. Listening to and analyzing midwives' stories of working in the rural and remote areas of this fragile setting helps to build a fuller and more holistic picture, by grasping the daily realities. Sharing this information with different stakeholders in the provincial health division and at district health level using an engaging approach will enable the generation of contextual strategies to address the issues affecting midwives in those settings, including their attraction, retention and support.

The stakeholder engagement process identified innovative solutions to attract, retain and support midwives in such rural and fragile settings – some of which can be applied

at community, facility, district and provincial levels. Despite stakeholders' goodwill towards making the changes, they can face challenges in implementing certain proposals, as managers at district and provincial levels may face resource constraints in using their decision space effectively (Munga, Songstad et al. 2009; Seshadri, Parab et al. 2016; Alonso-Garbayo, Raven et al. 2017), especially in a context where there are some policies, which are either partially or not implemented at all. In the context of DRC, the aftermath of the Ebola outbreak and the ongoing COVID-19 pandemic may possibly provide the window of opportunity needed in Ituri Province. Through the presence of many international organizations, local NGOs and the government intervening in the affected areas, there is now the potential to apply different interventions to strengthen the provincial and sub-provincial health systems, to build health workforce capacity and reorganize the health sector. This was observed within other African countries such as Guinea and other west African states during the Ebola crisis (Kolie, Delamou et al. 2019). This situation of midwives requires a call for action to different stakeholders to urgently address both their security and professional conditions, since this will help contribute to improving maternal and newborn health in such settings.

### **8.3. How does this study take forward what is already known in the literature on HRH in fragile contexts and DRC?**

#### **8.3.1. There is a growing body of literature on HRH in fragile contexts, however the evidence base in DRC is weak**

A substantial body of literature focuses on HRH in LMIC countries; although up until about five years ago there had been very limited focus on these issues within fragile and conflict-affected states. More recently, there have been a number of papers on HRH retention, attraction and career development in these settings, including in Timor Leste, Sierra Leone, Zimbabwe and Uganda (Witter, Falisse et al. 2015; Martineau, McPake et al. 2017; Witter, Wurie et al. 2017; Bertone, Martins et al. 2018; Witter, Wurie et al. 2018; Mashange, Martineau et al. 2019). Nevertheless, there still appear to be knowledge gaps in relation to workforce distribution (deployment), workforce

performance, provision of incentives, management, supervision, work organization, job design and performance appraisal in fragile and conflict-affected settings. There is an even greater shortage of research addressing human resources management issues in DRC. The exceptions are papers on: the impact of source of salary for health workers (Bertone, Lurton et al. 2016; Bertone 2018), paying the workforce for performance in fragile settings (Fox, Witter et al. 2014), the challenges of health workers' retention and income sources for primary health care workers (Maini, Hotchkiss et al. 2017), and factors that motivate midwives to remain in their workplaces (Bogren, Grahn et al. 2020). In addition, I am the co-author of a paper that discusses using a human resource management approach to support community health workers in DRC and other African countries (Raven, Akweongo et al. 2015).

### **8.3.2. Health workforce planning and inter sectoral coordination are critical**

Having described the staffing situation of SBAs and the ways in which human resources are being managed, including the supply of data and the need to coordinate across different sectors and levels, it is clear that there are some challenges associated with workforce planning.

Workforce planning can only be successful if all stakeholders are working together to address workforce-related issues and, as shown by Figure 22, this involves both the education sector and the health sector in terms of labour market dynamics. This requires strong coordination at the district, provincial and national levels and across different sectors, otherwise the HRH-related challenges in such settings surrounding production, availability and distribution will remain unresolved.

There is a growing interest in multi-sectoral approaches and collaboration, as these contribute to providing more comprehensive solutions to the different issues being studied (Bennett, Glandon et al. 2018; Graham, Kuruvilla et al. 2018; Al-Mandhari, El-Adawy et al. 2019).

This research also demonstrates complexity and lack of coordination across sectors (health and education), as both sectors train midwives and other health professionals

whilst the Ministry of Public Health is the potential employer across these cadres. With poor coordination, this will probably lead to overproduction within certain categories of the health workforce (Ministère de Santé Publique RD Congo 2016a; Ministère de la Santé Publique RD Congo 2016b), with more limited production in other areas. The overproduction of some categories of health workers (nurses, physicians) has been addressed in HRH policies in DRC, but the limitations in the implementation of these policies is still posing problems. For example, nursing schools and colleges are still training more nurses compared to other health professionals, such as midwives whose shortages are increasing (see subsections 5.5.3 and 5.6.3.). Data from the document review on health workforce policies in DRC highlighted the need to explore the training outputs from provincial nursing schools, colleges and faculty of medicine.

**8.3.3. Understanding and expanding the decision space at local level is needed to develop and implement strategies that will be effective in addressing HR issues, and is particularly relevant in FCAS contexts**

In theory, managers at provincial level should have control (or “decision space”) over key areas of health workforce management as described in the sub-section 3.7.5. Decision-making space could mean being in control of the province (Alonso-Garbayo, Raven et al. 2017; Roman, Cleary et al. 2017). As the province is a decentralized level of the health system, managers have a better understanding of the health workforce needs, in terms of the different categories of health workforce needed, taking into account both the numbers they have to train each year and the range of different categories to be recruited and deployed.

In most LMICs, district health management teams and provincial health authorities hold the responsibilities of managing health workers’ performance, and as such, their decision space is expanded (Bonenberger, Aikins et al. 2014; Alonso-Garbayo, Raven et al. 2017). In practice however, local managers face challenges in utilizing their decision space effectively due to challenges and gaps in policy implementation (Seshadri, Parab et al. 2016). In this situation, if the provincial health authorities do not play key roles in health workforce planning within the province, HRH challenges related to training

outputs, recruitment, deployment and retention will continue. This is why it is so important to understand the degree of decision space actually being used by local managers, since this has implications on health workforce performance (Alonso-Garbayo, Raven et al. 2017).

The study design enabled the expansion of decision space through the workshop process and strategies were developed that responded to the data and realities of Ituri Province.

The challenge is how to implement these strategies within this particular context of fragility and also separation from the capital. Kinshasa is more than 1700km away from Ituri, and the only means of travel is by airplane, which is expensive. The road infrastructure is very poor, due in part to conflict in the region. In such a context, contacts made using only telephone calls and e-mails with the national authorities are not fully effective in addressing the issues relating to HRH at local levels, because the authorities may view these as a second priority. This limits the follow-up of specific functions that are managed in Kinshasa, affecting performance at the district and province levels and ultimately, this distance sees their decision space reduced in practical terms. Broadening such consultations through a stakeholders' engagement approach and involving more stakeholders can contribute to practically expanding the decision space at district and provincial levels, however there are transport and logistical challenges involved within and beyond the province.

There are a number of challenges in conducting research in fragile and conflict-affected states, including: the lack of appropriate support; complex local research environments, including access constraints; weak local research capacity; collaboration challenges and a lack of trust in the research process with limited research application, including rapidly outdated findings; and, a lack of engagement with the research process and results (Woodward, Sheahan et al. 2017). Within fragile and conflict-affected contexts (see the outer circle of Figure 22), participatory workshops and the co-production of knowledge can address these constraints, building trust, capacity, collaboration and engagement with the research process.

#### **8.3.4. Midwives show great resilience, but this cannot be relied upon - strategies need to be implemented at all levels**

Midwives bear the brunt of the health system challenges. They work in a severely under-resourced health system with huge workloads; as a consequence of the health worker shortages in the rural and remote areas of fragile and conflict-affected settings. In this challenging situation however midwives show resilience and commitment, as has been observed in health workers within other similar contexts (Witter, Namakula et al. 2017; Witter, Wurie et al. 2017). For instance, despite health systems related challenges, my research findings showed that it is possible for regional health systems (provincial and district levels) to improve the systems' resilience (See chapter 7). Sustaining this resilience over time, as conflict and fragility continue to persist is extremely challenging. It is not known for how long midwives and other skilled birth attendants will maintain their resilient strategies in contexts of ongoing fragility and conflict, especially with the extra challenges related to COVID-19, which exposes these front-line cadres to the additional risk of infection (Wille 2020; Wurie and Lohmann 2020). In some remote health facilities, even though the national policies do not allow TBAs to deliver pregnant women (Ministère de la Santé Publique RD Congo 2016a), sometimes TBAs are the only accessible birth attendants in the area so undertake this role. In addition, TBAs are really trusted by the local community. Despite the fact that stakeholders taking part in the study have developed some local strategies at facility or health district levels, it is important that more strategies be developed and effectively implemented, both at national and international levels to support midwives and SBAs in the longer term (Witter, Wurie et al. 2017).

#### **8.3.5. Midwives in fragile and conflict-affected settings: Managing the social and family sphere with SBA work**

Family-related responsibilities for female midwives and other female SBA cadres (Witter, Namakula et al. 2017), can represent obstacles to both rural deployment and remaining in the profession. As long as these gendered power relations and gender norms and responsibilities within households remain unaddressed, the deployment of female



midwives and other SBA cadres in rural areas will remain challenging. Other gender related factors which can affect deployment are shaped by community beliefs. For instance, women's reluctance to go to early ante-natal appointments is shaped by community norms around not revealing early pregnancies. This contributes to underutilization of midwifery services and means that problems are not identified. This situation can demotivate midwives to accept their deployment in such rural and remote health facilities. Another community belief, shaped by gender norms, involves concealing labour due to fear of 'bewitching'. Again this situation can contribute to increasing avoidable maternal and newborn deaths in the area, leading to frustration of midwives working in facilities, another factor shaping their demotivation.

In addition, Adja district, being totally rural and the rural part of Aru district are made up of one ethnic group, and the only spoken language is the local tribal language. This situation can be considered as an obstacle for midwives from other tribal groups to be deployed, due to language barrier. This challenge of language (and cultural understanding), is not only linked to the health sector, but also to other sectors. Partnership and discussion with the educational sector to explore joint solutions to support and sustain cadres in rural settings would be beneficial.

To overcome these challenges, promoting security in rural areas, developing better employment opportunities for husbands and providing good quality schooling for children can all help to support the deployment and retention of female midwives in rural areas. Most of these elements are described in the national policies on attraction and retention of health workers in rural and remote areas, but they are still not implemented. In addition, encouraging families, including the husbands, to help midwives with their domestic work and caring responsibilities can reduce the pressure on women and help to support a balance between work and family life (World Health Organization 2016e). This can be done through sensitization campaigns within the community using different channels (radio, churches, community gatherings and opinion leaders). In addition, midwives need support in discussing and negotiating around gendered community norms which mean that women feel the need to not attend earlier

ante-natal appointments and/or conceal labour. Strategies to support midwives to communicate and interact with the community – in strategic partnership with and support from community health workers and women leaders are important here. This requires additional support and resourcing, given the serious shortage of midwives. This will vary in different contexts, in Aru there is a strong women’s association (IPASC DRC 2017) and sharing learning from this in the other districts would be a helpful approach. Participatory and reflective approaches (such as Stepping Stones) (Bradley, Bhattacharjee et al. 2011), that support women and men to reflect on their gender norms and explore strategies for change, will help to take this process forward within communities and also in midwives own lives and relationships.

## **8.4. Implications for health systems and policy research thinking**

### **8.4.1. Co-production of knowledge**

Evidence from facilitation and discussion with different stakeholders is an intermediary stage towards improving midwifery and the SBA workforce at district level, which can contribute to improvements in maternal health. As far as my positionality is concerned, being embedded in the context with strong and trusting relationships with participants built over several years, I was able to bring different stakeholders together (provincial delegates, district health delegates, nursing schools' delegates, midwives, nurses and church medical coordination delegates). Together with the research assistants, I presented findings from the PhD study in a way that would be acceptable to the stakeholders. I then facilitated the discussion, which led to the co-production of knowledge in terms of strategies to attract and retain midwives in the rural and remote areas of the fragile Ituri Province. This was only possible because of the trusting relationships I had developed over time with the different cadres within the districts and province, which created a comfortable and permissive space whereby stakeholders really listened to the research findings and discussed these, relating them to the realities of their work within the districts and the province and developing strategies that were feasible within their context. This process served to partially expand the decision space of these managers.

The decentralization of the health system within DRC provides the opportunity for greater decision space among managers at both provincial and district levels (Ministère de la Santé Publique RD Congo 2016b). Unfortunately however, there are still some challenges relating to the effectiveness of applying this decision space, since some functions, such as remuneration and incentives, fall under the responsibility of the central government (in Kinshasa), and the district health management team seems to have a limited role, as has also been found elsewhere (Alonso-Garbayo, Raven et al. 2017).

Local credibility, a good knowledge of the context and trust are all key components necessary for the co-production of knowledge, and are often lacking in fragile and conflict affected settings.

#### **8.4.2. A learning health system?**

The elements described above are critical steps in developing learning health systems. A learning health system is defined as a system that seeks to continuously generate and apply evidence, innovation, quality and value in health care (Platt, Raj et al. 2020). As described by Sheikh et al., learning needs to be considered as a priority for strengthening health systems in LMICs, in order to allow changes to come from the health system actors' own experiences through generating new knowledge (Sheikh, Agyepong et al. 2020). Not learning from experience, either their own or others, can contribute to repeating mistakes (Sheikh, Agyepong et al. 2020). The participatory workshops demonstrated a learning health system in action. As described in Paper Three, stakeholders were able to reflect on policy implementation, for example there are clear policies on workforce planning, but these are not implemented as they should be, and the central government is responsible for that poor implementation. By bringing different perspectives together in the workshops, they were able to recognize that the responsibilities lay with other levels of the health systems (such deciding on salary and recruiting new health workers), and went on to develop contextual strategies to deal with local challenges related to policy implementation.

Rather than simply receiving instructions 'from the top', without taking into account the local context, facilitation through engaging stakeholders and understanding the resilience, the innovation and the relationships (or lack of them) between all parties involved in the process, will support sustainable and learning health systems. Engaging different stakeholders through a consultation approach has also been revealed to be a responsible way to empower them to take action locally, leading to co-producing knowledge (Sheikh, Agyepong et al. 2020) and also to improving the resilience of the health systems at the provincial and health district's levels. This can only happen when there are trusting relationships among different stakeholders involved in the

consultation process. Good trust relationships with managers are clearly associated with health workers' motivation (Gilson 2006; Razee, Whittaker et al. 2012; Okello and Gilson 2015). It is only in that mood of trust that different stakeholders can engage themselves to co-produce knowledge on the issues that affect them (O'Hare, Coaffee et al. 2010; Raven, Baral et al. 2018). Permanent contacts with different stakeholders, both through professional and social environments; as well as not being judgmental towards certain local practices and values, can help in developing that mood of trust. In this context, co-production is considered as a way of working together with different participants to create people-centred interventions (Raven, Baral et al. 2018), contributing to improving health systems resilience.

#### **8.4.3. Learning and action need to continue**

Learning needs to continue through ongoing cycles for action; and workshops, such as in this current situation, can constitute a good starting point for the process of joint learning and action. What was innovative was the articulation of what is within the sphere of control for district and provincial planners and stakeholders in Ituri and what is not. For instance, most of the identified strategies were not actioned yet, with a few exceptions such as the district health development fund in Adja district. Due to the poor condition of health facility buildings throughout the district, the district health management, along with health centres' head nurses, agreed to contribute each month to the development fund the equivalent of every first delivery at the facility (\$15 USD), equating to around \$275 USD across the 17 health centres, including around \$20 USD for the referral hospital. They retain the contributions for about six months before deciding together on the facilities to be rehabilitated. This example illustrates a pragmatic way of improving resilience of the health systems at the health district level. There are certain constraints however in implementing some of the strategies, such as rural placement allowances, which are also clearly described in the policies, but not implemented yet. This is because the regular salaries are fully under the responsibility of the central government, and the provincial authorities felt limited in their ability to action this, as it is beyond their decision space. Ongoing facilitation and reflection is

critical here, to keep these spaces open for development and to build up resilience for action when new matters arise.

#### **8.4.4. My role in supporting continued learning and action**

Working in IPASC as the executive director and supervising some community-based interventions within the districts where IPASC operates, as well as attending meetings and workshops within health districts, has helped me to build relationships with health workers as well as their managers at the district and province levels. Therefore, it is possible to build on these relationships in order to follow up some learning through reflective actions within the health districts, which will contribute to strengthening management within health districts and the provincial health division. For instance, through lobbying for support from the provincial reproductive health office, church medical coordination (church health facilities' management office), NGOs intervening in maternal and newborn health and the district health management team, I will develop a mechanism for providing regular professional support to midwives working in rural and remote areas, in terms of in-service training, formative supervision and experience-sharing sessions, where midwives will be brought together to learn from one other.

Aside from my role within IPASC, I have a number of other educational responsibilities, which can contribute to promoting such learning experiences. For instance, as part of my role working with community health students, I will also encourage ongoing reflection and innovation, at the facility, district and community levels. I regularly carry out supervisory visits to students when they are placed at facilities, which will provide me with opportunities to create some spaces where facility managers, health workers and health facility committee members can reflect on their situation and develop strategies to address challenges. I can also share learning across the facilities. Since I am very active in the church, I am able to work with the church medical coordination, who are responsible for many health facilities within Ituri province. I will support the church medical coordination managers in using participatory methods with health workers, to analyze and reflect upon the health workforce situation, and jointly develop and implement solutions to challenges. I will also provide ongoing training

I further intend to organize a session with different stakeholders such as NGOs who participated in the workshops, where the results from these workshops will be shared and discussed, leading to potential action being undertaken within the limits of the relevant decision space. Within this space with the provincial health division authorities, including the human resources for health department, I intend to reflect on the different recommendations from the workshops and how these can lead to action. This will include ongoing dialogue and strategies to expand the decision-making space at provincial authority level, as well as lobbying to the central government on the elements beyond this decision space.

### **8.5. Strengths and weaknesses of the methodological approach**

Using mixed methods where numbers and voices are brought together, followed by a participatory consultation process in workshops to analyze and reflect on the implications of the evidence, is considered the key strength of the methodological approach, as it contributed to triangulating the evidence, from different perspectives. This builds trust and supports collaboration. Using available data and co-producing new knowledge with the provincial office was a great starting point. The innovative approach used by the provincial HRH analyst to retrieve missing data from health districts contributed to filling the data gaps. Then, gaining an in-depth understanding of what lay behind the numbers through the life history methods helped to grasp the daily experiences of the midwives, their challenges and opportunities. Finally, engagement with different stakeholders in workshops using findings from both the HR quantitative data and life histories with midwives, to explore appropriate strategies for improving SBA staffing to improve maternal health services, represented a perfect combination of the mixed methods used. This served to cement both interest and ownership of the study. The provincial HRH analyst was really invested in this process, since he had found a great interest in analyzing the HRH data, and in using this data to explain the HRH situation in the province, especially as this was the first time that such a study had been carried out within the province. I will continue to foster his interest by involving him in future research studies on HRH.

Normally, for an insider, i.e. someone born, grown, studied, and living in the research area, there are both advantages and disadvantages in terms of positionality. There are definite benefits of being an insider and being embedded within the relevant context. Through strong and trusting relationships with the participants that developed over several years, it was easy to identify the different stakeholders to be involved, and due to these existing relationships, and the fact that they were accustomed to meeting in other health meetings or trainings, their participation within the different sessions was active, and generated data and knowledge.

However, there are also limitations surrounding being embedded within this context. Since I am well-known to respondents, they may respond to questions based on what they think I might like to hear, rather than what they actually feel (Dwyer and Buckle 2009; Ross 2017; Fleming 2018). There is also a risk that I may interpret the data so that it fits with my own views and experiences. Stressing to the respondents that their views and experiences are important throughout the research process, as well as regular discussions with my supervisors helped to counter this potential bias. In my analysis, the positive aspect outweighs the risk, through convening power and the ability to continue action in ongoing cycles of reflection within a learning health system at provincial and districts levels.



## **8.6. Broader lessons and implications from the thesis**

There are four broad lessons that can be drawn from this thesis.

### ***Lesson 1: Build a holistic picture of the workforce***

Addressing health workforce staffing problems requires both quantitative and qualitative data. In most FCAS, good data is difficult to obtain, as health facility infrastructure is often destroyed along with the available data, and health managers and workers may have other priorities apart from data management (Roome, Raven et al. 2014). So it is important to start with the quantitative data on human resources for health when available, and then build a more holistic picture of the workforce through the generation of qualitative data. Implementation of this recommendation in FCAS is possible, but requires a strong facilitation of the process by a skilled researcher, research capacity building for regional and district managers and partnership with managers to strengthen capacity and ownership.

### ***Lesson 2: Engage with local stakeholders to find context specific solutions***

Strengthening managers' ability to collect and present data is important. Feeding back results from secondary data and qualitative data gathered in a participatory workshop to a group of local stakeholders is crucial, since this promotes ownership of the research and determination to propose and act on context-specific solutions within their decision space. Engaging midwives in this process is also important as is strategies to support them in community negotiations. Promoting the engagement of local managers with other local stakeholders to find context specific solutions is also crucial for the promotion of health systems resilience.

### ***Lesson 3: Trust and co-production of knowledge support a learning health system***

Building trust between the research team and stakeholders involved in the participatory workshops, as well as between different participants, is very important since FCAS are characterized by a lack of trust in the research process (Woodward, Sheahan et al. 2017). Without trusting relationships, participation will be challenged. Trust-building is key to

the process of co-producing knowledge and learning health system by local stakeholders. Trust building in FCAS is possible through a long stay of managers and researchers in the study area and being aware of and responsive to local social values. Permanent contacts and meetings of local managers with other stakeholders can also reinforce trust, especially in FCAS, and contribute to the promotion of health systems' resilience at provincial and district levels.

***Lesson 4: Critical thinking leads to promotion of spaces for action***

There is broader, process-led learning that goes beyond HRH - i.e. data collection and analysis is possible, reflection and workshops with different stakeholders for change are possible. What is important in such difficult conditions characterized by conflicts and outbreaks such as Ebola and COVID-19, is to think critically about room for manoeuvre and to have ongoing spaces for action at relatively low cost. The most important thing is to have people involved who have the skills to facilitate the reflective stakeholders' consultation and the credibility to make it work. Another important element is about getting the right people in the room with the right motivation, leading to local and contextual actions in order to contribute to the desired changes to the situation being experienced. Having a skilled researcher to undertake consultation with local stakeholders on the ground is important. This should be complemented by good knowledge of the local context and potential stakeholders, including local and provincial managers in order to support successful dialogues in FCAS which can contribute to expanding district and provincial managers' decision space. This will further strengthen the resilience of the health systems at provincial and district levels.

In addition, beside the collaboration, promoting multi-sectoral approach is crucial to provide more comprehensive solutions to different issues on HRH at local, regional and national levels of the health systems in fragile settings. Through a good facilitation process by provincial and districts' managers, the implementation of this recommendation is also possible in FCAS, at different levels of the health systems (district, provincial and national).

## 8.7. Conclusion

In conclusion, in order to better support the midwifery workforce in fragile and conflict affected states contexts like Ituri province, I have argued that it is very important to have current data on health workforce and an understanding of the underlying reasons behind this. But, in many cases in FCAS, access to this data is challenging, it may not have been fully or rigorously collected or it may have been destroyed because of conflicts. That is why, I have shown that in this context, it is always possible to start with the available data in such contexts. I have also described that it is possible to retrieve some missing data through some context specific innovative strategies.

I have also argued that understanding their pathways in terms of experiences, challenges and coping strategies in such settings is critical as it clarifies the nature of support they need so that they effectively contribute to improve maternal health outcomes, leading to universal health coverage. Otherwise, they will be left behind, and Universal Health Coverage will not be realized.

Finally, I have shown that, through engaging with different health systems stakeholders at the provincial and district levels, using a participatory workshop methodology, it is possible to identify context specific strategies which will promote attraction, support and retention of midwives in fragile and rural settings. I have argued that through a clear collaboration mechanism and building trust principles, it is possible to contribute to the co-production of knowledge, leading to the learning health system in action. Finally, I have described that the reflection on evidence and policies generated locally with different stakeholders in a fragile setting, and the detailed knowledge of the local contexts are very important as they contribute to providing context specific and appropriate strategies to deal with HRH related issues such as strengthening midwifery workforce, in terms of attraction and retention in such settings. The next step is for these strategies to be implemented and evaluated. And I am committed to driving this forward.

## REFERENCES

- Abimbola S, Negin J, Jan S and Martiniuk A (2014). "Towards people-centred health systems: a multi-level framework for analysing primary health care governance in low- and middle-income countries " *Health Policy and Planning*. 29: ii29-ii39.  
<https://doi.org/10.1093/heapol/czu069>
- Abimbola S, Olanipekun T, Schaaf M, Negin J, Jan S and Martiniuk A.L.C (2017). "Where there is no policy: governing the posting and transfer of primary health care workers in Nigeria." *The International Journal of Health Planning and Management*. **32**(4): 492-508. <https://doi.org/10.1002/hpm.2356>
- Accoe K, Marchal B, Gnokane Y, Abdellahi D, Bossyns P and Criel B (2020). "Action research and health system strengthening: the case of the health sector support programme in Mauritania, West Africa." *Health Research Policy and Systems*. **18**(1): 25. <https://doi.org/10.1186/s12961-020-0531-1>
- Action for Global Health UK (2011). Health workers in fragile states: The case for investment. <https://www.hrresourcecentre.org/node/3948.html> Accessed 23/06/2020
- Adegoke A, Utz B, Msuya SE and van den Broek N (2012). "Skilled Birth Attendants: Who is Who? A Descriptive Study of Definitions and Roles from Nine Sub Saharan African Countries." *PLoS One*. **7**(7): e40220.  
<https://doi.org/10.1371/journal.pone.0040220>
- Adeloye D, Adedeji David R.A, Olaogun A.A, Auta A, Adesokan A, Gadanya M, Opele J.K, Owagbemi O and Iseolorunkanmi A (2017). "Health workforce and governance: the crisis in Nigeria." *Human Resources for Health*. 15(32).  
<https://doi.org/10.1186/s12960-017-0205-4>
- Aembe B and Dijkzeul D (2018). Humanitarian governance and the consequences of the state fragility discourse in DRC's health sector. London, Secure Livelihoods Research Consortium. <https://securelivelihoods.org/publication/humanitarian-governance-and-235>

the-consequences-of-the-state-fragility-discourse-in-drcs-health-sector/ Accessed 23/08/2019

Africa Centre for Strategic Studies (2018). "Ituri Becomes Congo's Latest Flashpoint." <https://africacentre.org/spotlight/ituri-becomes-congos-latest-flashpoint/> Accessed 26/07/2020

Al-Mandhari A, El-Adawy M, Khan W and Ghaffar A (2019). "Health for all by all-pursuing multi-sectoral action on health for SDGs in the WHO Eastern Mediterranean Region." *Globalization and Health*. **15**(64). <https://doi.org/10.1186/s12992-019-0504-8>

Al-Amer R, Ramjan L, Glew P, Darwish M and Salamonsen Y (2014). "Translation of interviews from a source language to a target language: examining issues in cross-cultural health care research." *Journal of Clinical Nursing*. **24** (9-10): 1151-62. <https://doi.org/10.1111/jocn.12681>

Albaugh J (2003). "Keeping nurses in nursing: the profession's challenge for today." *Urol Nurs*. **23** (3): 193-9. <https://pubmed.ncbi.nlm.nih.gov/12861736/> Accessed 20/06/2020

Ali R, Barra, A.F, Berg C.N, Damania, R, Nash J.D, Russ J and Russ J (2015). Infrastructure in conflict prone and fragile environments: Evidence from Democratic Republic of Congo. Washington, University of Maryland. Policy Research Working Paper;No. 7273. Washington : World Bank. <https://openknowledge.worldbank.org/handle/10986/22005> Accessed 12/01/2019

Alliance for Health Policy and Systems Research (2013). What is HPSR? Overview. Geneva, Alliance for Health Policy and Systems Research.

Alonso A and Brugha R (2006) "Rehabilitating the health system after conflict in East Timor: a shift from NGO to government leadership." *Health Policy and Planning*. **21**(3): 206-16. <https://doi.org/10.1093/heapol/czl006>

Alonso-Garbayo A, Raven J, Theobald S, Ssenooba F, Nattimba M and Matineau T (2017) Decision space for health workforce management in decentralized settings: a case study in Uganda. *Health Policy and Planning*. **32**(3): iii59–iii66.

<https://doi.org/10.1093/heapol/czx116>

Aluttis C, Bishaw T and Frank M.W (2014). "The workforce for health in a globalized context – global shortages and international migration." *Global Health Action* **7**(23611).

<https://doi.org/10.3402/gha.v7.23611>

Amiri M, Khosravi A, Sakhaee S and Raei M (2020). "Knowledge, Attitude and Practice of Nursing and Medical Students about HIV/AIDS and Hepatitis." *The Open Public Health Journal*. **13**: 257-262. <https://doi.org/10.2174/1874944502013010257>

Amouzou A, Ziqi M, Carvajal L and Quinley J (2017). "Skilled attendant at birth and newborn survival in Sub-Saharan Africa." *Journal of Global Health*. **10**(12).

<https://doi.org/10.7189/jogh.07.020504>

Amuda B (2018). "A midwives and traditional birth attendants' collaboration in rural north-eastern DR Congo: A complementing strategy where there are few qualified midwives." *Rebuild Consortium* <https://rebuildconsortium.com/blog-news/blogs/2018/midwives-and-traditional-birth-attendants-collaborate-in-dr-congo/> Accessed 30/06/2018 2018.

Anwari Z, Shukla M, Maseed B.A, Wardak G.F.M, Sardar S, Matin J, Rashed G.S, Hamedi S.A, Sahak H, Aziz A.H, Boyd-Boffa M and Trasi R (2015). "Implementing people-centred health systems governance in 3 provinces and 11 districts of Afghanistan: a case study." *Conflict and Health*. **9**(2). <https://doi.org/10.1186/1752-1505-9-2>

Araújo E and Maeda A (2013). How to recruit and retain health workers in rural and remote areas in developing countries Washington, World Bank.

<https://openknowledge.worldbank.org/bitstream/handle/10986/16104/78506.pdf?sequence=1&isAllowed=y> Accessed 13/10/2018

Association Régionale d'Approvisionnement en Médicaments Essentiels (2016). *Guide CDR*. Kinshasa, ASRAMES.

Azad A, Min JG, Syed S and Anderson S (2017). "Continued nursing education in low-income and middle-income countries: a narrative synthesis." *BMJ Global Health*. **5**(2). <https://doi.org/10.1136/bmjgh-2019-001981>

Baba A, Martineau T, Theobald S, Sabuni P and Raven J (2020). "Using data to support evidence-informed decisions about skilled birth attendants in fragile contexts: A situational analysis from Democratic Republic of Congo " *Human Resources for Health*. **18**(82). <https://doi.org/10.1186/s12960-020-00511-w>

Baba A, Theobald S, Martineau T, Sabuni P, Muziakukwa M, Alitimango A and Raven J (2020a). "Being a midwife is being prepared to help women in very difficult conditions": midwives' experiences of working in the rural and fragile settings of Ituri Province, Democratic Republic of Congo " *Rural and Remote Health*. **20**(3). <https://doi.org/10.22605/RRH5677>

Baba A, Theobald S, Martineau T, Sabuni P, Muziakukwa M, Alitimango A, Kisembo J and Raven J (2020b) Developing strategies to attract, retain and support midwives in rural fragile settings: participatory workshops with health system stakeholders in Ituri Province, Democratic Republic of Congo. *Health Research Policy and Systems*. <https://doi.org/10.1186/s12961-020-00631-8>

Bailey R, Kamanzi D and Deussom R (2012). Assessment of nursing and midwifery education and training capacity at seven training institutes in the democratic Republic of Congo. Washington, IntraHealth International.

Bakiman K.B (2013). Une nouvelle stratégie pour réduire la mortalité maternelle et infantile. Kinshasa, relief web. <https://reliefweb.int/report/democratic-republic-congo/une-nouvelle-strat%C3%A9gie-pour-r%C3%A9duire-la-mortalit%C3%A9-maternelle-et> Accessed 23/07/2018

Balembu BA (2014) "Corruption et décentralisation en RDC. In: Omasombo J and Bouvier B (Editors). République Démocratique du Congo: Décentralisation et espaces de pouvoir. Tervuren : Musée Royal d'Afrique Centrale, 171 –91. .

Balibuno, B. et al. (2020). Lessons not learnt? Faith leaders and faith-based organisations in the DRC Ebola response. *Humanitarian Practice Network*.  
<https://odihpn.org/magazine/lessons-not-learnt-faith-leaders-and-faith-based-organisations-in-the-drc-ebola-response/> Accessed 23/06/2020

Banda A and Hinlopen C (2020). "Will investment in our health workforce continue beyond COVID-19?". <https://epha.org/will-investment-in-our-health-workforce-continue-beyond-covid-19/>. Accessed 7/06/2020

Banque Africaine de Développement (2013). République Démocratique du Congo. Document de stratégie pays. 2013-2017. Kinshasa, BAD

Banque Mondiale (2005). Santé et Pauvreté en République Démocratique du Congo : Analyse et Cadre Stratégique de Lutte contre la Pauvreté Rapport d'Etat Santé et Pauvreté, Banque Mondiale: 109.

Banque Mondiale (2019a). Infirmiers et sage femmes (pour 1000 personnes). Washington, Banque Mondiale.  
<https://donnees.banquemondiale.org/indicateur/SH.MED.NUMW.P3> Accessed 18/01/2020

Banque Mondiale (2019b). Medecins (pour 1000 personnes). Washington, Banque Mondiale. <https://donnees.banquemondiale.org/indicateur/SH.MED.PHYS.ZS> Accessed 18/01/2020

Bansele B (2010). "République Démocratique du Congo (RDC)." *Recherche en Soins Infirmiers*. **1**(100): 85-86. <https://doi.org/10.3917/rsi.100.0085>

Barroy H, Andre F, Mayaka S and Samaha H (2014). Investing in Universal Health Coverage: Opportunities and Challenges for Health Financing in the Democratic



Republic of Congo. Washington, World Bank Group.  
<https://documents.worldbank.org/en/publication/documents-reports/documentdetail/782781468196751651/investing-in-universal-health-coverage-opportunities-and-challenges-for-health-financing-in-the-democratic-republic-of-congo> Accessed 21/07/2020

Barry B (2019). Une centaine de groupes armés actifs dans l'est de la RDC. Berlin.  
<https://www.dw.com/fr/une-centaine-de-groupes-arm%C3%A9s-actifs-dans-lest-de-la-rdc/a-51664664> Accessed 28/12/2019

Baumann A, Yan J, Degelder J and Malikov K (2006). Retention strategies for nursing: a profile of four countries. Human Resources for Health. Series Number 5. Hamilton, Nursing Health Services Research Unit.  
<https://www.hrhresourcecentre.org/node/1205.html> Accessed 15/08/2020

Baumann A, Hunsberger M and Crea-Arsenio M (2011). "Workforce integration of new graduate nurses: evaluation of a health human resources employment policy." *Health Policy* **7**(2): 47-59 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3287948/> Accessed 15/08/2020

BBC (2019). Democratic Republic of Congo profile - Timeline. London.  
<https://www.bbc.com/news/world-africa-13286306> Accessed 15/08/2020

Beek K, McFadden A and Dawson A (2019). "The role and scope of practice of midwives in humanitarian settings: a systematic review and content analysis." *Human Resources for Health*. **17**(5). <https://doi.org/10.1186/s12960-018-0341-5>

Behera M.R, Prutipinyo C, Sirichotiratana N and Viwatwongkasem C (2017). "Interventions for improved retention of skilled health workers in rural and remote areas." *Annals of Tropical Medicine and Public Health*. **10**(1): 16-21.  
<https://doi.org/10.4103/1755-6783.205591>

Belaid L, Dagenais C, Moha M and Ridde V (2017). "Understanding the factors affecting the attraction and retention of health professionals in rural and remote areas: a mixed-method study in Niger." *Human Resources for Health*. **15**(1): 60.

<https://doi.org/10.1186/s12960-017-0227-y>

Bennett S, Glandon D and Rasanathan K (2018). "Governing multisectoral action for health in low-income and middle-income countries: unpacking the problem and rising to the challenge." *BMJ Global Health*. **3**: e000880. <https://doi.org/10.1136/bmjgh-2018-000880>

Bergold J and Thomas S (2012). "Participatory Research Methods: A Methodological Approach in Motion." *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*. **13**(1). <https://www.qualitative-research.net/index.php/fqs/article/view/1801/3334> Accessed 2/08/2020

Bernard R.H (2002). *Research Methods in Anthropology: Qualitative and quantitative methods*. Walnut Creek, California, AltaMira Press.

Bertone M.P, Samai M, Edem-Hotah J and Witter S (2014). "A window of opportunity for reform in post conflict settings? The case of Human Resources for Health policies in Sierra Leone." *Conflict and Health*. **8**(11). <https://doi.org/10.1186/1752-1505-8-11>

Bertone M.P and Witter S (2015). "The complex remuneration of human resources for health in low-income settings: policy implications and a research agenda for designing effective financial incentives." *Human Resources for Health*. **13**(62).

<https://doi.org/10.1186/s12960-015-0058-7>

Bertone M.P, Lurton G and Mutombo P.B (2016). "Investigating the remuneration of health workers in the DR Congo: implications for the health workforce and the health system in a fragile setting." *Health Policy and Planning* **31**(9): 1143-51.

<https://doi.org/10.1093/heapol/czv131>

Bertone M.P (2018). "Le defi de fidelisation des personnels de sante dans les zones rurales: analyse des strategies mises en oeuvre dans sept pays d'Afrique francophone. HS (HS)" *Sante Publique*. <https://doi.org/10.3917/spub.180.0033>

Bertone M.P, Pereira, S.M, Martineau T and Alonso-Garbayo A (2018). "Understanding HRH recruitment in post conflict settings: an analysis of central-level policies and processes in Timor-Leste (1999-2018)." *Human Resources for Health*. **16**(66). <https://doi.org/10.1186/s12960-018-0325-5>

Bertone M.P, Jowett M, Dale E and Witter S (2019). "Health financing in fragile and conflict-affected settings: What do we know, seven years on?" *Social Science & Medicine*. **232**: 209-219. <https://doi.org/10.1016/j.socscimed.2019.04.019>

Bharj K.K, Luyben A, Avery M.D, Johnson P.G, O'Connell R, Barger M.K and Bick D (2016). "An Agenda for Midwifery Education: Advancing the State of the world's Midwifery " *Midwifery*. **33**: 3-6. <https://doi.org/10.1016/j.midw.2016.01.004>

Bianchi T, Belingheri M, Nespoli A, De Vito G and A Riva M (2019). "Occupational Risks in Midwifery: From Bernardino Ramazzini to Modern Times." *Safety and Health at Work*. **10** (2): 245-247. <https://doi.org/10.1016/j.shaw.2018.11.002>

Bogren M, Ndela B, Toko C and Berg M (2020). "Midwifery education, regulation and association in the Democratic Republic of Congo (DRC) – current state and challenges." *Global Health Action*. **13**(1): 1717409. <https://doi.org/10.1080/16549716.2020.1717409>

Bonenberger M, Aikins M, Akweongo P and Wyss K (2014). "The effects of health worker motivation and job satisfaction on turnover intention in Ghana: a cross-sectional study." *Human Resources for Health*. **12**(43). <https://doi.org/10.1186/1478-4491-12-43>

Boniol M, Mclsaac M, Xu L, Wuliji T, Diallo K and Campbell J (2019). Gender equity in the health workforce: Analysis of 104 countries. Geneva, WHO.

[https://www.who.int/hrh/resources/gender\\_equity-health\\_workforce\\_analysis/en/](https://www.who.int/hrh/resources/gender_equity-health_workforce_analysis/en/)  
Accessed 12/05/2020

Bossert T (1998) Analyzing the decentralization of health systems in developing countries: decision space, innovation and performance. *Social Science and Medicine*. **47**(10): 1513-1527. [https://doi.org/10.1016/S0277-9536\(98\)00234-2](https://doi.org/10.1016/S0277-9536(98)00234-2)

Bouvier P. (2012) La Décentralisation en République Démocratique du Congo de la première à la troisième république, 1960–2011. Tervuren : Musée Royal d’Afrique Centrale.

Bowen G (2009). "Document Analysis as a Qualitative Research Method." *Qualitative Research Journal*. **9**(2): 27-40. <https://doi.org/10.3316/QRJ0902027>

Bradley JE, Bhattacharjee P, Ramesh BM, Girish M and Das AK. (2011) Evaluation of Stepping Stones as a tool for changing knowledge, attitudes and behaviours associated with gender, relationships and HIV risk in Karnataka, India. *BMC Public Health*. **11**(496). <https://doi.org/10.1186/1471-2458-11-496>

Bruneau J.C (2009). "Les nouvelles provinces de la République Démocratique du Congo : construction territoriale et ethnicités." *L'espace politique*. **7**(1). <https://doi.org/10.4000/espacepolitique.1296>

Brunner B, Combet V, Callahan S, Holtz J, Mangone E, Barnes J, Clarence C, Assi A and Gober S (2018). The Role of the Private Sector in Improving the Performance of the Health System in the Democratic Republic of Congo. Washington, Abt Associates Inc.

Bryman A. (2004). *Social Research methods*. 2nd ed. Oxford, OUP. Buchan J and Black S (2011). The impact of pay increases on nurses’ labour market. A Review of Evidence from Four OECD Countries". *OECD Health Working Papers*. No. 57. Paris, OECD Publishing. <https://doi.org/10.1787/5kg6jwn16tjd-en>

Buchan J, Couper ID, Tangcharoensathien V, Thepannya K, Jaskiewicz W, Perfilieva G and Dolea C (2013). "Early implementation of WHO recommendations for the retention

of health workers in remote and rural areas." *Bull World Health Organ.* **91**: 834-840.

<http://dx.doi.org/10.2471/BLT.13.11900>

Bureau Central de la Zone de Santé d'Adja (2019). Plan d'action opérationnel consolidé de la Zone de santé d'Adja l'année 2019. Adja, BCZ-Adja.

Bureau Central de la Zone de Santé d'Aru (2018). Plan d'action opérationnel consolidé de la Zone de Santé. Aru, BCZ-Aru: 49.

Bureau Central de la Zone de Santé de Bunia (2019). Plan d'action opérationnel consolidé de la zone de santé de Bunia. L'année 2019. Bunia, BCZ-Bunia.

Buykx P, Humphreys J, Wakerman J and Pashen D (2010). "Systematic review of effective retention incentives for health workers in rural and remote areas: towards evidence-based policy." *Aust J Rural Health.* **18**: 102-109.

<https://doi.org/10.1111/j.1440-1584.2010.01139.x>

Campbell O.M.R and Graham W.J (2006). "Maternal survival 2 - Strategies for reducing maternal mortality: getting on with what works." *Lancet.* **368**(9543): 1284-99.

[https://doi.org/10.1016/S0140-6736\(06\)69381-1](https://doi.org/10.1016/S0140-6736(06)69381-1)

CAPAC (2005). Document de stratégie de la réduction de la pauvreté. Province Orientale. Kinshasa, Ministère de Plan.

Carlougha M and McCallb M (2005). "Skilled birth attendance: What does it mean and how can it be measured? A clinical skills assessment of maternal and child health workers in Nepal." *International Journal of Gynecology & Obstetrics.* **89**(2): 200-208.

<https://doi.org/10.1016/j.ijgo.2004.12.044>

Cellule d'Analyse des Indicateurs de Développement (2018). Province de l'Ituri, Présentation de la province. <https://www.caid.cd/index.php/donnees-par-province-administrative/province-de-ituri/?donnees=fiche> Accessed 14/04/2019

Centre for Disease Control and Prevention (2009). Data collection methods for evaluation: Document review. Atlanta, CDC.

Chambers R (2007). "From PRA to PLA and Pluralism: Practice and Theory'." *IDS Working Paper* (286).

<https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/660/Wp286%20web.pdf?sequence=1&isAllowed=y> Accessed 19/08/2020

Chater A, Rourke J, Strasser R, Couper I and Reid S (2016). *WONCA rural medical education guidebook*. Bangkok, Memorial University of Newfoundland.

<https://www.globalfamilydoctor.com/groups/WorkingParties/RuralPractice/ruralguidebook.aspx> Accessed 16/08/2020

Chen L, Evans T, Anand S, Boufford JI, Brown H, Chowdhury M, Cueto M, Dare L, Dussault G, Elzinga G, Fee E, Habte D, Hanvoravongchai P, Jacobs M, Kurowski C, Michael S, Pablos-Mendez A, Sewankambo N, Solimano G, Stilwell B, de Waal A and Wibulpolprasert S (2004). "Human resources for health: overcoming the crisis." *Lancet*. **364** (9449): 1984-1990. [https://doi.org/10.1016/S0140-6736\(04\)17482-5](https://doi.org/10.1016/S0140-6736(04)17482-5)

Chirwa Y, Mashange W, Chandiwana P, Buzuzi S, Munyati S, Chandiwana B and Witter S (2014). Understanding health worker incentives in post-crisis settings: policies to attract and retain health workers in rural areas in Zimbabwe since 1997, a document review. *Rebuild Consortium*.

Chopra M, Munro S, Lavis J.N, Vist G and Bennett S (2008). "Effects of policy options for human resources for health: an analysis of systematic reviews." *Lancet*. **371**: 668-674. [https://doi.org/10.1016/S0140-6736\(08\)60305-0](https://doi.org/10.1016/S0140-6736(08)60305-0).

CIA (2019) *The Democratic Republic of Congo. The world factbook*.

<https://www.cia.gov/library/publications/the-world-factbook/geos/cg.html> Accessed 22/03/2019

Coghlan B, Brennan RJ, Ngoy P, Dofara D, Otto B, Clements M and Stewart T (2006).

"Mortality in the Democratic Republic of Congo: a nationwide survey." *Lancet* **18**(367). [https://doi.org/10.1016/S0140-6736\(06\)67923-3](https://doi.org/10.1016/S0140-6736(06)67923-3)

Cometto G, Fritsche G and Sondorp E (2010). "Health sector recovery in early post-conflict environments: experience from southern Sudan." *Disasters*. **34**(4): 885-909.  
<https://doi.org/10.1111/j.1467-7717.2010.01174.x>

Cometto G, Tulenko K, Muula A.S and Krech R (2013). "Health Workforce Brain Drain: From Denouncing the Challenge to Solving the Problem." *PLoS Medicine*. **10**(9).  
<https://doi.org/10.1371/journal.pmed.1001514>

Concern USA (2020). Timeline: Congo history and the DRC crisis, explained. New York.  
<https://www.concernusa.org/story/congo-crisis-drc-timeline/> Accessed 12/08/2020

Congo Profond (2018). "Presentation de la Province de l'Ituri." Congoprofond.  
<https://congoprofond.net/presentation-de-la-province-de-lituri/> Accessed 25/17/2020,

Congo virtuel (2019). "La Province de l'Ituri."  
[https://www.congovirtuel.com/page\\_province\\_ituri.php](https://www.congovirtuel.com/page_province_ituri.php). Accessed 25/07/2020

Congovirtual (2020). "The time of colonisation - History of Congo."  
[https://english.congovirtuel.com/history\\_colonial.php](https://english.congovirtuel.com/history_colonial.php). Accessed 20/07/2020

Council on Foreign relations (2018). "Violence in DRC." Council on Foreign relations, .  
<https://www.cfr.org/global-conflict-tracker/conflict/violence-democratic-republic-congo> Accessed 31/07/2020.

Creswell J (2015). A concise introduction to mixed methods research. Thousand Oaks, Sage.

Criel B, Waelkens M.P, Kwilu N.F, Coppieters Y and Laokri S (2020). "Can mutual health organisations influence the quality and the affordability of healthcare provision? The case of the Democratic Republic of Congo. ." *Plos One*. **15**(4): e0231660.  
<https://doi.org/10.1371/journal.pone.0231660>

- Cullen D, Sideboatham M, Gamble J and Fenwick J (2016). "Young students' motivations to choose an undergraduate midwifery program." *Women and Birth*. **29**(3): 234-239. <https://doi.org/10.1016/j.wombi.2015.10.012>
- Dalglish S.L, Straubinger S, Kavle J.A, Gibson L, Mbombeshayi E, Anzolo J, Scott K and Pacqué M (2019). "Who are the real community health workers in Tshopo Province, Democratic Republic of the Congo?" *BMJ Global Health*. **4**(4): e001529. <https://doi.org/10.1136/bmjgh-2019-001529>
- Dalrymple S (2016). "Does DFID's new fragile states list point towards a shift in funding allocation?" <http://devinit.org/post/does-dfids-new-fragile-states-list-point-towards-a-shift-in-funding-allocation/> Accessed 10/10/2018.
- Darawsheh W (2014). "Reflexivity in research: Promoting rigour, reliability and validity in qualitative research." *International Journal of Therapy and Rehabilitation* **21**(12).
- Dartey A.F, Deliwe Rene Phetlhu D.R and Phuma-Ngaiyaye E (2019). "Coping with Maternal Deaths: The Experiences of Midwives." *Ethiopian Journal of Health Science* **29**(4): 495-502. <https://doi.org/10.4314/ejhs.v29i4.11>
- Dawson A, Nkowane A.M and Whelan A (2015). "Approaches to improving the contribution of the nursing and midwifery workforce to increasing universal access to primary health care for vulnerable populations: a systematic review." *Human Resources for Health*. **13**(97). <https://doi.org/10.1186/s12960-015-0096-1>
- de Vries E and Reid S (2003). "Do South African medical students of rural origin return to rural practice?" *South African medical Journal*. **93**: 789-793. <https://pubmed.ncbi.nlm.nih.gov/14652974/> Accessed 23/03/2019
- Debarre A (2018). *Hard to Reach: Providing Healthcare in Armed Conflict*. New York, International Peace Institute. <https://www.ipinst.org/2018/12/hard-to-reach-providing-healthcare-in-armed-conflict> Accessed 20/03/2020



Deboutte D, O'Dempsey T, Faragher B and Baba A (2016). "Socioeconomic Consequences of Maternal Death: A Qualitative Study in Bunia, Democratic Republic of the Congo " *International Journal of Women's Health Wellness*. **2**(027).  
<https://doi.org/10.23937/2474-1353/1510027>

DFID (2008). Democratic Republic of Congo. Country plan.  
<http://www.oecd.org/countries/democraticrepublicofthecongo/40692153.pdf>  
Accessed 17/09/2019

Dhatt R, Theobald S, Buzuzi S, Ros B, Vong S, Muraya K, Molyneux S, Hawkins K, González-Beiras C, Ronsin K, Lichtenstein D, Wilkins K, Thompson K, Davis K and Jackson C (2017). "The role of women's leadership and gender equity in leadership and health system strengthening." *Global Health, Epidemiology and Genomics*. **2**(e8).  
<https://doi.org/10.1017/gheg.2016.22>

Ditlopo P, Blaauw D, Bidwell P and Thomas S (2011). "Analyzing the implementation of the rural allowance in hospitals in North West Province, South Africa." *Journal of Public Health Policy*. **32**: S80-S93. <https://doi.org/10.1057/jphp.2011.28>

Division Provinciale de Santé Bas Congo (2014). Plan provinciale de développement des ressources humaines en santé 2014-2016. Matadi, Division Provinciale de la Santé Bas Congo.

Division Provinciale de la Santé Ituri (2016). Plan provincial de développement sanitaire. Bunia, Division Provinciale de la Santé Ituri.

Division Provinciale de Santé Kasai Central (2017). Plan Provincial de Développement de ressources humaines en santé. Kananga, Division Provinciale de la Santé Kasai Central.

Division Provinciale de la Santé Kasai Occidental (2014). Plan provincial de développement des ressources humaines de la santé 2014 - 2016. Kananga, Division Provinciale de la Santé Kasai Occidental.

Division Provinciale de la Santé Katanga (2015). Plan Provincial de développement des ressources humaines en santé 2015-2017. Lubumbashi, Division Provinciale de la Santé.

Division Provinciale de la Santé Kongo Central (2017). Plan provincial de développement des ressources humaines pour la santé 2017-2020 du Kongo Central. Matadi, Division Provinciale de la Santé Kongo Central.

Dogba M, Fournier P and Berthe-Cisse S (2012). "Qualification of Staff, Organization of Services, and Management of Pregnant Women in Rural Settings: The Case of Diema and Kayes Districts (Mali) " *ISRN Obstetrics and Gynecology*. **2012**(649412).  
<https://doi.org/10.5402/2012/649412>

Dolea C, Stormont L and Braichet J.M (2010). "Evaluated strategies to increase attraction and retention of health workers in remote and rural areas." *Bull World Health Organ*. **88**(5): 379-385. <https://doi.org/10.2471/BLT.09.070607>

Duhau S (2018). VIH et tuberculose dans les contextes fragiles. Kinshasa, CORDAID.

Durey A, Haigh M and Katzenellenbogen J (2015). "What role can the rural pipeline play in the recruitment and retention of rural allied health professionals?" *Human Resources for Health*. **15**(3): 3438. <https://doi.org/10.22605/RRH3438>

Durham J, Pavignani E, Beesley M and Hill P.S (2015). "Human resources for health in six healthcare arenas under stress: a qualitative study." *Human Resources for Health*. **12**(14). <https://doi.org/10.1186/s12960-015-0005-7>

Dussault G and Franceschini M.C (2006). "Not enough there, too many here: understanding geographical imbalances in the distribution of the health workforce." *Human Resources for Health*. **4**(12). <https://doi.org/10.1186/1478-4491-4-12>

Dussault G, Buchan J, Sermeus W and Padaiga Z (2010). Assessing future health workforce needs. Copenhagen, World Health Organization.  
<https://www.euro.who.int/en/data-and-evidence/evidence-informed-policy->

making/publications/2010/assessing-future-health-workforce-needs accessed  
10/08/2020

Dwyer S.C and Buckle J.L (2009). "The Space Between: On Being an Insider-Outsider in Qualitative Research." *International Journal of Qualitative Methods*. **8**(1): 54-63.  
<https://doi.org/10.1177/160940690900800105>

Eberle K (2019). "ACHAP 2019: Faith-based organizations must be involved to achieve health and healing for all in Africa." IMA World health.  
<https://imaworldhealth.org/achap-workshop-2019> Accessed 25/07/2020.

Ebuehi O.M and Campbell P.C (2011). "Attraction and retention of qualified health workers to rural areas in Nigeria: a case study of four LGAs in Ogun State, Nigeria." *Rural and Remote Health*. **11**(1). <https://doi.org/10.22605/RRH1515>

Efendi F (2012). "Health Worker Recruitment and Deployment in Remote Areas of Indonesia " *Rural and Remote Health*. **12**(2008). <https://doi.org/10.22605/RRH2008>

Englebert P and Mungongo EK (2016) *Misguided and Misdiagnosed: The Failure of Decentralization Reforms in the DR Congo*. African Studies Association.  
<https://www.doi.org/10.1017/asr.2016.5>

Erasmus E (2014). "The use of street-level bureaucracy theory in health policy analysis in low- and middle-income countries: a meta-ethnographic synthesis." *Health Policy and Planning*. **29**(3): iii70-78. <https://doi.org/10.1093/heapol/czu112>

Esanga L.J.R, Viadro C, McManus L, Wesson J, Matoko N, Ngumbu E, Gilroy K.E and Daren T (2017). "How the introduction of a human resources information system helped the Democratic Republic of Congo to mobilise domestic resources for an improved health workforce." *Health Policy and Planning*. **32**(3): iii25–iii31.  
<https://doi.org/10.1093/heapol/czx113>

Etikan I, Musa S.A and Alkassim R.S (2016). "Comparison of Convenience Sampling and Purposive Sampling." *American Journal of Theoretical and Applied Statistics*. **5**(1): 1-4.  
<https://doi.org/10.11648/j.ajtas.20160501.11>

Evans G.A and Lema M.E (2010). Road Map for Community Midwifery in Southern Sudan. Liverpool, LATH.  
<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.432.7966&rep=rep1&type=pdf> Accessed 8/11/2018

Ezeonwu M.C (2011). "Maternal Birth Outcomes: Processes and Challenges in Anambra State, Nigeria " *Health Care for Women International*. **32**(6): 492-514.  
<https://doi.org/10.1080/07399332.2011.555827>

Farmer J, Kenny A, McKinstry C and Huysmans R.D (2015). "A scoping review of the association between rural medical education and rural practice location." *Human Resources for Health*. **13**(27). <https://doi.org/10.1186/s12960-015-0017-3>

Fauveau V, Sherratt D.R and de Bernis L (2008). "Human resources for maternal health: multi-purpose or specialists?" *Human Resources for Health*. **6**: 21.  
<https://doi.org/10.1186/1478-4491-6-21>

Fekadu M and Regassa N (2014). "Skilled delivery care service utilization in Ethiopia: analysis of rural-urban differentials based on national demographic and health survey (DHS) data." *African Health Sciences*. **14**(4). <https://doi.org/10.4314/ahs.v14i4.29>

Fereday J and Muir-Cochrane E (2006). "Demonstrating Rigor Using Thematic Analysis: A Hybrid Approach of Inductive and Deductive Coding and Theme Development." *International Journal of Qualitative Methods*. **5**(1).  
<https://doi.org/10.1177/160940690600500107>

FEWS NET (2019). République Démocratique du Congo. Perspectives sur la sécurité alimentaire. Kinshasa, FEWS NET. <https://reliefweb.int/report/democratic-republic-congo/r-publique-d-mocratique-du-congo-perspectives-sur-la-s-curit-8> Accessed 13/08/2020

FIGO (2015). Midwives key to success of SDGs, International Federation of Gynecology and Obstetrics. <https://www.figo.org/news/midwives-key-success-sdgs-0014938> Accessed 11/03/2020

Filby A, McConville F and Portela A (2016). "What Prevents Quality Midwifery Care? A Systematic Mapping of Barriers in Low and Middle Income Countries from the Provider Perspective." *Plos One*. **11**(5): e0153391.  
<https://doi.org/10.1371/journal.pone.0153391>

Finch H and Lewis J (2003). Focus Groups. Qualitative research practice. A guide for social science students and researchers. Ritchie J and Lewis J. London, SAGE Publications: 171-198.

Fleming J (2018). "Recognizing and resolving the challenges of being an insider researcher in work-integrated learning." *International Journal of Work-Integrated Learning*. **19**(3): 311-320.

Fox S, Witter S, Wylde E, Mafuta E and Tomas L (2014). "Paying health workers for performance in a fragmented, fragile state: reflections from Katanga Province, Democratic Republic of Congo." *Health Policy and Planning*. **29**(1): 96-105.  
<https://doi.org/10.1093/heapol/czs138>

Franco L.M, Bennett S and Kanfer R (2002). "Health sector reform and public sector health worker motivation: a conceptual framework." *Social Science & Medicine*. **54**(8): 1255-1266. [https://doi.org/10.1016/S0277-9536\(01\)00094-6](https://doi.org/10.1016/S0277-9536(01)00094-6)

Frehywot S, Mullan F, Payne P.W and Ross H (2010). "Compulsory service programmes for recruiting health workers in remote and rural areas: do they work?" *Bulletin of the World Health Organization*. **88**: 364-370. <https://doi.org/10.2471/BLT.09.071605>

Frenk J, Chen L, Bhutta Z.A, Cohen J, Crisp N, Evans T, Fineberg H, Garcia P, Ke Y, Kelley P, Kistnasamy B, Meleis A, Naylor D, Pablos-Mendez A, Reddy S, Scrimshaw S, Sepulveda J, Serwadda D and Zurayk H (2010). "Health Professionals for a New Century: Transforming Education to Strengthen Health Systems in an Interdependent

World." *Lancet*. **376**(9756): 1223-1258. [https://doi.org/10.1016/S0140-6736\(10\)61854-5](https://doi.org/10.1016/S0140-6736(10)61854-5)

Friedman C.P, Wong A.K and Blumenthal D (2010). Achieving a Nationwide Learning Health System. *Science Translational Medicine*. **2**(57): <https://doi.org/10.1126/scitranslmed.3001456>

Fujita N, Zwi A.B, Nagai M and Akashi H (2011). "A comprehensive framework for human resources for health system in fragile and post-conflict states." *PLoS Medicine*. **8**(12). <https://doi.org/10.1371/journal.pmed.1001146>

Fulton B.D, Scheffler R.M, Sparkes S.P, Auh E.Y, Vujcic M and Soucat A (2011). "Health workforce skill mix and task shifting in low income countries: a review of recent evidence." *Human Resources for Health*. **9**(1). <https://doi.org/10.1186/1478-4491-9-1>

Gaede B (2016). "Doctors as street-level bureaucrats in a rural hospital in South Africa." *Rural and Remote Health*. **16**(1). <https://doi.org/10.22605/RRH3461>

Gale N.K, Heath G, Cameron E, Rashid S and Redwood S (2013). "Using the framework method for the analysis of qualitative data in multi-disciplinary health research." *BMC Med Res Methodol*. **13**(117). <https://doi.org/10.1186/1471-2288-13-117>

Gareth W and Ghonda E. (2012) *The Political Economy of Public Financial Management in the Democratic Republic of Congo*.

George A (2007). "Human resources for health. A gender analysis." [https://www.who.int/social\\_determinants/resources/human\\_resources\\_for\\_health\\_wgkn\\_2007.pdf?ua=1](https://www.who.int/social_determinants/resources/human_resources_for_health_wgkn_2007.pdf?ua=1) Accessed 10/02/2020

Gilson L (2006). "Trust in Health Care: Theoretical Perspectives and Research Needs " *J Health Organ Manag*. **20**(5): 359-375. <https://doi.org/10.1108/14777260610701768>

Glandon D, Meghani A, Jessani N, Qiu M and Bennett S (2018). "Identifying health policy and systems research priorities on multisectoral collaboration for health in low-

income and middle-income countries." *BMJ Global Health*. **3**(e000970).

<https://doi.org/10.1136/bmjgh-2018-000970>

Glassman A, Becker L, Makinen M and De Ferranti D (2008). "Planning and costing human resources for health." *Lancet*. (371): 693-695. [http://dx.doi.org/10.1016/S0140-6736\(08\)60311-6](http://dx.doi.org/10.1016/S0140-6736(08)60311-6)

Global Health Workforce Alliance (2011). Report on the Second Global Forum on Human Resources for Health, Prince Mahidol Award Conference 2011.

<https://www.who.int/workforcealliance/knowledge/resources/secondHRHforumreport/en/> Accessed 14/09/2018

Global Workforce Alliance; JICA and WHO (2015). Profil en ressources humaines pour la santé en République Démocratique du Congo. Kinshasa, Ministère de la Santé Publique.

Golafshani N (2003). "Understanding Reliability and Validity in Qualitative Research." *The Qualitative Report*. **8**(4): 597-607. <https://nsuworks.nova.edu/tqr/vol8/iss4/6> Accessed 12/02/2018

Goodson I.F and Gill S.R (2011). "Understanding the Life History Research Process." *Counterpoints*. **386**: 35-54.

Graham W.J, Kuruvilla S, Hinton R, Veitch E and Simpson P (2018). "Multisectoral collaboration for health and sustainable development." *BMJ*. **363**: k-4868.

<https://doi.org/10.1136/bmj.k4868>

Grobler L, Marais B.J and Mabunda S (2015). "Interventions for increasing the proportion of health professionals practising in rural and other underserved areas." *Cochrane Database of Systematic Reviews*. 6.

<https://doi.org/10.1002/14651858.CD005314.pub2>

Grudniewicz A, Hedden L, Kromm S, Lavergne R, Menear M and Sivananthan S (2014). "Capacity development in health systems and policy research: a survey of the Canadian context." *Health Res Policy Syst.* **12**(9). <https://doi.org/10.1186/1478-4505-12-9>

Guest G, Bunce A and Johnson L (2006). "How many interviews are enough? An experiment with data saturation and variability." *Field Methods.* **18**(1): 59-82. <https://doi.org/10.1177/1525822X05279903>

Haar R.J and Rubenstein L.S (2012). "Health in fragile and post-conflict states: a review of current understanding and challenges ahead." *Med Confl Surviv.* **28**(4): 289-316. <https://doi.org/10.1080/13623699.2012.743311>

Hammarberg K, Kirkman M and de Lacey S (2016). "Qualitative research methods: when to use them and how to judge them " *Human Reproduction.* **31**(3): 498-501. <https://doi.org/10.1093/humrep/dev334>

Hammond M (2017). "Reflexivity ". <https://warwick.ac.uk/fac/soc/ces/research/current/socialtheory/maps/reflexivity/>. Accessed 3/09/2020

Haskins J.L, Phakathi S.A, Grant M and Horwood C.M (2017). "Factors influencing recruitment and retention of professional nurses, doctors and allied health professionals in rural hospitals in KwaZulu Natal." *Health SA Gesondheid.* **22**: 174-183 <https://doi.org/10.1016/j.hsag.2016.11.002>

Hassan-Bitar S and Narrainen S (2011). "'Shedding Light' on the Challenges Faced by Palestinian Maternal Health-Care Providers " *Midwifery.* **27**(2): 154-159. <https://doi.org/10.1016/j.midw.2009.05.007>

Hatem M, Halabi-Nassif H and Maroun M (2018). "Construire une vision commune de la formation des infirmières et sages-femmes en République Démocratique du Congo." *Santé Publique.* **HS** (HS): 89-100. <https://doi.org/10.3917/spub.180.0089h>



HBS (2018). Literacy Rates.

[www.hbs.edu/businesshistory/Lists/HistoricalData/Attachments/31/literacy.xls](http://www.hbs.edu/businesshistory/Lists/HistoricalData/Attachments/31/literacy.xls)

Accessed 19/01/2020

HealthLink BC (2016). Contact with Blood or Body Fluids: Protecting against Infection.

British Columbia. <https://www.healthlinkbc.ca/healthlinkbc-files/fluids-protecting-against-infection> Accessed 28/08/2020

Heaton J, Day J and Britten N (2016). "Collaborative research and the co-production of knowledge for practice: an illustrative case study." *Implementation Science*. **11**(20).

<https://doi.org/10.1186/s13012-016-0383-9>

Henry J, Edwards B and Crotty B (2009). "Why do medical graduates choose rural careers? ." *Rural and Remote Health*. **9** (1): 1083.

<https://pubmed.ncbi.nlm.nih.gov/19257797/> Accessed 18/08/2020

Higginbottom G and Liamputtong P (2015). What is Participatory Research? Why do it?

In Higginbottom G and Liamputtong P (Eds). *Participatory Qualitative Research Methodologies in Health*. Los Angeles, Sage publications.

<https://dx.doi.org/10.4135/9781473919945.n1>

Higginbottom G.M.A, Mathers N, Marsh P, Kirkham M, Owen J.M and Serrant-Green L (2006). "Young people of minority ethnic origin in England and early parenthood: views from young parents and service providers " *Social Science & Medicine*. **63**(4): 858-70.

<https://doi.org/10.1016/j.socscimed.2006.03.011>

Hill P.S, Pavignani E, Michael M, Murru M and Beesley M.E (2014). "The "empty void" is a crowded space: health service provision at the margins of fragile and conflict affected states." *Conflict and Health*. **8**(20). <https://doi.org/10.1186/1752-1505-8-20>

Hobbs A.J, Moller A.B, Kachikis A, Carvajal-Aguirre L, Say L and Chou D (2019). "Scoping review to identify and map the health personnel considered skilled birth attendants in low-and-middle income countries from 2000–2015." *Plos One*. **14**(2): e0211576.

<https://doi.org/10.1371/journal.pone.0211576>

Hossain P, Gupta R.D, YarZar P, Jalloh M.S, Tasnim N, Afrin A, Naher N, Hossain T, Joarder T and Ahmed S.M (2019). "'Feminization' of Physician Workforce in Bangladesh, Underlying Factors and Implications for Health System: Insights From a Mixed-Methods Study " *Plos One*. **14**(1): e0210820.

<https://doi.org/10.1371/journal.pone.0210820>

House of Commons (2017). Fragility and development in the Democratic Republic of Congo. London, International Development Committee, House of Commons: 58.

<https://reliefweb.int/report/democratic-republic-congo/fragility-and-development-democratic-republic-congo-fifth-report> Accessed 1/03/2020

Huq N.L, Ahmed A, al Haque N, Hossaine M, Uddin J, Ahmed F and Quaiyum M.A (2015). "Effect of an integrated maternal health intervention on skilled provider's care for maternal health in remote rural areas of Bangladesh: a pre and post study." *BMC Pregnancy and Childbirth*. **15** (104). <https://doi.org/10.1186/s12884-015-0520-5>

Ifakara Health Institute (2011). Health Facility Committees: Are they working? Dar Es Salam, Ifakara Health Institute.

Indriani R (2019). "The Use of Snowball Technique in Teaching Writing Skill in EFL Classroom." *VOLES* **3**(1).

International Coalition for the Responsibility to Protect (2018). "Crisis in the Democratic Republic of Congo "

<http://www.responsibilitytoprotect.org/index.php/crises/crisis-in-drc> Accessed 31/07/2020 2020.

International Confederation of Midwives (2017). "International definition of the midwife." [https://www.internationalmidwives.org/assets/files/definitions-files/2018/06/eng-definition\\_of\\_the\\_midwife-2017.pdf](https://www.internationalmidwives.org/assets/files/definitions-files/2018/06/eng-definition_of_the_midwife-2017.pdf). Accessed 3/05/2020

Ith P, Dawson A and Homer C.S.E (2012). "Challenges to reaching MDG5: a qualitative analysis of the working environment of skilled birth attendants in Cambodia."

*International Journal of Childbirth*. **2**(3): 152-162. <https://doi.org/10453/22516>

Jansen C, Codjia L, Cometto G, Yansane M.L and Dieleman M (2014). "Realizing universal health coverage for maternal health services in the Republic of Guinea: the use of workforce projections to design health labor market interventions." *Risk Manag Healthc Policy*. **7**: 219-232. <https://doi.org/10.2147/RMHP.S46418>

Johnson P, Fogarty L, Fullerton J, Bluestone J and Drake M (2013). "An integrative review and evidence-based conceptual model of the essential components of pre-service education." *Human Resources for Health*. **11**: 42. <https://doi.org/10.1186/1478-4491-11-42>

Kabambi E (2017). "Supporting Decentralization in the DRC." <https://www.uhcpartnership.net/une-aide-a-la-decentralisation-en-rdc/>. Accessed 23/07/2020

Kabuiku N.A (2007). Mortalité maternelle intra-hospitalière dans le district sanitaire de Lubumbashi. Cas des cliniques universitaires de Lubumbashi, hopital Sendwe, hopital sncc, hopital kenya. Lubumbashi, Universite de Lubumbashi. <https://www.memoireonline.com/01/14/8486/Mortalite-maternelle-infra-hospitaliere-dans-le-district-sanitaire-de-Lubumbashi-Cas-des-cliniqu.html> Accessed 2/02/2020

Kacik A (2019). Few women reach healthcare leadership roles. <https://www.modernhealthcare.com/operations/few-women-reach-healthcare-leadership-roles> Accessed 23/06/2020

Kalisya, L. M., M. Salmon, K. Manwa, M. M. Mutendi, K. Diango, R. Zaidi, S. K. Wendel and T. A. Reynolds (2015). "The state of emergency care in Democratic Republic of Congo." *African Journal of Emergency Medicine*(5): 153-158.

Kalonji, E. (2020). RDC : des milliers d'enfants frappés par la malnutrition. <https://www.dw.com/fr/rdc-des-milliers-denfants-frapp%C3%A9s-par-la-malnutrition/a-54787107> Accessed 20/05/2020

Keith R and Cadge N (2010). Unlocking Progress in Fragile States Optimising high-impact maternal and child survival interventions. London, Save the Children UK.  
<https://resourcecentre.savethechildren.net/sites/default/files/documents/4592.pdf>  
Accessed 8/09/2018

Kendall T and Langer A (2015). Critical Maternal Health Knowledge Gaps in Low- and Middle-Income Countries for Post-2015 era. *Reproductive Health*. **12**(55).  
<https://doi.org/10.1186/s12978-015-0044-5>

Kiambati H, Kii C.K and Toweett J (2013). Understanding the labour market of human resources for health in Kenya. WHO.  
[http://www.who.int/hrh/tools/labour\\_market/en/](http://www.who.int/hrh/tools/labour_market/en/) Accessed 12/02/2019

Kibangula T. (2015) Découpage en RDC : ce qui va changer la vie des Congolais.  
<https://www.jeuneafrique.com/240375/politique/decoupage-en-rdc-ce-qui-va-reellement-changer-la-vie-des-congolais/> Accessed 18/01/2021

Kithatu-Kiwেকে A (2017). "Fiscal decentralization in the DRC: Evidence of revenue assignment." *International Journal of Economics and Finance Studies*. **9**.

Kleifeld P and Flummerfelt R (2020). Rebel splits and failed peace talks drive new violence in Congo's Ituri. *The New Humanitarian*.  
<https://www.newsbreak.com/news/1560268650208/rebel-splits-and-failed-peace-talks-drive-new-violence-in-congos-ituri> Accessed 03/10/2020

Kolehmainen-Aitken R (2004) Decentralization's impact on the health workforce: Perspectives of managers, workers and national leaders. *Human Resources for Health*. **2**(5). <https://doi.org/10.1186/1478-4491-2-5>

Kolie D, Delamou A, van de Pas R, Dioubate N, Bouedouno P, Beavogui A, Kaba A, Diallo A.M, Put M.V.D and van Damme W (2019). "'Never let a crisis go to waste': post-Ebola agenda-setting for health system strengthening in Guinea." *BMJ Global Health*. **4**(e001925). <https://doi.org/10.1136/bmjgh-2019-001925>

Korstjens I and Moser A (2018). "Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing." *European Journal of General Practice*. **24**(1): 120-124. <https://doi.org/10.1080/13814788.2017.1375092>

Kotzee T and Couperman I (2006). "What interventions do South African qualified doctors think will retain them in rural hospitals of the Limpopo province of South Africa?" *Rural and Remote Health*. **6**(3): 581. <https://doi.org/10.22605/RRH581>

Kwamie A, Asiamah M, Marta, S and Agyepong I.A (2017). "Postings and transfers in the Ghanaian health system: a study of health workforce governance." *International Journal for Equity in Health*. **16**(85). <https://doi.org/10.1186/s12939-017-0583-1>

Lassi Z.S, Musavi N.B, Maliqi B, Mansoor N, de Francisco A, Toure K and Bhutta Z.A (2016). "Systematic review on human resources for health interventions to improve maternal health outcomes: evidence from low- and middle-income countries." *Human Resources for Health*. **14**(10). <https://doi.org/10.1186/s12960-016-0106-y>

Lehmann U, Dieleman M and Martineau T (2008). "Staffing remote rural areas in middle- and low-income countries: A literature review of attraction and retention." *BMC Health Services Research*. **8**(19). <https://doi.org/10.1186/1472-6963-8-1>

Leinweber J and Rowe H.J (2010). "The costs of 'being with the woman': secondary traumatic stress in midwifery ." *Midwifery*. **26**(1): 76-87. <https://doi.org/10.1016/j.midw.2008.04.003>

Lema M.E (2011). Maternal and Newborn health and emergency transport in Sub-Saharan Africa. Nairobi, The Aga Khan University: 38.

Lemiere C, Herbst C, Jahanshahi N, Smith E and Soucat A (2011). "Reducing Geographical imbalances of health workers in Sub-Saharan Africa: A labor Market. Perspective on What Workers, What Does Not and Why?" *World Bank Working Paper No. 209/2011*.

Lezama I and Oyewale T (2018). Situation de la nutrition en RDC. Kinshasa, UNICEF.

Lincoln Y and Guba E (1985). Naturalistic inquiry. Beverly Hills, Sage.

Liu JX, Goryakin Y, Maeda A, Bruckner T and Scheffler R (2017). "Global Health Workforce Labor Market Projections for 2030." *Human Resources for Health*. **15**(11). <https://doi.org/10.1186/s12960-017-0187-2>

Longombe A.O (2009). "Medical schools in rural areas: necessity or aberration?" *Rural and Remote Health*. **9**(3). <https://doi.org/10.22605/RRH1131>

Lorenzini E (2017). "Mixed-method research in the health sciences." *Revista Cuidarte*. **8**(2). <http://dx.doi.org/10.15649/cuidarte.v8i2.406>

Lori J.R, Moyer C.A, Dzomeku V, Kweku Nakua E, Agyei-Baour P and Rominski S (2018). "Achieving universal coverage: Understanding barriers to rural placement for final year midwifery students." *Midwifery*. **58**: 44-49. <https://doi.org/10.1016/j.midw.2017.12.012>

Lowman S (2020). Community Health Workers in DRC Help Stop Spread of Ebola and COVID-19. <https://internationalmedicalcorps.org/story/community-health-workers-in-drc-help-stop-spread-of-ebola-and-covid-19/> Accessed 5/08/2020

Macaulay A.C, Jagosh J, Seller R, Henderson J, Cargo M, Greenhalgh T, Wong G, Salsberg J, Green L.W, Herbert C.P and Pluye P (2011). "Assessing the Benefits of Participatory Research: A Rationale for a Realist Review " *Global Health Promotion*. **18**(2): 45-48. <https://doi.org/10.1177/1757975910383936>

MacKinnon J and MacLaren B (2012). Human Resources for Health Challenges in Fragile States: Evidence from Sierra Leone, South Sudan and Zimbabwe, The North-South Institute. <http://www.nsi-ins.ca/wp-content/uploads/2012/11/2012-Human-Resources-for-Health-Challenges-in-Fragile-States.pdf> Accessed 12/12/2018

Maini R, Hotchkiss D.R and Borghi J (2017). "A cross-sectional study of the income sources of primary care health workers in the Democratic Republic of Congo." *Human Resources for Health*. **15**(17). <https://doi.org/10.1186/s12960-017-0185-4>

Maini R, Mounier-Jack S and Borghi J (2018). "Performance-based financing versus improving salary payments to workers: insights from the Democratic Republic of Congo." *BMJ Global Health*. **3**( e000958). <https://doi.org/10.1136/bmjgh-2018-000958>

Maini R, Lohmann J, Hotchkiss D.R, Mounier-Jack S and Borghi J (2019). "What Happens When Donors Pull Out? Examining Differences in Motivation Between Health Workers Who Recently Had Performance-Based Financing (PBF) Withdrawn With Workers Who Never Received PBF in the Democratic Republic of Congo." *International Journal of Health Planning and Management*. **8**(11): 646-661.  
<https://doi.org/10.15171/ijhpm.2019.55>

Makangara J (2019). Catastrophes naturelles en RDC : nous récoltons ce que nous avons semé. -<https://habarirdc.net/catastrophes-naturelles-recolter-semer-planete-terre/> Accessed 12/03/2020

Management Sciences for Health and Ministry of Health - DRC (2018). "Les sages-femmes luttent contre les causes de la mortalité maternelle et infantile en République démocratique du Congo." *Healthy newborn network*.  
<https://www.healthynewbornnetwork.org/blog/les-sages-femmes-luttent-contre-les-causes-de-la-mortalite-maternelle-et-infantile-en-republique-democratique-du-congo/> Accessed 01/04/2019 2019.

Mangwi Ayiasi R, Rutebemberwa E and Martineau T (2019). "'Posting policies don't change because there is peace or war': the staff deployment challenges for two large health employers during and after conflict in Northern Uganda." *Human Resources for Health*. **17**(27). <https://doi.org/10.1186/s12960-019-0361-9>

- Mansoor G.F, Hashemy P, Gohar F, Wood M.E, Ayoubi S.F and Todd C.S (2013). "Midwifery retention and coverage and impact on service utilisation in Afghanistan." *Midwifery*. **29**(10): 1088-1094. <https://doi.org/10.1016/j.midw.2013.07.021>
- Mantuba-Ngoma MP (2009) Le processus actuel de decentralisation en RDC: Enjeux et defis. Mantuba-Ngoma MP (ed). Le processus de decentralisation en Republique Democratique du Congo. Kinshasa, Publications de la Fondation Konrad Adenauer: 25-56.
- Mariani G, Kasznia-Brown J, Paez D, Mikhail M.N, Salama D.H, Bhatla N, Erba P.A and Kashyap R (2017). "Improving women's health in low-income and middle-income countries. Part I: challenges and priorities." *Nuclear Medicine Communications*. **38**(12): 1019-1023. <https://doi.org/10.1097/MNM.0000000000000751>
- Martineau T et McPake B, Theobald S, Raven J, Ensor T, Fustukian S, Ssengooba F, Chirwa Y, Vong S, Wurie H, Hooton N and Witter S (2017). "Leaving no one behind: lessons on rebuilding health systems in conflict- and crisis-affected states." *BMJ Global Health*. **2**(2). <http://dx.doi.org/10.1136/bmjgh-2017-000327>
- Martins F.S, da Cunha J.A.C and Serra F.A.R (2018). "Secondary data in research - Uses and opportunities." *PODIUM Sport, Leisure And Tourism Review*. **7**(3): 1-4. <https://doi.org/10.5585/podium.v7i3.316>
- Mashange W, Martineau T, Chandiwana P, Chirwa Y, Pepukai V.M, Munyati S and Alonso-Garbayo A (2019). "Flexibility of deployment: challenges and policy options for retaining health workers during crisis in Zimbabwe." *Human Resources for Health*. **17**(39). <https://doi.org/10.1186/s12960-019-0369-1>
- Mateen F.J, McKenzie E.D and Rose S (2018). "Medical Schools in Fragile States: Implications for Delivery of Care." *Health Services Research*. **53**(3): 1335-1348. <https://doi.org/10.1111/1475-6773.12709>
- Mathole T, Lindmark G and Ahlberg B.M (2006). "Knowing but Not Knowing: Providing



Maternity Care in the Context of HIV/AIDS in Rural Zimbabwe " *African Journal of AIDS Research*. **5**(2): 133-139. <https://doi.org/10.2989/16085900609490373>

Matungulu M.C, Kandolo I, Mukengeshayi N.A, Nkola M.A, Mpoyi I.D, Mumba K.S, Kabamba N.J, Cowgill K and Kaj M.F (2015). "Déterminants de l'utilisation des méthodes contraceptives dans la zone de santé Mubunda à Lubumbashi, République Démocratique du Congo." *PanAfrican Medical Journal*. **22**(329).<https://doi.org/10.11604/pamj.2015.22.329.6262>

Mbemba G.I.C, Gagnon M.P and Hamelin-Brabant L (2016). "Factors influencing recruitment and retention of healthcare workers in rural and remote areas in developed and developing countries: an overview " *Journal of Public Health in Africa*. **7**(565): 61-66. <https://doi.org/10.4081/jphia.2016.565>

Mbeva K.J.B, Karemere H, Schirvel C and Porignon D (2014). "Rôles exercés par le Niveau intermédiaire du système sanitaire en République démocratique du Congo : représentations des acteurs." *Santé Publique*. **26**: 685-693. <https://doi.org/10.3917/spub.145.0685>

McPake B, Maeda A, Araujo E.C, Lemiere C, El Maghraby A and Cometto G (2013). "Why do health labour market forces matter?" *Bulletin of the World Health Organization*. **91**(11): 841-846. <https://doi.org/10.2471/Blt.13.118794>

Médecins Sans Frontières (2020). DRC Ebola outbreaks. Crisis update-May 2020. Geneva, MSF.Merriam S (1998). *Qualitative Research and Case Study Applications In Education*. 2nd ed. . San Francisco, Jossey-Bass Publishers.

Mertens D (2009). *Transformative research and evaluation*. New York, Guilford.

Messner J (2017). 2017 fragile states index. <https://reliefweb.int/report/world/fragile-states-index-2017> Accessed 12/08/2020

Meyer J (2016). "A New Plan to Achieve Big Increases in Financing for Women's and Children's Health in the Democratic Republic of Congo." Global Financing Facility <https://www.globalfinancingfacility.org/new-plan-achieve-big-increases-financing->

women%E2%80%99s-and-children%E2%80%99s-health-democratic-republic-congo  
Accessed 10/10/2020 2016.

Ministère de la Santé Publique RD Congo (2006). Stratégies de renforcement de système de santé.

Ministère de la Santé Publique RDC (2008). Politique Nationale de Santé de Réproduction..

Ministère de la Santé Publique RD Congo (2010a). Plan National de Développement Sanitaire.

Ministère de la Santé Publique RD Congo (2010b). Stratégie de Renforcement du Système de Santé.

Ministère de la Santé RD Congo (2011). Plan National de Développement des ressources humaines en santé 2011-2015.

Ministère de la Santé Publique RD Congo (2015). Profil pays en ressources humaines pour la santé de la République Démocratique du Congo. Kinshasa, Observatoire National de Ressources Humaines pour la Santé de la République Démocratique du Congo, Global health workforce alliance, JICA, WHO.

Ministère de Santé Publique RD Congo (2016a). Plan national de développement sanitaire.

Ministère de la Santé Publique RD Congo (2016b). Plan national de développement des ressources humaines en santé 2016-2020.

Ministère de Santé Publique RD Congo (2017). Cadre d'investissement pour la santé reproductive, maternelle, du nouveau-né, de l'enfant et de l'adolescent en vue de l'atteinte de la couverture sanitaire universelle en République Démocratique du Congo. Vers une vision de développement durable d'ici 2030.

Ministère de la Santé publique RD Congo (2018). Plan National de Développement Sanitaire recadré pour la période 2019-2022 : Vers la couverture sanitaire universelle.

Ministère du Plan, Ministère de la Santé Publique et ICF International (2014). Deuxième enquête démographique et de santé (EDS-RDC II 2013-2014) Rockville, Ministère du Plan, Ministère de la Santé Publique et ICF International: 696.

<https://reliefweb.int/report/democratic-republic-congo/deuxi-me-enqu-te-d-mographique-et-de-sant-eds-rdc-ii-2013-2014>

Miyake S, Speakman E.M, Currie S and Howard N (2017). "Community midwifery initiatives in fragile and conflict-affected countries: a scoping review of approaches from recruitment to retention " *Health Policy and Planning*. **32**(1): 21-33.

<https://doi.org/10.1093/heapol/czw093>

Mohamed I.N, Abdelraheem M.B and Abdullah M.A (2012). "Sudanese female doctors in pediatrics." *Sudanese Journal of Paediatrics*. **12**(2): 36-43.

<http://www.sudanjp.com/index.php?mno=280751> Accessed 28/06/2020

Moncrieff G (2019). "Traumatic distress in midwifery: a preventable occupational hazard?" all4Maternity. <https://www.all4maternity.com/traumatic-distress-in-midwifery-a-preventable-occupational-hazard/> Accessed 29/06/2020 2020.

Mondiwa M and Hauck Y (2007). "Malawian Midwives' Perceptions of Occupational Risk for HIV Infection " *Health Care Women Int*. **28**(3): 209-223.

<https://doi.org/10.1080/07399330601179778>

MONUSCO (2020). Rapport public sur les conflits en territoire de Djugu, province de l'Ituri Décembre 2017 à septembre 2019. <https://reliefweb.int/report/democratic-republic-congo/rapport-public-sur-les-conflits-en-territoire-de-djugu-province-de-l-Ituri> Accessed 13/04/2020

Moore G.F, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, Moore L, O'Cathain A, Tinati T, Wight D and Baird J (2015). "Process evaluation of complex interventions: Medical Research Council guidance." *The British Medical Journal*. **350**(h1258).

<https://doi.org/10.1136/bmj.h1258>

- Moore A, Catling C, West F, Neill A, Rumsey M, Samor KM and Se Homer C (2015). "What motivates midwifery students to study midwifery in Papua New Guinea." *Pacific Journal of Reproductive Health*. **1**(2): 60-67. <https://doi.org/10.18313/pjrh.2015.911>
- Moran A.M, Coyle J, Pope R, Boxall D, Nancarrow S.A and Young J (2014). "Supervision, support and mentoring interventions for health practitioners in rural and remote contexts: an integrative review and thematic synthesis of the literature to identify mechanisms for successful outcomes." *Human Resources for Health*. **12**(10). <https://doi.org/10.1186/1478-4491-12-10>
- Moumami A (2010). Analyse de la pauvreté en République Démocratique du Congo. *Working Paper series*. Tunis, Banque Africaine de Développement.
- MSF Belgium (2019). Ebola en RDC: face à l'opacité de l'OMS/MSF appelle à la création d'un comité de coordination international indépendant pour gérer la vaccination. <https://www.msf-azg.be/fr/news/ebola-en-rdc-face> Accessed 23/03/2020
- MSF France (2018). République Démocratique du Congo: l'urgence permanente. <https://www.msf.fr/eclairages/republique-democratique-du-congo-l-urgence-permanente> Accessed 11/10/2020
- MSF France (2020). Coronavirus en RDC : la double peine à Kinshasa. <https://www.msf.fr/actualites/coronavirus-en-rdc-la-double-peine-a-kinshasa> Accessed 11/10/2020
- Muliira R.S and Ssendikadiwa V.B (2016). "Professional Quality of Life and Associated Factors Among Ugandan Midwives Working in Mubende and Mityana Rural Districts." *Maternal and Child Health Journal* volume. (20): 567-576. <https://doi.org/10.1007/s10995-015-1855-2>
- Mulobo G (2020). Lutte contre la mortalité maternelle et néonatale : le gouvernement veut redynamiser le Programme national de santé de la reproduction. <https://www.lisapo.info/lutte-contre-la-mortalite-maternelle-et-neonatale-le->

gouvernement-veut-redynamiser-le-programme-national-de-sante-de-la-reproduction/  
Accessed 12/09/2020

Mulumba F (2017). L'évolution de la mortalité des enfants en RDC.

<https://reliefweb.int/report/democratic-republic-congo/l-volution-de-la-mortalit-des-enfants-en-rdc> Accessed 23/03/2019

Mumtaz Z, Salway S and Nykiforuk C (2013). "The role of social geography on lady health Workers' mobility and effectiveness in Pakistan." *Social Science & Medicine*. (91): 48-57. <https://doi.org/10.1016/j.socscimed.2013.05.007>

Munabi-Babigumira S, Glenton C, Lewin S, Fretheim A and Nabudere H (2017). "What factors influence the delivery of care by skilled birth attendants in low- and middle-income countries?" *Cochrane Database of Systematic Reviews*(11).  
<https://doi.org/10.1002/14651858.CD011558.pub2>

Munabi-Babigumira S, Glenton C, Lwewin S, Fretheim A and Nabudere H (2017). "Factors that influence the provision of intrapartum and postnatal care by skilled birth attendants in low- and middle-income countries: a qualitative evidence synthesis " *Cochrane Database of Systematic Reviews* **11**(11).  
<https://doi.org/10.1002/14651858.CD011558.pub2>.

Munabi-Babigumira S, Nabudere H, Asiimwe D, Fretheim A and Sandberg K (2019). "Implementing the skilled birth attendance strategy in Uganda: a policy analysis." *Health Services Research*. **19**(655). <https://doi.org/10.1186/s12913-019-4503-5>

Munga M.A, Songstad N.G, Blystad A and Mæstad O (2009). "The decentralisation-centralisation dilemma: recruitment and distribution of health workers in remote districts of Tanzania." *BMC International Health and Human Rights*. **9**(9).  
<https://doi.org/10.1186/1472-698X-9-9>

Murphy G.T, Goma F, Mackenzie A, Bradish S, Price S, Nzala S, Rose A, Rigby J, Muzongwe C, Chizuni N, Carey A and Hamavhwa D (2014). "Training and Deploying

Human Resources for Health for Maternal, Newborn, and Child Health in Rural Africa: An in-depth policy analysis." *The Journal of Global Health Care Systems*. 5(2).

Murru M and Pavignani E (2012). Democratic Republic of Congo: The chronically-ill heart of Africa. *Providing Health Care in Severely-Disrupted Environments. A Multy-County Study*. Brisbane, University of Queensland.

Namakula J and Witter S (2014). "Living through conflict and post-conflict: experiences of health workers in northern Uganda and lessons for people-centred health systems." *Health Policy and Planning*. (29): ii6-ii14. <https://doi.org/10.1093/heapol/czu022>

Nathe M (2015). *Where Are the DRC's Doctors and Nurses? iHRIS Data Give Us Hints* Washington, Intrahealth International. <https://www.intrahealth.org/vital/where-are-drc%E2%80%99s-doctors-and-nurses-ihris-data-give-us-hints> Accessed 15/09/2019

Ndaywel è Nziem I. (1998) *Histoire générale du Congo*. Brussels : De Boeck and Larcier.

Nevala N and Ketola R (2012). "Birthing Support for Midwives and Mothers - Ergonomic Testing and Product Development." *The Ergonomics Open Journal*. (5): 28-34. <https://doi.org/10.2174/1875934301205010028>

Ngalili B.M and Malori L (2015). "Décès maternel dans le milieu rural : cas de la zone de sante rurale de lita, dans le district sanitaire de Djugu, Ituri, RDC." *Kisangani Medical*. **6**(2): 150-165.

Ngoie E (2016). Démembrement des provinces et nouvelle territorialisation en République Démocratiquedu Congo : logiques, attentes, contraintes et défis. *En quête de territoire(s)? Looking for territories?* CIST. Grenoble, Collège International des Sciences du Territoire: 333-338.

Ngombwa, J. (2020). Training to save lives. UNICEF is helping train midwives to improve care for mothers and new-borns in the Democratic Republic of Congo. <https://www.unicef.org/drcongo/recits/former-sauver-vies> Accessed 10/10/2020

Nicol E, Turawa E and Bonsu G (2019). "Pre- and in-service training of health care workers on immunization data management in LMICs: a scoping review." *Human Resources for Health*. **17**(92). <https://doi.org/10.1186/s12960-019-0437-6>

Nowotny-Czupryna O, Naworska B, Brzęk A, Nowotny J, Famuła A, Kmita B and Bąk K (2012). "Professional experience and ergonomic aspects of midwives' work." *International Journal of Occupational medicine and environmental health*. **25**(3): 256-274. <https://doi.org/10.2478/S13382-012-0034-6>

Ntambue A.M, Malonga F.K, Dramaix-Wilmet M, Ngatu R.N and Donnen P (2016). "Better than nothing? maternal, newborn, and child health services and perinatal mortality, Lubumbashi, democratic republic of the Congo: a cohort study." *BMC Pregnancy and Childbirth*. **16**(89). <https://doi.org/10.1186/s12884-016-0879-y>

Nyirenda L, Kumar M.B, Theobald S, Sarker M, Simwinga M, Kumwenda M, Johnson C, Hatzold K, Corbett E.L, Sibanda E and Taegtmeier M (2020). "Using research networks to generate trustworthy qualitative public health research findings from multiple contexts." *BMC Medical Research Methodology*. **20**(13). <https://doi.org/10.1186/s12874-019-0895-5>

Nyström M.E, Karlton J, Keller C and Gäre B.A (2018). "Collaborative and partnership research for improvement of health and social services: researcher's experiences from 20 projects." *Health Research Policy and Systems*. **16**(46). <https://doi.org/10.1186/s12961-018-0322-0>

Nyumba T.O, Wilson K, Derrick C.J and Mukherjee N (2018). "The use of focus group discussion methodology: Insights from two decades of application in conservation." *Methods in Ecology and Evolution*. **9**: 20-32. <https://doi.org/10.1111/2041-210X.12860>

Nzuzi A (2017). Santé : les grossesses précoces, une cause de mortalité maternelle en RDC. <http://www.adiac-congo.com/content/sante-les-grossesses-precoces-une-cause-de-mortalite-maternelle-en-rdc-62829> Accessed 13/09/2019

O'Hare P, Coaffee J and Hawkesworth M (2010). "Managing sensitive relations in coproduced planning research." *Public Money Manag.* **30**(4): 243-250.  
<https://doi.org/10.1080/09540962.2010.492188>

O'Sullivan B, Russell D.J, McGrail M.R and Scott A (2019). "Reviewing reliance on overseas-trained doctors in rural Australia and planning for self-sufficiency: applying 10 years' MABEL evidence." *Human Resources for Health.* **17**(8).  
<https://doi.org/10.1186/s12960-018-0339-z>

OECD (2016). Health workforce policies in OECD countries: right jobs, right skills, right places. Health policy studies. <https://www.oecd.org/publications/health-workforce-policies-in-oecd-countries-9789264239517-en.htm> Accessed 10/08/2020

Ojaka D, Olango S and Jarvis J (2014). "Factors affecting motivation and retention of primary health care workers in three disparate regions in Kenya." *Human Resources for Health.* **12**(33). <https://doi.org/10.1186/1478-4491-12-33>

Okello D.R.O and Gilson L (2015). "Exploring the influence of trust relationships on motivation in the health sector: a systematic review." *Human Resources for Health.* **13**(16). <https://doi.org/10.1186/s12960-015-0007-5>

Okyere E, Mwanri L and Ward P (2017). "Is task-shifting a solution to the health workers' shortage in Northern Ghana?" *Plos One.* **12**(3): e0174631.  
<https://doi.org/10.1371/journal.pone.0174631>

Oloyede O (2017). "Rural-Urban Disparities in Health and Health Care in Africa: Cultural Competence, Lay-beliefs in Narratives of Diabetes among the Rural Poor in the Eastern Cape Province of South Africa." *African Sociological Review.* **21**(2): 36-57.  
<https://www.jstor.org/stable/90018696?seq=1> Accessed 11/03/2020

Omaamaka O.P and Ogbonna A.M (2015). "The Impact of Armed Conflict on Africa of the Democratic Republic of Congo." *Research on Humanities and Social Sciences.* **5**(18).  
<https://www.iiste.org/Journals/index.php/RHSS/article/view/26083> Accessed 11/09/2019



Omek, E. (2015). SANTE.UNAAC. Investir dans la Sage-femme : réduire la mortalité mère-enfant Kinshasa, NHS.

OMS (2010). Accroître l'accès aux personnels de santé dans les zones rurales ou reculées. <https://www.who.int/hrh/retention/guidelines/fr/> Accessed 12/12/2018

OMS (2018). Maladie à Virus Ebola. République démocratique du Congo. <https://www.who.int/csr/don/25-october-2018-ebola-drc/fr/> Accessed 12/11/2019

ONRHSC (2015). Profil en ressources humaines pour la santé en République Démocratique du Congo. Kinshasa, Ministère de la Santé RD Congo.

Ørngreen R and Levinsen K (2017). "Workshops as a Research Methodology." *The Electronic Journal of e-Learning*. **15**(1): 70-81. <http://www.ejel.org/volume15/issue1> Accessed 3/03/2020

Pavignani E, Michael M, Murru M, Beesley M and Hill P.S (2013). "Making sense of the apparent chaos: health-care provision in six country case studies." *International Review of the Red Cross*. **95**(889): 41-60. <https://doi.org/10.1017/S1816383113000726>

Pendleton J (2019). "What role does gender have in shaping knowledge that underpins the practice of midwifery?" *Journal of Gender Studies*. **28**(6): 629-234. <https://doi.org/10.1080/09589236.2019.1590185>

Peters A, Lotfinejad N, Guitart C, Borzykowski T, Allegranzi B and Pittet D (2020). "“Nurses and midwives: clean care is in your hands”: the 5th May 2020 World Health Organization SAVE LIVES: Clean Your Hands campaign." *Antimicrobial Resistance and Infection Control*. **9**(54). <https://doi.org/10.1016/j.jhin.2020.02.014>

Peters D, Chakraborty S, Mahapatra P and Steinhardt L (2010). "Job satisfaction and motivation of health workers in public and private sectors: cross-sectional analysis from two Indian states." *Human Resources for Health*. **8**(27). <https://doi.org/10.1186/1478-4491-8-27>

Pilkenton D (2008). "Midwifery: A career for men in nursing." *Men in Nursing*. **3** (1): 29-33. [https://www.nursing.vanderbit.edu/msn/pdf/nmw\\_midwiferyformen.pdf](https://www.nursing.vanderbit.edu/msn/pdf/nmw_midwiferyformen.pdf) Accessed 20/04/2019

Platt J.E, Raj M, Wienroth M (2020). "An Analysis of the Learning Health System in Its First Decade in Practice: Scoping Review." *J Med Internet Res*. **22**(3): e17026. <https://doi.org/10.2196/17026>

PNUD-RDC (2020). Impacts sanitaires et socio-economiques de la COVID-19 en Republique Democratique du Congo. Analyse prospective et orientations de la riposte multisectorielle. Kinshasa, PNUD

PNUD (2015). Objectifs de développement durable. Kinshasa, PNUD. Population data (2019). République démocratique du Congo. <https://www.populationdata.net/pays/republique-democratique-du-congo/> Accessed 19/01/2020

Portela G.Z, Fehn A.C, Ungerer R.L.S (2017). "Human resources for health: global crisis and international cooperation." *Ciência & Saúde Coletiva*. **22**(7). <http://dx.doi.org/10.1590/1413-81232017227.02702017>

Programme National de Santé de Reproduction (2011). Rapport annuel 2010. Kinshasa, PNSR. Prust M.L, Kamanga A, Ngosa L, McKay C, Muzongwe C.M, Mukubani M.T, Chihinga R, Misapa R,

van den Broek J.W and Wilmink N (2019). "Assessment of interventions to attract and retain health workers in rural Zambia: a discrete choice experiment." *Human Resources for Health*. **17**(26). <https://doi.org/10.1186/s12960-019-0359-3>

Radio okapi (2010). Bunia: 24 prestataires de santé formés pour limiter la mortalité maternelle à l'accouchement. <https://www.radiookapi.net/actualite/2010/10/19/bunia-24-prestataires-de-sante-formes-pour-limiter-la-mortalite-maternelle-a-l-25e2%2580%2599accouchement> Accessed 15/06/2017

Radio Okapi (2016). Kinshasa : USAID lance un programme de lutte contre la mortalité maternelle et infantile.

<https://www.radiokapi.net/2016/04/14/actualite/sante/kinshasa-usaid-lance-un-programme-de-lutte-contre-la-mortalite-maternelle> Accessed 23/08/2017

Radio Okapi (2018). RDC : le projet de budget 2019 se chiffre à près de 6 milliards de dollars. <https://www.radiokapi.net/2018/10/04/actualite/societe/rdc-le-projet-de-budget-2019-se-chiffre-pres-de-6-milliards-de-dollars> Accessed 18/05/2019

Radiokapi (2017). Sida : la RDC réalise des progrès en matière de traitement et de prévention. <https://www.radiokapi.net/2017/12/01/actualite/sante/sida-la-rdc-realise-des-progres-en-matiere-de-traitement-et-de-prevention> Accessed 12/07/2018

Rajan D, Kalambay H, Mossoko M, Kwete D, Bulakali J, Lokonga JP, Porignon D and Gerard S (2014). "Health service planning contributes to policy dialogue around strengthening district health systems: an example from DR Congo 2008–2013." *BMC Health Serv Res.* **14**(552). <https://doi.org/10.1186/s12913-014-0522-4>

Ramanarayanan D (2020). "First Ever State of the World's Nursing Report: Unlocking the Gender Dimensions." NewSecurityBeat <https://www.newsecuritybeat.org/2020/04/state-worlds-nursing-report-unlocking-gender-dimensions/> Accessed 28/06/2020.

Raven J, Martineau T, MacPherson E, Baba A.D.M, Ssali S, Torr S and Theobald S (2014). "Fragile and conflict affected states: report from the Consultation on Collaboration for Applied Health Research and Delivery." *Conflict and Health.* **8**(15). <https://doi.org/10.1186/1752-1505-8-15>

Raven J, Akweongo P, Baba A, Baine S.O, Sall M.G, Buzuzi S and Martineau T (2015). "Using a human resource management approach to support community health workers: experiences from five African countries." *Human Resources for Health.* **13**(45). <https://doi.org/10.1186/s12960-015-0034-2>

Raven J, Baral S, Wurie H, Witter S, Samai M, Paudel P, Subedi H.N, Martineau T, Elsey H and Theobald S (2018). "What adaptation to research is needed following crises: a comparative, qualitative study of the health workforce in Sierra Leone and Nepal." *Health Research Policy Systems*. **16**(6). <https://doi.org/10.1186/s12961-018-0285-1>

Raven J, Wurie H and Witter S (2018). "Health workers' experiences of coping with the Ebola epidemic in Sierra Leone's health system: a qualitative study." *BMC Health Services Research*. **18**(251). <https://doi.org/10.1186/s12913-018-3072-3>

Raven J, Wurie H, Idriss A, Bah A.J, Baba A, Nallo G, Kollie K.K, Dean L, Steege R, Martineau T and Theobald S (2020). "How should community health workers in fragile contexts be supported: qualitative evidence from Sierra Leone, Liberia and Democratic Republic of Congo." *Human Resources for Health*. **18**(58). <https://doi.org/10.1186/s12960-020-00494-8>

Razee H, Whittaker M, Jayasuriya R, Yap L and Brentnall L (2012). "Listening to the rural health workers in Papua New Guinea - the social factors that influence their motivation to work." *Social Science & Medicine*. **75**(5): 828-835. <https://doi.org/10.1016/j.socscimed.2012.04.013>

Relief web (2018a). What's happening in Ituri?  
<https://reliefweb.int/report/democratic-republic-congo/what-s-happening-ituri> Accessed 12/05/2019

Reliefweb (2018b). "DRC: A Crisis the World Can No Longer Afford to Ignore."  
<https://reliefweb.int/report/democratic-republic-congo/drc-crisis-world-can-no-longer-afford-ignore>. Accessed 31/07/2020

Reliefweb (2019) President's Malaria Initiative: Democratic Republic of Congo - Abbreviated Malaria Operational Plan FY 2019.  
<https://reliefweb.int/report/democratic-republic-congo/president-s-malaria-initiative-democratic-republic-congo> Accessed 18/01/2021

Reliefweb (2020). "DR Congo: Ending the Cycle of Violence in Ituri."  
<https://reliefweb.int/report/democratic-republic-congo/dr-congo-ending-cycle-violence-ituri> Accessed 31/07/2020

Reliefweb (2020b). Democratic Republic of the Congo - Fourth Additional Financing for the Health System Strengthening for Better Maternal and Child Health Results Project.

Renfrew M (2017). Midwifery matters. *Comprehensive Midwifery: The role of the midwife in health care practice, education, and research: An Interactive Guide to the Theory and Evidence of Practice*. Ontario, The e-Book Foundry, McMaster University.

Ritchie H (2020). Exemplars in Global Health: Which countries are most successful in preventing maternal deaths? <https://ourworldindata.org/exemplars-maternal-mortality> Accessed 05/10/2020

Ritchie J, Lewis H and El am G (2003). Designing and Selecting Samples. Ritchie J and Lewis J. (eds). *Qualitative research practice. A Guide for Social Science Students and Researchers*. London, Sage Publications: 77-108.

Ritchie J, Spencer L, O'Connor W (2003). Carrying out Qualitative Analysis. Ritchie J and Lewis J. (eds). *Qualitative research practice. A Guide for Social Science Students and Researchers* London, Sage Publications: 219-262.

Roman T.E, Cleary S and McIntyre D (2017). "Exploring the Functioning of Decision Space: A Review of the Available Health Systems Literature." *International Journal of Health Policy and Management*. **6**(7): 365-376.  
<https://doi.org/10.15171/ijhpm.2017.26>

Rominski S.D, Lori J, Nakua E, Dzomeku V, Moyer C.A (2017). "When the baby remains there for a long time, it is going to die so you have to hit her small for the baby to come out: justification of disrespectful and abusive care during childbirth among midwifery students in Ghana." *Health Policy and Planning*. **32**(2): 215-224.  
<https://doi.org/10.1093/heapol/czw114>

Roome E, Raven J and Martineau T (2014). "Human resource management in post-conflict health systems: review of research and knowledge gaps." *Conflict and Health*. **8**(18). <https://doi.org/10.1186/1752-1505-8-18>

Roos E.C (2020). Sida's support to midwifery in low- and middle-income countries. Midwifery. <https://www.sida.se/English/publications/165812/sidas-support-to-midwifery-in-low--and-middle-income-countries/> Accessed 3/07/2020

Ross L.E (2017). "An account from the inside: Examining the emotional impact of qualitative research through the lens of "insider" research." *Qualitative Psychology*. **4**(3): 326-337. <https://psycnet.apa.org/fulltext/2016-62664-001.html> Accessed 12/08/2020

Roy B, Holmes D and Chouinard V (2011). "Contribution à une éthique de la sollicitude - Masculinités et genre dans la profession infirmière." *Recherche en soins infirmiers*. **107**(4). <https://doi.org/10.3917/rsi.107.0038>

Rubenstein L.S and Bittle M.D (2010) "Responsibility for Protection of Medical Workers and Facilities in Armed Conflict " *Lancet*. **375** (9711): 329-340. [https://doi.org/10.1016/S0140-6736\(09\)61926-7](https://doi.org/10.1016/S0140-6736(09)61926-7)

Rural Health Information Hub (2019). Education and Training of the Rural Healthcare Workforce. <https://www.ruralhealthinfo.org/topics/workforce-education-and-training> Accessed 08/10/2020

Rycroft-Malone J, Burton C.R, Bucknall T, Graham I.D, Hutchinson A.M and Stacey D (2016). "Collaboration and Co-Production of Knowledge in Healthcare:

Opportunities and Challenges." *International Journal of Health Policy and anagement*. **5**(4): 221-223. <https://doi.org/10.15171/ijhpm.2016.08>

Sabzevari M.T and Rad M (2019). "Resilience strategies against working pressures in midwives: A qualitative study." *J Educ Health Promot*. **8**(33). [https://doi.org/10.4103/jehp.jehp\\_241\\_18](https://doi.org/10.4103/jehp.jehp_241_18)

SADC (2012). Southern African development Community. Towards a common future. Pretoria. <https://www.sadc.int/about-sadc/overview/sadc-vision/> Accessed 12/08/2020

Sadler E, Pora, T, Marshall I, Hoang U, Curcin V, Wolfe C.D.A and McKeivitt C (2017). "Shaping innovations in long-term care for stroke survivors with multimorbidity through stakeholder engagement." *Plos One*. **12**(5). <https://doi.org/10.1371/journal.pone.0177102>

Safi N, Naeem A, Khalil M, Anwari P and Gedi G (2018). "Addressing health workforce shortages and maldistribution in Afghanistan." *Eastern Mediterranean Health Journal*. **24**(9). <https://doi.org/10.26719/2018.24.9.951>

Santos K.d.S, Ribeiro M.C, de Queiroga D.E.U, da Silva I.A.Pereira and Ferreira S.M.S (2020). "The use of multiple triangulations as a validation strategy in a qualitative study." *Ciência & Saúde Coletiva* **25**(2). <https://doi.org/10.1590/1413-81232020252.12302018>

Saraki T (2015). "Midwifery Digest Hot Topic: Midwifery in the sustainable development era." *MIDIRS Midwifery Digest*. **25**(4): 413-418. <https://www.midirs.org/midwifery-digest-hot-topic-midwifery-sustainable-development-era/> Accessed 1/03/2020

Scheffler R, Bruckner T and Spetz J (2012). The Labour Market for Human Resources for Health in Low and Middle Income Countries. Human Resources for Health Observer. Geneva, Department of Health Systems Policies and Workforce, World Health Organization [http://www.who.int/hrh/tools/labour\\_market/en/](http://www.who.int/hrh/tools/labour_market/en/) Accessed 23/04/2019

Scheil-Adlung X (2013). "Health workforce benchmarks for universal health coverage and sustainable development." *Bulletin of the World Health Organization*. (91). <http://dx.doi.org/10.2471/BLT.13.126953>

Schoonenboom J and Johnson R.B (2017). "How to Construct a Mixed Methods Research Design." *Kolner Z Soz Sozpsychol.* **69** (suppl 2).  
<https://doi.org/10.1007/s11577-017-0454-1>.

Seddiq K, Enarson D.A, Shah K, Haq Z and Khan W.M (2014). "Implementing a successful tuberculosis programme within primary care services in a conflict area using the stop TB strategy: Afghanistan case study." *Conflict and Health.* **8**(1): 3  
<https://doi.org/10.1186/1752-1505-8-3>

Seidman G and Atun R (2017). "Does Task Shifting Yield Cost Savings and Improve Efficiency for Health Systems? A Systematic Review of Evidence From Low-Income and Middle-Income Countries " *Human Resources for Health.* **15**(29).  
<https://doi.org/10.1186/s12960-017-0200-9>

Seifman R (2019). Global Health Workforce Crisis: What To Do.  
<https://impakter.com/global-health-workforce-crisis-what/> Accessed 5/06/2020

Seshadri S.R, Parab S, Kotte S, Latha N and Subbiah K (2016). "Decentralization and decision space in the health sector: a case study from Karnataka, India." *Health Policy and Planning.* **31**(2): 171-181. <https://doi.org/10.1093/heapol/czv034>

Shannon G, Minckas N, Tan D, Haghparast-Bidgoli H, Batura N and Mannell J (2019). "Feminisation of the health workforce and wage conditions of health professions: an exploratory analysis." *Human resources for Health.* **17**(72).  
<https://doi.org/10.1186/s12960-019-0406-0>

Sheikh K, Agyepong I, Jhalani M, Ammar W, Hafeez A, Pyakuryal S, Abimbola S, Ghaffar A and Swaminathan S (2020). "Learning health systems: an empowering agenda for low-income and middle-income countries." *The Lancet.* **395**(10223): 476-477.  
[https://doi.org/10.1016/S0140-6736\(19\)33134-4](https://doi.org/10.1016/S0140-6736(19)33134-4)

Sidibé C.S, Touré O, Broerse J.E.W and Dieleman M (2019). "Rural pipeline and willingness to work in rural areas: Mixed method study on students in midwifery and



obstetric nursing in Mali." *Plos One*. **14**(9).

<https://doi.org/10.1371/journal.pone.0222266>

Simon S, Chu K, Frieden M, Candrinho B, Ford N, Schneider H and Biot M (2009). "An integrated approach of community health worker support for HIV/AIDS and TB care in Angónia district, Mozambique." *International Health and Human Rights*. **9**(13).

<https://doi.org/10.1186/1472-698X-9-13>

Smith S, Sim J and Halcomb E (2018). "Nurses' experiences of working in rural hospitals: an integrative review." *J Nurs Manag.*(27): 482-490.

<https://doi.org/10.1111/jonm.12716>

Snow R.C, Asabir K, Mutumba M, Koomson E, Gyan K, Dzodzomenyo M, Kruk M and Kwansah J (2011). "Key Factors Leading to Reduced Recruitment and Retention of Health Professionals in Remote Areas of Ghana: A Qualitative Study and Proposed Policy Solutions " *Human Resources for Health*. **9**(13). <https://doi.org/10.1186/1478-4491-9-13>

Snowden J.M and Muoto I (2018). "Strengthening the Health Care Workforce in Fragile States: Considerations in the Health Care Sector and Beyond." *Health Services Research*. **53**(3): 1308-1315. <https://doi.org/10.1111/1475-6773.12854>

Sousa A and Flores G (2013). Transforming and Scaling Up Health Professional Education: Policy Brief on Financing Education of Health Professionals. Geneva, WHO.

Sousa A, Scheffler RM, Nyoni J and Boermad T (2013). "A comprehensive health labour market framework for universal health coverage." *Bull World Health Organ*. **91**(11): 892-894. <http://dx.doi.org/10.2471/BLT.13.118927>

Sousa A, Scheffler R.M, Koyi G, Ngah S.N, Abu-Agla A, M'kiambati H.M and Nyoni J (2014). "Health labour market policies in support of universal health coverage: a comprehensive analysis in four African countries." *Human Resources for Health*. **12** (55). <https://doi.org/10.1186/1478-4491-12-55>

Ssali S and Theobald S (2016). "Using life histories to explore gendered experiences of conflict in Gulu District, northern Uganda: Implications for post-conflict health reconstruction." *South African Review of Sociology*. **47**(1): 81-98.

<https://doi.org/10.1080/21528586.2015.1132634>

Ssali S, Theobald S and Hawkins K (2015). "Life histories: a research method to capture people's experiences of health systems in post conflict countries." *Health systems global* <https://doi.org/10.1080/21528586.2015.1132634>.

Statoids (2009) Provinces of the Democratic Republic of Congo (Congo Kinshasa) <http://www.statoids.com/ucd.html>. Accessed 27/12/2020

Stasse S, Vita D, Kimfuta J, Campos da Silveira V, Bossyns P and Criel B. (2015). "Improving financial access to health care in the Kisantu district in the Democratic Republic of Congo: acting upon complexity." *Global Health Action* **8** (25480).

Statistica (2019). Valeur du produit intérieur brut (PIB) de la République démocratique du Congo de 2011 à 2021, à prix courants par habitant (en dollars des États-Unis). <https://fr.statista.com/statistiques/710685/pib-republique-democratique-du-congo-par-habitant/> Accessed 23/04/2020

Steinmetz S, de Vries D.H and Tijdens K.G (2014). "Should I stay or should I go? The impact of working time and wages on retention in the health workforce." *Human Resources for Health*. **12**(23). <https://doi.org/10.1186/1478-4491-12-23>

Stewart D.W, Shamdasani P.N and Rook, D.W (2007). *Applied social research methods series: Vol. 20. Focus groups: Theory and practice* (2nd ed.). Sage Publications, Inc. <https://doi.org/10.4135/9781412991841>

Strasser R, Kam S.M and Regalado S.M (2016). "Rural Health Care Access and Policy in Developing Countries." *The Annual Review of Public Health*. **37**: 395-412. <https://doi.org/10.1146/annurev-publhealth-032315-021507>

Suuk M (2017). Ghanaian women reject male midwives.

[https://www.dw.com/en/ghanaian-](https://www.dw.com/en/ghanaian-women-reject-male-midwives/a-37733547)

[women-reject-male-midwives/a-37733547](https://www.dw.com/en/ghanaian-women-reject-male-midwives/a-37733547) Accessed 23/04/2019

Sweeney J (2018). DRC. Conflict induced displacement in Ituri.

[https://reliefweb.int/sites/reliefweb.int/files/resources/20180316\\_acaps\\_start\\_drc\\_ituri\\_displacement%20%281%29.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/20180316_acaps_start_drc_ituri_displacement%20%281%29.pdf) Accessed 22/10/2018

Tandi T.E, Cho Y, Akam A.J.C, Afoh C.O, Hun Ryu S, Choi MS, Kim K and Choi JW (2015).

"Cameroon public health sector: shortage and inequalities in geographic distribution of health personnel." *International Journal for Equity in Health*. **14**(43).

<https://doi.org/10.1186/s12939-015-0172-0>

Tangcharoensathien V, Limwattananon S, Suphanchaimat R, Patcharanarumol W, Sawaengdee, K and Weerasak P (2013). "Health workforce contributions to health system development: a platform for universal health coverage " *Bull World Health Organ*. **91**(11): 874-880. <https://doi.org/10.2471/BLT.13.120774>

Tariq S and Woodman J (2013). "Using mixed methods in health research." *Journal of the Royal Society of Medicine*. **4**(6). <https://doi.org/10.1177/2042533313479197>

Temple B, Edwards R and Alexendar C (2006). "Grasping at context: Cross language qualitative research as secondary qualitative data analysis." *Forum: Qualitative Social Research*. **7**(4). <http://dx.doi.org/10.17169/fqs-7.4.176>

ten Hoop-Bender P, de Bernis L, Campbell J, Downe S, Fauveau V, Fogstad H, Homer C.S.E, Kennedy H.P, Matthews Z, McFadden A, Renfrew M.J and Van Lerbergh W (2014). "Improvement of maternal and newborn health through midwifery." *Lancet*. **384**(9949): 1226-1235. [https://doi.org/10.1016/S0140-6736\(14](https://doi.org/10.1016/S0140-6736(14)

Theobald S, Brandes N, Gyapong M, El-Saharty S, Proctor E, Diaz T, Wanji S, Elloker S, Raven J, Elsey H, Bharal S, Pelletier D and Peters D.H (2018). "Implementation

research: new imperatives and opportunities in global health " *Lancet*. **392**(10160): 2214-2228. [https://doi.org/10.1016/S0140-6736\(18\)32205-0](https://doi.org/10.1016/S0140-6736(18)32205-0)

Thompson R and Kapila M (2018). Healthcare in conflict settings. Doha, World Innovation Summit for Health.

Thorsen V.C, Teten Tharp A.L and Meguid T (2011). "High rates of burnout among maternal health staff at a referral hospital in Malawi." *BMC Nursing*. **10**(9). <https://doi.org/10.1186/1472-6955-10-9>

Tremeau V (2019). RDC : 260.000 enfants souffrent de malnutrition aiguë sévère dans la région du Kasai (UNICEF). Kinshasa, ONU. <https://news.un.org/fr/story/2019/03/1038631> Accessed 23/06/2020

Trépanier A, Gagnon M.P, Mbemba G.I.C, Côté J, Paré G, Fortin J.P, Duplâa E and Courcy F (2013). "Factors associated with intended and effective settlement of nursing students and newly graduated nurses in a rural setting after graduation: A mixed-methods review." *International Journal of Nursing Studies*. **50**(3): 314-325. <https://doi.org/10.1016/j.ijnurstu.2012.09.005>

Trudeau D and Robert L J. (2016). Renforcement du système d'information des ressources humaines en santé en République Démocratique du Congo: Mise en place d'IHRIS dans les provinces de Kasai et Kasai Central. Washington, IntraHealth International

Turkmani S, Currie S, Mungia J, Assefi N, Rahmanzai A.J, Azfar P and Bartlett L (2013). "'Midwives are the backbone of our health system': Lessons from Afghanistan to guide expansion of midwifery in challenging settings." *Midwifery*. **29**(10): 1166-1172. <https://doi.org/10.1016/j.midw.2013.06.015>

Tursunbayeva A, Bunduchi R, Franco M and Pagliari C (2016). "Human resource information systems in health care: a systematic evidence review." *J Am Med Inform Assoc*. **24**: 633–654. <https://doi.org/10.1093/jamia/ocw141>

UNDP-DRC (2012). About The Democratic Republic of Congo (DRC).

<https://www.cd.undp.org/content/rdc/en/home2/countryinfo.html> Accessed 23/09/2020

UNDP (2018). Human Development Indices and Indicators: 2018 Statistical Update Briefing note for countries on the 2018. Statistical Update Congo (Democratic Republic of the). [http://hdr.undp.org/sites/all/themes/hdr\\_theme/country-notes/COD.pdf](http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/COD.pdf) Accessed 20/09/2019

UNFPA (2014a). The Democratic Republic of Congo. The state of the world's midwifery 2014. <https://www.unfpa.org/data/sowmy/CD> Accessed 17/09/2019

UNFPA (2014b). The state of the world's midwifery 2014: a universal pathway. A woman's right to health. <https://www.unfpa.org/sowmy> Accessed 13/07/2018

UNFPA (2015). Maternal mortality in humanitarian crises and in fragile settings. New York,

UNFPA. <https://www.unfpa.org/resources/maternal-mortality-humanitarian-crisis-and-fragile-settings> Accessed 3/05/2018

UNFPA RDC (2012). Evaluation des besoins en soins obstétricaux et néonataux d'urgence dans

trois provinces de la République Démocratique du Congo. Rapport d'enquête. Kinshasa, UNFPA.

UNFPA DR Congo (2018). Bulletin n°1 de la surveillance des décès maternels et riposte (SDMR) Janvier-Juin 2018 en République Démocratique du Congo. Kinshasa, UNFPA & WHO: 12.

UNICEF (2017). Levels and Trends in Child Mortality: Report 2017. New York, UNICEF. [https://www.unicef.org/publications/files/Child\\_Mortality\\_Report\\_2017.pdf](https://www.unicef.org/publications/files/Child_Mortality_Report_2017.pdf). Accessed 14/09/2019

United Nations (2012). General Assembly 2012. Resolution on Global Health and foreign policy. New York, United Nations.

United Nations Economic and Social Council (2019). Special edition: progress towards the Sustainable Development Goals. Report of the Secretary-General. New York, United Nations. <https://sustainabledevelopment.un.org/sdg3> Accessed 11/02/2020

Utz B, Siddiqui G, Adegoke A and van den Broek N (2013). "Definitions and roles of a skilled birth attendant: a mapping exercise from four South-Asian countries." *Acta Obstetricia et Gynecologica Scandinavica*. **92**(9): 1063-1069.  
<https://doi.org/10.1111/aogs.12166>

Van Lerberghe W, Matthews Z, Achadi E, Ancona C, Campbell J, Channon A, de Bernis L, De Brouwere V, Fauveau V, Fogstad H, Koblinsky M, Liljestrand J, Mechbal A, Murray S.F, Rathavay T, Rehr H, Richard F, ten Hoop-Bender P and Turkmani S (2014). "Country experience with strengthening of health systems and deployment of midwives in countries with high maternal mortality." *The Lancet*. **384**(9949): 1215-1225. [https://doi.org/10.1016/S0140-6736\(14\)60919-3](https://doi.org/10.1016/S0140-6736(14)60919-3)

Varpilah S.T, Safer M, Frenkel E, Baba D, Massaquoi M and Barrow G (2011). "Rebuilding human resources for health: a case study from Liberia." *Human Resources for Health*. **9**(11). <https://doi.org/10.1186/1478-4491-9-11>

Vircoulon T (2005). "L'Ituri ou la guerre au pluriel." *Afrique contemporaine*. **3**(215): 129-146. <https://www.cairn.info/revue-afrique-contemporaine-2005-3-page-129.htm>  
Accessed 23/05/2019

Vujicic M and Zurn P. (2006) The dynamics of the health labour market. *The International Journal of Health Planning and Management*. **21**(2): 101-115.  
<https://doi.org/10.1002/hpm.834>

Vutegha J, Mpunga D, Mvudi Matingo, S and Tshetu, A (2019). Analyse du système de référence et de contre-référence dans la Zone de santé de Gombe Matadi. Lubumbashi, RIPSEC RD Congo. <https://ripsec.org/esp-unikin/analyse-du-systeme-de->

reference-et-de-contre-reference-dans-la-zone-de-sante-de-gombe-matadi/ Accessed 10/10/2020

Wakkary R (2007). A Participatory Design Understanding of Interaction Design. <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.596.497> Accessed 3/03/2020

Wang W, Temsah G and Carter E (2016). Levels and Determinants of Out-of-Pocket Health Expenditures in the Democratic Republic of the Congo, Liberia, Namibia, and Rwanda. Washington, USAID. <https://dhsprogram.com/publications/publication-AS59-Analytical-Studies.cfm> Accessed 21/07/2020

Warren N, Norr K.F and Keeney G.B (2013). "Matroniya: the lived experiences of rural auxiliary midwives in Koutiala, Mali." *Health Care Women Int.* **34**(6): 482-498. <https://doi.org/10.1080/07399332.2012.673659>

Wille C. (2020). Health Workers at Risk: Added challenges of COVID-19. <https://reliefweb.int/report/world/health-workers-risk-added-challenges-covid-19> Accessed 03/10/2020

Williams H (2018). "Burnout in Midwifery: An Occupational Hazard?" *Health Times* <https://healthtimes.com.au/hub/midwifery/38/news/hw/burnout-in-midwifery-an-occupational-hazard/3504/> Accessed 28/06/2020 2020.

Willis-Shattuck M, Bidwell P, Thomas S, Wyness L, Blaauw D and Ditlopo P (2008). "Motivation and retention of health workers in developing countries: a systematic review." *BMC Health Serv Res.* **8**: 247. <https://doi.org/10.1186/1472-6963-8-247>

Wirth M (2008). "Professionals with Delivery Skills: Backbone of the Health System and Key to Reaching the Maternal Health Millennium Development Goal." *Croatian Medical Journal.* **49**(3): 318-333. <https://doi.org/10.3325/cmj.2008.3.318>

Wisdom J and Creswell J.W (2013). Mixed Methods: Integrating Quantitative and Qualitative Data Collection and Analysis While Studying Patient-Centred Medical

Home Models. Rockville, MD, Agency for Healthcare Research and Quality.  
<https://pcmh.ahrq.gov/page/mixed-methods-integrating-quantitative-and-qualitative-data-collection-and-analysis-while> Accessed 08/10/2020

Witter S, Bertone M.P, Wurie H, Samai M, Edem-Hotah J and Amara R (2015). Health worker incentives: survey report, Sierra Leone., Rebuild Consortium.  
<https://rebuildconsortium.com/resources/research-reports/health-worker-incentives-survey-report-sierra-leone/> Accessed 19/05/2019

Witter S, Falisse J.B, Bertone M.P, Alonso-Garbayo A, Martins J.S, Salehi A.S, Pavignani E and Martineau T (2015). "State-building and human resources for health in fragile and conflict-affected states: exploring the linkages." *Human Resources for Health*. **13**(33). <https://doi.org/10.1186/s12960-015-0023-5>

Witter S, Namakula J, Wurie H, Chirwa Y, So S, Vong S, Ros B, Buzuzi S and Theobald S (2017a). "The gendered health workforce: mixed methods analysis from four fragile and post-conflict contexts." *Health Policy and Planning*. **32**(5): v52-v62.  
<https://doi.org/10.1093/heapol/czx102>

Witter S, Namakula J, Alonso-Garbayo A, Wurie H, Theobald S, Mashange W, Ros B, Buzuzi S, Mangwi R and Martineau T (2017b). "Experiences of using life histories with health workers in post-conflict and crisis settings: methodological reflections." *Health Policy and Planning*. **32**(4): 595-601. <https://doi.org/10.1093/heapol/czw166>

Witter S, Wurie H, Chandiwana P, Namakula J, So S, Alonso-Garbayo A, Ssengooba Fand Raven J (2017). "How do health workers experience and cope with shocks? Learning from four fragile and conflict-affected health systems in Uganda, Sierra Leone, Zimbabwe and Cambodia." *Health Policy and Planning*. **32**(3): iii3-iii13.  
<https://doi.org/10.1093/heapol/czx112>

Wong S.T, MacDonald M, Martin-Misener R, Meagher-Stewart D, O'Mara L and Valaitis R.K (2017). "What systemic factors contribute to collaboration between primary care



and public health sectors? An interpretive descriptive study." *BMC Health Serv Res.* **17**(796). <https://doi.org/10.1186/s12913-017-2730-1>

Wood M.E, Mansoor G.F, Hashemy P, Namey E, Goha F, Ayoubi S.F and Todd C.S (2013). "Factors influencing the retention of midwives in the public sector in Afghanistan: A qualitative assessment of midwives in eight provinces." *Midwifery.* **29**(10): 1137-1144. <https://doi.org/10.1016/j.midw.2013.07.004>

Woodward A, Sheahan K, Martineau T and Sondorp E (2017). "Health systems research in fragile and conflict affected states: a qualitative study of associated challenges." *Health Research Policy and Systems.* **15**(44). <https://doi.org/10.1186/s12961-017-0204-x>

World Bank (2013) "Project Paper on a Proposed Additional Grant in the Amount of SDR 42.3 Million to the Democratic Republic of Congo for a Governance Capacity Enhancement Project." Report No: 76718-ZR. Washington, D.C.: World Bank.

World Bank (2015a). "World Databank".

<http://databank.worldbank.org/data/home.aspx> Accessed 15/04/2020

World Bank (2015b). Physicians (per 1000 people).

<https://data.worldbank.org/indicator/SH.MED.PHYS.ZS> Accessed 12/08/2018

World Bank (2015c). Nurses and midwives (per 1000 people).

<https://data.worldbank.org/indicator/SH.MED.NUMW.P3> Accessed 12/08/2018

World Bank (2019) The World Bank in DRC.

<https://www.worldbank.org/en/country/drc/overview> Accessed 30/08/2019

World Health Organization (2004). Making pregnancy safer the critical role of the skilled attendant : a joint statement by WHO, ICM and FIGO. World health organization (WHO). <http://apps.who.int/iris/bitstream/handle/10665/42955/9241591692.pdf> Accessed 20/04/2019

World Health Organization (2006). The world health report 2006: working together for health. [https://www.who.int/whr/2006/whr06\\_en.pdf?ua=1](https://www.who.int/whr/2006/whr06_en.pdf?ua=1) Accessed 18/03/2018

World Health Organization (2008). Health Workers Salaries in Low and Middle Income Countries. [https://www.who.int/alliance-hpsr/projects/bitran\\_hrhsalaries/en/](https://www.who.int/alliance-hpsr/projects/bitran_hrhsalaries/en/) Accessed 25/06/2020

World Health Organization (2010). Increasing Access to Health Workers in Remote and Rural Areas through improved Retention: Global Recommendations. <https://www.who.int/hrh/retention/guidelines/en/> Accessed 12/05/2018

World Health Organization (2012). Health policy and systems research: a methodology reader. <https://www.who.int/alliance-hpsr/resources/reader/en/> Accessed 12/07/2017

World Health Organization (2014a). A universal truth: No health without a workforce. <https://www.who.int/workforcealliance/knowledge/resources/hrhreport2013/en/> Accessed 6/03/2020

World Health Organization (2014b). Comprehensive Analytical Profile: Democratic Republic of the Congo. Brazzaville, WHO.

World Health Organization (2015a). Trends in Maternal Mortality: 1990 to 2015. <https://www.who.int/reproductivehealth/publications/monitoring/maternal-mortality-2015/en/> Accessed 14/09/2019

World Health Organization (2015b). Human Resources for Health Information System. Minimum Data Set for Health Workforce Registry. Geneva, WHO.

World Health Organization (2016a). Health systems: key expected results. <https://www.who.int/healthsystems/about/progress-challenges/en/> Accessed 23/04/2018

World Health Organization (2016b). Maternal mortality. Fact sheet. 348.  
<https://www.who.int/news-room/fact-sheets/detail/maternal-mortality> Accessed  
12/02/2020

World Health Organization (2016c). Global strategy on human resources for health:  
Workforce 2030. Geneva, WHO.  
[http://www.who.int/hrh/resources/global\\_strategy\\_workforce2030\\_14\\_print.pdf?Ua=](http://www.who.int/hrh/resources/global_strategy_workforce2030_14_print.pdf?Ua=1)  
1 Accessed 15/11/2018

World Health Organization (2016d). Democratic Republic of the Congo. Key indicators.  
<https://apps.who.int/gho/data/node.goe.ki-COD?lang=en> Accessed 12/01/2020

World Health Organization (2016e). Midwives' Voices. Midwives' Realities. Findings  
from a global consultation on providing quality midwifery care.  
[https://www.who.int/maternal\\_child\\_adolescent/documents/midwives-voices-](https://www.who.int/maternal_child_adolescent/documents/midwives-voices-realities/en/)  
[realities/en/](https://www.who.int/maternal_child_adolescent/documents/midwives-voices-realities/en/) Accessed 12/08/2018

World Health Organization (2018). Definition of skilled health personnel providing care  
during childbirth: the 2018 joint statement by WHO, UNFPA, UNICEF, ICM, ICN, FIGO  
and IPA. [https://www.who.int/reproductivehealth/publications/statement-competent-](https://www.who.int/reproductivehealth/publications/statement-competent-mnh-professionals/en/)  
[mnh-professionals/en/](https://www.who.int/reproductivehealth/publications/statement-competent-mnh-professionals/en/) Accessed 24/06/2019

World Health Organization (2019a). Maternal mortality. Geneva, WHO.  
<https://www.who.int/news-room/fact-sheets/detail/maternal-mortality> Accessed  
29/10/2019

World Health Organization (2019b). Strengthening quality midwifery education for  
Universal

Health Coverage 2030: framework for action.  
[https://www.who.int/maternal\\_child\\_adolescent/topics/quality-of-](https://www.who.int/maternal_child_adolescent/topics/quality-of-care/midwifery/strengthening-midwifery-education/en/)  
[care/midwifery/strengthening-midwifery-education/en/](https://www.who.int/maternal_child_adolescent/topics/quality-of-care/midwifery/strengthening-midwifery-education/en/) 23/05/2020.

World Health Organization (2020). New Ebola case confirmed in the Democratic Republic of the Congo. <https://www.who.int/news/item/10-04-2020-new-ebola-case-confirmed-in-the-democratic-republic-of-the-congo> Accessed 23/08/2020

World Poverty Clock (2018). "The Democratic Republic of Congo's roles in Africa's poverty narrative." World Poverty Clock. <https://worldpoverty.io/blog/index.php?r=18> Accessed 2/09/2019 2019.

Wright J (2015). Essential Package of Health Services Country Snapshot: The Democratic Republic of the Congo. <https://www.hfgproject.org/essential-package-of-health-services-country-snapshot-the-democratic-republic-of-the-congo/> Accessed 23/08/2020

Wurie H and Lohmann J (2020). Health workers mental health during COVID-19 - Lessons from, and for, fragile and conflict-affected settings. <https://healthsystemsglobal.org/news/health-workers-mental-health-during-covid-19-lessons-from-and-for-fragile-and-conflict-affected-settings/> Accessed 23/09/2020

Xu L, Wuliji T, Diallo K and Campbell J Eds. (2019). Gender equity in the health workforce: Analysis of 104 countries. Health Workforce Working Paper 1. Geneva, WHO. <https://apps.who.int/iris/bitstream/handle/10665/311314/WHO-HIS-HWF-Gender-WP1-2019.1-eng.pdf> Accessed 6/08/2019

Yagub A.I.A and Mtshali K (2015). "The role of non-governmental organizations in providing curative health services in North Darfur State, Sudan." *African Health Sciences*. **15**(3): 1049-1055. <https://doi.org/10.4314/ahs.v15i3.48>

Yakhelef N, Codjia L, Dal Poz M and Campbell J (2018). "Cartographie des politiques en matière de ressources humaines de la santé en Afrique francophone." *Santé Publique*. **30**(Hors serie): 19-31. <https://doi.org/10.3917/spub.180.0019>

Yetilo KJ. (2010) La sous-administration territoriale en République démocratique du Congo. Etat des lieux et perspectives. Pyramides. 19  
<http://journals.openedition.org/pyramides/711> Accessed 18/01/2021

You L-m, Aiken L.H, Sloane DM, Liu K, He G-p, Hu Y, Jiang X-l, Li X, Li X-m and Liu H-p (2013). "Hospital nursing, care quality, and patient satisfaction: cross-sectional surveys of nurses and patients in hospitals in China and Europe." *Int J Nurs Stud.* (50): 154-161. <https://doi.org/10.1016/j.ijnurstu.2012.05.003>

Zhu A, Tang S, Thu N.T.H, Supheap L and Liu X (2019). "Analysis of strategies to attract and retain rural health workers in Cambodia, China, and Vietnam and context influencing their outcomes." *Human Resources for Health.* **17**(2). <https://doi.org/10.1186/s12960-018-0340-6>

Zihindula G, John R.A, Gumede D.M, Gavin M.R and De Wet N (2019). "A review on the contributions of NGOs in addressing the shortage of healthcare professionals in rural South Africa." *Cogent Social Sciences.* **5**(1). <https://doi.org/10.1080/23311886.2019.1674100>

Zurn P, Codjia L, Sall F.L and Braichet J.M (2010). "How to recruit and retain health workers in underserved areas: the Senegalese experience." *Bulletin of the World Health Organization.* **88**: 386-389. <https://doi.org/10.2471/BLT.09.070730>

Zurn P, Dal Poz M.R, Stilwell B and Adams O (2004). "Imbalance in the health workforce." *Human Resources for Health.* **2**(13). [https://doi.org/10.1186/1478-4491-2-](https://doi.org/10.1186/1478-4491-2-13)

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## Annexes

### Annex 1: Research assistants training programme

Time	Session	Content /Process	Facilitator
DAY 1			
8h30-9h00	Welcome, introductions, objectives	Background to the study	Amuda
9h00-11h00	Session	Qualitative research methods	Amuda
11h00- 11h15	Short break		
11h15- 11h40	Session	Consent seeking process	Amuda
11h40- 13h00	Session	Life history	Amuda
13h00- 13h45	Lunch break		
13h45- 13h50	Warm up		Amuda
13h50- 14h50	session	Conducting a workshop with different participants	Amuda
14h50- 15h20	Session	Probing questions in interview or FGD	Amuda
15h20- 15h35	Break		

15h35-16h00	Session	Recording information	Marie
16h00-17h30	Session	Qualitative data analysis	Amuda
17h30	Closing day 1		
DAY 2			
7H30-9H00	Session	Ethics in qualitative research	Marie
9h00-10h30	Session	data collection tools with emphasis on the terms used	Amuda
10h30-14h00	Session	Practices with students	Amuda
14h00-14h30	Lunch		
14h30-16h30	Session	Practices with students	Amuda
16h30-18h00	Session	Comments on the practice	
18h00	Closing	Closing	Amuda

## **Annex 2: Guide for secondary data review**

Identifying the characteristics of the skilled birth attendance workforce in terms of their availability and distribution within the province

Objectives:

- To describe the availability of human resources for health, in particular midwives and other SBAs (physicians, nurses).
- To describe data on numbers, vacancies, distribution, and turnover in the health zones (health districts) in Ituri province.

The data will be disaggregated where available by health districts' categories, different cadres of SBA and gender where available. The data will be collected using a tool. The following elements will be sought:

Expected numbers of doctors, nurses, midwives in each health district

Current number of doctors, nurses, midwives in each health district

Vacancies in each health district in terms of doctors, nurses, midwives

Distribution of doctors, nurses and midwives within each health district

Turnover of midwives and other SBA cadres (doctors and nurses) within each health district



2.6 Template for analysis of routine staffing data

Health District: \_\_\_\_\_

Cadre	Gender	Posts (a)	Filled posts (b)	Vacancy (Mariani, Kasznia-Brown et al.)
Doctors	Total			
	Female			
	Male			
Midwives	Total			
	Female			
	Male			
Nurses	Total			
	Female			
	Male			

### **Annex 3: Participant Information Sheet: Life history interviews**

*“Title of Study”:* Supporting midwives to improve maternal health outcomes in fragile contexts: case study of rural Ituri Province, DR Congo.

My name is Amuda Baba and I work for IPASC DR Congo. We would like to invite you to take part in our research study. Before you decide, we would like you to understand why the research is being done and what it would involve for you. I will go through the information sheet with you and answer any questions you have. Ask me if there is anything that is not clear.

#### *Purpose of this study*

Generally, midwives play key roles in promoting maternal health. We are interested in finding out more about midwifery cadres in rural settings. In this particular study, we would like to find out more about your experiences and challenges working as a midwife in rural area, and strategies that can be proposed to improve attraction and retention of midwives in rural areas of DR Congo.

#### *Why have you been invited?*

This study is being conducted in three health zones of Ituri Province: Aru, Bunia and Kambala. As the study is about midwives and that you work as a midwife in the targeted site, that is why you have been selected to take part. A part from about 10 current midwives targeted in each selected health zone, about 3 ex-midwives located in the area will also be selected.

#### *Do I have to take part?*

It is up to you to decide whether to join the study. We will describe the study and go through this information sheet. If you agree to take part, we will then ask you to sign a consent form. You are free to withdraw at any time, without giving a reason. This would not affect anything in relation to your work.

If you agree, the interview will take place in a location of your choice, and apart from myself, the interviewer and my research assistant who will help with taking note, no one else will be present. I expect that the interview will take 60 – 90 minutes.

Questions that we will ask you cover your professional life as a midwife, from midwifery training, recruitment and deployment, and your experiences up to date.

*Compensations:*

There will be no benefits to you from participating in this study, but your participation should help us understand midwives' experiences in working in rural areas and formulate recommendations to health authorities.

*Incentives:*

You will not be paid to take part in the research. However, during the interview, we will share soft drink.

*Confidentiality:*

The information that we collect from this research will be kept confidential, meaning that no one else except my 2 research assistants and myself will access the information. Information that we will collect from you will be kept in a file. Your name and other identity details will not be mentioned on the file. We will just assign a number to the file. The name associated with the number assigned to each file will be kept in a locked cupboard and will not be divulged to anyone except members of the research team.

If you agree, we will like to record the interview just to help us not to lose anything that you will share to us, as the recording will only be used to help us remember what we discussed during the interview. The information recorded will be confidential, which means that no one else except people working on this study will be able to hear the recorded tape. File will be kept in on a password protected computer and only members of the research team can access it. You will not be identified by name on the

tape. As soon as we get all the information from the tape, it will be destroyed. No names will be included in the written report of this project.

Participants are advised not to discuss specific cases with names, and talk more in general terms. We advise all participants that everything is kept confidential, except if information is revealed about corruption and any other governance issues. Then this information will be fed up to a higher level ensuring anonymity. This is included in the information sheets

#### *What will happen to the results of the research study?*

Preliminary results of this research will be shared with study participants. Afterwards, results will be published and shared with study participants during their monthly sessions at the health zone offices. Research participants will not be identified in any report / publication.

#### *Study Conduct*

The Sponsor is ultimately responsible for the safe conduct of the study and the well-being of participants. Any unforeseen circumstances will be reported to the Sponsor and dealt with appropriately.

#### *Complaints*

If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions to the main researcher, Amuda Baba – contact details are below.

#### *Risks of involvement in the study*

As a life history interview takes more time, there is a high risk that it affects your working or social schedule. To deal with that, we will make sure you are contacted prior data collection period to seek for your consent to participate and also to give your proposition on the time and the venue where you would like the interview to take place. Research team will be briefed that a life history interview does not go beyond 2 hours.

There might be potential risks of distress. If it happens, the participant can stop the interview at any time, does not have to answer a question, and we can provide psychological support if needed.

*Sponsorship and Funding*

This research is sponsored by Liverpool School of Tropical Medicine (LSTM) and has been reviewed and been approved by LSTM Research Ethics Committee and the Ethics Committee of “Centre de Recherche Multidisciplinaire pour le Développement de Bunia, (CRMD/Bunia)”.

It is funded by LSTM.

*Contact Details:*

Amuda Baba, Institut Panafricain de Santé Communautaire, Av. ISPASC, Quartier Simbilyabo, Bunia

Telephone: 0810078822, 0994074822

**Contact of someone independent of the research study:** Details of the local REC.: ATR NGULO BUBBU DHENE; 0998781462

## Annex 4: Consent Form

CONFIDENTIAL

There might be potential risks of distress. If it happens, the participant can stop the interview at any time, does not have to answer a question, and we can provide psychological support if needed.

### Sponsorship and Funding

This research is sponsored by Liverpool School of Tropical Medicine (LSTM) and has been reviewed and been approved by LSTM Research Ethics Committee and the Ethics Committee of “Centre de Recherche Multidisciplinaire pour le Développement de Bunia, (CRMD/Bunia)”.

It is funded by LSTM.

### Contact Details:

Amuda Baba, Institut Panafricain de Santé Communautaire, Av. ISPASC, Quartier Simbilyabo, Bunia; Telephone: 0810078822, 0994074822

**Contact of someone independent of the research study:** Details of the local REC.: ATR NGULO BUBBU DHENE; 0998781462

<p>Study Title:</p> <p>Supporting midwives to improve maternal health outcomes in fragile contexts: case study of rural Ituri Province, DR Congo.</p>	
<p>Principal Investigator: Amuda Baba</p>	<p>Study Site: Aru, Bunia and Adja Health Zones, Ituri Province, DR Congo</p>

	Please initial box
1. I confirm I have read and understood the information sheet dated 18 <sup>th</sup> April 2017 for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
2. I understand that participation in this study is voluntary and I am free to withdraw consent at any time, without giving a reason, without any penalties.	
3. I understand that interviews and focus group discussions will be recorded. I give my consent to be recorded	
4. I understand that data collected during the study, may be looked at by individuals from LSTM and from regulatory authorities. I give permission for these individuals to have access to my records.	
5. I hereby declare that I have not been subjected to any form of coercion in giving this consent.	
6. I agree / do NOT agree to the data about me collected in this study being stored for further use in the future. (delete if not applicable)	
7. I agree to take part in this study.	

Signing this declaration does not affect your right to decline to take part in any future study.

Name of participant

Date

Signature

Name of person taking

Date

Signature

Consent

When complete: 1 copy for participant; 1 copy (original) for research



## Annex 5: Topic guide for life history interview with midwives

### 1. Topic guide for life histories with midwives

**Objectives:** To assess the opportunities, challenges and experiences of midwives through time from initial professional choice, to current day

**Introduction:** Introduce the study, the scope of the life history interviews

**Informed Consent Process:** Ensure participant has read the information sheet, ask if she / he has any questions or areas for clarification, explain about confidentiality including recording the interview, complete consent sheet.

Details of participant:

1. Interviewee ID		5. Qualification of midwife	
2. Date of Interview		6. Gender	Male <input type="checkbox"/> Female <input type="checkbox"/>
3. Health District		7. Age	
4. Facility name		8. Name of interviewer	

### Topic guide

I would like to understand about your career. Can you draw me a line, starting with your birth and leading to the present day? What are the major events that you would put on it? Suggestions to include: family life, births, training, different jobs. Describe them to me.

Allow respondent to draw the whole life history. Then using that diagram explore their career with probing questions, such as:

1. How and why did you become a midwife?
2. How would you describe your experiences in relation to:
  - a. Your recruitment and deployment?
  - b. Different professional supports (supervision)?
  - c. Incentives (financial and non-financial)?
  - d. Your relationship with other health cadres (nurses and others)?
  - e. Your work in rural settings?
3. What challenges have you faced in different phases of your working experiences as midwife in rural area?
4. What are coping strategies that you have used to address the challenges mentioned above?
5. According to you, what strategies can be applied to support midwives working in rural areas so that they contribute to effectively improve maternal health outcomes?
6. How would you describe “being a midwife” in a rural health facility of Ituri Province?
7. According to you, what are reasons for leaving midwifery?
  - a. Professional reasons
  - b. Personal reasons
  - c. Family reasons
8. What are your career aspirations?

Closure

Is there anything you would like to ask me?

The interviewer thanks the interviewee for their time and explains how the information will be analyzed and the findings of the study disseminated.

## Annex 6: Topic guide for life history interview with ex-midwives

**Objectives:** To assess the opportunities, challenges and experiences of midwives through time from initial professional choice, to current day

**Introduction:** Introduce the study, the scope of the life history interviews

**Informed Consent Process:** Ensure participant has read the information sheet, ask if she / he has any questions or areas for clarification, explain about confidentiality including recording the interview, complete consent sheet.

Details of participant:

2. Interviewee ID		5. Qualification of midwife	
3. Date of Interview		6. Gender	Male <input type="checkbox"/> Female <input type="checkbox"/>
4. Health Zone		7. Age	
5. Facility name		8. Name of interviewer	

### Topic guide

I would like to understand about your career. Can you draw me a line, starting with your birth and leading to the present day? What are the major events that you would put on it? Suggestions to include: family life, births, training, different jobs. Describe them to me.

Allow respondent to draw the whole life history. Then using that diagram explore their career with probing questions, such as:

1. How and why did you become a midwife?
2. How would you describe your experiences in relation to:
  - a. Your recruitment and deployment?

- b. Different professional supports (supervision)?
  - c. Incentives (financial and non-financial)?
  - d. Your relationship with other health cadres (nurses and others)?
  - e. Your work in rural settings?
3. How would you describe your relationships and interactions with existing cadres in the health system?
  4. What challenges have you faced in different phases of your working experiences as midwife in rural area?
  5. What coping strategies have used to address the challenges mentioned above?
  6. Why did you move or leave the job?
  7. Do you know some other midwives who left their job as well? And why did they leave, according to your experience?
    - a. Professional reasons
    - b. personal reasons
    - c. Family reasons
  8. What is your current job?
  9. Where do you work?
  10. How do you compare your current work with working as a midwife where you have been working before?
  11. According to you, what strategies can be applied to support midwives working in rural areas so that they contribute to improve effectively maternal health outcomes?
  12. How would you describe “being a midwife” in a rural health facility of Ituri Province?
  13. What are your career aspirations now?

#### Closure

14. Is there anything that you would like to ask me?

The interviewer thanks the interviewee for their time and explains how the information will be analyzed and the findings of the study disseminated.

## **Annex 7: Topic guide for FGDs with midwives**

**Objectives:** To explore challenges faced by midwives in the fragile Ituri context and coping strategies they have developed to overcome those challenges.

**Introduction:** Introduce the study, the scope of the life history interviews

**Informed Consent Process:** Ensure participant has read the information sheet, ask if she / he has any questions or areas for clarification, explain about confidentiality including recording the interview, complete consent sheet.

Details of participants:

Health District:

Date of FGDs:

Name of moderator:

Participant IDs	Gender	Years of work as midwife	Qualification of midwife

## Topic guide

I would like to understand about your career as midwives.

1. Can you describe your career as midwives in terms of:

- opportunities,
- experiences
- challenges

2. How do those experiences and challenges affect your work as midwives?

4. What are strategies you have developed to overcome the challenges?

## Closure

The moderator thanks the interviewee for their time and explains how the information will be analyzed and the findings of the study disseminated.

## **Annex 8: Document review guide for policy analysis**

**Objective:** To analyze national and provincial human resources for health policies and plans in relation attraction and retention of health workers, especially midwives and the extent to which they have been adapted in implementation in rural/fragile settings

### Collecting the documents

1. Request provincial HRH policies and plans from the HR Department both from government and non-government organizations, as well as the national HRH policies and plans (current and in the last 5 years)
2. Follow up references in different policy documents
3. Use Key Informant Interviews to identify new documents and check status of existing documents

### Review guide

1. Register details of the document in the table below
2. Carry out a quick review of the document (see Guidance on structured skim reading – 7 steps below)
3. Decide whether to include in review or not and briefly register reason for decision
4. If included, make notes – using pages or paragraph numbers (often used in government documents) – on the following points – but not limited to them – about the policies.

Policy items in relation to skilled birth attendants

Policy items in relation to midwives alone

Policy items in relation to midwives in rural and remote areas

Policy items describing the extent to which policies are adapted in implementation in rural areas

Guidance on implementation



Reviewers own thoughts on the document

Details of Document:

1. Document title	
2. Authors/ institution	
3. Commissioning institution	
4. Journal title + issue, volume # and pp	
5. Publisher	
6. URL and access date	
7. Date of publication	
8. Status	
9. For inclusion? Reasons for or not	
10. Name of reviewer	
11. Date of review	

Notes (Page or paragraph number followed by note)

[add notes here]

## Annex 9: Programme of the workshop with stakeholders

	Session	Content /Process	Facilitator
8h30-9h00	Registration	Registration of participants and achieving consent procedure	Marie
9h00-9h15	Welcome, introductions, objectives	- Welcome + introductions of participants - Presentation of the study overview - Presentation of the objectives of the workshop	Amuda  Amuda  Amuda
9h15-9h30	SBAs situation in Ituri Province	Presentation of SBAs' results from secondary data	Amuda
9h30-9h50	Experiences of being a midwife in rural Ituri	Presentation of "Being a midwife" results	Amuda
9h50-10h30	General discussions	Comments and views on the presented results (Group discussions) (Questions 1, 2, 3) (See topic guide Page 6)	Amuda
10h30-10h40	Short break	Refreshment (cold drinks)	
10h40-11h15	Policies and strategies on health workers attraction and retention	Presentation of policies and strategies on attraction and retention of health workers (International	Provincial HRH analyst

		Confederation of Midwives) in rural and remote areas	
11h15- 11h55	Application of policies and strategies	Buzz groups on the application of different areas covered in the policies and strategies in rural Ituri contexts (Feeding back on flip charts) (Question 4)	Amuda
11h55- 12h00	Warm up	Breaking the ice exercise	Marie
12h00- 13h30	What are feasible strategies for attraction and retention in Ituri?	Brainstorming on feasible strategies to improve attraction of midwives in rural areas (writing them down on flipchart) (Question 5a)	Amuda
		Brainstorming on feasible strategies to improve retention of midwives in rural areas (writing them down on flipchart) (Question 5b)	Amuda
13h30- 14h15	Break	Lunch break	Marie
14h15- 14h20	Warm up	Another short warm-up exercise	Marie
14h20- 15h20	Challenges to the identified strategies	Group discussions (buzz groups: midwives + chief midwives; head nurses;	Amuda

		district health authorities + NGO delegate + delegates from church medical coordination) on challenges related different strategies being proposed (Questions a1, b1)	
15h20- 16h20	Overcoming the challenges	Group discussions on how the identified challenges can be overcome in the context of Ituri (Questions a1, b1)	Amuda
16h20- 16h45	Closing	- Summing up different elements being raised - Thanking the participants and closing the sessions	Amuda

## **Annex 10: Topic guide for workshop with stakeholders**

**Objectives:** To engage with stakeholders in order to review the current midwifery staffing situation in order to identify feasible and context specific strategies which can help to attract, support and retain midwives in the fragile and rural Ituri province

**Introduction:** Introduce the study, the scope of the workshop

**Informed Consent Process:** Ensure participant has read the information sheet, ask if she / he has any questions or areas for clarification, explain about confidentiality including recording the interview, complete consent sheet.

Details of participants:

Health District:

Date of Workshop:

Name of moderator:

Participant IDs	Position	Gender	Years of work in the health sector	Qualification

## Topic guide

I will start presenting the results of life history interviews, followed by secondary data results on the availability and the distribution of skilled birth attendants in Ituri Province. Then, after both presentations, the following questions will be explored further with different stakeholders:

Results from the 2 papers being presented

1. What can we learn from the results which have been presented?
2. What problems do these results reveal about skilled birth attendants in Ituri?  
*(Please write those problems on flipchart)*
3. What do they reveal particularly on midwives in Ituri Province?

Policies and strategies on health workers' attraction and retention

4. Are there policies? Are they being implemented? If not, why not? Are the policies effective? Is the implementation the problem?
5. How do you find the application of different areas related to attraction and retention of health workers, particularly midwives covered in the described policies and strategies in the context of Ituri?

Problem analysis + strategies

6. According to you, what can be done both at the national, provincial and district levels to address different problems which were raised?

Ask probing questions, such as:

- a. What feasible strategies can be proposed to attract qualified midwives in rural Ituri in order to improve maternal outcomes
  - What challenges could be with each strategy and how to overcome these?
- b. What feasible strategies can be proposed to retain qualified midwives in rural Ituri Province?
  - What challenges could be with each strategy and how to overcome these?

Closure

The moderator thanks the participants for their time and explains how the information will be analyzed and the findings of the study disseminated.



## Annex 11: Coding framework for Life Histories and FGDs

N	Themes	Sub-themes
1	Personal description	1.1. Role in the health sector 1.2. Duration in the service
2	Reasons for becoming a midwife	2.1. Personal choice 2.2. Influence of others 2.3. Inspirations since childhood 2.4. Role model 2.5. Personal experience 2.6. To help women
3	Recruitment and deployment	3.1. Normal recruitment procedure 3.2. Invitation by contacts in the health facilities
4	Professional supports	4.1. Supervision 4.2. In-service training
5	Incentives	5.1. Financial 5.2. Non-financial
6	Working in rural areas	6.1. Experiences 6.2. Challenge 6.3. Coping strategies
7	Strategies to support midwives working in rural areas	7.1. Government related strategies 7.2. Health district related strategies 7.3. Health facility and Community related strategies
8	Reasons for leaving midwifery career	8.1. Professional reasons 8.2. Personal reasons 8.3. Family reasons

9	Current job of ex-midwives	<p>9.1. Health sector</p> <p>9.2. Non health sector</p> <p>9.3. Private occupation</p>
10	Career of midwives	<p>10.1. Opportunities</p> <p>10.2. Experiences</p> <p>10.3. Challenges</p> <p>10.4. Aspirations</p>
11	Proposed strategies to attract and retain midwives in rural Ituri Province	<p>11.1. Strategies to attract midwives in rural Ituri Province</p> <p>11.2. Strategies to retain midwives in rural Ituri Province</p>
12	Perceptions on policies in relation to attraction and retention of health workers	<p>12.1. Health workers' attraction and retention policies</p> <p>12.2. Policies implementation in relation to attraction and retention of health workers in rural areas</p> <p>12.3. Challenges to implementation fidelity</p> <p>12.4. Recommendations to improve implementation fidelity</p>
13	Current life of ex-midwife	<p>13.1. Perception of current conditions</p>

## Annex 12: Coding framework from workshops data

N	Themes	Sub-themes
1.	Issues on implementing attraction and retention policies	<ol style="list-style-type: none"> <li>1. HRH recruitment in health districts</li> <li>2. Working conditions in rural and remote health facilities</li> <li>3. Living conditions in rural and remote areas</li> <li>4. Financial incentives</li> <li>5. Redeployment of health workers</li> <li>6. Distribution of health workers</li> <li>7. Government responsibility</li> </ol>
2.	Reasons for poor implementation of the policies	<ol style="list-style-type: none"> <li>1. National level</li> <li>2. Provincial level</li> <li>3. District health level</li> </ol>
4.	Attraction strategies	<ol style="list-style-type: none"> <li>1. Improved living conditions</li> <li>2. Improved working conditions</li> <li>3. Prioritizing the registration of midwives working in rural areas</li> <li>4. Improved financial incentives in rural areas</li> <li>5. Training of rural background candidates</li> </ol>
6.	Challenges to attraction strategies	<ol style="list-style-type: none"> <li>1. Government responsibility</li> <li>2. Lack of NGOs in rural areas</li> <li>3. Financial constraints</li> <li>4. Unfair rate policies in health districts</li> </ol>
7.	Strategies to overcome the attraction challenges	<ol style="list-style-type: none"> <li>1. Lobbying with NGOs</li> <li>2. Local contextual strategies</li> </ol>
8.	Retention strategies	<ol style="list-style-type: none"> <li>1. Improved living conditions</li> <li>2. Improved working conditions</li> <li>3. Good leadership at facilities level</li> <li>4. Improved financial incentives</li> </ol>

		<ul style="list-style-type: none"> <li>5. Community mobilization to use health services</li> <li>6. Training of rural background candidates</li> </ul>
9.	Challenges to retention strategies proposed	<ul style="list-style-type: none"> <li>1. Government responsibility</li> <li>2. Poor management skills of health authorities</li> <li>3. Socio-cultural pressures</li> <li>4. Church related regulations</li> <li>5. Interpersonal conflicts</li> </ul>
10	Strategies to overcome challenges	<ul style="list-style-type: none"> <li>1. Provincial health division leadership</li> <li>2. Socio-cultural interventions</li> <li>3. Lobbying to NGOs</li> </ul>

### Annex 13: Some examples of coded transcripts

Life history with an ex-midwife: ARLHEM3 F35	
<p>Q. How and why did you become a midwife?</p> <p>A. Thank you very much for your question. The first question, I think it is obvious. You only become a midwife after having been trained. So, I went to the nursing school, and I was trained as a community midwife, that is how I became a midwife. I think I have answered your question. <b>However, in regards to why I became midwife, you know my mother was a traditional birth attendant, and she really wanted me to be trained as a midwife. I was also seeing her, the way she was caring for pregnant women, the way she was respected and honoured in the community, I also said to myself that I would like one day to be a midwife, and that wish met with my mother's dream,</b> that is why I went to study midwifery for 4 years, after I completed my senior 4 (10 years after schooling) and then I became a midwife.</p>	<p>How she became midwife</p> <p>Reason for becoming a midwife</p> <p>2.4. Role model</p>

Life history with a midwife: : ADLHM1 F27	
<p>Q. How and why did you become a midwife?</p> <p>A. I would say that was a vocation, as since my childhood, I knew that one day I will be a midwife. When I was sick, taken to hospitals when I was still a child, I was really admiring midwives in the health facilities, especially as they reacted with women.</p>	<p>Reason for becoming a midwife</p> <p>2.3. Child aspirations</p> <p>2.4. Role model</p>

Life history with a midwife: : ARLHM4 45F	
<p>Q. How and why did you become a midwife?</p> <p>A. I chose to be a midwife so that I could be there to help pregnant women in our areas, as there were many women who were losing their lives while giving birth. Once in Logo, and following the advice of my brother, I straight away chose midwifery</p>	<p>Reason for becoming a midwife</p> <p>2.6 To help women</p>

Life history with a midwife: : BLHM3 M32	
<p>Q. How and why did you become a midwife?</p> <p>A. It is from a very tragic experience. When I was still about 7 years, I saw a pregnant lady from my family, leaving home and heading to the health centre to give birth. 3 hours later, they informed my parents that lady and the baby she was carrying are all dead, and they are taking the two bodies at our place. That day I felt very bad, and I decided that when I will complete my secondary education, I will go to be trained as a midwife so that other families do not lose theirs when giving birth. And that is why I became a midwife.</p>	<p>Reason for becoming a midwife</p> <p>2.5. Personal experience</p>

## Annex 14: Some examples of charts

<p>2. Reason for being a midwife</p>	<p>Text: Ex-midwives/LH with ex-midwives 3            Position: 99-102             Code. 2/ Reasons for being a midwife             AB: Why did you chose to become a midwife?            EAR3: However, in regards to why I became midwife, you know my mother was a traditional birth attendants, and she really wanted me to be trained as a midwife.            I was also seeing her, the way she was caring for pregnant women, the way she was respected and honoured in the community, I also said to myself</p>	<p>Text: Midwife/LH with a female midwife, Adja            Position: 67-73            Code 2./reason for being a midwife             AB: Why did you chose to become a midwife?            MAD1: . I would say that was a vocation, as since my childhood, I knew that one day I will be a midwife. When I was sick, taken to hospitals when I was still a child, I was really admiring midwives in the health facilities, especially as they reacted with women.</p>	<p>Text: Midwife/LH with a male midwife, Bunia            Position: 20-24            Code 2/Reason for being a midwife             AB: Why did you chose to become a midwife?            MB3: . It is from a very tragic experience. When I was still about 7 years, I saw a pregnant lady from my family, leaving home and heading to the health centre to give birth. 3 hours later, they informed my parents that lady and the baby she was carrying are all dead, and they are taking the two bodies at our place.            That day I felt very bad, and I decided</p>
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	<p>that I would like one day to be a midwife, and that wish met with my mother's dream</p>	<p>Text: Midwife/LH with female midwife, Aru  Position: 84-87  Code / reason for being a midwife</p> <p>AB: Why did you chose to become a midwife?</p> <p>MAR4: I chose to be a midwife so that I could be there to help pregnant women in our areas, as there were many women who were losing their lives while giving birth. Once in Logo, and following the advice of my brother, I straight away chose midwifery</p>	<p>that when I will complete my secondary education, I will go to be trained as a midwife so that other families do not lose theirs when giving birth. And that is why I became a midwife.</p>
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## **Annex 15: Document review results**

### **Documents review on human resources for health in RDC**

The objective of this method is to analyze national and provincial human resources for health policies and plans in relation to skilled birth attendants, especially midwives and the extent to which they have been adapted in implementation in rural/fragile settings.

Reviewed documents were those describing national and provincial policies and plans on HRH in the DR Congo, with a special focus on physicians, nurses and midwives in the areas of their production, recruitment, attraction, working conditions, and retention. Documents were searched in the DR Congo Ministry of Health, international NGOs websites, google scholar and through consulting key informants in the Province, at the Ministry of Health in Kinshasa, Kinshasa School of Public Health and some other researchers in this area. Selected documents were based on their relevance on different aspects of HRH in DRC: recruitment, deployment, attraction, retention. Human resources policies, plans and regulations at the national, provincial levels were analysed for content on human resource management strategies such as recruitment, attraction and retention, and the extent to which they have been adapted to rural areas.

To identify articles and grey literature on human resources for health in relation to skilled birth attendants, especially midwives in DRC, a search was conducted on the databases PubMed and Science Direct as well as the World Health Organisation's website using the following key words: "skilled birth attendants, midwives, human resources for health production, recruitment, attraction, retention, motivation, rural and remote areas" combined with a Boolean operator 'AND' to search for key words pertaining to DR Congo. In addition, searches were performed through the Ministry of Health of DR Congo website to extract grey literature human resources for health, maternal health. The search engine Google was also used to find French grey literature on human resources for health policies, plans, maternal health, and skilled birth attendants. The Provincial Health Division, the Kinshasa School of Public Health, the Department of Human Resources for Health and some other researchers in that area were also contacted to identify more literature. Searches were limited to literature from 2006 onwards.

Studies and documents that reported on human resources for health, skilled birth attendants in DR Congo were identified. Out of 38 documents identified, 22 were assessed

as being relevant to the theme of this study, which included both French and English documents. There seems not to be enough materials addressing HRH policies and plans, especially focused on skilled birth attendants in DR Congo. The profile of documents included are presented in table 1

Data was then synthesised across the different documents, and narratives developed under two following themes: key HRH issues affecting skilled birth attendants in DR Congo and policies and plans addressing raised HRH issues

Constraints: Policy documents in DRC were very rare to be found. Despite many visits and communication with officials at provincial and national level, only 12 documents related to policy were found.

### Description of documents reviewed

Table 1 Details on documents reviewed

No	Type of documents	Title	Authors	Language
1	Report	Assessment of nursing and midwifery education and training capacity at seven training institutes in the democratic Republic of Congo	Bailey, R., D. Kamanzi and R. Deussom (2012)	English
2	Article	Investigating the remuneration of health workers in the DR Congo: implications for the health workforce and the health system in a fragile setting	Bertone, M. P., G. Lurton and P. B. Mutombo (2016)	English
3	Provincial plan	Plan provincial de développement sanitaire ( <i>Provincial plan for health development</i> )	Division Provinciale de la Santé de l'Ituri (2016)	French
4	Provincial plan	Plan provincial de développement des ressources humaines de la santé 2014 –	Division Provinciale de la Santé de Kasai	French

		2016 ( <i>Provincial human resources for health development plan 2014-2016</i> )	occidental (2014)	
5	Provincial plan	Plan Provincial de développement des ressources humaines en santé 2015-2017 ( <i>Provincial human resources for health development plan 2015-2017</i> )	Division Provinciale de la Santé de Katanga (2015)	French
6	Provincial plan	Plan provincial de développement des ressources humaines pour la santé 2017-2020 du Kongo Central ( <i>Kongo Central Provincial human resources for health development plan 2017-2020</i> )	Division Provinciale de la Santé de Kongo Central (2017)	French
7	Provincial plan	Plan provincial de développement des ressources humaines en santé 2014-2016 ( <i>Provincial human resources for health development plan 2014-2016</i> )	Division Provinciale de la Santé de Bas Congo (2014)	
8	Provincial plan	Plan Provincial de Développement de ressources humaines en santé ( <i>Provincial human resources for health development plan</i> )	Division Provinciale de la Santé de Kasai Central (2017)	French
9	Article	Paying health workers for performance in a fragmented, fragile state: reflections from Katanga Province, Democratic Republic of Congo.	Fox, S., S. Witter, E. Wylde, E. Mafuta and T. Lievens (2014)	English
10	Article	The state of emergency care in Democratic Republic of Congo.	Kalisya, L. M., M. Salmon, K. Manwa, M. M. Mutendi, K. Diango, R. Zaidi, S. K. Wendel	English

			and T. A. Reynolds (2015)	
11	Report	Stratégies de renforcement de système de santé ( <i>Health systems strengthening strategies</i> )	Ministère de la Santé RD Congo (2006)	French
12	Report	Stratégies de renforcement de système de santé ( <i>Health systems strengthening strategies</i> )	Ministère de la Santé RD Congo (2010a)	French
13	National plan	Plan National de Développement Sanitaire. ( <i>Health development national plan</i> )	Ministère de la Santé RD Congo (2010b)	French
14	Report	Plan stratégique de la réforme hospitalière ( <i>Hospital reform strategic plan</i> )	Ministère de la Santé RD Congo (2010c)	French
15	National plan	Plan national de développement sanitaire 2016-2020 ( <i>Health development national plan 2016-2020</i> )	Ministère de la Santé RD Congo (2016)	French
16	National plan	Plan national de développement des ressources humaines en santé ( <i>National human resources for health development plan</i> )	Ministère de la Santé RD Congo (2011)	French
17	National plan	Plan national de développement des ressources humaines en santé 2016-2020 (National human resources for health development plan)	Ministère de la Santé RD Congo (2016b)	French
18	Report	Cadre d'investissement pour la santé reproductive, maternelle, du nouveau-né, de l'enfant et de l'adolescent en vue de l'atteinte de la couverture sanitaire universelle en République Démocratique du Congo. Vers une	Ministère de la Santé RD Congo (2017)	French

		vision de développement durable d'ici 2030. ( <i>Investment Framework for Reproductive, Maternal, Newborn, Child and Adolescent Health to achieve Universal Health Coverage in the Democratic Republic of Congo. Towards a vision of sustainable development by 2030</i> )		
19	Report	SANTE.UNAAC. Investir dans la Sage-femme : réduire la mortalité mère-enfant Kinshasa ( <i>Health. UNAAC. Investing in Midwifery: Reducing maternal-child mortality Kinshasa</i> )	Omek, E. (2015)	French
20	Report	Profil en ressources humaines pour la santé en République Démocratique du Congo ( <i>Human resources for health profile in the Democratic Republic of Congo</i> )	ONRHSC (2015)	French
21	Report	Rapport annuel 2010 ( <i>Annual report 2010</i> )	Programme National de Santé de Reproduction (2011)	French
22	Article	Improving financial access to health care in the Kisantu district in the Democratic Republic of Congo: acting upon complexity.	Stasse, S., D. Vita, J. Kimfuta, V. Campos da Silveira, P. Bossyns and B. Criel (2015).	English

23	Report	Renforcement du système d'information des ressources humaines en santé en République Démocratique du Congo: Mise en place d'IHRIS dans les provinces de Kasai et Kasai Central <i>(Strengthening human resources for health information system in Democratic Republic of Congo: Implementing IHRIS in Kasai and Central Kasai provinces)</i>	Trudeau, D. and L. J. Robert (2016)	French
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### **Human resources for health issues related to skilled birth attendants in DR Congo as revealed by policies and plans**

The Ministry of Public Health in DR Congo identified key problems affecting human resources for health (HRH) in DR Congo, including skilled birth attendants.

#### **1. Issues related to HRH training, planning outputs and composition of labour market**

One of the issues described in different policies and plans on HRH is on the fact of having unclear national plan for training HRH, in terms of schools organising nursing and midwifery training courses as well as the faculty of medicine training doctors; and number of students to enrol and to complete their training each year (Ministère de la Santé Publique RD Congo 2006, Ministère de la Santé Publique RD Congo 2010a, Ministère de la Santé Publique RD Congo 2010b, Ministère de la Santé Publique RD Congo 2010c, Ministère de Santé Publique RD Congo 2011, Bailey, Kamanzi et al. 2012, Ministère de Santé Publique RD Congo 2016, Ministère de la Santé Publique RD Congo 2016b). There is a real unplanned increase of nursing schools just in the last 10 years, compared to the figures in 1998 (470 in 2008, 475 in 2016 against 255 in 1998) and nursing colleges (108 in 2008, 128 in 2016 against 53 in 1998) as well as universities organising the faculty of medicine (39 in 2008, 37 in 2016 against 3 in 1998) across the countries (Ministère de Santé Publique RD Congo 2011, Kalisya, Salmon et al. 2015, Stasse, Vita et al. 2015). Furthermore, there is also imbalance in the courses being organised in nursing schools (Institut de Techniques Médicales / Institut de l'Enseignement

Médical: ITM/IEM) and nursing colleges (Institut Supérieur des Techniques Médicales: ISTM), leading to over production of nurses compared to other health professionals such as midwives and others (Ministère de la Santé Publique RD Congo 2006, Ministère de la Santé Publique RD Congo 2010a, Ministère de la Santé Publique RD Congo 2010b, Ministère de Santé Publique RD Congo 2011, Programme National de Santé de Reproduction 2011, Division Provinciale de la Santé Kasai Occidental 2014, Division Provinciale de Santé Bas Congo 2014, Division Provinciale de la Santé Katanga 2015, Ministère de Santé Publique RD Congo 2016, Ministère de la Santé Publique RD Congo 2016b, Division Provinciale de la Santé Kongo Central 2017, Division Provinciale de Santé Kasai Central 2017). Taking the example of doctors for example, while between 1962 and 2004, DR Congo registered around 6000 doctors, between 2004 and 2015, it has registered more 12000 doctors, pushing their number to more than 18000, and as a consequence, most of them are invested in the private for profit sector, probably due to the fact of increasing demand in private sector or poor working conditions in the public sector (Ministère de Santé Publique RD Congo 2016). In relation to nursing and midwifery, for instance in 2013, out of 406 registered nursing schools for diploma level (ITM/IEM) across the country that year, 394 were training nurses and only 16 were training midwives (“accoucheuses”) (Ministère de Santé Publique RD Congo 2016).

Apart from nurses and doctors whose numbers seem to be sufficient, the country is facing serious shortages of other professional categories such as midwives, lab technicians, pharmacists, physiotherapist (Division Provinciale de la Santé Kasai Occidental 2014, Division Provinciale de Santé Bas Congo 2014, Division Provinciale de la Santé Katanga 2015, Ministère de Santé Publique RD Congo 2016, Division Provinciale de la Santé Kongo Central 2017, Division Provinciale de Santé Kasai Central 2017). As for midwives, DR Congo counts less than 2 midwives per 1000 births, being below 6, considered as the standard (Ministère de Santé Publique RD Congo 2016, Ministère de Santé Publique RD Congo 2017). Another problem on HRH production is that there are two different ministries in charge of HRH production, without a concertation mechanism: the ministry of Health for nursing diploma courses (ITM/IEM) training nurses and midwives (“accoucheuses”) for secondary levels and the Ministry of Higher Education for nursing colleges (ISTM) training nurses and midwives (“accoucheuses” for former programme and “Sage femme” for the reform programme



having the international confederation of midwifery standard) and the faculty of medicine in universities (training doctors) (Ministère de la Santé Publique RD Congo 2010c, Ministère de Santé Publique RD Congo 2011, Bailey, Kamanzi et al. 2012, ONRHSC 2015, Division Provinciale de la Santé Ituri 2016, Ministère de Santé Publique RD Congo 2016).

## **2. Problems related to recruitment and deployment of health workers**

Recruitment and deployment of human resources for health are not based on the needs, leading some facilities overstaffed, especially in urban areas and some others, especially in rural areas, with less staff (Ministère de la Santé Publique RD Congo 2010a, Ministère de la Santé Publique RD Congo 2010c). Recruitment and deployment regulations of health workers are not being observed, there are various recruitment centres at the health districts level, provincial health division levels, and also interference of some politicians, leading to uncontrolled number of health workers being recruited, with a plethora in urban health facilities (Division Provinciale de la Santé Kasai Occidental 2014, Division Provinciale de la Santé Ituri 2016, Ministère de la Santé Publique RD Congo 2016b, Division Provinciale de la Santé Kongo Central 2017, Division Provinciale de Santé Kasai Central 2017, Ministère de Santé Publique RD Congo 2017). (Division Provinciale de la Santé Ituri 2016, Trudeau and Robert 2016, Ministère de Santé Publique RD Congo 2017).

## **3. Poor salary, poor working conditions of health workers**

Lack or poor financial incentives and poor working conditions have been described in different policies and plans as one of the serious issues affecting HRH within the country. Most health workers do not receive salary from the government, a part from risk compensation allowances that some receive (Ministère de Santé Publique RD Congo 2011, Division Provinciale de la Santé Kasai Occidental 2014, Division Provinciale de Santé Bas Congo 2014, Division Provinciale de la Santé Katanga 2015, Bertone, Lurton et al. 2016, Ministère de Santé Publique RD Congo 2016, Division Provinciale de la Santé Kongo Central 2017, Division Provinciale de Santé Kasai Central 2017). Poor salary and poor working conditions, especially in rural areas have negative implications on health workers' motivation and retention, being one of the reasons for their inequitable distribution, as most prefer to remain in urban settings, where conditions are relatively better (Ministère de la Santé Publique RD Congo 2010a, Ministère de Santé Publique RD Congo 2011, Division

Provinciale de la Santé Katanga 2015, Ministère de Santé Publique RD Congo 2016, Ministère de la Santé Publique RD Congo 2016b). In 2014 for instance, only 32.8% of 127716 health workers in the country were receiving their salary from the government and 81.1% were receiving the risk compensation allowances. They qualified what they were receiving being insignificant (Fox, Witter et al. 2014, Bertone, Lurton et al. 2016, Division Provinciale de la Santé Ituri 2016, Ministère de Santé Publique RD Congo 2016). In Central Kasai for instance, 64% of health workers do not receive any salary from the government, and only 52% receive their risk allowances (Division Provinciale de Santé Kasai Central 2017). Rural placement allowances which were the main factor of rural retention are no longer paid. Retention is also affected by poor working conditions as most health facilities, especially in rural areas do not have sufficient equipment and supplies. SYNAMED, the association of doctors had for instance registered between 2008 and 2010, 470 doctors who officially left the country going to work abroad due to poor salary and poor working conditions (Ministère de Santé Publique RD Congo 2011).

### **Policies and plans addressing raised human resources for health issues**

The main aim of DR Congo HRH development policy is to provide the health sector at all levels of the health pyramid, multidisciplinary human resources for health who are competent, efficient, in sufficient quantity, equitably distributed, contributing to improve population's health (Ministère de la Santé Publique RD Congo 2010a, Ministère de la Santé Publique RD Congo 2010b, Ministère de Santé Publique RD Congo 2011, Division Provinciale de la Santé Kasai Occidental 2014, Division Provinciale de Santé Bas Congo 2014, Division Provinciale de la Santé Katanga 2015, Ministère de Santé Publique RD Congo 2016, Division Provinciale de la Santé Kongo Central 2017, Division Provinciale de Santé Kasai Central 2017) In order to fulfil that aim, different strategies are developed in HRH plans and policies, as described below.

#### ***1. Regulations plan for human resources for health training***

The national health development plan describes the focus on regulating HRH training, through improving HRH initial training. This improvement will involve the development and implementation of a concerted national plan of training courses in line with the needs on the field and will help to deal with the overproduction of some health professionals or the shortages of other categories (Ministère de Santé Publique RD Congo 2016). It is described

in that plan that the next national human resources for health development plan will provide more details on courses to be organised (Ministère de Santé Publique RD Congo 2016). In relation to that, the national human resources for health development plan states that it will contribute to improving the production of human resources for health both for diploma (IEM/ITM) and degree courses (ISTM and Faculty of Medicine) through strengthening institutional governance and leadership of structures in charge of HRH development as well as HRH planning framework (Ministère de Santé Publique RD Congo 2011). In relation to courses where there are shortages of a category of health professionals such as midwives, different plans propose that they be organised in nursing schools (ITM/IEM) and also nursing colleges (ISTM) where needs are very high (Division Provinciale de la Santé Kasai Occidental 2014, Division Provinciale de Santé Bas Congo 2014, Division Provinciale de la Santé Katanga 2015, Division Provinciale de la Santé Kongo Central 2017, Division Provinciale de Santé Kasai Central 2017). That is why, 16 nursing schools in 13 of the 26 provinces have introduced the new midwifery reformed programme since 2015 (Ministère de la Santé Publique RD Congo 2016b). For 2016-2020, the Ministry of Public Health estimates to graduate 676 midwives, 12920 nurses from nursing schools (ITM); 13761 midwives, 112036 nurses from nursing colleges (ISTM) and 19219 physicians from faculties of medicine across the country (Ministère de la Santé Publique RD Congo 2016b). In 2020, the Ministry of Public of Health estimates the number of different skilled birth attendants on posts as follows: 8627 physicians, 98323 nurses and 5760 midwives (Ministère de la Santé Publique RD Congo 2016b).

Strengthening institutional governance and leadership of structures in charge of HRH development, the plan suggests the implementation of HRH information system, decentralisation of HRH management and strengthening both intra and intersectoral partnership in relation to HRH. Concerning strengthening of HRH planning framework, the plan suggests developing institutional and normative HRH planning framework; capacity building of structures in charge of HRH planning; and promoting HRH planning (Ministère de Santé Publique RD Congo 2011, Division Provinciale de la Santé Kasai Occidental 2014, Division Provinciale de Santé Bas Congo 2014, Division Provinciale de la Santé Katanga 2015, Division Provinciale de la Santé Kongo Central 2017, Division Provinciale de Santé Kasai Central 2017). As the health professionals training is under the responsibility of 2 different

national ministries, the plan envisages implementing a common vision through a concertation structure which is to be put in place between the ministry of health and higher education for ensuring quality of human resources for health initial training (Ministère de Santé Publique RD Congo 2016, Ministère de la Santé Publique RD Congo 2016b).

In addition, to deal with shortages of midwives across the country, UNFPA has funded more than 250 schools training midwives by providing books and training materials for qualified teachers. They also helped training 2500 midwives ("accoucheuses") having followed the old midwifery programme at nursing colleges, and 43 midwives ("Sage femmes") having completed with the reformed programme following the international confederation of midwifery standard and intend to get invested in midwifery training (Omek 2015). With support from UNFPA, since 2013, the new midwifery programme are being experimented in nursing colleges of 8 of the 26 provinces (Ministère de la Santé Publique RD Congo 2016b).

## ***2. Regulating recruitment and deployment of health workers***

In DR Congo, all recruitment must be based on filling vacancies of budgeted posts following standard procedures on recruitment (ONRHSC 2015). So, the national health development plan states that emphasis will be placed on streamlining staff in the development and dissemination of HRH staffing standards at all levels, taking into account workload indicators (Ministère de Santé Publique RD Congo 2016). To provide health facilities with quality health workers, motivated, in sufficient quantity and equitably distributed at different levels of the Health System pyramid, the national health development plan envisages 3 following strategies: improving the availability and retention of competent HRH; improving initial HRH training quality; and developing HRH skills. So it is planned to organise equitable redeployment of HRH in health facilities and services with a view to reducing the plethora and filling the gaps that will be observed in accordance with the standards (Ministère de Santé Publique RD Congo 2016, Ministère de la Santé Publique RD Congo 2016b).

Concerning management of HRH, two main strategies are proposed in the plan: controlling the inflow and outflow of registered HRH and strengthening the HRH information system (Ministère de Santé Publique RD Congo 2016). In provincial HRH development plans, they would like to make sure that recruitment and deployment of health workers are totally based on needs. To do so, they plan to establish a mechanism for monitoring and controlling HRH recruitment deployment process (Division Provinciale de la Santé Kongo Central 2017).

The plan also intends to redeploy in rural and remote areas categories of health workers being overcrowded in urban areas for a better implementation of the national health policy (Ministère de la Santé Publique RD Congo 2016b).

### ***3. Financial incentives and working conditions of health workers***

Policies and plans state that there will be improvement of financial incentives for health workers as well as working and living conditions of health workers (Ministère de la Santé Publique RD Congo 2006, Ministère de la Santé Publique RD Congo 2010a). They state the need of reintroducing the rural placement compensation allowances scheme for attracting qualified health workers in rural areas (Ministère de Santé Publique RD Congo 2011). Those policies and plans do not state exactly how that will really happen, a part from lobbying which will be done with the budget authorities to have a 20% increase for health workers (Ministère de Santé Publique RD Congo 2016). The plan also proposes mechanisation of registered health workers so that they are added on the government pay roll (Ministère de Santé Publique RD Congo 2016). In Kongo Central Province, they aim for example to increase up to 50% of HRH salary through additional provincial fundraising mechanisms (Division Provinciale de la Santé Kongo Central 2017), but that mechanism has not been described.

With regards to working conditions, the government plans for the next 5 years to have at least 80% of targeted health facilities built or rehabilitated and equipped, and essential medicine will be made available in those facilities (Ministère de la Santé publique RD Congo 2016). The central level intends to reinforce the implementation of the in-service training normative framework through auditing the real needs of in-service training, the training of the trainers and the development of joint continuing in-service training plans at all levels (Division Provinciale de la Santé Katanga 2015, Ministère de Santé Publique RD Congo 2016).