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## Continuous Professional Development in Rwanda: The Experience of Midwives who Participated in the Advanced Life Support in Obstetrics (ALSO) Educational Program

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A thesis submitted in partial fulfillment of the requirements for the Master of Science degree in Nursing

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**CONTINUOUS PROFESSIONAL DEVELOPMENT IN RWANDA: THE EXPERIENCE  
OF MIDWIVES WHO PARTICIPATED IN THE ADVANCED LIFE SUPPORT IN  
OBSTETRICS (ALSO®) EDUCATIONAL PROGRAM**

**(Thesis format: Integrated-article)**

**by**

**Pauline Uwajeneza**

**Graduate Program in Nursing**

**A thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Science in Nursing**

**The School of Graduate and Postdoctoral Studies  
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## ABSTRACT

High maternal and newborn mortality rates remain a global health issue. Every day approximately 800 women die from complications related to pregnancy. Ninety-nine percent of maternal deaths occur in low and middle income countries. In 2013, 62% of maternal deaths took place in Sub-Saharan Africa. The Advanced Life Support in Obstetrics Educational Program (ALSO®) is an internationally recognized continuous professional development course aimed at increasing the knowledge, skills, competence and confidence of health professionals to manage obstetric emergencies. The purpose of this qualitative descriptive study was to explore midwives' experiences of translating the knowledge and skills acquired from participating in the ALSO® program into their professional practice in Rwanda. A purposive sample of nine midwives was recruited and participated in semi-structured interviews directed at understanding their experience of implementing new knowledge and skills into practice. All interviews were audio-recorded and transcribed verbatim. Content analysis revealed five themes: *improved midwifery practice, availability of resources, inter-professional collaboration, job satisfaction and autonomy for midwifery practice*. The results indicated that although midwives reported increased knowledge, skills and confidence in management of obstetric emergencies, their ability to change practice was often hampered by non-conducive work environments, a shortage of health care providers, and insufficient equipment and materials. These findings can serve to inform ALSO® course module review and development, midwifery education development, and health human resources policy and planning that will address obstetrical and newborn education needs and health service delivery in Rwanda.

**Key Words:** Advanced Life Support in Obstetrics, maternal mortality, obstetric emergencies, midwifery, and continuous profession development.

## **CO-AUTHORSHIP STATEMENT**

Pauline Uwajeneza conducted the research for her master's thesis under the supervision of Dr. Yolanda Babenko-Mould, Dr. Marilyn K. Evans and Dr. Donatilla Mukamana who will be co-authors on the publication resulting from the manuscript.

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.

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## CHAPTER ONE

The United Nations [UN] (2014) stipulates that approximately 800 women die every day from complications related to pregnancy or childbirth. This translates to an estimate of 289000 women died from causes related to pregnancy in 2013 (UN, 2014). Maternal health research indicates health inequity exists between developing countries and developed countries. For example, 99% of maternal deaths occur in developing countries (Ameh et al., 2012; De Brouwere, Richard, & Witter, 2010; Gabrysch, Zanger, & Campbell, 2012; Grady et al., 2011; Okereke et al., 2013; Dogba & Fournier, 2009; Olenja, Godia, Kibaru, & Egondi, 2009; Pearson & Shoo, 2005; van Lonkhuijzen, Dijkman, van Roosmalen, Zeeman, & Scherpbier, 2010). The maternal mortality ratio in developing countries is 14 times higher than that of developed countries. In Sub-Saharan Africa, maternal mortality ratio is over 500 deaths per 100000 live births (U N, 2014). In 2013, 62 % of maternal deaths took place in Sub-Saharan Africa. Furthermore, there remains an extreme difference in maternal mortality rates between developing countries. For example Sierra Leone has 1100 maternal deaths per 100000 live births, while Belarus has one maternal death per 100000 live births (UN, 2014).

Although the Rwandan maternal mortality rate has dropped from 840/100000 live births in 2000 to 320/100000 live births in 2013 (WHO, UNICEF, UNFPA, & The World Bank, 2014) it remains high compared to the standard of the UN, which stipulates that maternal mortality ratio is considered to be high if it is equal to or over 300 deaths per 100000 live births (UN, 2014). The main causes of these maternal deaths during labour or postpartum are related to direct complications of pregnancy known as obstetric emergencies and most of them are preventable. There are well-known, evidence-based interventions aimed to prevent and manage obstetric emergencies (McCarthy, 2010; Paxton et al., 2005; Scott, Chowdhury, Pambudi, Qomariyah, &

Ronsmans, 2013; Thorsen, Meguid, Sundby, & Malata, 2014). In different low income countries, such as Rwanda (Homaifar et al., 2013), Somalia (Ameh et al., 2012), Kenya (Olenja et al., 2009) and Tanzania (Sorensen et al., 2010; 2011), access to and implementation of obstetrical emergency care is an important effort aimed at reducing maternal morbidity and mortality.

### **Background and Significance**

Reducing maternal mortality by 75% between 1990 and 2015 is a target of the 5<sup>th</sup> Millennium Development Goal [MDG](UN, 2014). Rwanda, as a member of the UN, is committed to achieving this goal's target. A service provision assessment survey completed in Rwanda in 2007 identified gaps in the ability of health professionals to effectively treat many conditions associated with maternal, newborn, and child health (National Institute of Statistics, 2008). For example, health professionals in Rwanda were not adequately prepared to manage complicated pregnancies and births. In addition a serious shortage of practicing midwives in Rwanda was noted. These gaps have not yet been fully addressed. The most recent estimates note the ratio stands at one midwife per 44,584 pregnant women (Ministry of Health, 2012).

The World Health Organization (WHO), (2012) defines an enrolled midwife as a person, who has successfully completed a non-degree granting midwifery education program who is competent to use common midwifery skills such as providing routine antenatal care, conducting normal deliveries and providing cares to mothers and newborns in post-partum period. A registered midwife is a person who has been registered by a state midwifery regulatory board or a similar regulatory authority. A registered midwife has a broad range of midwifery skills including providing care to childbearing women during pregnancy, labour, and in the post-partum period. He/she also cares for the newborn and assists the mother to breastfeed her

newborn. Formal midwifery education generally is 3-4 years in length in a midwifery program at the baccalaureate degree level.

High maternal mortality rates are partly attributed to health providers having inadequate knowledge and skills to effectively manage direct complications of pregnancy and childbirth, known as obstetrical emergencies (Afari, Hirschhorn, Michaelis, Barker, & Sodzi-Tettey, 2014; Paxton et al., 2005). Even if the level of risks related to pregnancy, birth, and postpartum outcomes differ among countries and settings, the need to implement effective, sustainable and affordable improvements in the quality of obstetric care is common to all, and midwifery is essential to this approach (Gerein, Green, & Pearson, 2006; McCarthy, 2010; WHO, 2009). The literature shows that the majority of women who present with complications during labour do not have any predicting risk factors during pregnancy (McCarthy, 2010; Olenja et al., 2009). Therefore, because of the variability in risk and the need to tailor antenatal care, it is of utmost importance to ensure the availability of well-educated midwives in practice settings to promote holistic and quality maternal care.

In many low income countries, midwives face challenges related to the delivery of education programs that lack structure and substantive content that is directly applicable to practice (Schoon & Motlolometsi, 2012), while also being delivered by individuals who often lack the requisite knowledge and skills in the topic area (Schoon & Motlolometsi, 2012). Another challenge faced by midwives in resource-limited settings relates to efforts to reduce maternal mortality that have positively resulted in increased access to maternal health services, which has increased the workload of midwives and decreased their capacity to provide quality care to clients (Van Lerberghe et al., 2014). An additional challenge many midwives face is physicians' opposition to the midwifery role and regulations that require midwives to be

supervised by physicians, both of which limit midwives' scope of practice and impact the quality of care they can offer (Cant, Watts & Ruston, 2011). To address these challenges midwives in low income countries need to be exposed to quality education, to have support from health organizations to address workload issues, and to work collaboratively with other health professionals, such as physicians, obstetricians, neonatologists, nurses, and anesthetists.

Continuous professional development (CPD) is recognized as an essential activity for midwives and other health professionals, allowing them to maintain their clinical skills, to stay current with advances in knowledge, skills, and technology and to integrate the acquired knowledge into practice (Katsikitis et al., 2013; Shehab, Elnour, Sowaidi, & Abdulle, 2012). Advanced Life Support in Obstetrics (ALSO®) is an internationally recognized inter-professional CPD course aimed at increasing the knowledge, skills, competence, and confidence of health professionals to recognize and manage obstetrical emergencies (Dauphin, Michel, Brown, Hugo, & Quintero, 2007; Taylor & William, 1998).

Evaluative studies of the ALSO® program have shown to increase short and long-term confidence of health providers in managing obstetrical emergencies (Dauphin-McKenzie, Celestin, Brown, & González-Quintero, 2007; Taylor & Kiser, 1997). Dauphin-McKenzie et al. (2007) conducted a quantitative pre and post-test study on obstetric emergencies, to assess the utility of the ALSO® for first-year medical residents in obstetrics. The results of the study indicated a significant increase in medical residents' confidence in managing obstetrical emergencies after participating in the ALSO® course. Similar results were reported in a quantitative study using Bandura's model of self-efficacy to compare residents' pre and post ALSO® course levels of confidence to manage obstetric emergencies (Bower, Wolkomir, & Schubot, 1997). The results showed that the residents' confidence in their ability to manage

obstetric emergencies increased significantly (Bower et al., 1997). Results from two recent quantitative studies conducted in Tanzania, where the majority of participants were nurse-midwives, indicated that implementation of the ALSO® program improved health providers' competencies in dealing with postpartum hemorrhage and reduced immediate neonatal mortality (Sorensen et al., 2010; 2011).

The literature indicates there is an increase of skilled workers' knowledge and confidence in the management of obstetric emergencies after participating in an education program on obstetrics. For example, a pre and post-test study, aimed to evaluate the Before and After Bleeding after Birth (BAB) education program, was conducted with 144 skilled attendants from four countries (India, Malawi, Tanzania, and Zanzibar) who had participated in the BAB education program. The results showed that the BAB education program increased participants' knowledge and confidence in prevention and management of post-partum hemorrhage (Evans et al., 2014). Crofts et al. (2007) conducted a prospective randomised trial in six hospitals in the United Kingdom (UK), with 95 midwives and 45 medical doctors. The aim of the study was to examine the effect of obstetric emergency education on participants' knowledge. The study results showed that the education program on obstetric emergencies increased midwives' and medical doctors' knowledge of obstetric emergency management.

Although the results of these studies regarding obstetric emergency courses, and the ALSO® course in particular are promising, most employ quantitative methods and few studies have been conducted about how knowledge and skills gained by midwives involved in an ALSO® course are integrated and sustained in their professional practice. Furthermore, an understanding of the challenges faced by midwives from low income countries, to sustain their

newly acquired knowledge and skills in practice and how to best support their ongoing professional development is needed.

In Rwanda, ALSO® education has been offered to health professionals working in maternity services (midwives, nurses, and physicians) since 2005. Additionally, CPD educational sessions including ALSO®, using a 'train-the-trainer' approach have been conducted by the Maternal, Newborn, and Child Health in Rwanda Project (MNCHR) in the Eastern province of Rwanda, as requested by the Ministry of Health of Rwanda. However little is known about the experience of midwives managing obstetrical emergencies after participating in the ALSO® educational program. Specifically, more research is needed to increase understanding of midwives' experiences of negotiating knowledge transfer to professional practice after participating in ALSO® programs.

The primary aim of this qualitative descriptive study was to explore midwives' experiences of applying the knowledge and skills they acquired from attending ALSO® educational programs to their professional practice in the Eastern province of Rwanda. The findings could serve to inform CPD ALSO® course module development, midwifery educational development, and health human resources policy and planning to address obstetrical and newborn ongoing professional education needs and health service delivery in Rwanda.

### **Literature Review**

Although there have been many studies about CPD in nursing, midwifery and medical practice (Crothers, 2011, Gould, Drey, & Berridge, 2007; Gray, Rowe, & Barnes, 2014; Knox, Cullen, & Dunne, 2014; Lee, 2011; Olenja et al., 2009; Phillips, Piza, & Ingham, 2012; Shehab et al., 2012), most of this research has been conducted in high income countries. There is positive support for the use of CPD education for practicing nurses and midwives in general

(Brekelmans, Maassen, Poell, & van Wijk, 2015). However, little is known about midwives' experience of applying their learning from CPD, like the ALSO® program, into practice.

Moreover, in the majority of the studies conducted about ALSO® training, participants were primarily medical residents rather than midwives, who are expected to offer essential basic maternity care and work collaboratively with other health professionals to manage obstetrical emergencies.

### **CPD and Related Concepts**

In the literature reviewed, a number of concepts were identified as being similar to CPD and, in some cases, used interchangeably with CPD. One term related to CPD is “in-service education”, which refers to all educational activities prepared and offered by the employer during working hours in order to improve job-performance (Knox, Cullen, & Dunne, 2014). Another similar concept is continuous professional education (CPE), which refers to educational activities aimed at enhancing the knowledge and skill level of practicing nurses and midwives for the improvement of practice, administration and theory development, with a general goal of improving the health outcomes of clients and society (Crothers, 2011). Continuous profession education involves a process of ongoing learning, using available teaching and learning opportunities, in order for nurses and midwives to become more competent and safe in practice (Phillips, Piza, & Ingham, 2012). In many high income countries, such as the United States of America, Canada, England and Australia, CPD is mandatory and associated with licensure for professional nurses, midwives and medical doctors. Mandatory CPD offers a strategy by which professionals can remain competent and progress in advanced knowledge and technology as well as respond to public demands for accountability (Phillips et al., 2012).



## **CPD Education Programs on Obstetric Emergencies**

Pearson and Shoo (2005) used a random sample of obstetric care facilities and conducted a baseline assessment study to explore the availability and use of emergency obstetric services in Rwanda, Kenya, Uganda and South Sudan. To collect data the researchers used clinical record reviews, interviews of midwives, other maternal health care providers and clients, observation, and focus groups. The results showed that shortage of qualified and trained staff, insufficient equipment and material, poor working conditions, cost of health care service and poor management were the main barriers in providing quality emergency obstetric care services primarily, in remote and rural areas.

Olenja et al. (2009) analysed data from the 2004 Kenya Service Provision Assessment (KSPA), with the purpose of assessing the availability of emergency obstetric care in Kenya, and to demonstrate the importance of CPD for health workers and in-service education programs in the management of obstetrical care. During the KSPA, 276 maternal health care providers were interviewed, where 44.6% were enrolled midwives and 11.9% were registered midwives. The results showed that CPD education program was a very important element in health care providers' ability to diagnose and manage obstetric emergencies. The education program focused on obstetrical emergencies and was significantly and positively associated with the health care providers' ability to identify and to adequately manage causes of maternal bleeding, which is the main cause of maternal death in Africa and worldwide (Khan, Wojdyla, Say, Gülmezoglu, & Van Look, 2006). The researchers concluded that to achieve positive maternal health outcomes, CPD education programs must be carried out within the context of improved infrastructure (Olenja et al., 2009). Otherwise, the strides made to develop knowledge and skills through

education might not be implemented in settings that don't have leadership structures, or resources in place to support knowledge translation into midwifery practice.

### **Literature Review Summary**

In summary, implementation of CPD programs related to obstetrical emergencies has shown to increase the knowledge, skills and confidence of health workers who provide obstetric care. However, other factors such as poor infrastructure, lack of necessary equipment and materials, unaffordable cost of health care, and poor working conditions could negatively influence the provision of quality emergency obstetric care (Chandhiok et al., 2014; Chodzaza & Bultemeier, 2010; Hanson et al., 2013; Pearson & Shoo, 2005). This study provides insights about the opportunities and challenges faced by midwives from a low resource country like Rwanda while trying to apply the knowledge and skills gained from participating in the ALSO® CPD course into clinical practice.

### **Statement of Purpose**

The purpose of this qualitative descriptive study was to gain an in-depth understanding of midwives' experiences of applying the new knowledge and skills they gained from attending the ALSO education course into their practice settings.

### **Research Questions**

The research questions were: 1) What are midwives' experiences of transferring into practice new knowledge and skills they gained after completing the ALSO® education course? and 2) What facilitators and barriers impact midwives' ability to implement new knowledge and skills in their practice settings?

### **Declaration of Self**

I need to recognize and address the latent prejudice, personal biases, life experiences and expectations which influence my view of the subject under study. I have worked as a midwife in a district hospital as well as in a referral teaching hospital in my country, Rwanda. I recall how it was very difficult to manage some obstetrical emergencies because many midwives did not have the required knowledge, skills and appropriate resources to adequately provide emergency obstetric care. I left the career of clinical midwifery and continued my studies to become a midwife educator. I participated in an ALSO® course as a provider, then as an instructor. I believe that midwives and organizers of ALSO® course and other CPD education programs need to understand the benefits of CPD education programs. In particular the significance of ALSO® training to the midwifery profession, and what is it like to practice midwifery after attending the ALSO® course from the perspective of midwifery attendees. Therefore, for me the significance of this study was to understand the opportunities and challenges, faced by midwives while trying to apply into clinical practice the knowledge and skills acquired from ALSO® course education.

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## CHAPTER TWO

### Background

Safe pregnancy and childbirth is an imperative human right and a key international goal (Khan, Wojdyla, Say, Gülmezoglu, & Van Look, 2006). However, high maternal mortality rates remain a global health issue (Hammonds & Ooms, 2014). To evaluate the progress of the United Nations (UN) 5<sup>th</sup> Millennium Development Goal (MDG): Improving Maternal Health, the UN uses indicators such as maternal mortality ratio and proportion of births delivered by skilled attendants (Gabrysch, Zanger, & Campbell, 2012). Although globally, the maternal mortality ratio has decreased by 45% between 1990 and 2013, from 380 to 210 deaths per 100000 live births (UN, 2014), it falls short of achieving the target of the MDG to reduce the maternal mortality ratio by 75% by 2015. In Rwanda, the maternal mortality ratio decreased from 1400 to 320 deaths per 100000 live births between 1990 and 2013 (World Health Organization [WHO], 2014). Despite the obvious improvement, which has been associated with increased skilled attendants at birth (WHO, 2014), the maternal mortality ratio in Rwanda still remains high in relation to UN standards.

In a joint statement by the WHO, International Confederation of Midwives (ICM) and the International Federation of Gynecology and Obstetrics [FIGO] (2004), skilled care refers to the care provided to a woman and her baby during pregnancy, labour and postpartum by a qualified health provider. The WHO (2004), defines a skilled attendant as a qualified health professional such as a midwife, doctor, or nurse. A skilled attendant has been professionally educated, and possesses the skills and competencies required to manage uncomplicated and complicated pregnancies, childbirth, and immediate postnatal period. A skilled attendant also has the required skills to care for newborns and to identify and manage their complications or problems (WHO,

2004). In the developing world, the proportion of births conducted by a skilled attendant has increased from 56% to 68% between 1990 and 2012 (UN, 2014). In Rwanda, skilled attendants at births increased from 21.2% to 71.2 % between 1990 and 2013 (WHO, 2014). Research indicates that a reduction of maternal mortality in health facilities and countries has taken place where obstetric care is offered by skilled birth attendants (Chandhiok et al., 2014). However, approximately 40 million births in low income countries have not been attended by skilled health professionals and more than 32 million of those births occurred in rural areas (UN, 2014).

Even though the formal education that skilled birth attendants receive emphasizes care provision for the uncomplicated pregnancy (WHO, 2004), the main causes of maternal deaths are related to pregnancy complications or obstetric emergencies (Evans et al., 2014; Gabrysch et al., 2012). Therefore, it is recommended that all skilled birth attendants learn how to effectively manage complications associated with pregnancy and childbirth. Furthermore, to achieve and maintain competencies in obstetrical practice, current skilled birth attendants need to be provided opportunities to engage in continuous professional development (CPD) courses on managing complicated pregnancies and obstetric emergencies in order to further reduce the maternal mortality ratio (Chaturvedi, Upadhyay, & De Costa, 2014).

The Advanced Life Support in Obstetrics (ALSO®) course is an evidence-based multidisciplinary education program that prepares skilled birth attendants to better manage obstetric emergencies. The ALSO® course was developed in 1991 by two medical doctors, James Damos and John Beasley, from the University of Wisconsin in the United States (US). They proposed that the ALSO® education course could bridge knowledge gaps and increase skills among maternal health care providers to improve obstetrical care management (Deutchman, Dresang, & Winslow, 2007). The ALSO® course is based on adult learning

theories, emphasizes an inter-professional team approach, and hands on training to reduce errors and save lives (Deutchman, et al., 2007).

Given the gravity of the issue of maternal mortality globally, and in low income countries in particular, it is important to gain further understanding about the ways in which skilled birth attendants, such as midwives, who have been involved in CPD have experienced applying their knowledge and skills into practice in the low income country of Rwanda.

### **Literature Review**

Databases used for a comprehensive literature review included ProQuest Nursing and Allied Health Source, CINAHL, PubMed, SCOPUS, Libhab.kiox.org and web search engines such as Google Scholar, and Science Direct. The search was limited to English, peer-reviewed articles and governmental and institutional reports that included low, middle and high income countries, published between 2004 and 2015. This range was used to capture the most current literature on the ALSO® course and CPD education programs about obstetric emergencies specifically in low income countries; including Rwanda in particular. Key search terms used were: obstetric emergency, maternal mortality, advanced life support in obstetrics, continuous professional development, continuing education, in-service education, midwifery, team work, and developing countries. The search yielded four categories of CPD enactment: the benefits and challenges for midwives and nurses, courses on management of obstetric emergencies in low income countries, translation of knowledge and skills into clinical practice, and ALSO® education opportunities for skilled birth attendants.

### **CPD Enactment: Benefits and Challenges for Midwives and Nurses**

A joint statement made by midwifery, nursing and allied health professionals' bodies in the United Kingdom (UK), recognizes CPD as fundamental to the development of all health and social care practitioners and to the improvement of quality client care (Royal College of Nursing, 2007). In many high income countries such as the US, UK, Canada, and Australia the importance of continuous learning is frequently emphasized, and often mandated by professional nursing, midwifery, medicine and allied health sciences associations or governing bodies (Crothers, 2011). In the UK, CPD is viewed as part of nursing in the National Health Service and reflected to be a key factor in nursing retention (Gould, Drey, & Berridge, 2007), to renew registration 35 hours over 3 years are required (Tran, Tofade, Thakkar, Rouse, & Hons, 2014). In Canada and the US, nurses and midwives are required to maintain records of their ongoing education, and the number of CPD hours required to renew registration vary depending on the region, province or state (Tran et al., 2014). In Australia, nurses and midwives are required to complete 20 hours of CPD education to renew their annual registration (Gray, Rowe, & Barnes, 2014; Katsikitis et al., 2013; Ross, Barr, & Stevens, 2013). In some low and middle income countries, attending CPD courses is also mandatory for midwives and nurses. For example, in South Africa and Uganda, midwives, nurses and physicians require proof of completing CPD programs in the last three years to renew their annual registration (Ndege, 2006). In many other low income countries, including Rwanda, CPD programs are often not mandatory, as the structures may not be fully in place through midwifery and nursing associations.

A recent quantitative study conducted by Katsikitis et al. ( 2013), surveyed 289 midwives and nurses from public and private hospitals in the region of Queensland, Australia to explore their understanding of and involvement with CPD. The results revealed that 85.4% of midwives

and nurses stated that CPD helped them to remain interested in their profession and 84.4% indicated that CPD was a valuable part of reflective practice and career progression. Participants valued the benefits of ongoing learning and they preferred the CPD activities to occur during working hours. Challenges reported to engaging in CPD included staff shortages, which decreased opportunities to dedicate time to CPD during work hours, and personal responsibilities outside of work hours. However, hospital management were noted as supporting nurses' and midwives' involvement in CPD for encouraging midwives and nurses to embrace ongoing learning opportunities.

The results highlighted by Katsikitis et al. (2013) concur with findings of a quantitative study conducted in the UK (Hughes, 2005) with 200 nurses to explore factors that influenced nurses' perception of CPD. Nurses positively perceived the benefits of engaging in CPD activities and organizational managers were found to influence nurses' valuing of CPD and their ability to apply the knowledge and skills gained into their practice (Hughes, 2005). In a review of the literature about CPD amongst nurses in Ireland, UK, US and Australia conducted by Murphy, Cross and McGuire (2006), three main challenges for nurses and midwives to participation in CPD were identified: situational barriers, institutional barriers and dispositional barriers. Situational barriers consisted of lack of time, money and job responsibilities. Institutional barriers were practices, policies and procedures that placed limits on opportunities for potential candidates to participate, for example course scheduling. Dispositional barriers were related to attitude and self-perception about one self as a learner and included low confidence and negative past experience. Giri et al.(2012) and Ndege (2006) noted that in low and middle income countries, lack of financial assistance was the main barrier for CPD to be offered in institutional organizations and for participation.

## **CPD Enactment: Courses on Management of Obstetric Emergencies in Low Income Countries**

van Lonkhuijzen, Dijkman, van Roosmalen, Zeeman, & Scherpbier (2010) conducted a systematic review to explore the effectiveness of CPD or in-service education programs in emergency obstetric care in low-resource environments. The results from the review of 38 papers revealed that CPD education programs about emergency obstetric care differ considerably in course length, and course content. The majority of the papers described participants' increased knowledge and skills in management of obstetric emergencies, and improved behaviors towards colleagues and clients after the delivery of a CPD education program. van Lonkhuijzen et al. (2010) affirmed that hands-on practice, team work, and follow-up on CPD efforts contributed considerably to the positive effects of CPD in practice.

Another systematic review aimed to identify barriers to the provision of evidence-based maternal care in low and middle income countries was conducted by Knight, Self, and Kennedy (2013). The results showed that the poor quality of maternal care in these countries was related to lack of CPD about evidence-based maternal care, inadequate formal training, and poor access and use of up-to-date resources. Staff shortages, low staff motivation due to overwork and underpayment were also found as the main barriers to the provision of quality maternal care. Among others, inadequate drugs and equipment, ineffective guideline policies, and poor infrastructure were also identified as barriers to the quality of maternal care (Knight et al., 2013).

Owens et al. (2015) conducted a survey study in a Southern province in Zambia, to assess the capability of health facilities to provide obstetric care and neonatal care. Ninety health centers and 10 hospitals with 172 health workers including midwives, physicians and nurses participated in the study. The results showed the percentage of health workers who participated



in CPD education programs on different topics of obstetric emergencies were as follows: 44% participated in magnesium sulfate administration for pre-eclampsia and eclampsia, 40% participated in manual removal of the placenta, 17% in vacuum aspiration for retained fragments of the placenta, 53% in utero-tonic administration and 69% in the management of labor. The results of the study also revealed that no health centers met the criteria for basic emergency obstetric and neonatal care. The researchers proposed an increased focus on improvement of resources and CPD education programs about comprehensive emergency obstetric and neonatal care. The CPD offerings engaged in by study participants were noted as not attending to all vital components of obstetric emergencies. Evidence indicates that in-depth CPD or in-service education programs to be efficient in addressing health care providers' education needs in providing care (Cohen, Cragin, Wong, & Walker, 2012; Covell & Sidani, 2013; Crofts et al., 2007; Draycott & Sibanda, 2006; Olenja, Godia, Kibaru, & Egondi, 2009; Walker et al., 2014).

### **CPD Enactment: Translation of Knowledge and Skills into Clinical Practice**

Lee (2011) conducted a qualitative study using a pluralistic evaluation approach in the UK, to explore positive practice change in nursing and health care practice among health providers after participation in a CPD education program. A purposive sample of twenty-six participants from nursing and physiotherapy who had been involved in CPD education programs 12-18 months before the study, a convenience sample of eleven line managers from a hospital, and three university lecturers who were CPD module leaders participated in the study. The results revealed that colleagues' attitude facilitated and hampered knowledge transfer for CPD participants. Facilitating attitudes were: supportive colleagues, self-motivation, peer discussion, and encouragement. However, fear of being labeled a trouble maker, difficulties to engage coworkers to improve practice, and colleagues' pressure to practice according to the usual

standards of behavior were identified factors that hampered CPD participants to transfer new knowledge and skills gained from CPD education program (Lee, 2011). Line managers' lack of knowledge about how learning could be transferred into practice, lack of realization of line managers' perspectives to enable change, lack of systematic follow up and evaluation post-CPD, pace of nursing work which limited innovative practice, some policies and protocols, time and resources were factors that hindered the transfer of new knowledge and skills gained from participating in CPD education programs.

The results of a grounded theory study conducted with 26 nurses in Iran (Cheraghi, Salasli, & Ahmadi, 2007) revealed two themes: *traditional routine based-delivery of nursing care* and *traditional-based clinical education*. The themes highlighted why nurses were unable to translate into clinical practice the knowledge and skills they were taught in academia. Traditional routine-based delivery of nursing care was characterized by a less caring attitude between nurses, which was manifested by mechanical rather than a holistic caring approach (Cheraghi et al., 2007). Traditionally-based clinical education was characterized by a huge gap between what was taught in academia and how care was provided in clinical settings. The results also revealed incompetence of clinical educators manifested by lack of expertise and lack of confidence in carrying out nursing care (Cheraghi et al., 2007). The researchers suggested that an effective strategy to deconstruct the routine care approach was to implement CPD courses.

### **CPD Enactment: ALSO® Course Education Opportunities for Skilled Birth Attendants**

A prospective intervention study was conducted at a regional hospital in Tanzania to evaluate the impact of the ALSO® course on performance of midwives, medical officers and physicians offering maternity services and the incidence of post-partum hemorrhage (PPH) (Sorensen et al., 2011). The researchers compared staff performance and incidence of PPH before

and after the staff attended an ALSO® course. The sample for the study included 510 women who had delivered vaginally before the intervention (ALSO® course) and 505 women who had also delivered vaginally after the intervention, and 16 midwives, eight medical officers and two medical doctors. The data was collected by observing the care received by women from the onset of labor until they were discharged from hospital. In this study the following specific measures were used: PPH (blood loss  $\geq$  500ml), severe PPH (blood loss  $\geq$  1000 ml) and maternal health care providers' ability to prevent, diagnose, and manage PPH. The results revealed that after the ALSO® course the active management of third stage of labor to prevent PPH significantly improved. The staff who participated in the study effectively diagnosed, and managed PPH after involvement in the ALSO® course as compared to seven weeks before the training (Sorensen et al., 2011). The researchers concluded that a two-day ALSO® training course can improve staff performance in managing obstetrical emergencies, and thus contribute to the reduction of maternal mortality.

The results of this Tanzanian study (Sorensen et al., 2011) concur with those of a Rwandan quantitative study conducted by Homaifar et al. (2013) to evaluate retention of emergency obstetrical knowledge and practical skills among 65 senior final-year medical students after having participated in an ALSO® course. Written standardized questions were administered before, immediately after the training, and again at 3-9 months post-CPD education. Participants' knowledge of the main causes of maternal deaths and effective preventative and curative interventions were assessed. After the ALSO® course, participants performed a practical skills exam to assess their ability to recognize the necessity for assisted vaginal delivery, skills in use of vacuum extraction, diagnosis and management of shoulder dystocia and post-partum hemorrhage. The results of the study indicated that 80% of participants

improved their knowledge on obstetrical emergencies, 87.7% improved or maintained their score from the post-training test to the final assessment and 49.2% retained practical skills. The researcher used the written and skills test to measure competency. Thirty-two percent of participants demonstrated competency in both written and practical skills. The results of these two African-based studies are similar to previous research evaluating the ALSO® course, conducted in the USA (Dauphin-McKenzie, Celestin, Brown, & González-Quintero, 2007; Taylor & Kiser, 1997). All these studies reported that the ALSO® course significantly improved participants' knowledge, skills and confidence level in the management of obstetric emergencies.

### **Literature Review Summary**

In many high income countries, CPD is highly valued and is mandatory for midwifery and nursing (Lee, 2011; Gould, Drey, & Berridge, 2007). In some low income countries, CPD is performed based on the needs and the availability of donors who offer financial support to organize and implement CPD (Giri et al., 2012). Although the importance of CPD on knowledge, skills, confidence and performance of participants is evident, little research has been conducted to explore the opportunities and challenges midwives experience when applying the knowledge and skills they gain from CPD into the practice setting.

The literature review indicated participants' increase of knowledge, skills and confidence in managing obstetric emergencies after participating in an ALSO® course. However, little is known about the translation of newly acquired knowledge and skills into clinical practice. Therefore, the aim of this study is to address this gap by exploring midwives' experiences of applying the knowledge and skills they acquired from attending an ALSO® educational course to their professional practice in the Eastern province in Rwanda.

## **Statement of Purpose**

The purpose of this qualitative descriptive study was to gain an in-depth understanding of midwives' experiences of applying the new knowledge and skills they gained from attending the ALSO® education course into their practice settings.

## **Research Questions**

The research questions were: 1) What are midwives' experiences of transferring into practice new knowledge and skills they gained after completing the ALSO® education course? and 2) What facilitators and barriers impact midwives' ability to implement new knowledge and skills in their practice settings?

## **Methodology**

### **Study Design**

This study used a descriptive qualitative design to explore how knowledge gained from participation in an ALSO® course had been applied by midwives in professional practice. Sandelowski (2000) suggests qualitative descriptive studies are appropriate when wanting to describe a life experience or event. A qualitative descriptive design involves using an approach that enables in-depth understanding and rich descriptions of life experiences, and findings that are responsive to local situations and conditions (Magilvy, Thomas, Editor, & Marie, 2009; Sandelowski, 2004; 2010) . Ethical approval to conduct the study was obtained from Western University Research Ethics Board and from the Rwanda National Ethics Committee.

### **Setting**

The healthcare system in Rwanda is composed of referral hospitals also known as tertiary care hospitals, secondary level care or district hospitals, and primary care level which are known as health centers. Women with pregnancy complications, and those who cannot deliver at health

centers are transferred to district hospitals for advanced obstetrical management (Ministry of Health, 2011). This study was conducted with midwives employed in district hospitals located in the Eastern Province of Rwanda. The Rwanda Demographic and Health Survey conducted in 2010, showed that the Eastern Province is the region with the highest maternal and under five years of age mortality rates in Rwanda (National Institute of Statistics, 2012).

### **Sampling**

Following ethics approval from Western University's Research Ethics Board and ethics boards in Rwanda to conduct the study, purposive sampling (Sandelowski, 1995) was utilized in order to obtain rich data and gain an understanding of midwives' experience of applying new knowledge gained from participation in an ALSO® course into practice. Between the period of June and December, 2013, the Maternal, Newborn, and Child Health in Rwanda (MNCHR) project organised and funded the enactment of ALSO® education courses for skilled birth attendants who work in maternity services in the Eastern province of Rwanda.

The researcher received from the project manager in Rwanda a list of all the midwives who had completed the ALSO® course offered through the MNCHR project. The list consisted of midwives' names, email addresses, and cell phone numbers. The researcher used the list to contact midwife attendees, provide them with the Letter of Information about the study and if interested, invite them into the study. The researcher attempted to contact the 23 midwives on the list provided. However, some midwives were unable to be contacted due to changing phone numbers, email addresses, or moving locations. Inclusion criteria included practicing midwives who were able to speak and read English or Kinyarwanda, worked in maternity service in the Eastern Province and had attended and completed an ALSO® CPD course organized and funded by the MNCHR within the last two years. Midwives who met these criteria, but who were on

leave from the district hospital during the period of the study, were excluded. The final sample size for this study included nine midwives who had completed the ALSO® course.

### **Data Collection**

The primary data collection method was individual interviews using a demographic questionnaire (see Appendix A) and a semi-structured interview guide (see Appendix B). The semi-structured interviews were conducted from July, 2014 to December 2014, to gain an understanding about midwives' experience of applying to practice the new knowledge and skills gained from the ALSO® course. Midwives who were contacted through email received an attachment of the study's Letter of Information (See Appendix C). Midwives who were contacted by telephone had the Letter of Information read to them by the researcher. The email, or telephone message were conducted at least one to two weeks before the proposed date for the interview was to be scheduled. The date, time and location for the interview were chosen by each participant. A reminder telephone message was sent one day before the agreed upon date of the interview. Written consent was signed by each participant immediately before commencing the interview (See Appendix D). Given that English and Kinyarwanda are official languages used in Rwanda, all written correspondence was in English and in Kinyarwanda (See Appendix E). All participants chose to have their interviews conducted in Kinyarwanda. The interviews were digitally audio-recorded with permission of each participant. The audio-recorded interviews were transcribed verbatim in Kinyarwanda, and then translated to English by the researcher. Individual interviews lasted approximately 60 to 90 minutes in length.

## **Data Analysis**

Inductive content analysis as described by Hsieh and Shannon (2005) was used to analyze the data. The inductive content analysis process is used when there is not enough former knowledge about a phenomena (Noble & Smith, 2014), and includes open coding, creating categories, and abstraction to identify themes (Elo et al., 2014; Elo & Kyngas, 2008). This process of data analysis was suitable for this study because little was known about knowledge transfer from the ALSO® course into midwifery practice. Data collection and the data analysis processes occurred concurrently.

Initially, each transcript was read through while listening to its audio recording to ensure accuracy. Then the researcher translated the transcripts to English. One of the members of the research committee from the University of Rwanda read both the transcripts in Kinyarwanda and in English to ensure the translation accuracy. Subsequently the researcher read each transcript in its entirety to get a sense of what the participant said. The researcher then read and re-read each transcript, highlighting key words in the text, and engaged in open coding of highlighted text by writing codes in the margins of the transcripts. The labels or codes were collected from the margins of the transcripts to develop a coding guide. Categories were generated by grouping similar codes together. After open coding of content and initial categorizing, the categories which appeared similar were grouped under higher order categories or themes. These higher order categories or themes helped the researcher gain an in-depth understanding of midwives' experience of applying knowledge and skills gained from an ALSO® CPD course to their practice settings. The general description of midwives' experience was formulated through the generated themes. Every theme included direct quotes to link them back to the data (Elo &



Kyngas, 2008). The researcher's committee members engaged in coding transcripts independently and through group discussion consensus was reached on the final themes.

### **Approaches for Creating Trustworthiness**

To assure the quality of this study, trustworthiness, namely credibility, dependability, transferability and conformability, as proposed by Elo et al. (2014) were used. The researcher ensured the trustworthiness for every phase of the research process. These phases are: preparation, organization and reporting of results (Elo & Kyngas, 2008; Elo et al., 2014).

Trustworthiness in the preparation phase consisted of data collection method, sampling and data analysis. According to Graneheim and Lundman (2004), credibility is concerned with the focus of the research. Credibility in qualitative content analysis describes how well data collection and the process of analysis deal with the research focus (Elo et al., 2014). To ensure credibility, the researcher ensured that the participants were accurately identified for eligibility. In addition, the use of a semi-structured interview guide with open-ended questions enabled the participants to provide rich descriptions of their experience of applying ALSO® knowledge and skills into practice settings. To address credibility during data collection, the researcher used member checking by asking for clarifications during the actual interviews to confirm that she understood correctly what the participants were telling her.

In the organization phase, trustworthiness consisted of categorization, interpretation and representativeness (Elo et al., 2014). Credibility and conformability are the main issues of trustworthiness for the organization phase (Morrow, 2005). Conformability of findings means that the data represent correctly the information shared by participants and the interpretation is not invented by the researcher (Elo et al., 2014). To ensure conformability the researcher kept

reflective notes to capture her thoughts and feelings throughout the process of analysis.

Reflective notes helped the researcher to ensure that she stayed true to what participants said.

Dependability refers to the stability of data throughout the process of data analysis (Elo et al., 2014). To ensure dependability the researcher kept a record of decisions made throughout the research process of data analysis in the form of an audit trail. To indicate conformability and credibility of findings the researcher ensured that the data represented accurately the information provided by participants. To achieve this, investigator triangulation was used and data analysis was performed by the researcher and by members of her research committee. Final categories and themes were discussed and determined by consensus of the researcher and her committee members. Conformability and credibility are also associated with the reporting phase (Elo et al., 2014). To indicate these elements of trustworthiness in the reporting phase, the researcher used representative quotes from the transcribed text to reflect the participants' voice and to show the connection between the data and findings (Shenton, 2004). Transferability was addressed by providing sufficient rich description of the findings that might be transferable to other contexts.

### **Ethical Considerations**

This study has been approved by the Western University Health Sciences Research Ethics Board and has met Tri-Council and International Ethics Standards (See appendix F for Ethics Approval Letter from Western University). Ethics approval was also obtained from the Rwanda National Ethics Committee [RNEC] (See Appendix G), and a research permit was obtained from the Directorate of Science, Technology and Research in the ministry of education in Rwanda before initiating the study. Midwives who voluntarily accepted to participate in this study signed the consent form. To preserve anonymity pseudonyms for participants were used. All

information collected in this study was kept confidential and only accessed by the researcher and members of the research committee.

## **Findings**

All nine participants in this study had completed a diploma in midwifery, eight were female, most were between 27-35 years of age, the youngest was 27 years old and the oldest was 50 years old. Most participants had more than five years of experience in maternity services, four had between one year and five years of experience, and five had experience ranging between six years and ten years.

Five interrelated themes were identified which illustrated the midwives' experiences of applying new knowledge and skills into practice: a) *Improved midwifery practice*, b) *Availability of resources*, c) *Inter-professional collaboration*, d) *Job (dis)satisfaction*, and e) *Autonomy for midwifery practice*.

### **Theme One: Improved Midwifery Practice**

Improved midwifery practice was characterized by increased maternal and newborn health as evidenced by the midwives' personal observations of reductions in maternal and newborn morbidity and mortality. This theme includes the sub-themes of increased knowledge, skills and confidence in management of obstetric emergencies, improved maternal and neonatal health, knowledge sharing, and improved interactions between midwives and mothers.

**Sub-Theme: Increased knowledge, skills and confidence in management of obstetric emergencies.** Participants described that after attending the ALSO® course, their knowledge, skills and confidence in managing obstetrical emergencies increased. Many discussed feeling more "*confident*" in performing certain emergency procedures and managing obstetrical complications such as shoulder dystocia based on what they had learned. One midwife stated:

*“Before attending ALSO® training, things like shoulder dystocia and PPH whenever they happened, I should be confused and call immediately upon a doctor. Today because of ALSO® training, I am confidently able to make the diagnosis and take care of the client accordingly while I am waiting for the doctor.”*

Participants also expressed improved decision making abilities in their daily professional life. One midwife stated, *“Before ALSO® training, in some emergency cases like eclampsia, we were used to wait for the doctor before doing anything”* Participants commented that they were now feeling more competent to make a diagnosis, plan and initiate care without waiting for a physician’s assistance. As one participant remarked about admitting a woman: *“...depending on her condition, it is easy for me to diagnose her problem, thus make a good plan and implement it without waiting for the assistance of the physician, something different from what I did before ALSO®.”*

The majority of participants described abandoning previous routine practices, such as systematic episiotomy for primipara, after involvement in the ALSO® course. Some stated that their beliefs about certain procedures also changed. *“Nowadays, we believe that a mother can deliver without episiotomy nor tear, even though it is her first birth.”* Participants also stated that routine practices for newborn resuscitation were *“eradicated”* after attending the ALSO® course, and they now *“know the simple helpful procedures to help the baby breath the first minutes of her/his life.”*

**Sub-theme: Improved maternal and neonatal health.** Participants from different district hospitals expressed there was *“concrete”* improvement of maternal and newborn health and the reduction of maternal mortality after implementation of ALSO® courses. Participants affirmed that the maternal deaths caused by the insufficient knowledge and skills of skilled birth

attendants to manage obstetric emergencies decreased after participating in the educational program on obstetric emergencies. The midwives reasoned that the reduction of maternal and newborn mortality was linked to the increased confidence, knowledge and skills of birth attendants for the management of obstetric emergencies as a result of the ALSO® courses. As one participant stated about ALSO® training: “... *even if we are not yet achieving 100% but the improvement is remarkable. These days the maternal and neonatal deaths related to health workers’ poor knowledge and skills, is obviously reduced.*”

**Sub-theme: Knowledge sharing.** Knowledge and skills sharing with colleagues after participation in the ALSO® education program was described by some participants. One midwife remarked sharing what she learned with others, “...*the few who did not attend the course, we try all our best to train them to act as we have been taught, so that our services may be perfect.*”

Although the ALSO® education sessions used a train-the trainer approach, some participants stated that they were not always able to teach their colleagues who did not have the opportunity to participate in the ALSO® course. Participants mentioned the shortage of midwives and a heavy workload as the reasons behind the lack of time to train other midwives.

In the scope of midwifery practice in Rwanda, midwives have the responsibility to teach and to mentor students in clinical settings. Participants shared experiences of mentoring and teaching students in clinical settings after participating in the ALSO® course. They described imparting their new knowledge and skills acquired from the ALSO® course to explain and role model proper technique for procedures to students. One midwife remarked that her increased confidence and skills in practicing midwifery as result of the ALSO® course impacted her work

with students: “...*When students come in their clinical settings, they tell us their objectives, then based on your competence and confidence you help them to achieve their learning objectives.*”

**Sub-theme: Improved interaction between mothers and midwives.** A main role of midwives is educating mothers and providing them information related to their health and the health of their baby and families. Participants expressed that the interaction between them and clients improved after participating in the ALSO® course and became more women-centered. One participant commented how she has changed the way she used to respond to women in labour:

*“We should not care about the cries of a mother who was suffering from the pain related to uterine contractions. We were considering that, like noise, we should even ask the mother to stop shouting in labour ward! Today, we are aware that all mothers do not react to the pain in the same way, hence we try our best to show them the best of those contractions and request them to be patient. It is known that when a mother is in labour, she needs psychological support. When you try to show her that you are her nearest support in whatever happens during labour, she feels reinforced.”*

Another participant mentioned that, while she does not have sufficient time, for individual health education before discharging the mother, she now provides group health education to mothers who are in the same ward. In different hospitals in Rwanda, a hospital ward consists of a room with between 4 to 7 beds, depending on the department.

## **Theme Two: Availability of Resources**

Shortage of midwives and physicians, insufficient materials and equipment, lack of regular CPD and in-service education programs and inexperienced midwives and medical doctors are the sub-themes for the theme “availability of resources.” The participants outlined the

characteristics of this theme as the challenges hampering the implementation of the knowledge and skills gained from ALSO®.

**Sub-theme: Shortage of midwives and physicians.** All participants revealed that a shortage of midwives was the main challenge which hindered the implementation of the newly acquired knowledge and skills, which complicated the working conditions, and could impact the quality of obstetric emergency care they could provide to clients. Some participants explained that, to be able to translate into practice the knowledge and skills gained, thus improve maternal and neonatal health, the support they needed from hospital management was an increase in the number of practicing midwives. One participant expressed how a shortage of midwives is linked to poor quality of care: *“The great challenge is that we are few in number. You may need a help from a colleague yet he/she is too busy and you find that what you should do for the mother is not done as intended.”*

Another challenge related to staff shortages expressed by many participants was a lack of obstetrics and gynaecology specialists in the district hospitals. In Rwanda, specialist medical doctors are allocated to work in referral and teaching hospitals. Participants suggested that if the district hospitals had an obstetrician-gynaecologist, who was able to perform a laparotomy or hysterectomy, then some maternal deaths, which largely occur due to the delay in accessing these needed emergency procedures, could be prevented. One participant stated that lack of an obstetrician-gynaecologist in district hospitals impacts the implementation of the new knowledge and skills thus, reduction of maternal deaths: *“Furthermore we don’t have any specialist doctor in maternity, I mean in obstetrics and gynaecology, this is another serious problem linked to some avoidable maternal deaths.”*

**Sub-theme: Insufficient materials and equipment.** “*Shortage of materials*” and equipment was mentioned by all participants as contributing to poor obstetric services. The participants suggested that if their respective hospitals employed a proportionate number of midwives to the number of clients that maternity services receive, and supplied maternity services with required materials, the maternal and neonatal mortality would be reduced to the expected level.

**Sub-theme: Lack of regular CPD or in-service education programs for skilled attendants.** All participants felt that to be able to manage obstetric emergencies, in addition to what they learned in midwifery education programs, offering CPD or in-service education programs about obstetric emergencies and other related topics routinely might help them to improve the quality of care provided to clients. One participant expressed the need of regular CPD education programs to ensure all physicians and skilled birth attendants remain “*competent and confident in management of obstetric complications.*”

Most participants suggested that, after completing a CPD education course, it would have been useful to have follow up offered by the instructors of the ALSO® course, to help participants resolve technical problems encountered during the implementation of the gained knowledge and skills in practice settings. One participant commented on the necessity of supervision being done by the instructors to determine if trainees practiced what they were taught: “*...If we should be visited by the instructors one day, the concern we have at this hospital of not knowing exactly where to fix the cup of the vacuum on the foetal skull would have been resolved.*”

All participants revealed that the time allocated to the ALSO® course was very short and the content was taught very quickly. The ALSO® course guidelines require the participants to



receive and read the module of ALSO® course one month prior to the two-days of the ALSO® workshop. Each country independently organizes and offers the ALSO® course based on its context (Deutchman et al., 2007). In the Rwandan context, the licensed hospital to offer ALSO® course, normally provides the module to registered skilled attendants for the ALSO® course approximately one month before the two-day ALSO® workshop and provides four sessions (16 hours) of presentations and group discussions to prepare participants for the two-days of the ALSO® course. Nevertheless, because of some logistic issues the ALSO® course for the skilled attendants delivered in the Eastern Province in Rwanda, was only able to provide the module one week before delivery of the ALSO® course and the preparation sessions were not included.

### **Theme Three: Inter-Professional Collaboration**

According to D'Amour and Oandasan (2005), inter-professional collaboration in the health sector is a way for health care professionals from different domains to work together and offers a cohesive solution to the complex needs of clients. For this study, the theme inter-professional collaboration was characterized by the professional interaction between midwives and physicians.

In Rwanda, practicing midwives are encouraged to work in inter-professional teams as some obstetrical complications can arise quite suddenly, and immediate assistance from all team members is critical to effectively manage the complex care required by the mother and her baby. A number of participants commented that “*team spirit*” and support improved after participating in an ALSO® course and enhanced team collaboration particularly in managing obstetrical emergencies. As one participant commented:

*“Despite the fact that we are few, when it comes to an emergency case in the labour ward, it becomes a concern for everyone; we call upon the people in the post-partum and*

*the doctor. If it arises when the doctor allocated in maternity is performing caesarean, we call upon another from a different service and all personnel are informed to answer by their presence. So, the team spirit is something that we have just covered in my hospital.”*

However, participants stated that teamwork and collaboration is hampered by the shortage of qualified midwives. As one midwife remarked:

*“Normally when we have an emergency case, we call for help, and the colleague come from different services to assist, but sometimes there are only two midwives in maternity ward, as we have three labour rooms you may both be conducting deliveries, in that situation your colleague cannot leave the mother alone, this is really a challenge”*

Participants expressed that some hospital regulations sanction physicians’ authority which, in turn can limit midwives’ autonomy and scope of practice. Many participants described how the power imbalance between physicians and midwives is often disruptive to practice and efforts are needed to strengthen collaboration between the two professions. One midwife stated: *“To reduce maternal deaths that could be avoided some hospital regulations could be revised and the collaboration between midwives and physicians be improved.”* Insufficient knowledge and skills of some novice physicians working in maternity services was also expressed by participants as a challenge to improve maternal health. In describing some physicians one participant stated: *“Sometimes he/she tells you to do something that you find yourself not good to be done based on the experience you have in maternity. If the doctor is not collaborative, you finally fell into misunderstanding, and the mother and her baby become victim.”*

Although most participants described limited collaboration between midwives and physicians, two participants from the same hospital, commented on the positive collaboration

between midwives and physicians at their respective hospital. One of them announced that midwives and physicians work collaboratively and share knowledge in the best interest of the client. The other midwife described how novice physicians show respect by asking senior midwives to “*teach them some procedures like vaginal examination, monitoring labor, conducting normal delivery and so on.*”

#### **Theme Four: Job (dis)Satisfaction**

Job satisfaction was characterised by the midwives’ perceptions, behaviour and attitude towards their work in practice settings. The theme “*job (dis)satisfaction*” has three sub-themes: joy of achievement, emotional exhaustion and working conditions.

**Sub-theme: Joy of achievement.** Participants, after participating in the ALSO® course, expressed feeling proud and *rejoiced* knowing they had the knowledge, skills and competencies to save the lives of a mother and her baby. As one midwife stated, “*I really rejoice when I succeeded to resuscitate a baby!*” Another commented that having participated in the ALSO® course made her “*feel proud of my career.*”

**Sub-theme: Emotional exhaustion.** Emotional exhaustion was characterised by being overloaded and facing work stress for long time. Participants described feeling “*confused*”, “*sad*”, “*alone*”, stressed and disliking midwifery altogether. The participants described emotional exhaustion as the consequences of the shortage of midwives.

**Sub-theme: Working conditions.** In general the midwives commented that working conditions were not favourable for balanced professional life and quality care. The main factor reported to be associated to poor working conditions was high midwife-client ratios and overwork load. One participant described the emotions associated with having to work in such conditions, “*breaks my heart is that I don’t practice as I should do because of the conditions*

*under which we work.....”* Another participant contemplated leaving the profession altogether to survive.

*“I really like midwifery, but because of risks and stress related to poor working conditions, I feel like if there is no improvement, I mean specifically increasing the number of midwives, I have to leave this profession, and look for something else could help me to survive.”*

### **Theme Five: Autonomy for Midwifery Practice**

The ICM (2011) stipulates that midwifery autonomy denotes that midwives control the standards for midwifery education, practice and regulation. The theme, autonomy for midwifery practice, was characterised by two sub-themes: midwives’ empowered feelings to initiate change, and hospital policies and midwifery scope of practice and autonomy.

**Sub-theme: Midwives’ empowered feelings to initiate change.** Participants revealed that, although they faced various challenges in their practice settings, the hospital managers encouraged them to initiate changes that could improve the quality of midwifery care. Many mentioned feeling empowered to make necessary changes to improve obstetric and midwifery practices. One participant stated, *“We feel really empowered by the hospital leaders, and we have already succeeded to change some bad routines based on the knowledge and skills we gained from ALSO® course.”* Although the comments about feeling empowered were encouraging many participants pointed out that the chronic shortage of midwives *“handicaps our good initiatives.... We agreed on the appropriate ways to improve the care we offer to our clients, but we failed to implement them, because we are very few compared to the number of clients we receive.”*

**Sub-theme: Hospital policies and autonomy to practice midwifery.** Many participants mentioned that some hospital policies conflicted with midwifery autonomy and scope of practice. For example, participants suggested revising some policies which limit midwives' authority to administer some necessary drugs to manage obstetrical emergencies. One participant stated: "*All medicine that we have been taught that are very necessary in emergency cases should be allowed to be administered by midwives for identified reasonable cases, in order to avoid preventable maternal complications and deaths.*"

### **Discussion**

This qualitative descriptive study explored midwives' experiences of translating the knowledge and skills they acquired from participating in the ALSO® course into their professional practice. Five main themes and accompanied subthemes: *improved midwifery practice, availability of resources, inter-professional collaboration, job (dis) satisfaction* and *autonomy for midwifery practice* were revealed in the data analysis. The findings highlight that although midwives indicated having increased knowledge, skills and confidence in management of obstetric emergencies, their ability to change midwifery practice was often hampered by non-supportive work environments, shortage of qualified health care providers and insufficient equipment and materials.

Improved midwifery practice was revealed as a major outcome from participating in the ALSO® course. The results suggest that midwives' increased knowledge and skills in the management of obstetric emergencies contributed to the improvement of midwifery practice. These study findings concur with the results of previous research on similar CPD education programs which reported increased knowledge, skills and confidence among participants in obstetric emergency management (Ameh et al., 2012; Chandhiok et al., 2014; Cohen et al., 2012;

Crofts et al., 2007; Dauphin-McKenzie et al., 2007; Ellard et al., 2014; Evans et al., 2014; Grady et al., 2011; Homaifar et al., 2013; Sorensen et al., 2011; 2010; Spitzer et al., 2014).

The study results suggested the midwives perceived that maternal deaths, related to the skilled birth attendants' former lack of knowledge and skills in the identification and management of obstetric emergencies, decreased after participating in an ALSO® course. One significant outcome from participation in the ALSO® course that could reflect participants' perceptions of the reduction of maternal deaths might be the improved ability to prevent and manage PPH (post-partum hemorrhage) by avoiding unnecessary episiotomies and improved team work to manage PPH appropriately. In fact postpartum hemorrhage is the leading cause of maternal death in Rwanda (Ministry of Health, 2012), and world-wide (Say et al., 2014). When midwives increase their knowledge and skills in preventing, identifying, working in teams, and timely management of PPH, maternal death is likely to decrease significantly. These study results are similar with previous results of a study conducted in Tanzania, which showed a significant decrease in episiotomies and a reduction of incidence of PPH after skilled birth attendants' participation in an ALSO® course (Sorensen et al., 2011).

The study results revealed that health promotion strategies and interaction between midwives and women improved after midwives' involvement in an ALSO® education course. Health education and information aimed to promote the welfare of mothers and their babies is one of the main roles of midwives in maternity services (Miles, Francis, & Chapman, 2010). However, in this study some midwives' attitudes or prior habits that hampered the implementation of new knowledge and skills were also identified, including some midwives' negative attitude towards mothers, poor communication, insufficient information given to the

clients and lack of sensitive responses to help mothers to cope with labour pain or obstetric complications.

Although the midwives reported a heavy workload and work-related stress to be associated to these unprofessional behaviours towards the client which were still manifested by a few midwives, the findings suggest that participants highlighted the need to eliminate completely these unprofessional behaviours. These types of behaviours have been identified in previous research on the relationship between midwives and women who used illicit drugs. Miles, Chapman, Francis, and Taylor (2014) found that despite the great support needs manifested by pregnant women who used illicit drugs, health professionals, including midwives had stereotypical views and negative attitudes towards them. Considering the importance of good relationships and positive interaction between midwives and their clients (Miles et al., 2014) in the process of improving maternal health, all barriers hampering midwife- client interactions should be minimized.

In this current study, availability of resources was discussed by the participants to be important to facilitate the application of the new knowledge and skill into practice. In discussing resources, shortage of skilled attendants, and insufficient materials and equipment were identified by the participants as the main issues hampering the translation of new knowledge into practice, and advancing midwifery practice. Similar results were demonstrated in a study conducted in Somalia where 90% of participants were nurse/midwives, to assess the impact of in-service education programs on emergency obstetric care. The findings showed that lack of drugs, materials and essential equipment, and discouraging policies were barriers which hampered the translation of new knowledge and skills acquired into practice (Ameh et al., 2012).

In the field of maternal and newborn health services, researchers in low and middle resource countries identified the shortage of skilled attendants and limited materials and equipment as critical barriers to availability of quality emergency obstetric care (Gerein, Green, & Pearson, 2006; Owens et al., 2015; Pearson & Shoo, 2005; Van Lerberghe et al., 2014). Inadequate implementation of evidence-based interventions, to reduce maternal and newborn mortality in limited resource settings is primarily due to lack of resources (Nyamtema, Urassa, & van Roosmalen, 2011). To support and encourage midwives who participated in the ALSO® course in applying their new knowledge into practice, the hospital managers could improve the availability of essential materials, and increase the number of health professionals in maternity services, particularly more obstetric-gynecological specialists.

This study revealed that inter-professional collaboration especially in the obstetric emergency management is an important skill that all health care providers working in maternity services need to acquire in order to improve the quality of emergency obstetric care thus, reduce maternal and neonatal morbidity and mortality. The results of this study indicated that in hospitals where midwives and physicians are willing to share knowledge and to work in collaborative way, midwives' decision making ability and quality of midwifery care improved. Therefore, clients benefited from having good professional relationships in practice. This study results concur with the results of a qualitative study conducted by Hastie and Fahy (2011) in Australia, with 10 midwives and 9 physicians, to examine the factors affecting inter-professional interactions in maternity units. The findings of that study revealed that both midwives and physicians agreed that positive interactions are collaborative and are associated with the positive outcomes. However, in hospitals where medical doctors tended to underestimate midwives and to exercise authority over them, the quality of emergency obstetric care was hampered by the



delay in provision of appropriate obstetric care. Consequently, some clients were victims of poor inter-professional collaboration, between professionals who are supposed to complement each other for the best of their clients.

These study's results are similar to a study aimed to describe the socio-cultural and health service factors associated with maternal death in rural Gambia (Cham, Sundby, & Vangen, 2005). The researchers found that women reached the health facilities on time to seek emergency obstetric care, but among others, lack of collaboration between physicians and midwives contributed to the disorganized and delayed health care to respond to obstetric emergencies. For that reason, delay in receiving appropriate care was a major factor associated with high maternal mortality rate (Cham et al., 2005).

These study findings concur with previous study results examining the collaboration between midwives, nurses and physicians in maternity services (Downe, Finlayson, & Fleming, 2010; McIntyre, Francis, & Chapman, 2012; Munro, Kornelsen, & Grzybowski, 2013; Reiger & Lane, 2009; Simpson, James, & Knox, 2006). Simpson et al. (2006) found that nurse-midwives and physicians in maternity services had a common objective of improving maternal and neonatal outcomes; however, they did not always come to an understanding on how to achieve that shared objective. Education programs for health professionals would benefit by focusing on inter-professional collaboration (WHO, 2010). To improve the quality of maternal healthcare and thus reduce maternal and neonatal morbidity and mortality, the barriers to lack of collaboration between midwives and physicians should be resolved. In all hospitals, policies which require midwives and physicians to work collaboratively as equals may improve inter-professional collaboration, and thus the quality of health care.

The findings in this study also indicated that the midwives' job satisfaction was associated with their increased knowledge and skills in management of obstetric emergencies. Participants reported feelings of pride when succeeded to improve mothers and babies' health. The midwives' happiness with their work was also reported in the study conducted by Rouleau, Fournier, Philibert, Mbengue and Dumont (2012) in Senegal to explore the effects of midwives job satisfaction on burnout, intention to quit and profession mobility. Midwives reported satisfaction with the quality of their work and the outcome of obstetric labour and the health of mothers. Midwives' feelings of satisfaction with midwifery work might be linked to the nature of midwifery work, which in normal circumstances has often positive outcomes (Rouleau et al., 2012).

However, job dissatisfaction was experienced in non-conducive working environments, which acted as a major barrier to the implementation of new knowledge and skills into midwifery practice. Midwives expressed experiencing diminished job satisfaction associated with poor professional collaboration between midwives and physicians, inability to save women's lives due to increased workload, shortage of qualified staff, and insufficiency of essential materials and equipment. In addition work related stress as result of job dissatisfaction was evident in the findings. These results are consistent with previous research on nurses' job satisfaction and burnout conducted in some sub-Sahara African countries (Kekana & Rand, 2007; Mbindyo, Blaauw, Gilson, & English, 2009; Pillay, 2009; Rouleau et al., 2012). Similarly, Homburg, van der Heijden, and Valkenburg ( 2013) and Djukic, Kovner, Budin, and Norman ( 2010), argued that non-conducive work environments and job dissatisfaction affect midwives' and nurses' intention to leave the job or their carrier.

The study results suggested that autonomy for midwifery practice is an important tool to change practice and improve the quality of health care. Hospital midwives felt empowered to introduce innovation or change aimed to improve the quality of health care, and that this would be welcomed by the hospital managers. Participants in this study affirmed that after involvement in the ALSO® course, despite the challenges hampering the implementation of the new knowledge and skills gained, they have successfully initiated some changes in providing routine obstetric care. For example, they succeeded to eliminate systematic episiotomy for primipara as part of normative practice.

However, some hospital policies, protocols and guidelines, which require midwives to work under the authority of physicians, and a shortage of midwives, hampered their autonomy and limited midwifery scope of practice. These findings are consistent with results from an Australian study by Homer et al.(2009), which revealed that health facilities' system of maternity care, domination of physicians, invisibility of midwifery in decision making and regulation, were the major barriers of midwives to fully play their role in maternity services.

Edmondson and Walker ( 2014) found that in caseload midwifery care, midwives considered autonomy of midwifery practice to be a key factor in constructing midwifery role. In that study autonomy of practice was associated with the ability to use the full scope of midwives' skills and knowledge to care for women and newborns and to develop as professionals. In high income countries, the introduction of well-educated, licensed midwives, who work collaboratively with physicians and other health professionals has been shown to be associated with sustainable decrease of maternal and neonatal morbidity and mortality (Renfrew et al., 2014). The policies and institution systems which limit autonomy for midwifery practice and midwifery scope of practice need to be revised if the midwifery role can continue to play a

significant role in implementing effective, sustainable, and affordable quality obstetric care, thus reducing maternal and infant mortality.

### **Implications for Education, Practice and Research**

Findings from this study may have implication in midwifery education, practice and research. Regarding professional education, the findings revealed that before participating in ALSO® education program, midwives had limited knowledge and skills in managing the main causes of maternal deaths. To assist midwives in clinical settings to improve the quality of obstetric care, CPD education programs, and refresher courses could be available for all, especially for novice midwives in order to acquire and sustain the competencies required to help reduce maternal and neonatal mortality. In collaboration with health care facilities and the National Council of Nursing and Midwifery, schools of nursing and midwifery could organise and offer regular CPD programs and refresher courses aimed to bridge gaps in knowledge and skills among practicing midwives. The study findings also highlighted the need to incorporate the notion of follow-up, inter-professional collaboration and knowledge sharing in the program of CPD offered to midwives to facilitate and encourage them to implement into practice the acquired new knowledge and skills. Therefore, National Council of Nursing and Midwifery and schools of nursing and midwifery could develop and revise CPD education program modules for midwives and nurses, incorporating those concepts as highlighted by participants in this study.

The findings of this study may increase practicing midwives' understanding of the importance of regular CPD education programming to acquire the knowledge, skills and confidence necessary in providing quality care, thus improve patient outcomes. Study findings can help increase awareness among hospital managers about the challenges that midwives face to fully apply their knowledge and skills into practice in order to improve the quality of obstetrical

care. Research has identified a shortage of skilled birth attendants and a shortage of materials as the main barriers contributing to poor quality of emergency obstetric care, thus to high rate of maternal and neonatal mortality (Ameh et al., 2012; Owens et al., 2015; Van Lerberghe et al., 2014). To facilitate midwives' ability to apply their knowledge and skills into clinical practice, hospital managers could supply the required resources. For example, sufficient sterile towels, box-delivery and suction pump for newborns might be available in labour wards.

In this study the participants were midwives and therefore this study merits replication with other health professionals working in maternity services, who also participate in an ALSO® course. Midwives identified challenges to applying knowledge from the ALSO® course into practice. For example, autonomy for midwifery practice, non-conducive work environments, and heavy workload, were key inhibiting factors that need further study. The findings also showed that midwives experienced “*diminished job satisfaction.*” Thus, further research is warranted to explore factors associated with midwives' job satisfaction, and possible interventions to improve it.

### **Strengths and Limitations**

To our knowledge this is the first qualitative study conducted in Rwanda about transfer of knowledge and skills to midwifery practice settings, and so data provided rich description of the midwives experiences. This study has some limitations that deserve mention. Although midwives, nurses and physicians participated in each of the ALSO® course offerings only the midwives were participants in this study. Investigating the experiences of physicians and nurses working with midwives who have participated in the ALSO® course is warranted. Another limitation is associated with the setting. The Eastern Province has nine hospitals. However

participants in this study were from only three hospitals. A future larger study could be more inclusive of participants from each of the settings involved in the CPD offering.

### **Conclusion**

In conclusion, this study was conducted to explore midwives' experience of translating the knowledge and skills acquired from participating in the ALSO® course into their professional practice in Rwanda. Study findings suggest that midwives increased their knowledge, skills and confidence in management of obstetric emergencies. Consequently, midwifery practice and clients' health outcomes were perceived as being improved. However some midwives' abilities to change practice was limited by a shortage of staff, poor resources, heavy workloads, poor collaboration between midwives and physicians, and non-conducive work environments. To improve the quality of obstetric care, and thus reduce maternal and neonatal morbidity and mortality, all those identified elements hampering midwives' ability to improve the quality of care have the potential to be changed in the future. These study findings have contributed to advancing the limited amount of research on the translation of new knowledge and skills into clinical practice after CPD education in Rwanda, specifically in the field of midwifery.

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## CHAPTER THREE

### DISCUSSION, IMPLICATIONS AND CONCLUSION

The purpose of this descriptive qualitative study was to gain an understanding of midwives' experience in translating new knowledge and skills into midwifery practice, after participating in an ALSO® education course. Five themes emerged from the data analysis: *improved midwifery practice, availability of resources, inter-professional collaboration, job (dis)satisfaction, and autonomy for midwifery practice*. The findings from this study revealed that midwives who participated in an ALSO® course increased their knowledge, skills, and confidence in the management of obstetric emergencies. The study findings also suggest that team spirit and knowledge sharing among health professionals who work in maternity services improved due to involvement in the ALSO® education program.

Midwives reported improved communication and relationships between midwives and their clients after participating in the ALSO® course. The findings revealed that midwives perceived a reduction in maternal and neonatal morbidity and mortality, which had been attributed to health professionals' insufficient knowledge and skills regarding obstetric emergency management prior to participation in the ALSO® course. Despite the challenges midwives experienced in implementing their new knowledge and skills into practice, they noted that their quality of care seem to have improved after taking the ALSO® course.

The findings also highlighted that a shortage of midwives and other health professionals, insufficient resources, and non-conducive working environments were identified as key issues encumbering midwives' abilities to fully apply their new knowledge and skills gained from the ALSO® course into practice to improve the provision of quality care. Limited inter-professional collaboration, especially between physicians and midwives, heavy workloads, and limited

autonomy for midwifery practice were found in this study as the main factors associated with non-conducive work environments, and some midwives' experiences of job dissatisfaction. The findings also highlighted the need for ongoing CPD education courses with follow-up to help participants maintain and extend their competency levels when implementing knowledge and skills to their practice.

### **Implications for Midwifery Practice**

The study findings provide midwives and other healthcare professionals with information to develop effective strategies to improve the work environment and quality of obstetric care. The findings illuminated facilitators and barriers to the improvement of midwifery practice. Managers responsible for maternal health can use the study finding of not having sufficient skilled attendants in maternity services to improve the way they allocate health care providers in different maternity wards. According to the International Confederation of Midwives [ICM] (2011) and the World Health Organization (1996), autonomy is the core concept of the definition of a midwife. However, midwives' ability to work autonomously depends to the degree of authority and respect afforded to them in their practice settings (Herron, 2009). Therefore these findings highlighted the need to recognize midwives' knowledge and skill level, and to allow them to practice to their full scope as per ICM and regulatory bodies in Rwanda. For example, a registered midwife who has been trained in obstetric emergencies needs to be allowed to prescribe and administer required drugs to manage any obstetric emergency, on time without waiting for the decision of the physician (Ministry of Health, 2012).

These study results highlight the need to increase the number of qualified midwives and other health care providers in order to maintain the reasonable workload for midwives that can lead to improved working conditions, midwives' overall job satisfaction and patient care.

Hospital managers could use the study results to stress the magnitude of the shortage of healthcare providers in maternity services, to both the clients and healthcare providers, and advocate with health councils to attempt to resolve the issue. To achieve this more effort in education and hiring midwives is required. The findings also emphasize the need to supply the necessary materials and equipment to improve the quality of obstetric care. Therefore, the study results could be used to inform hospital managers about the consequences of resource issues in relation to the provision of quality obstetric care, maternal morbidity and mortality. Midwives, physicians and other health professionals who have the goal and mission to improve the health of mothers and their babies could be encouraged to work in constructive teams. Strategies to improve inter-profession collaboration in practice settings could be developed in order to effectively manage obstetric emergencies.

If these study findings are not considered and acted upon by various key stakeholders, there will continue to be a shortage of skilled attendants, a lack of materials and equipment, limited CPD offerings, challenging inter-professional relationships, and non-conducive work environments. By addressing each of these factors using a policy driven, multi-sectoral and inter-professional approach, maternal and neonatal health could continue to be improved and additional gains continue to be made to addressing the UN 4<sup>th</sup> and 5<sup>th</sup> millennium development goals in Rwanda.

### **Implications for Midwifery Education**

Midwives in practice have the responsibility to teach and mentor student midwives in clinical settings. The study findings revealed that in order to accomplish the responsibility of mentoring students in clinical settings, midwives need the opportunity to attend regular CPD or in-service education programs to update their practice-based knowledge and skills as well as to

gain knowledge in education and mentoring. The findings showed that midwives desired to upgrade their level of education in order to provide quality care. Therefore, it is recommended that schools of nursing and midwifery in Rwanda continue to review and refine their education programs to further enable professional development that can ultimately serve to improve the quality of care offered to those in the care of midwives. The findings of this study might inform midwife educators about the existing gaps related to obstetric emergencies in current midwifery curricula. Therefore educators could address those gaps during curriculum development and review.

The instructors of future ALSO® education course in Rwanda could also benefit from the findings in order to understand the strengths of the ALSO® course, and the elements necessitating review and improvement. The ALSO® program needs to include a component where instructors follow up with participants to facilitate successful implementation of newly acquired knowledge and skills. In addition, the organisers of CPD education programs could plan follow-up supervision and refresher sessions with midwives to assist and encourage participants to apply in practice the new knowledge and skills.

These study findings highlight the need to incorporate both the concepts and practice of inter-professional collaboration in midwifery education programs to equip student midwives with required skills and attitudes to work collaboratively with other health professionals in order to promote supportive work environments, quality and comprehensive care, and positive client outcomes. Educators in midwifery education programs could focus on midwife-client-health team relationships, team spirit, and knowledge sharing to help student midwives to develop enhanced inter- professional competencies, attitudes and values that could contribute to effective

professional behaviours during their development as soon-to-be midwives, and also upon graduation when they start practicing midwifery.

### **Implications for Midwifery Research**

This study added value to the knowledge regarding midwives' experience of translating knowledge and skills gained from a CPD education course (ALSO®) into practice. The study findings illuminated the factors which both supported and hampered midwives' abilities to improve delivery of quality care in obstetrics. Therefore, more research is needed to determine sustainable strategies that might eliminate those factors limiting midwives' abilities to improve practice. There is a limited, but important body of research which has been conducted on the issue of emergency obstetric care in sub-Saharan Africa (Cavallaro & Marchant, 2013; Echoka et al., 2013; Huchon et al., 2014; Kayongo, Rubardt, & Butera, 2006; McCarthy et al., 2014; Pirkle, Fournier, Tourigny, Sangaré, & Haddad, 2011; Pearson & Shoo, 2005), however little has been focused on the experiences of midwives, or midwives practicing in Rwanda.

The existing research concentrated in Rwanda is related to safe motherhood practices (Puri et al., 2012), availability of emergency obstetric care services (Kayongo et al., 2006), and emergency obstetrics knowledge and skills among medical students after involvement in an ALSO® education course (Homaifar et al., 2013). The research on safe motherhood conducted in Rwanda has highlighted the importance of CPD or in-service education programs to improve the knowledge and skills of skilled attendants in the management of obstetric emergencies. Nevertheless, the findings of this study revealed that competency of health care providers is not the only factor associated with maternal deaths in Rwanda. Therefore, researchers need to explore other factors contributing to maternal and neonatal deaths in Rwanda. Further research is needed to address the issue of midwives not being able to work at their full scope of practice, and



to determine if the skills and knowledge levels of midwives and other skilled attendants working in maternity services are maintained to the standards of quality care over long term. The settings for this study were some hospitals in Eastern Province in Rwanda, therefore this study could be replicated in other hospitals.

### **Implications for Policy**

Although health policy decisions are often made without the participation of health professionals who are supposed to implement them, effects of policy are frequently first felt by those professionals in practice (Mckenzi & Wharf, 2010). The findings of this study highlight the need to include midwives, and all concerned health professionals in policy development, which might further enable policy implementation and enhance practice effectiveness. To resolve the problem of health professionals' shortage, while there are some who are unemployed, policy makers in the Ministry of Health could mandate immediate recruitment of midwives, nurses and physicians, just after their graduation. Based on the importance of CPD education programs for nurses and midwives (Katsikitis et al., 2013), the Ministry of Health could mandate health care facilities to organize regular CPD education programs for health care providers to keep updating their knowledge and skills in order to offer enhanced health care quality. Therefore, regulatory bodies in Rwanda might mandate involvement in yearly CPD education programs in order for midwives to renew their licence to practice. The findings of this study suggest the need to revise existing policies which limit midwifery autonomy and scope of practice, and hamper midwives' abilities to fully apply their knowledge and skills into clinical practice to improve the quality of obstetric care. Furthermore, policies influencing physicians' authority over midwives might be revised to promote inter-professional collaboration in practice. The findings of this study could inform policy makers who determine hospital and health centre budgets, about the poor quality

of care that can result due to a shortage of materials, qualified personnel and equipment in health care settings.

### **Conclusion**

This descriptive qualitative study explored midwives' experiences of transferring new knowledge and skills into midwifery practice. Facilitators and barriers were identified that impacted the midwives' abilities to implement new knowledge and skills acquired from involvement in an ALSO® course into their practice. Support from hospital leaders, team work, knowledge sharing between health professionals working in maternity services, and professional relationships between midwives and clients were factors that influenced midwives' abilities to translate their new knowledge and skills into practice. However, a shortage of skilled attendants, limited resources, heavy workloads, non-conducive work environments, and poor collaboration between midwives and physicians were barriers limiting midwives' abilities to improve their practice. The findings call for a transformation in practice, education, research, and policy in order to more fully support CPD for in-service knowledge development and for enhanced education at the pre-service stage.

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**APPENDICES****Appendix A****Demographic Questions**

Please provide some information about yourself

Gender

Female

Male

Age in years: .....years

Level of education

Diploma

Bachelor's Degree

Master's Degree

Hospital where you work: .....

District hospital    Service.....    Unit.....

Referral hospital    Service.....    Unit.....

Years of experience

In the profession of a midwife ..... Years.....months

In maternity units ..... Years.....months

In your current unit..... Years..... Month

## **Appendix B**

### **Semi-Structured Interview Guide –Midwives**

During the audio-recorded interview you are asked to refrain from disclosing information that will identify you or others. Should any identifying information be disclosed during the interview, it will not be included in the transcript.

In what ways did your participation in the ALSO course increase your knowledge/skills/attitude/judgment about managing obstetrical emergencies?

In what ways did your participation in the ALSO course increase your problem-solving and decision-making skills for emergency care of pregnant, laboring or immediate postpartum women?

How were you able to use your new knowledge and skills gained from ALSO in clinical practice?

What are the facilitators you encountered in your work place to put into practice the knowledge and skills gained from the ALSO course.

What are the barriers you encountered in your work place to put into practice the knowledge and skills gained from the ALSO course

How do you think using your new knowledge and skills gained from ALSO has positively changed your clinical practice?

In what ways have you been able to mentor or coach other midwives, nurses, physicians, or students in practice to help improve their knowledge and skills?

In what ways do you think has the use of your new knowledge and skills been able to change the professional relationship you have with women, newborns, and their families in clinical practice?

## **Appendix C**

### **Letter of Information**

#### **Study Title**

Experience of midwives who participated in advanced life support in obstetrics educational program in Rwanda

#### **Principal Investigator**

Pauline Uwajeneza, Master's student, Arthur Labatt Family School of Nursing, Western University

#### **Invitation to Participate**

You are being invited to participate in this research study evaluating the continuing professional development (CPD) workshop because you have participated in a CPD workshop hosted by the Maternal, Newborn, and Child Health in Rwanda project. This study is needed to understand how the CPD workshop has affected maternal, newborn and child health.

#### **Purpose of the Letter**

The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research.

#### **Purpose of this Study**

The purpose of this study is to evaluate the effectiveness of the CPD workshop you attended and the impact of the workshop on your practice.

#### **Inclusion Criteria**

Participants meet inclusion criteria if they are registered midwives, if they have attended an ALSO course provided by MNCH project and if they work full-time in a maternity unit in eastern province.

#### **Exclusion Criteria**

Individuals who meet the inclusion criteria but who will be on leave from work during the period of the study

#### **Study Procedures**

If you agree to participate, you will also be asked to participate in a 60-90 minute individual interview approximately six months after the workshop. The interview will be conducted at a place convenient to you such as your workplace, home, or other local venue.



**Possible Risks and Harms**

There are no known or anticipated risks or discomforts associated with participating in this study.

**Possible Benefits**

The possible benefits associated with participation in this study include informing CPD module development, health professional educational development, and health human resources policy and planning that will address maternal, infant, and child education needs and health service delivery in Rwanda.

The potential benefit to society is that participants involved in the study will have an opportunity to apply the knowledge gained from the CPD workshops directly into client care - particularly for newborns and maternal health. Health professionals involved in the study can potentially share their new knowledge with other health professionals, so as to support the enhancement of others' practice in maternal, newborn, and child health.

**Compensation**

You will not be compensated for your participation in this research.

**Voluntary Participation**

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your participation in the CPD workshop.

**Confidentiality**

All data collected will remain confidential and accessible only to the investigators of this study. If the results are published, your name will not be used. If you choose to withdraw from this study prior to initiation of the data analysis phase, your data will be removed and destroyed from our database. Information collected in this study including the instruments and audio recordings will be kept for five years and then destroyed. During the audio-recorded interviews you are asked to refrain from disclosing information that will identify you or others. Should any identifying information be disclosed during the interview, it will not be included in the transcript. Representatives of The University of Western Ontario Health Sciences Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research.

**Publication**

If the results of the study are published, your name will not be used and the name of the health facility where you are employed will not be used. If you would like to receive a copy of any

potential study results, please provide your name and contact number on a piece of paper separate from the Consent form.

### **Consent**

A Consent Form will be provided for you to sign prior to the interview.

*This letter is yours to keep for future reference.*

**Appendix D**  
**Consent Form**

**Study Title:**

Experience of midwives who participated in advanced life support in obstetrics educational program in Rwanda

**Principal Investigator**

Pauline Uwajeneza, Master's student, Arthur Labatt Family School of Nursing, Western University

I have read the letter of information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

Participant's Name (please print): \_\_\_\_\_ Participant's  
Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Appendix E**  
**Research Documents in Kinyarwanda**  
**Umwirondoro**

Twagusabaga kuzuza kuri uru rupapuro umwirondoro wawe

Igitsina:

Gabo: .....

Gore: .....

Imyaka: .....

Amashuri wize:

Icyiciro cya mbere cya kaminuza (Diploma)

Icyicaro cya kabiri cya kaminuza (Bachelor's Degree)

Icyiciro cya gatatu cya kaminuza (Master's Degree)

Ibitaro ukoramo:

Ibitaro bya District: Service..... Unit.....

Ibitaro bikuru (Referral hospital) Service.....Unit.....

Imyaka y'uburambe:

Uburambe mu mwuga w'ububyaza: Imyaka.....

Uburambe muri service ya Maternite: Imyaka.....

Uburimbe muri service urimo ubu: Imyaka.....

### Umuyoboro w'Ibazwa Ritaziguye

Mu gihe cy'ifatwa ry'amajwi, usabwe kugira ibanga ry'amakuru yatuma uwabyumva yamenya ubazwa uwo uriwe cyangwa abandi abavugwa mu makuru watanga. Amakuru yose yatuma ibanga rititabwaho, ntabwo agenewe kwandikwa cyangwa kubikwa.

Ni mubihe buryo kwitabira amahugurwa arebana no kwita kubuzima bw'umubyeyi ufite ibibazo by'ingutu igihe atwite, abyara cyagwa nyuma yo kubyara byaba byarongereye ubumenyi, imikorere n'imyitwarire yawe mugufasha abo babyeyi

Ni mubuhe buryo kwitabira amahugurwa kubirebana n'ubuzima bw'umubyeyi ufite ibibazo by'ingutu igihe atwite, abyara cyangwa nyuma yo kubyara byagufashije mugufata icyemezo nyacyo mugihe gikwiye mugucyemura ibibazo byuwo mubyeyi?

Ni gute ushyira mubikorwa ubumenyi bushya wungukiye mu mahugurwa arebana no kwita kubuzima bw'umubyeyi ufite ibibazo by'ingutu (ALSO)?

Ni ubuhe bufasha wabonye ku kazi aho ukorera bwagufashije gushyira mu bikorwa ubumenyi bushya wungukiye muri ALSO

Ni izihe mbogamizi wahuye nazo mugushyira mubikorwa ubumenyi wavanye mu mahugurwa ya ALSO

Ni mubuhe buryo ubona gushyira mu bikorwa ubumenyi wungutse kubijyanye no kwita kubuzima bw'umubyeyi utwite, ubyara cyagwa umaze kubyara byateje imbere umwuga wawe?

Uhereye kubumenyi wungutse, nimubuhe buryo waba warafashije abandi muhuje umwuga, abanyeshuri bimenyereza umwuga, kugira imyumvire n'ubumenyi bushya mu bijyanye no kwita k'ubuzima bw'ababyeyi bafite ibibazo by'ingutu igihe batwite, babyara cyagwa bamaze kubyara?

Ni mubuhe buryo gukoresha ubumenyi bwawe bushya byaba byaragufashije kurushaho gushyikirana no gufasha byimbitse ababyeyi bafite ibibazo by'ingutu igihe abavura

## **Ibaruwa Imenyeshya**

### **Inyito y'Ubushakashatsi**

Uburyo ababyaza b'umwuga bashyira mubikorwa ubumenyi bavanye mu mahugurwa kubijyanye no kwita k'ubuzima bw'umubyeyi ufite ibibazo by'ingutu igihe atwite, abyara na nyuma yo kubyara, mu rwanda

### **Uhagarariye Inyigo**

Pauline UWAJENEZA, umunyeshuri mu cyiciro cya gatatu cya kaminuza, mu ishuri ry'abaforomo Arthur Labatt Family, muri kanuza ya Western, muri Canada

#### **1. Ubutumire bwo Kwitabira Ubushakashatsi**

Kuberako witabiriye inyigisho zigenewe abavuzi, turagusaba kwitabira ubushakashatsi bugamije kureba akamaro k'izo nyigisho. Izo nyigisho zateguwe n'umushinga witwa “Maternal, Newborn, and Child Health in Rwanda project”. Ubu bushakashatsi bugamije kugaragaza impinduka zizakurikira izo nyigisho mu buzima bw'ababyeyi, impinja n'abana.

#### **2. Impamvu y'Urwandiko**

Uru rwandiko rurakumenyeshya ibyo ukeneye kumenya kugirango ubashe gufata icyemezo cyo kwitabira ubu bushakashatsi ku bushake.

#### **3. Intego y'Ubushakashatsi**

Ubu bushakashatsi bugamije kureba ishyirwamubikorwa ry'inyigisho witabiriye ndetse n'akamaro kazo mu kazi kawe.

#### **4. Ibigomba Kuzuzwa n'Uwitabiriye ubu Bushakashatsi**

Agomba kuba ari umubyaza, yarakurikiye amahugurwa kubijyanye n'ubuvuzi bw'ababyeyi bafite ibibazo by'ingutu igihe batwite, babyara cyangwa nyuma yo kubyara (ALSO). Akora mubitaro biherereye muntara y'iburasirazuba, muri service ya materinite. Agomba kandi kuba ashobora kuvuga cangwa kwandika ururimi rw'Icyongereza cyangwa Ikinyarwanda.

#### **5. Ibishobara Gutuma Umuntu Atitabira ubu Bushakashatsi**

Kuba igihe cy'ubushakashatsi uwujuje ibisabwa ari mukiruhuko (adakora).

#### **6. Imigendekere y'Ubushakashatsi**

Niba wemera kwitabira ubu bushakashatsi, urasabwa kuzuza urupapuro rw'umwirondoro no kugirana ikiganiro cy'iminota hagati ya 60 na 90 n'umushakashatsi. Ikiganiro kizabera ahantu uzihitiramo nko ku kazi kawe cyangwa ahandi hakubereye heza.

### **7. Ibyago cgangwa Ingaruka**

Nta byago cgangwa ingaruka biteganijwe bishobora guterwa no kwitabira ubu bushakashatsi

### **8. Inyungu Zishoboka**

Mu nyungu zishobora guturuka ku kwitabira ubu bushakashatsi harimo gutanga amakuru ngenderwaho mu guhanga amasomo agenewe abavuzi n'umurongo ngenderwaho mu kwita ku buzima bw'abagore, impinja n'abana mu Rwanda.

Ku bijyanye n'inyungu ku baturage muri rusange, abazitabira aya masomo bazakoresha

ubumenyi bazunguka mu kuvura ababagana cyane cyane ababyeyi batwite, babyara cyagwa bamaze kubyara. Abavuzi bazitabira ubu bushakashatsi bashobora kuzasangiza bagenzi babo ubumenyi mu rwego rwo kuzamura ireme ry'ubuvuzi bw'ababyeyi, impinja n'abana.

### **9. Ibihembo**

Nta bihembo uzahabwa kubwo kwitabira ubu bushakashatsi

### **10. Kwitabira k' Ubushake**

Kwitabira ubu bushakashatsi bituruka ku guhitamo. Ushobora kwanga kubwitabira, kureka gusubiza bimwe mu bibazo cyangwa guhagarika gukomeza muri ubu bushakashatsi igihe icyo aricyo cyose kandi ibyo nta ngaruka byakugiraho.

### **11. Ibanga**

Amakuru yose azatangwa n'abazitabira ubu bushakashatsi azaguma ari ibanga kandi azaba ashobora kubonwa n'abakora ubu bushakashatsi gusa. Nuramuka uhisemo kuva muri ubu bushakashatsi mbere y'uko inyigo y'amakuru watanze itangira, amakuru watanze azavanwa mu yandi kandi akurwe mu bubiko bw'ubushakashatsi. Amakuru yose azava muri ubu

bushakashatsi azabikwa imyaka itanu nyuma yaho ajugunywe mu buryo bwabugenewe. Mu gihe uzaba uganira n'umushakashatsi anagufata amajwi, uzirinde kuvuga amakuru yagaragaza uwo uriwe cyangwa undi muntu uwo ari we wese. Uramutse ugize amakuru utanze agaragaza uwo uri we ntabwo azashyirwa mu bizifashishwa muri ubu bushakashatsi. Abahagarariye ikigo

gishinzwe ubushakashatsi muri kaminuza ya Western Ontario Health Sciences bashobora kugira icyo bakubaza cyangwa bareba ku makuru watanze ajyanye n'ubu bushakashatsi mu rwego rwo kugenzura imigendekere yabwo.

## **12. Gutangaza Ibizava muri ubu Bushakashatsi**

Mu gutangaza ibizava muri ubu bushakashatsi nta zina ryawe cyangwa iry'aho ukorera rizatangazwa. Niba ushaka kubona kopi y'iby'ingenzi bizava muri ubu bushakashatsi, utange izina ryawe na nimero yawe ya telephone ku rupuro rutandukanye n'urwo wemereraho kuzitabira ubushakashatsi.

## **13. Kwemera k'Ubushake**

Mbere y'ibibazo bifatwa mu majwi, uzasabwa gusinya urwandiko rwo kwemera ku bushake kwitabira ubu bushakashatsi.

*Uru rwandiko ni urwawe ushobora kuzakoresha mu gihe kiri imbere bibaye ngombwa.*



## Kwemera ku Bushake

### Inyito y'Ubushakashatsi

Uburyo ababyaza b'umwuga bashyira mubikorwa ubumenyi bavanye mu mahugurwa kubijyanye no kwita k'ubuzima bw'umubyeyi ufite ibibazo by'ingutu igihe atwite, abyara na nyuma yo kubyara, mu rwanda

### Ukuriye Ubushakashatsi

Pauline Uwajeneza, umunyeshuri mu cyiciro cya gatatu cya kaminuza, mu ishuri rya Arthur Labatt Family muri kanuza ya Western, muri Canada.

Nasomye urwandiko rumenyeshya, numvise icyo ubu bushakashatsi Ari cyo n'icyo bugamije none niyemeje kubwitabira. Nanyuzwe N'ibisubizo by'ibibazo byanjye byose.

Izina ry'uwitabira ubushakashatsi (andika mu nyuguti nkuru):

\_\_\_\_\_

Umukono W'uwitabira Ubushakashatsi:

\_\_\_\_\_

Itariki: \_\_\_\_\_

Uhagarariye Ubushakashatsi (Andika Mu Nyuguti Nkuru):\_\_\_\_\_

Umukono: \_\_\_\_\_

Itariki: \_\_\_\_\_

# Appendix F



## Research Ethics

### Use of Human Participants - Initial Ethics Approval Notice

Principal Investigator: Dr. Yolanda Babenko-Mouat  
 File Number: 104579  
 Review Level: Delegated  
 Protocol Title: Evaluating Continuing Professional Development Education Workshops in Rwanda  
 Department & Institution: Health Sciences/Nursing, Western University  
 Sponsor: Canadian International Development Agency

Ethics Approval Date: October 13, 2013 Expiry Date: October 31, 2014  
 Documents Reviewed & Approved & Comments Received for Information:

Document Name	Comments	Version Date
Instruments	Appendix A1 - Helping Babies Breast (HBB) Workshop Evaluation Form	
Western University Protocol		
Other	Semi-Structured Interview Guide - Formal Leaders-Received Dec 14, 2013	
Other	Semi-Structured Interview Guide - Health Professionals-Received Dec 14, 2013	
Letter of Information & Consent	Nurses, Midwives, Physicians	2014/01/12
Letter of Information & Consent	Formal Leaders	2014/01/12
Recruitment Items	Email or Telephone Script for Recruitment - To Nurses, Midwives, and Physicians	2014/01/12
Recruitment Items	Recruitment Email Script - Formal Leaders	
Instruments	CPD - Pre-Test Knowledge - ETAT-Received Dec 14, 2013	
Instruments	CPD - Post-Test Knowledge - ETAT-Received Dec 14, 2013	
Instruments	CPD Workshop Evaluation Form - ALSO-Received Dec 14, 2013	
Instruments	CPD - HBB Pre-Test and Post-Test Document-Received Dec 14, 2013	

This is to notify you that The University of Western Ontario Research Ethics Board for Health Sciences Research Involving Human Subjects (HSREB) which is registered and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the Health Canada/ICH Good Clinical Practice Practices, Consolidated Guidelines, and the applicable laws and regulations of Ontario has reviewed and granted approval to the above referenced research(s) as mentioned(s) on the approval date noted above. The membership of this REB also complies with the membership requirements for HSREB as defined in Division 3 of the Food and Drug Regulations.

The ethics approval for this study shall remain valid until the expiry date listed above assuming timely and acceptable responses to the HSREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the University of Western Ontario Updated Approval Request Form.

Members of the HSREB who are correct as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the HSREB.

The Chair of the HSREB is Dr. Joseph Gilbert. The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number 0000000000.

Ethics Office to Contact for Further Information:

<input checked="" type="checkbox"/> Ethics Approval	<input type="checkbox"/> Data Entry/Documentation	<input type="checkbox"/> Recruitment/Registration	<input type="checkbox"/> Other (Please Specify)
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This is an administrative document designed for your file.

## Appendix G

## REPUBLIC OF RWANDA/REPUBLIQUE DU RWANDA



## NATIONAL ETHICS COMMITTEE / COMITE NATIONAL D'ETHIQUE

Telephone: (250) 2 55 10 78 84

E-mail: [info@rncrwanda.org](mailto:info@rncrwanda.org)Web site: [www.rncrwanda.org](http://www.rncrwanda.org)

Ministry of Health

P.O. Box. 84

Kigali, Rwanda.

FWA Assurance No. 00001973

IRB 00001497 of IORG0001100

July 02, 2014

No. 177/RNEC/2014

**Pauline UWAJENEZA**  
Principal Investigator  
(A Student)

Your Project title **"The impact of participation in one or more of the CPD educational workshops on competency (knowledge) in the area of maternal, newborn or child health"** has been evaluated by the Rwanda National Ethics committee.

Name	Institute	Involved in the decision		
		Yes	No ( Reason)	
			Absent	Withdrawn from the proceeding
Dr.Jean-Baptiste MAZARATI	Biomedical Services (BIOS)		X	
Prof. Eugène RUTEMBESA	National University of Rwanda	X		
Dr.Laetitia NYIRAZINYOYE	National University of Rwanda(school of public Health)		X	
Prof.Alexandre LYAMBABAJE	National University of Rwanda	X		
Ms.Françoise UWINGABIYE	Lawyer at Musanze		X	
Dr. Egide KAYITARE	National University of Rwanda	X		
Sr.Domitilla MUKANTABANA	Kabgayi Nursing and Midwife school	X		

## CURRICULUM VITAE

**Name:** Pauline Uwajeneza

<b>Post- Secondary Education and Degrees</b>	<b>Name of the University</b>	<b>Years</b>
Master's of Science in Nursing	Western Ontario University/ Canada	2013-Current
Bachelor's of Nursing Education:	University of Rwanda/ College of Medicine and Health Sciences	2006-2008
Advanced Diploma in Midwifery (A1)	University of Rwanda / College of Medicine and Health Sciences	1999-2003
<b>Professional Experience</b>	<b>Name of the Institution</b>	<b>Year</b>
Tutorial Assistant	University of Rwanda /College of Medicine and Health Sciences	2011 – Current
Nurse- Midwife Educator Head of Midwifery Department	Byumba School of Nursing and Midwifery	2008-2010
Clinical Midwife (RM)	University Teaching Hospital of Kigali (CHUK)	2003-2006
Clinical Midwife (RM)	Kabyayi Hospital	May,2003- September,2003
Clinical nurse (Enrolled Nurse )	Nyanza Hospital	1998-1999

**Workshops Attended/ Continuous Professional Development**

1. Health [e] Families (Women and Newborns) [e] training
2. Manuscript Writing
3. Academic Writing
4. Competency Based Approach to Teaching
5. Academic Quality Upholding and Modular system of Teaching
6. Helping Babies Breathe
7. Emergency care in Obstetrics and Neonatology
8. Advanced Life Support in Obstetrics (ALSO)
9. Family Planning
10. Neonatal Resuscitation

**Research Involvement**

1. Uwajeneza, P., & Ingabire, M.L. (2008). Students' knowledge and perceptions on the use of natural methods of family planning. 3<sup>rd</sup> year midwife students at K H I, Kigali, Rwanda
2. Uwajeneza, P., Kakana, L. (2003). Monitoring and evaluation of mothers in labour at Kabgayi Hospital, South Province, Rwanda