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Exploration of Knowledge and Skills Development among Community Health Workers in Rwanda

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Abstract

Community Health Workers (CHWs) are individuals who are selected and trained to provide healthcare services in the community. To be effective, they need ongoing training opportunities to gain knowledge and skills to perform their tasks. This study used descriptive qualitative methods to explore how Animatrice de Santé Maternelle (ASM)-CHWs working in select regions of Rwanda gained and enhanced their knowledge and skills to support maternal and newborn health care. Thematic analysis was used to analyze data from 110 ASM-CHWs and ten supervisors of CHWs. The analysis yielded two main themes. 1) Formalized training among CHWs, which included the subthemes of didactic training workshops, supervision, and monthly meetings. 2) Informalized training, with subthemes of informal peer to peer mentorship, learning as an ongoing process, moving toward formalized peer to peer mentorship model with its benefits, way to move forward, and challenges of peer to peer mentorship model. Adequate training of CHWs is crucial to the success of the program. However, training of CHWs was hampered by the unavailability of funds. Thus, peer to peer formal mentorship could serve as a learning strategy to reinforce the training of CHWs.

Keywords: Community health worker, training strategies

Summary for Lay Audience

Community Health Workers (CHWs) are individuals who are selected and trained to provide healthcare services in the community. They have no prior education in the health domain. To be effective in their role, CHWs need ongoing training to develop knowledge and skills to perform their tasks. This study used descriptive qualitative methods to explore how CHWs working in Rwanda develop their knowledge and skills to support maternal and newborn health care. A thematic analysis was used to analyze data from 110 CHWs and ten supervisors of CHWs. The data analysis produced two main findings. 1) Formalized training among CHWs, which included classroom-based training workshops, supervision, and monthly meetings. 2) Informalized training, with subthemes of informal peer to peer teaching, learning as an ongoing process, formalized peer to peer teaching model with its benefits, its implementation, and barriers.

These findings will inform the development of ongoing training strategies to reinforce the knowledge and skills of CHWs within Rwanda. CHWs in this study highlighted several educational strategies essential to learning the CHW role. In particular, CHWs reported peer to peer mentorship as a strategy to support CHWs learning needs. Adequate training of CHWs is crucial to the success of the program and the enhanced health of mothers and their infants. However, training of CHWs was hampered by the unavailability of funds. Thus, peer to peer formal teaching can serve as a solution to reinforce the existing strategies to train CHWs effectively.

This thesis is organized into three chapters. The first chapter presents the background, an overview of Rwanda, the role of CHWs in Rwanda, TSAM project in Rwanda, the significance and purpose of the study, the research question, and the declaration. Chapter two is a manuscript

of the research. It is composed of background, literature review about different ways CHWs gain knowledge and skills in different countries, the methodology used in this study, the results, and discussion. Chapter three presents a summary of the implications of the research, conclusion, and future direction in this domain.

Co-Authorship Statement

NGABONZIZA Schadrack conducted this research for a master's degree under the supervision of Dr. Lorie Donelle and Dr. Jodi Hall. The committee members were Dr. David Tumusiime and Dr. Yolanda Babenko Mould. They will be co-authors of the publication resulting from this thesis.

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List of Abbreviations

ASM: Animatrice de Santé Maternelle

C&EHO: Community & Environmental Health Officer

CA: Contribution Agreement

CBHI: Community Based Health Insurance

CBPFP: Community Based Provision of Family Planning methods

CHV: Community Health Volunteers

CHW: Community Health Worker

CINAHL: Cumulative Index to Nursing and Allied Health Literature

CPD: Continuing Professional Development

CQI: Continuous Quality Improvement

CSHGP: Child Survival and Health Grants Program

DH: District Hospital

DHS: Demographic Health Survey

DOT: Direct Observed Treatment

EAC: East African Community

FGD: Focus Group Discussion

GAC: Global Affairs Canada

GDP: Gross Domestic Product

HB-MNH: Home-Based Maternal and Newborn Health

HC: Health Centre

HEW: Health Extension Worker

HIV: Human Immunodeficiency Virus

ICCM: Integrated Community Case Management

LoI: Letter of Information

LSTM: Liverpool School of Tropical Medicine

MDGs: Millennium Development Goals

MNCH: Maternal, Newborn and Child Health

MNH: Maternal and Newborn Health

MoH: Ministry of Health

MoU: Memorandum of Understanding

NCDs: Non-Communicable Diseases

NGO: Non-Governmental Organization

NISR: National Institute of Statistics of Rwanda

PRCMM: Performance Review and Clinical Mentoring Meeting

PSG: Peer Support Group

RBC: Rwanda Biomedical Center

RDHS: Rwanda Demographic Health Survey

RGB: Rwanda Governance Board

RPHC: Rwanda Population House Census

SDGs: Sustainable Development Goals

SMS: Short Message Service

TB: Tuberculosis

ToT: Training of Trainers

TSAM: Training, Support and Access Model

UNEST: Uganda Newborn Study

UNICEF: United Nations International Children's Emergency Fund

USAID: United States Agency for International Development

USD: United States Dollar

WHO: World Health Organization

Chapter One

Introduction

Community Health Workers (CHWs) are people elected by members of their community, to expand health care services in the community (Lewin et al., 2010). Most of the time, they have no prior education in the health domain and undergo a short period (six days) of training about maternal and child health in order to carry out their CHW role. To be effective, CHWs need ongoing opportunities to gain knowledge and skills to perform their tasks, for example, maternal and newborn healthcare, health education, and screening for infant malnutrition. This thesis explored how CHWs working in selected regions in Rwanda gained and enhanced their knowledge and skills to support maternal and newborn health care. This research is intended to inform the ongoing development of training strategies that could be used to train and enhance skills among CHWs. This chapter provides a background to the study, an overview of the Rwandan government, an overview of the role of CHWs in Rwanda, and the Training, Support and Access Model (TSAM) project in Rwanda. This first chapter includes information related to the significance of the study, the purpose of the study, the research question and the declaration. This chapter concludes by showing the organization of this thesis.

Background

Health for all (understanding health as a human right), as outlined in the Sustainable Development Goals (SDGs) is a global initiative (WHO, 2010). Governments have an obligation to ensure timely access of affordable and acceptable healthcare services and ensure provision of underlying health determinants to all population. However, Africa and Asia have a deficiency of health personnel (Kok et al., 2015). Although Sub-Saharan Africa where Rwanda is located has 33% of the world problems of maternal, newborn and child illness, it has only 2.8% of the

healthcare providers who are also disproportionately scattered among the countries (WHO, 2010).

Specifically, Rwanda has a shortage of staff as highlighted in the health sector policy of 2015. There was one doctor per 16,046 population, one pharmacist per 20,000 population, one nurse per 1,227 population and one midwife per 18,790 population (MoH, 2015a). These ratios are higher compared to the recommended minimum threshold of 23 doctors, nurses and midwifes per 10,000 population to deliver essential maternal and child health services (WHO,2010). In addition, there was insufficient knowledge and skills of the existing staff, inadequate deployment, and high staff turnover (MoH, 2015a).

This deficiency of health personnel compromises the ability of the Sub-Saharan countries to fulfill health-related targets set within the SDGs (Christopher, Le May, Lewin, & Ross, 2011). A lack of healthcare providers has implications for the quality of health care services and restricting opportunities for capacity development (WHO, 2010; Schwerdtle, Morphet, & Hall, 2017). To overcome this shortage of health personnel and to expand access to primary health care, mainly in hard to reach areas, the Alma Alta declaration of 1978 incorporated CHWs into health system to deliver basic health services at the village level (Haver, Brieger, Zoungrana, Ansari, & Kagoma, 2015).

Rwanda integrated CHWs into the service delivery model in 1995 to enhance ease of access to health services for all Rwandans (Condo et al., 2014; LSTM, 2016), and to improve cost-effective healthcare services delivery at community level (MoH, 2015a). The CHW role is targeted to laypeople selected within their community, who receive relevant training on the health services to provide some health care interventions in the community such as maternal and newborn health, nutrition, etc., but without having a formal education, degree or certificate in

health domain (Lewin et al., 2010). The CHWs are known by different names in different countries; for instance, health extension workers, traditional birth attendant, lay counsellor, etc.(Sanders, 2007).

In Rwanda, CHWs are recognized as contributing to the improvement of many health outcomes. The important contribution of CHWs within Rwanda was demonstrated in 2015 by the: (1) 900,000 children that were treated by CHWs, (2) approximately one million children that were screened for growth monitoring, (3) 170,000 women that were referred for family planning services, and (4) 93,000 suspected cases of Tuberculosis that were referred to health center (RGB, 2017). There are two types of CHWs in Rwanda such as Binomes who are in charge of Integrated Community Case Management (ICCM) and Animatrice de Santé Maternelle (ASM) who are in charge of Maternal and Newborn Health (MNH) (MoH, 2015b). This research focused on ASM.

In MNH care services, ASMs accompanied 150,207 pregnant women to a health facility to give birth and accompanied 19,248 women identified with prenatal danger signs to the health center for management in 2015 (Haver et al., 2015). However, CHWs are individuals without prior education in the health domain, and in some circumstances, newly recruited CHWs may begin their role without adequate training (Condo et al., 2014). There is also a concern related to the retention of CHWs (Roberton et al., 2015) that has implications for education and training practices of CHWs.

In Rwanda, the Ministry of Health (MoH) train ASM-CHWs in charge of maternal and newborn health over a period of six days. During the first three days, they are trained on home-based care of pregnant women such as physiological changes during pregnancy, danger signs on pregnancy, antenatal care visits, etc., then home-based maternal and infant health care during the

remaining three days for instance breastfeeding of newborn, Kangaroo method, danger signs for newborn, etc. After the training, they go into their villages to practice the knowledge and skills gained during the training and as per protocol, are supervised at least once quarterly to enhance their competencies (MoH, 2010).

During training, CHWs are gathered together for didactic training, such as classroom lectures that are facilitated, in part, through the use of case scenarios as part of the training curriculum. However, research evidence demonstrates that didactic training and supervision are not sufficient to enhance and sustain the knowledge and skills of healthcare providers (Bailey et al., 2016). In addition, Sipsma, Curry, Kakoma, Linnander, and Bradley (2012) in their study about performance practices in maternal and newborn care among health facilities in Rwanda showed no evidence that didactic training and supervision were consistently associated with using recommended practices.

Due to a lack of professional education, and limited opportunities for ongoing refresher training, the knowledge and skills acquired by CHWs during didactic training programs are not sustained over time. A study done in Guinea Bissau to assess the need for refresher training showed a significant improvement in CHWs performance to manage diarrheal diseases in children under five years after training. But after three months, the follow-up assessment showed that the performance of CHWs to manage diarrheal diseases had decreased significantly (Lopes, Cabral, & Sousa, 2014).

To address the decline of CHW knowledge and skills, different countries, including Rwanda, introduced CHW supervision. However, researchers who conducted a systematic review of primary health workers supervision within Sub-Saharan Africa found that the main activities of supervision focused on gathering data, evaluating the practices, and inspecting report

completion rather than facilitating learning and improving the quality of care (Bailey et al., 2016). To overcome these gaps, the health care system in Rwanda has considered a mentorship approach to strengthening the capacity of healthcare providers in different settings, including CHWs. However, the Peer Support Group (PSG) used by Kabeho Mwana project (Life for a child) in Rwanda to improve the practice of CHWs was intended to provide CHWs with ease of access to information to effectively perform their CHW role than strengthening practice.

Kabeho Mwana was a five years project from 2006-2011 that helped the MoH to scale up the Integrated Community Case Management (ICCM) in six selected districts. It was implemented by a consortium of three Non-Governmental Organization (NGOs) such as Concern Worldwide, the International Rescue Committee and Word Relief with funding from the United States Agency for International Development (USAID), and Child Survival and Health Grants Program (CSHGP). This approach of PSG allowed CHW who coordinate the activities of all CHWs in the cell (a zone covering three to five villages or more) time to collect, review and discuss reports from all PSG members together at a single location during the scheduled team meeting (Langston et al., 2014).

Of concern, Condo et al., (2014) reported that some newly recruited CHWs did not undergo initial training for their role and compensated for this lack of preparation for their CHW role by seeking help from other experienced CHWs. This informal training in the form of peer mentorship supported newly elected CHWs to gain some knowledge and skills to serve their clients and carry out health promotion activities in their respective villages. This informal peer mentoring of CHWs involves mentorship that occurs between CHWs who are in the similar position in their career where the more experienced or knowledgeable teach the less experienced CHW (mentee) (Quesnel, King, Guilcher, & Evans, 2012).

Peer mentoring models have been shown to be less inhibiting than other mentoring models and can provide important and effective guidance in daily activities. In this model, the CHW mentees feel free to ask questions and express their opinions to their peers rather than the unfamiliar mentors or those in a supervisory position (Yates, Cunningham, Moyle, & Wollin, 1997). “Informal peer mentorship" occurs between two or more CHWs based on a wish to work together. The more experienced CHW (mentor) and a less experienced CHW (mentee) independently and without outside influences commit to helping each other (Green & Jackson, 2014).

Generally, mentorship as the dynamic reciprocal relationship between mentor and mentee to ease the development of knowledge and clinical skills of the mentee is effective in skills transfer and quality care improvement (Schwerdtle et al., 2017). It has also been found to be effective in healthcare professional recruitment and retention in rural areas (Rohatinsky & Ferguson, 2013). It is necessary to recognize this mutual support that CHWs engage in to address their ongoing training limitations. It is also important to understand from the perspective of CHWs how they gain knowledge and skills to build on their experiences in establishing a training strategy that can maximally benefit their knowledge and skills to provide quality care in the community. It is in this regards this study has been conducted.

Overview of Rwanda

Rwanda is in central Africa and is a member of the East African Community (EAC). Its geographical area includes 26,338 square kilometers and is bordered by the Democratic Republic of Congo to the West, Tanzania to the East, Uganda to the North and Burundi to the South. Rwanda is a mountainous country with an average elevation of 1,700 meters. The country is landlocked and lies 2,000 kilometers from the Atlantic Ocean and 1,200 kilometers from the

Indian Ocean. Average temperature is18.5°C. Rwanda has two rainy and two sunny seasons (NISR, 2015). According to the National Institute of Statistics of Rwanda (NISR) (2015), Rwanda is geographically organized into 14,837villages, 2,148 cells, 416 sectors, 30 districts, and four provinces: South, North, East, West provinces. Kigali City is the country's capital.

According to NISR (2015), the economy of Rwanda is developing at around 8 % for each year since 2001. The Gross Domestic Product (GDP) per capita has increased from $211 in 2001 to $719 in 2014. The primary influence on the economy includes services (45%), agriculture (33%), and industry (16%). Rwanda's primary exported products are coffee and tea. Rwanda has a vision of changing its economy within 2020 vision into a middle-income country (per capita wage of around 900 USD every year, from 211 USD in 2001).

The total population of Rwanda is 12,818,831 with a population density of 519 per km^2. The median age is 19.6 years, and the annual population growth average is 2.35%. This makes Rwanda one of the most densely populated nations in Africa (Worldometers, August 5th 2019). The population is generally rural. As indicated by the fourth Rwanda Population House Census (RPHC4), about 84% of the population live in rural zones. Among the urban population, Kigali, the capital of the country is populated by 49% of all urban people. The Rwandan population is increasingly young, with 43.4% of all Rwandans being under 15 years of age as indicated by the RPHC4. The official languages are Kinyarwanda, French, and English. Life expectancy, on average, is 62.6 years for males and 66.2 years for females (Nyandwi et al., 2015).

The literacy rates in Rwanda among 15 to 59 years is 77% for females and 80% for males. However, the level of education in Rwanda remains low. The 2010 Rwanda Demographic Health Survey (RDHS) demonstrated that 22 % of females and 16 % of males had not had any formal schooling. Primary school, secondary school, and university have been attended

respectively by 68 % of females and 72 % of males, 9 % of females and 11% of males, and 1% of the female and 2% of the male populations (NISR, 2015).

Rwanda achieved most of the MDGs by the end of 2015 (RGB, 2017). Child mortality has declined by two thirds from 2005 to 2014. The rate of poverty has been reduced from 44% in 2011 to 38% in 2014 (LSTM, 2016a). Maternal, newborn and child health has improved. Maternal mortality rate declined from 750 per 100000 live births in 2005 to 210 per 100000 live births in 2014. The under-five mortality rate dropped from 152 per 1000 live births in 2005 to 50 per 1000 live births in 2014. Neonatal mortality has fallen from 37 per 1000 live births to 20 per 1000 live births from 2005 to 2014 (NISR, 2015).

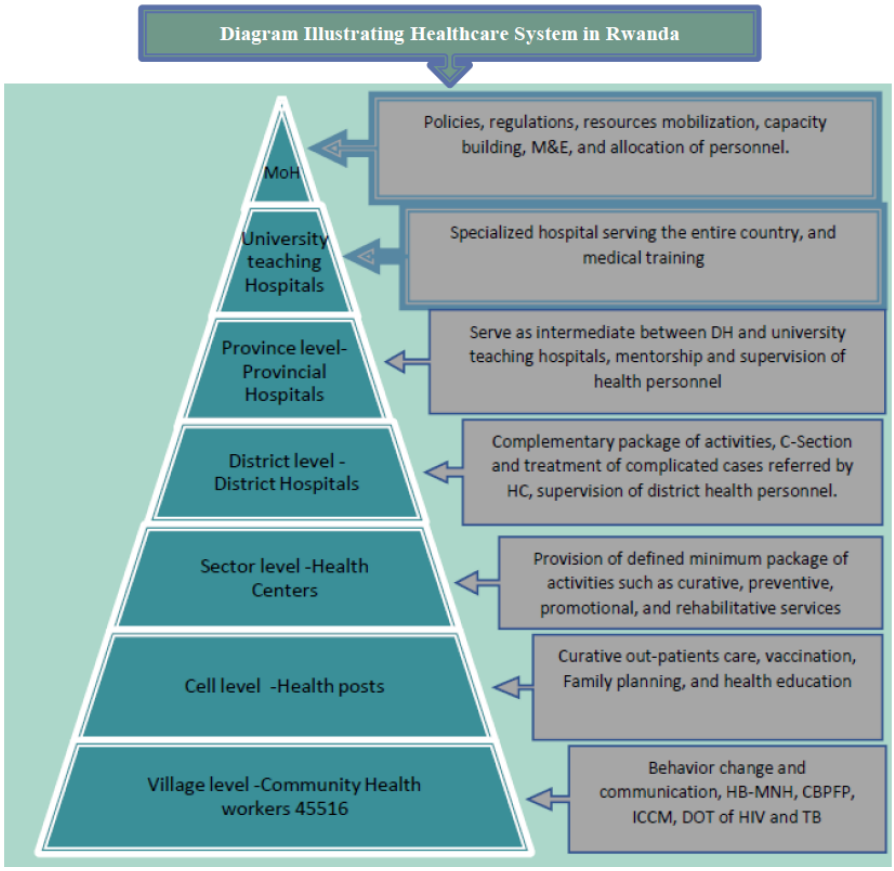
Health Care System in Rwanda

The health care system in Rwanda is organized from the village level up to the central level. CHWs provide care in the community at the village level. Oversite of healthcare within the villages occurs at the cell level; within the cell, there is a health post that serves as an intermediate between the village community and the larger health centre. Nurses at health posts provide family planning methods and manage the patients with simple conditions such as simple malaria, and diarrheal diseases. When needed, nurses at health posts transfer patients who are beyond their capacity or scope of practice, to the health centres (scope of practice of nurses vary depending on the level of health facility one works for). Each sector is accountable for multiple cells and has at least one health centre. Nurses at the health centre provide vaccinations for children, antenatal care, conduct low-risk births, consultation and management of common diseases and minor injuries. Nutritionist and social workers provide nutritional services, HIV counselling and testing, etc. Nurses at HC refer patients to the district hospital where each district has at least one hospital. As needed, the general practitioners at the district hospitals

manage the patients based on assessment, diagnosis, level of knowledge, the available drugs and medical equipment. They transfer patients who are beyond their care capacity to the provincial hospitals. Each province has at least one provincial hospital.

The provincial hospitals have some specialist doctors, and if needed, the most complex or critical care patients are referred to the university teaching hospitals that have many specialist doctors and medical equipment. The provincial hospital serves as an intermediate between district hospitals and university teaching hospitals. On the central level, there are MoH, Rwanda Biomedical Center (RBC), and eight university teaching hospitals. At each level, Community Based Health Insurance (CBHI), commonly known as "Mutuele de Santé" covers 90% of the cost of all services delivered (MoH, 2015a).

Diagram of Healthcare System in Rwanda



Adapted from: Ministry of Health, Fourth Health Sector Strategic Plan, July 2018- June 2024.

Overview of the Community Health Program in Rwanda

The community health program was first endorsed in Rwanda by the MoH in1995 (MoH, 2015b), after the Genocide against Tutsi of 1994, to support the existing health system that had a shortage of staff due to loss of many health professionals during that genocide. Some of the health personnel died, and others went into exile (RGB, 2017). At the beginning of the community health program, there were 12,000 CHWs to deliver health education and facilitation of health campaigns. There was no policy, no strategy or operational guideline of how CHWs would be used in the community. The policy of the community health program was introduced in 2005 after the decentralization of health care system down to the village level with emphasis on the capacity building of the CHWs via training and provision of equipment (LSTM, 2016a).

Today there are an estimated 45,516 CHWs within Rwanda (MoH, 2018). Each village has two CHWs called 'Binomes', one female and one male who oversee integrated community cases management (ICCM). Each village has also Animatrice de Santé Maternelle (ASM) who oversee maternal and newborn health. In total, each village has three CHWs (MoH, 2015b).

The Services Offered by ASM-CHWs

The services offered by ASM-CHWs include Home-Based Maternal and Newborn Health (HB-MNH), Community Based Provision of Family Planning methods (CBPFP), and health promotion (RGB, 2017). In HB-MNH, ASM-CHWs monitor pregnant women and their newborns up to two months of age. Part of their role is to identify and register women and girls at reproductive age in the village, identify and refer pregnant women to the health centre for antenatal care, and provide a home visit to pregnant women at least three times during the pregnancy period. During home visits, the role of ASM-CHWs include identifying danger signs during pregnancy and refer and / or accompany pregnant women to the health centre, help to

prepare women for delivery at the health centre , ensure use of a mosquito net in the households, and sensitize pregnant women to acquire community-based health insurance (LSTM, 2016; Ngabo et al., 2012).

ASM-CHWs also screen the nutritional status of pregnant women. Some ASM-CHWs administer the uterotonic drug (Misoprostol) to women who deliver in the community within two hours of birth to control postpartum hemorrhage and then accompany the newborn and the mother to the health centre for postnatal care. After the delivery, ASM-CHWs visit the mother and the newborn at least three times to observe the mother and the newborn for danger signs and refer them to the HC if necessary. They also serve in a supportive role for mothers who breastfeed their newborns, demonstrate skin to skin contact care for low birth weight newborns, provide family planning methods, and screen lactating mothers for malnutrition and provide advice as necessary (LSTM, 2016a).

In conjunction with the Binomes, ASM-CHWs carry out health promotion and behavioural change activities such as mobilization for hygiene and sanitation, early use of health services, immunization, HIV counselling and testing, and encourage timely adherence to community-based health insurance. They identify, refer, and accompany TB suspected patients to the appropriate HC for sputum examination and provide Direct Observed Treatment (DOT) in the community. They educate people about gender-based violence (GBV) and screen individuals for GBV in the community in order to refer them to the HC for management. They screen for non-communicable diseases (NCDs), and once a month, they monitor the growth of under five years children and refer the children with abnormal findings to the HC (LSTM, 2016a). In addition to these activities, ASM must generate a monthly report and send a rapidSMS of maternal and newborn health indicators.

Rapid SMS is a free software used in Rwanda to track the activities of CHWs in order to document the number of women of child-bearing age, women who are pregnant, and women who have given birth; monitor the mother and newborn in the post-partum phase (MoH, 2015b). It was introduced and piloted in the Rwandan community health program in 2010 in Musanze district over 12 months (Ngabo et al., 2012). Thereafter it was expended in all districts in 2013 (LSTM, 2016a). This SMS based reporting platform is designed for timely two-way communication between the CHWs and the rest of the health system to monitor maternal and child health interventions (Ngabo et al., 2012).

Selection and Training of CHWs

CHWs in Rwanda are elected in the community by the people in the villages, and there are generally no term limits placed on their role. Representatives from the local health centre in collaboration with local leaders, organize and supervise the elections. Interested candidates present themselves to the community, and people in the community elect the CHW of their choice by lining up behind that individual. The criteria to become a CHW are: being a resident of the village, having completed at least primary education, have the ability to read, write and count, are between 20 and 50 years of age, are willing to work voluntarily, and are honest, reliable and trusted by the community. Above these criteria, ASM must be a female candidate (RGB, 2017; MoH, 2015b).

The training of CHWs is organized using a cascade model from the central level to HC level so that each level plays a role in the training. When a new CHW program or package is added, the central level (RBC) train national trainers, who will, in turn, conduct the training of trainers (ToT) of the in-charge of community health activities in the district hospitals. Then, these

trainers from district hospitals train the health centre providers who will train and supervise CHWs in their zones (RGB, 2017).

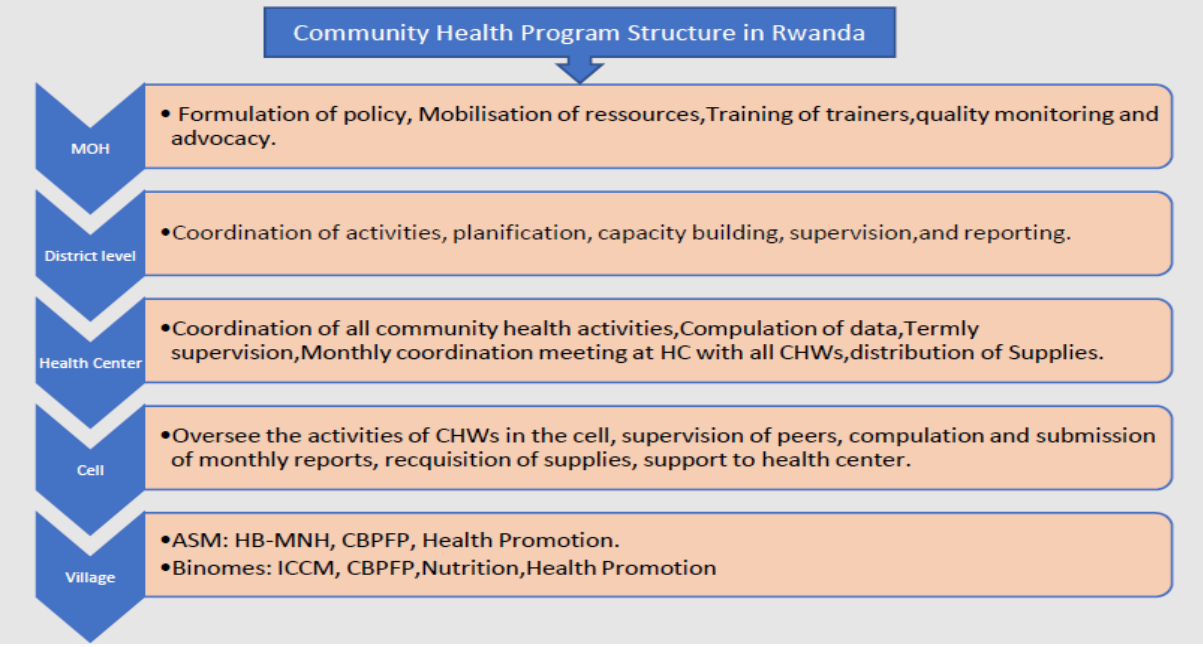
According to the MoH, training programs for newly elected CHWs ideally would include an induction training to provide an overview of what they will do at the health centre while waiting for the initial training (LSTM, 2016a). The initial training of ASM-CHWs as highlighted in the training manual, should take approximately five days for maternal, infant and young child nutrition, six days for home-based maternal and newborn health care, and three days for the community information system (MoH, 2010; Devlin, Egan, & Pandit-Rajani, 2017). However, the provision of training and refresher training depends on the availability of funds (MoH, 2015b; RGB, 2017). To compensate for this gap, the CHWs supervisors at the health centre and other staff are required to provide training to ASM-CHWs during supervision or in the monthly coordination meetings (LSTM, 2016a).

Organization of Community Health Program

Each village has three CHWs, one ASM and two binomes. CHWs in the villages are firstly supervised by the cell coordinators (One binome and one ASM in each cell) who are unpaid CHWs who also provide the same services as other CHWs. They have additional responsibilities to check the completeness and accuracy of the registers, collection of CHWs requisitions of drugs and materials for compilation and its submission to the HC (LSTM, 2016a). At each health centre, there is a CHWs supervisor to coordinate all CHWs activities and provision of capacity building by supportive supervision. They are healthcare professionals with bachelor's degree in health related domain. Above the HC, there is a focal person appointed at the district hospital to oversee all the activities of CHWs in the district. At the central level, the

MoH generates and implements community health policy, and RBC is accountable for the implementation and coordination of day to day activities of CHWs (LSTM, 2016a).

Diagram of CHWs Organization



Adapted from: Liverpool School of Tropical Medicine (LSTM) Center for Maternal and Newborn Health, comprehensive evaluation of the community health program in Rwanda, December 2016.

Training Support and Access Model (TSAM) Project in Rwanda

TSAM is a project focused on Maternal, Newborn and Child Health (MNCH) in Rwanda. It is a 4-year international development partnership project with funding provided to the University of Western Ontario by Global Affairs Canada (GAC) at the Government of Canada. The main mission of the TSAM project in Rwanda is to increase the capacity of healthcare providers within select regions of Rwanda to improve access to health service and delivery. There is a project team based in Rwanda and a project team based in Canada (at Western University). One of the strategies of the capacity development process used by TSAM is to support the training of physicians, nurses and CHWs within Rwanda and to also train the next generation of researchers and scholars in the area of maternal and child health.

The project has three essential components: a) The enhancement of access to MNCH care through capacity building of CHWs at the community level, b) The establishment and implementation of a mentorship program that supports and strengthens capacity development for healthcare personnel at district hospitals and health centres, and c) The delivery of Continuing Professional Development (CPD) training for healthcare providers through mentorship. TSAM project sites within Rwanda include Gakenke, Gicumbi, Rulindo, Gisagara, Ruhango, and Muhanga. The activities to be carried out by TSAM project are included in the Memorandum of Understanding (MoU) between TSAM and MoH. To enhance access to MNCH care through capacity building of CHWs at the community level, TSAM in collaboration with RBC offered a refresher training of three days to ASMs and one day to Binomes in its project districts. Training equipment provided included registers and books for ASMs.

Purpose of the Study

The purpose of this study was to explore how CHWs gain and enhance knowledge and skills within their role of community health worker in Rwanda.

The Significance of the Study

This study aimed to explore how CHWs in Gakenke, Gicumbi, and Rulindo districts in the northern province and Gisagara, Muhanga, and Ruhango districts in the southern province of Rwanda gain knowledge and skills. These districts are supported by the TSAM project to improve maternal and child health since 2016 up to 2020. CHWs lack formal professional certification in healthcare service delivery, sufficient training, adequate continuous capacity development, and adequate supervision (MoH, 2015b). Anecdotal reports from CHWs, cell coordinators, and in charge of CHW indicate that CHWs are supporting each other in an informal peer to peer model to develop the knowledge and skills needed to fulfill their role as a CHW.

Understanding how CHWs gained the knowledge and skills for their role will help to inform TSAM, Rwandan MoH, and other stakeholders to develop evidence-informed training strategies to support and reinforce the knowledge and skills of CHWs. Ultimately, findings are intended to contribute to the ongoing development and refinement of training programs for CHWs so that families of child-bearing age are provided with quality care by CHWs in order to contribute to the reduction of maternal/newborn deaths in Rwanda.

Research Question

How do CHWs describe their experience of gaining and enhancing knowledge and skills within their role of community health workers?

Self-Declaration

I am a registered nurse with seven years of working experience in internal medicine and surgery departments at the university hospital of Butare in Rwanda. I have also done clinical medicine and community health at the bachelors' level to become a clinical officer to manage patients at the health centre level. Often in my practice with outpatient's consultation, I received patients transferred to the health centre by CHWs. I was not aware of the tasks and responsibilities of these CHWs and was curious to know more about them and the role they played within the Rwandan health care system; especially how they were trained to be able to manage patients in the community. I did not have the opportunity to work in person with CHWs during my practice, but I did get an opportunity to follow the didactic training components of ASM- CHWs offered by TSAM project.

Community and health promotion were the focus of my graduate studies, and I was interested in doing my thesis research on CHWs to gain a deeper understanding of how CHWs gain knowledge and skills to perform their role in the community. I have some knowledge on the

training of ASM -CHWs from the training sessions attended, and the literature reviewed during proposal development and data analysis. In conducting qualitative research, from a constructivist-interpretive perspective, it is recognized that the researcher informs the data that is generated during the collection process, and that it is not possible to ensure they have not influenced the participants. However, through personal reflexivity, I became mindful of how my prior knowledge on the training of CHWs could guide my inquiry. For example, prior to conducting my research, I tried to understand how my position of being a graduate student at Western University, a tutorial assistant at the University of Rwanda, and being gendered as a man gender compared with all the CHW participants who were women, may influence the participants' responses during fieldwork. I tried to put aside my prior knowledge in order to ensure that the interpretations of data collected authentically represent the experience of the participants, not my understanding. I also got feedback from my research advisory team to increase the transparency of the results.

This thesis is organized into three chapters. Apart from the first chapter, chapter two is a manuscript of the research composed of background, literature review about different ways CHWs gain knowledge and skills in different countries, the methodology used in this study, the results, and discussion. Chapter three presents an in-depth summary of the implications of the study, conclusion, and future direction in this domain.

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Chapter Two

Background

Worldwide, governments are motivated to achieve the global target of health for all as stipulated by Sustainable Development Goals (SDGs) (WHO, 2010). However, there is a shortfall of health workers in Africa and Asia (Kok et al., 2015). While Sub-Saharan Africa constitutes 33% of the global burden of maternal, newborn and child illness, it has only 2.8% of the health workforce who are also inequitably distributed within these countries (WHO, 2010). This crisis in human health resources compromises the ability of these countries to meet health-related targets outlined by the SDGs (Christopher et al., 2011). Furthermore, the resource crisis is not limited to the lack of health personnel, but by association, lack of health care personnel has implications for the quality of health care services, limited opportunities for capacity building, and limited use of evidence for decision-making within the workforce (WHO, 2010; Schwerdtle, Morphet, & Hall, 2017).

In response to this crisis of health human resources and to increase access to primary health care, especially in underserved remote areas, CHWs have been incorporated into the delivery of basic health services at the village level as recommended by the Alma Alta declaration of 1978 to increase people's access to healthcare (Haver et al., 2015). In fact, Rwanda incorporated CHWs into their service delivery model in 1995 to increase easy access to medical care for all Rwandans (Condo et al., 2014; LSTM, 2016). Lewin et al., (2010) define the term CHW as any health worker who has received some form of training relevant to the given intervention (e.g., maternal-child health, nutrition), performs functions related to healthcare delivery, and does not need to hold a formal professional or paraprofessional certificate or tertiary education degree. Depending on their roles in the community, CHWs are known by

different names in different countries to mean the selected and trained community health aides working in the community in which they live (Sanders, 2007).

In Rwanda, the Ministry of Health (MoH) and its partners such as TSAM project, Kabeho Mwana project, and UNICEF provided short-term training and supervision to gain and enhance the knowledge and skills of CHWs (Condo et al., 2014; LSTM, 2016; MoH, 2015). Ideally, ASM-CHWs are provided with an orientation and training to the Maternal, Newborn and Child Health (MNCH) over approximately six days. The training is organized in two sections: section one concentrates on home-based care of pregnant women for three days, and section two discusses home-based maternal and newborn health care during three remaining days. After the training, CHWs are deployed to their respective villages to practice their role based on acquired knowledge. To enhance their knowledge and skills, each ASM-CHW is visited by a CHW supervisor to provide ongoing guidance (MoH, 2010).

The Training Support and Access Model (TSAM) project is among the partners of MoH that support the training and development of CHWs. TSAM is a project to create and enhance the capacity of the healthcare providers (e.g., nurses, physicians, and CHWs) to support MNCH in Rwanda. It is a 4-year international development partnership project funded by Global Affairs Canada (GAC), a branch of the Government of Canada. The main mission of the TSAM project in Rwanda is to improve MNCH by working with local partners to improve access to health services and delivery. The project is regulated by a contribution agreement (CA) between Western University, the Rwandan government, and GAC.

TSAM has three primary components: a) The delivery of Continuing Professional Development (CPD) training for health professionals through mentorship, b) The establishment of a mentorship program that supports and reinforces training for healthcare providers at HCs

and district hospitals, and c) The improvement of access to MNCH care through capacity building of CHWs at the community level. The aim of all these components is to contribute to the improvement of MNCH activities in assigned districts namely Gicumbi, Rulindo, Gakenke, Muhanga, Ruhango, and Gisagara. All the main activities to be implemented by TSAM are included in the MoU between MoH and TSAM.

From August 2017, the TSAM Project, in collaboration with Rwanda Biomedical Center (RBC) began the process of training for CHWs and provided training materials including books and registers. The Animatrice de Santé Maternelle (ASM) didactic refresher training for three days and one day for Binomes in the northern province were completed in 3 districts namely Rulindo, Gicumbi, and Gakenke. Since September 2018 up to February 2019, the same refresher training was completed in the southern province in Gisagara, Muhanga, and Ruhango districts.

Members of the TSAM project in partnership with RBC continue to explore effective strategies for continuing education and training of ASM-CHWs to support and reinforce their knowledge and skills about maternal, newborn and child healthcare. Thus, understanding how CHWs are obtaining the knowledge and skills for their role will help to inform TSAM, MoH, and other stakeholders to develop evidence-informed training strategies to support and reinforce the knowledge and skills of CHWs.

Literature Review

The review of the literature on CHW training and educational strategies included a keyword search of the following databases: PubMed, Scopus, and Cumulative Index to Nursing and Allied Health Literature (CINAHL), Google and Google scholar. The key terms to search into these online databases were “Training”, “Supervision”, “Supportive supervision”, “peer mentorship”, OR “peer support” OR “mentorship”, OR “continuous quality improvement”, OR “on-site training”, AND “Community health worker”, OR “ Lay workers” OR “Health Extension Workers” OR “Health Volunteers”. The ancestry-search strategy was also used to retrieve articles that relate to the training of CHWs (Bottorff et al., 2014). A total of 361 articles were retrieved. The title and abstract were reviewed to select articles to be included in the review. The inclusion criteria were articles written in English, related to the training of CHWs or other term that means CHW, and published from 1990 to 2019. This period was considered appropriate to capture the experience of the last three decades because many countries initiated training, mentorship and supervision of CHWs in the 1990s in response to the growing HIV/AIDS epidemic, and increase in non-communicable and infectious diseases (Lewin et al., 2010; Sanders, 2007). Articles that did not meet the inclusion criteria were excluded. Twenty-two articles met the inclusion criteria and were included in this review. The searched articles were categorized into didactic training, supervision and supportive supervision, and mentorship of CHWs.

Training Strategies used for CHWs

Training is defined as “a systematic process through which an individual learns to perform assigned tasks more effectively”(Virginia, Goethals, & Dorfman, 2008, p182). Quality care practices are dependent on the knowledge and skill development generated from effective

training and refresher training among CHWs (Abdel-all, Putica, Praveen, & Abimbola, 2017). There are different strategies used to train CHWs. These strategies include didactic training, supervision, supportive supervision, mentorship and a combination of these strategies.

Didactic Training of CHWs

Didactic training asserts the role of the trainer as that of the expert, with the trainee being receptors of the trainer's knowledge and experience (Eniko, 2013). Lessons are primarily lecture-based where the information presented by the designated expert is provided to the trainee. With didactic training, it is the trainee's responsibility to take notes and listen, and to answer and give responses when requested or required (Eniko, 2013). Possible methods used to train CHWs include classroom lectures, interactive lessons, e-learning, and online support and group discussions or a mix of two or more methods (Abdel-all et al., 2017). A systematic review of factors that influenced the performance of CHWs in low and middles income countries showed that training positively influenced CHWs job satisfaction, motivation, and overall performance (Kok et al., 2015). However, training modalities are not equally effective for all learning goals; for example, didactic training tended to be more effective for enhancing theoretical knowledge but less so for the development of clinical competences (Lopes et al., 2014).

A longitudinal survey to assess the impact of didactic training of CHWs about to train or to retrain CHWs was conducted in Guinea Bissau. The main goal was to assess how didactic training of CHWs on the identification and treatment of diarrheal diseases impacted the accuracy of the diagnosis and treatment of these diseases in children under the age of 5 years. One evaluation was done before the training, and two follow up evaluations were done one month and three months after the training. The results showed that knowledge and skills acquired by CHWs during didactic training decreased gradually over time. In the first follow up, a significant

improvement in CHW performance was noted, but after three months, CHWs' performance decreased significantly (Lopes et al., 2014).

Supervision and Supportive Supervision of CHWs

Supervision as one of the on-going training strategies is defined as: "The provision of guidance and feedback on matters of personal, professional and educational development in the context of a trainee's experience of providing safe and appropriate patient care" (Kilminster, Cottrell, Grant, & Jolly, 2007.p3). Most of the time supervision in the health system is not done well due to lack of knowledge of managerial staff, prioritization of clinical duties, time constraints, lack of means for transport, and accommodation and per diems (Bailey et al., 2016). In addition, where supervision is in place, the supervisors often focus on inspection for identification of mistakes and provision of corrective or negative feedback (Bailey et al., 2016).

More supportive supervision on other hand, takes the traditional notion of supervision as "mistake finding" and refocuses it on supporting staff to engage in problem-solving via technical assistance, capacity building and resource provision – not merely supervision for the sake of inspection and fixing the problem of the staff (Bailey et al., 2016). Supportive supervision can promote quality of care by reinforcing the relationship with the staff, identifying problems within the system, offering provisions toward an adequate solution, and making effective use of resources (Chambers & Long, 1995). Furthermore, it enhances professional development as well as personal development of employees by giving constructive feedback, problem-solving, fostering autonomy, and creating a supportive environment (Kilminster et al., 2007).

The qualitative study entitled "Engaging community health workers in maternal and newborn care in eastern Uganda" The Uganda Newborn Study (UNEST) was done in 2015. The

aim of this study was to examine the factors that influenced the performance of CHWs providing maternal and newborn care. Several CHWs were engaged in ‘hands-on' training in preventive and promotion of maternal and newborn care and counselling for five days. The teaching sessions were a combination of practical demonstration, role-playing, and participatory discussion. After the training, CHWs did not feel ready to provide care in the community. Following this training, CHWs were engaged in direct observed supervision for each CHW and group supportive supervision meetings took place monthly until the CHWs reached the competence. After that, supportive supervision was conducted quarterly by midwives/nurses from the local health unit. The results of this study showed that the CHWs reported competence, confidence, and motivation to provide care in the community due to supportive supervision. Furthermore, the supervision increased the trust of CHWs by the community members to seek care/assistance from them (Okuga, Kemigisa, Namutamba, Namazzi, & Waiswa, 2015).

Researchers in Uganda conducted a pair-matched cluster randomized trial to compare training alone and training with supportive supervision of Community Health Volunteers (CHVs) by paid CHWs to deliver education about family planning, pregnancy, newborn care, and hygiene. One of the objectives of this study was to see if CHWs could train and supervise CHVs. They evaluated different approaches among four interventional villages and four control villages to determine whether supportive supervision would increase the number of visits to pregnant women and newborns, improve the retention rate of CHVs and hygiene in households. The CHVs in the control group were offered monthly training alone, and the intervention group received monthly training plus supportive supervision while home visits by paid CHWs. The researchers found that the homes under CHVs supervised and trained by CHWs installed a functioning tippy tap for handwashing at a higher prevalence than the control group and home

visits of pregnant women and newborns favored the intervention group even if it was not statistically significant (Singh, Negin, Orach, & Cumming, 2016).

However, a qualitative study conducted in 2015 in Mozambique with the aim to understand how and which aspects of supervision impacted on CHW motivation and program implementation showed supervision as an ineffective learning strategy. The study captured the experience and perception of CHWs, health facility supervisors, district supervisors, and community leaders on the supervision of CHWs. The results showed that supervision was structured as dictated by policy but in practice it was infrequent, and irregular with the focus of supervision to be finding fault with CHW performance instead of providing support to enhance the work of CHWs. Such supervision was identified by CHWs themselves as demotivating. The supervisors also reported their performance as poor quality due to a significant supervision workload within the community and at the health facilities, and lack of training in the provision of supportive supervision. This study depicted supervision as an ineffective training strategy to build the capacity of CHWs when the supervisors were not equipped to provide supportive supervision and when carrying already heavy workloads (Ndima et al., 2015).

Mentorship of CHWs

Mentorship has been defined as the dynamic reciprocal relationship in a work environment between an experienced and knowledgeable individual (mentor) and a beginner or less experienced individual (mentee) (Belrhiti, Booth, Marchal, & Verstraeten, 2016). Mentorship in health care is based on the understanding that the mentor and mentee are in a reciprocal relationship that provides both mentor and mentee with the opportunity to improve their knowledge and clinical skills (Chen, Watson, & Hilton, 2016). It is characterized by regular

and shared collaboration over a period of time to ease the development of the mentee (Nick et al., 2012).

Mentorship is based on mutual respect and trust. It seeks to build confidence and is an empowering partnership between two people who have a shared set of learning objectives (Green & Jackson, 2014). Clinical mentoring is an aspect of work-based training, which applies practical tutoring as an approach to capacity building among health workers (Okereke, Tukur, Oginni, & Obonyo, 2015). It typically includes a sustained relationship, and broad skills transfer from an individual with more experience in an area to a less experienced mentee to both improve performance and also support professional development (Manzi et al., 2017; Rohatinsky & Ferguson, 2013).

A continuous quality improvement (CQI) mentoring intervention was implemented in South Africa to mentor CHWs by experienced quality mentors based at the University of KwaZulu-Natal. A cluster randomized controlled trial study investigated the effectiveness of a CQI mentorship among CHWs providing home-based education and support to pregnant women and mothers was conducted. The CHWs in the intervention group had received two weeks of additional didactic training and bimonthly mentorship for twelve months to provide home-based education and support to pregnant women and mothers than the control group. The baseline survey was conducted prior to the intervention. Follow up surveys were conducted at 15 months after initiation of the intervention with mothers of children under 12 months of age living in the households served by the participating CHWs. The researchers showed that mothers served by the mentored group were more likely to have received a CHW visit during pregnancy and the postnatal period. Mothers in the intervention group had higher maternal and child health knowledge scores and reported higher exclusive breastfeeding rates at six weeks. HIV-positive

mothers served by intervention group of CHWs were more likely to have disclosed their HIV status to the CHW compared to control group (Horwood et al., 2017).

In Ethiopia, the Performance Review and Clinical Mentoring Meeting (PRCMM) of Health Extension Workers (HEW) showed an improvement in the performance of HEWs (HEW is another term of CHW in Ethiopia). The HEWs were given training in Integrated Community Case Management (ICCM) of common childhood illness. A half-day to one day follows–up refresher training within eight weeks was provided to reinforce knowledge and skills learned during the initial ICCM training. Then, two-days of performance review meeting in which ICCM registers were examined on day one by the mentor, peer HEW, and their supervisors were carried out. Thereafter, clinical mentoring in a health facility focusing on practice and feedback from facilitators was implemented on day two every six months. Health workers trained as trainers facilitated a PRCMM for 20-24 HEWs for each mentor. A quarterly standardized supportive supervision was also carried out in this intervention to strengthen the knowledge and skills of HEWs. A historical cohort study was done to compare HEWs consistency in recording ICCM before and after they participated in PRCMM. The results showed that the combination of didactic training, supportive supervision, and mentorship was effective in training CHWs to perform their role effectively. The performance in recording consistent cases improved significantly after PRCMM for all standard classifications of pneumonia, malaria, and diarrhea (Mengistu et al., 2014).

To further test the knowledge and skills of CHWs involved in PRCMM, a cross-sectional survey by direct observation and reevaluation to check the proportion of children properly managed was conducted. The purpose of this study was to assess the associations between interventions to improve ICCM quality of care and the observed quality of care provided by

HEWs at health posts. The results showed that children who were managed by a HEW who attended PRCMM had 8.3 times the chances of being correctly managed, compared to children managed by a HEW who had not attended a PRCMM. The children managed by HEWs who had received a follow-up training have a chance of 2.09 times of being correctly managed than those managed by HEWs who had not received it. Supervision did not significantly mark the chance of receiving correct care (Miller et al., 2016).

The study done in Malawi to evaluate the impact of CHWs peer mentorship to improve skills and knowledge of CHWs to provide Tuberculosis (TB) treatment and adherence support showed positive results (Ritchie et al., 2015). A peer mentorship model was implemented among CHWs in Malawi. Senior CHWs in TB management were given additional training to mentor their peers who were novice in TB management. Peer mentorship was done for three months. The peer trainer was asked to provide a minimum of six sessions of at least 60-90 minutes to the mentee involved in the management of TB patients at their health centre. The pragmatic cluster randomized controlled trial was used to compare TB outcome in the intervention group and control group. The researchers found that although there was not a statistical significance, treatment success rates were trending higher in the intervention group than in the control group (Ritchie et al., 2015). Furthermore, a qualitative study conducted on this peer mentorship showed that this mentorship was well received and valued by the participants. It increased knowledge, improved clinical skills, increased confidence, and job satisfaction within the work of CHWs (Puchalski Ritchie et al., 2016).

In summary, the reviewed studies showed different strategies to train CHWs, including didactic training, supervision, supportive supervision, mentorship, and a combination of these strategies to improve the knowledge and skills of CHWs. Didactic training improves more the

theoretical knowledge rather than clinical competence of CHWs, and the knowledge acquired decreases over time if not reinforced (Lopes et al., 2014). Supervision of CHWs tended to focus more on fault-finding, reports verification, and provision of negative feedback rather than knowledge and skills development (Bailey et al., 2016). This created a lack of motivation among CHWs and poor care quality, as demonstrated by reviewed studies (Ndima et al., 2015). Supportive supervision increased knowledge and skills of CHWs (Okuga et al., 2015; Singh et al., 2016). However, there was a lack of knowledge of supervisors in supportive supervision, increased workload and lack of means for transport and per diem in different countries (Ndima et al., 2015). All the studies reviewed showed that mentorship is effective in knowledge and skills acquisition for CHWs. In addition, peer mentorship has been shown to be cost-effective and highly appreciated by the CHWs to improve their performance (Puchalski Ritchie et al., 2016).

Statement of the Purpose

The purpose of this study was to explore how Community Health Workers (CHWs) in Rwanda gained and enhanced knowledge and skills within their role of community health workers.

Research Question

The research question that guided this study was: How do CHWs describe their experience of gaining and enhancing knowledge and skills within their role of community health workers?

Methodology

This study used a qualitative descriptive design to explore the phenomena of interest (Sandelowski, 2000), which was the CHWs perspectives on their training, and barriers to skill development, and suggestions they may have regarding access to knowledge and skills related to

their CHW role. The fundamental philosophy of qualitative description, grounded in a naturalistic inquiry, is a commitment to study the experience in its natural state to gain understanding more deeply, the experience as it is lived, as it is shared from the perspectives of those with lived experience, without making a priori commitment to any theoretical view of a target phenomenon and with willingness to remain open to the emergent nature of qualitative research (Sandelowski, 2000).

The description in qualitative descriptive studies involves an interpretation of the participants 'experience based on the purpose of the study and the researcher's choices of what conveys the meaning participants attributed to the experience studied and what most of the observers would agree is accurate (Maxwell, 1992). In this study, qualitative description helped the researcher to understand how CHWs gained knowledge and skills to perform their role and uncover training strategies that may be effective to train the CHWs in the future. This was achieved through a combination of data collected from CHWs, cell coordinators, and the Community & Environmental Health Officers (C&EHO) who are supervisors of CHWs at health centre level. The terms C&EHO and supervisor are used interchangeably in this study.

Setting

This study was conducted in Rwanda, in the north and south provinces in the districts supported by the TSAM project. The districts included Gakenke, and Rulindo in the north; Gisagara and Muhanga in the south. Data were collected at HCs selected based on "first interested in participating, first included in the study" namely Kibirizi, Kigembe, and Musha in Gisagara district; Mata and Nyarusange in Muhanga district; Nemba, Muhondo, and Rushashi in Gakenke district; Tare, and Rutonde in Rurindo district. These were the first ten HCs who had

supervisors that showed interest to participate in the study. I stopped on tenth HC due to the saturation of the data.

Participant Recruitment

The email of invitation to participate in the study with the letter of information (LOI) were sent to the supervisors of CHWs at district hospitals by TSAM assistant project manager in charge of community health program on researcher's behalf. In turn, these supervisors sent that invitation and LOI to the C&EHOs at health centres under their catchment areas. The interested C&EHO to participate in this study contacted the researcher on the email or telephone number provided on the LOI. The recruited C&EHOs were requested to advertise this study among CHWs prior to their monthly meeting at the health centre. The invitation to participate voluntarily in the study was sent to them via their channel of communication. On the day of the meeting, the researcher met the C&EHO and CHWs separately for further explanation about the study and to respond to any arising question about the study. The interviews were conducted with C&EHO and interested CHWs who met the inclusion criteria were recruited and participated in the Focus Group Discussion (FGD). In the health centres where was no planned meeting in the period of data collection, a convenient date was fixed to meet at the health centre for data collection. No participant was coerced to participate in this study.

Sampling Strategy

Sampling strategy refers to the process of selecting a group of people, events or behaviours with which to conduct a study (Burns & Grove, 2003). This study used a purposive sampling strategy to select CHWs. Purposive sampling is a strategy that helps to select participants who will provide rich, in-depth information about the phenomena under the study (Polit & Beck, 2017). The maximum variation that helps to explore a wide range of experience

from new to more experienced CHWs were used to capture the diverse experience of the CHWs. Potential CHWs who were able to describe how they gained and enhanced their knowledge and skills were recruited to participate in FGD. The in-charge of CHWs in HCs responded to the recruitment email to show their interest to participate in the study, and the CHWs of that HC were invited to participate in FGDs based on inclusion criteria and their willingness to participate in the study. The first C&EHOs to respond to the recruitment email were conveniently recruited to participate in the study until saturation of the data. They were interviewed individually as people who always supervise and train CHWs. All CHWs and supervisors who participated in this study were people supported by TSAM project to build their capacity.

Sampling

Qualitative researchers seek thick, in-depth descriptions of a phenomenon, rather than a pre-determined number of participants, and data saturation guides how many people participate (Mojapelo, 1997). In this study, participants included ten supervisors of CHWs and 10 FGDs with CHWs. The number of participants in a focus group discussion can vary between 6 to 12 people as suggested by Polit and Beck, (2017), but in this study based on the number of cells served by each selected HC, the participants ranged from nine to fourteen. The total number of CHWs from all FGDs was 110.We took two ASM-CHWs in each cell (the more experienced ASM cell coordinator and the recently elected ASM). Saturation of data and themes was used to determine whether recruitment would continue or not (Glanz, Rimer, & Viswanath, 2008). Data saturation is reached when it is determined that no additional new information is being generated (Guest et al., 2006). Data saturation in this study was determined by the use of probing questions and once there was no new information emerging the researcher brought the interview to an end. As the data collection went concurrently with analysis, After collecting data in first ten HCs,

there was no new theme emerging, and the researcher assumed that theme saturation had been achieved (Wiens, 2012) and no additional participants were recruited.

Inclusion Criteria

Participants recruited for the key informant interviews included the C&EHO supervisors of CHWs at HC in districts supported by TSAM project, having shown the willingness to participate in the study by responding to the invitation, and first come was first included. Experienced ASM cell coordinators were included because they supervise other CHWs and may have information on how CHWs gain and enhance knowledge and skills. CHW participants included new elected CHWs in each cell because they may be the rich informants in another way, they gain knowledge and skills. Gender was not a criterion of inclusion as all ASM-CHWs are female. Individuals were excluded from the study if they were unable to communicate verbally at the time of interview or FGD and stated their unwillingness to participate in the study.

Data Collection

A semi-structured interview guide and FGD guide were used to collect information from the CHWs' supervisors at HCs and the CHWs themselves. Open-ended questions were used to allow the participants to describe the CHW training experiences (Dammak, 2015). (See Appendix A for In-charge of CHWs at HCs and B for CHWs). Social demographic characteristics, such as age, gender, job title, education level, years of experience, and basic information such as the number of previous training received, the frequency of supervision, and the main activity of the supervision was collected from each participant on separate sheet (Appendix C).

The interview was conducted in privacy with the supervisor of CHWs at the HC in her/ his office at a convenient time. The FGD with CHWs was also conducted in privacy at the HC in

the conference room in the absence of the supervisor. Pilot interviews and FGD were done at Nemba HC, and with feedback, the interview guide and FGD guide were refined to include additional probing questions. Key informant interviews and FGDs were audio-recorded and transcribed verbatim with the participants' permission. The length of the key informants' interview was approximately 30 minutes, and FGDs were between 30 to 45 minutes. The data collection period was two months, from mid-December 2018 to mid-February 2019. Interview and FGDs were conducted in conversational nature to allow open dialogue and discussion for all participants (Neill-weston & Morgan, 2017).

Before starting the data collection, all participants read the letter of information and signed the consent form prior to participation in the study. The group of CHWs who participated in the FGDs were reminded to keep the confidentiality of their fellow CHWs. To start the FGD, a general open-ended question about the experience of how CHWs gain knowledge and skills was asked “Describe different ways do CHWs obtain and enhance knowledge and skills to perform their roles in their communities?” followed by other questions on the FGD guide to gain a deep understanding from the CHWs’ experience about how they gained knowledge and skills to conduct their role. A similar process was used to conduct interviews with the “supervisor of CHWs”. The interviews and FGDs were brought to an end by asking if there is any information that is not explored that participants would like to add before closing the discussion. Fieldnotes of all-important observations from the participants such as facial express, a tone change, silence period, common issues, etc. were written immediately after the interviews and FGD by the researcher.

Data Analysis

Qualitative data analysis is a "process of fitting data together, of making the invisible obvious, and of linking and attributing consequences to the antecedent" (Morse & Field, 1995 p126). Data collection and analysis occurred simultaneously, key informant interviews and FGDs with CHWs were transcribed verbatim from the recorded interviews by the researcher. The transcribed copies in Kinyarwanda were translated in English by the researcher to be used by the researcher, the research supervisors, and committee member not fluent in speaking and understanding Kinyarwanda.

To ensure accuracy of the transcription, the transcripts were verified by one master's student colleague who was not involved in the data collection to see if the transcripts represented the story of the recorded participants and were adjusted accordingly. The field notes were included in the analysis. The pilot interview and FGD were analyzed together with the rest of the data. The analysis was done manually on the spreadsheet by identifying the codes, grouping the codes into categories and categories into themes; and extraction of the quotes from the collected data. The socio-demographic information of the CHWs were entered and analyzed in SPSS then, presented in the tables with frequencies and percentages.

In this study, the analysis was done based on six phases of the thematic analysis of Braun and Clarke (2006), which are familiarizing oneself with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report.

The researcher familiarized with the data during data collection, transcription and translation in English. Line by line was read to generate initials codes and quotes were extracted to support the codes (Generating initial codes). Thereafter, different codes were merged together to form the themes with their supporting quotes (searching for themes). The formed themes were

examined to see if they present a coherent pattern of the meaning expressed by the participants and some themes were merged to form the new themes (reviewing themes). Then, the researcher identified the essence of each theme as well as the overall themes and generated the clear names for each theme and sub-themes based on the aspect of the data each theme captured (defining and naming themes). Finally, the researcher provided the report of the coherent, concise, logical and interesting story revealed by the data with enough extracts to support the themes (producing the report). Due to the similarity of the questions asked to the key informants and CHWs who participated in FGD and the consistency of the thematic findings between the participant groups, the findings derived from the interviews and FGDs of CHWs and key informants were merged.

Thematic analysis minimally organizes and describes the dataset in detail, is very flexible for further interpretation of various aspects of the research topic (Patton, 1990), and is independent and a reliable qualitative approach to analysis (Vaismoradi, Turunen, & Bondas, 2013). In this analysis, the researcher used an inductive approach to analyze the gathered information in response to the research question. Thematic analysis is not a linear process of simply moving from one phase to another phase consecutively. Instead, it is a more repetitive and iterative process, with back and forth movement as needed during data analysis (Patton, 1990). The researcher moved back and forth in these six phases to capture maximally the meaning and experience of how CHWs develop knowledge and skills.

Themes were identified at the semantic level where the themes were identified within the explicit meanings of the information collected, and the researcher did not look for anything beyond what the participants said or what had been written in the field notes. In addition, the important quotes to support the themes identified from the transcripts are presented in the results as stated by the participants in their own words. Quotes from both interviews and FGDs are used

concurrently to support the themes and were given identification codes for the anonymity of the participants while presenting the quotes in the results.

Approaches for Creating Trustworthiness

Qualitative researchers need to show their findings are trustworthy by demonstrating rigour and strength throughout all stages of the research process, including data collection, data analysis and description (Vivar, McQueen, Whyte, & Armayor, 2007). To assess trustworthiness in a qualitative study, researchers have identified four measures: credibility, transferability, dependability, and confirmability (Guba & Lincoln, 1985).

Credibility refers to the truthfulness of the data. This means that the interpretations are an accurate reflection of the participants' experience of the phenomena studied (Vivar et al., 2007). The credibility of the results was assured by checking the transcripts by another person who was not part of the study by listening to the recordings while reading the transcripts to verify they matched. Throughout the study, committee members were often consulted to ensure the quality of research that was being conducted and interpretations of the data was undertaken rigorously. In addition, the researcher used direct quotes in the findings to support the researcher's interpretations and to provide an opportunity for the reader to see how the researcher arrived at their findings.

Transferability refers to the degree that the information is applicable to various contexts (Guba & Lincoln, 1985). The phenomena of how CHWs gain and enhance knowledge and skills was described in detail by using probing questions to generate enough information that can be transferable to other times, settings, situations and different CHWs (Schwandt, 2007). Information was collected from participants who would offer different perspectives such as supervisors of CHWs, experienced cell coordinators, and other CHWs with rich and varied

information about the ways CHWs gain knowledge and skills to enhance the transferability to another similar context.

Dependability refers to the clarity of decisions you made in the development of the study and why you made them, and complete set of data that can be reviewed by others (Gilson, 2012) The researcher maintained an audit trail of all methods, transcripts, records, and analysis from the beginning of the study up to the end so that they can be audited (Guba & Lincoln, 1985). Furthermore, the researcher used the experienced committee members in qualitative research to confirm the emerged themes based on the available data set (Noone & Young, 2010).

Confirmability concerns the degree to which the results of a study are formed by the participant experience and not researcher interest, bias, or motivation (Guba & Lincoln, 1985). The researcher reported the experience of the participants without bias that could arise from the researcher's attitudes or beliefs and knowledge that could influence the results. The researcher attended many training sessions of CHWs and has much knowledge from the reviewed literature, but through reflexivity, the researcher made the research process transparent (Palaganas, Sanchez, Molintas, & Caricativo, 2017) by being conscious of his position and knowledge that could influence the collection and interpretation of the data. To ensure whether the results, interpretation, and conclusion are underpinned by the data, confirmability audit was used. The competent committee members who were not previously involved in the data collection were used to help examine the transcripts and the results of the study (Gilson, 2012).

Ethical Considerations

Ethical approval was obtained from the Western University ethics review board and the University of Rwanda ethics review board. The letter requesting permission to collect data in HCs attached to ethical review board submission and approval was subsequently addressed to the

mayors of districts under the study with a carbon copy to the directors of public health in districts, directors general of DH, and CHWs supervisors at DH. Leaders within a few of the districts such as Rulindo and Muhanga requested the Visa approval from the National Institute of Statistics in Rwanda (NISR) in order to provide the permission to conduct the study in their districts. The application was done, after reviewing the process of the study, Visa was obtained from NISR and was submitted to them.

After getting permission to collect data from mayors' office, the letter of information about the study was provided to all eligible participants as described in the recruitment process. Before participating in the study, the participants were given an opportunity to ask any questions prior to giving consent. The signed consent was obtained from each participant before data collection occurred. Participation was voluntary and the CHWs were given five thousand Rwandan francs (5000 frw) equivalent to 7.70 CAD for transportation and meals to cover the costs of participating in this study.

Findings

This study explored how CHWs gained and enhanced knowledge and skills to be able to perform their role. From December 2018 – February 2019, ten focus group discussions (FGD) were conducted with CHWs from select health centres within the districts supported by the TSAM project. Ten interviews with C&EHO at the ten respective health centres in Rwanda were also conducted. CHWs and supervisor's data were merged to report the findings as previously reported.

Characteristics of the Participants

Description of CHW participants. A total of 110 CHWs participated in focus groups. The number of CHWs in FGD varied from 9 to 14 CHWs in the FGD. All CHWs participants

were females, and the average age of the CHWs was 44 years and ranged between 25 to 65 years old. Twenty-eight percent of the participants were cell coordinators, and the remaining were ASM without a managerial position. Cell coordinators are experienced CHWs with additional administrative tasks. Most of the participants (66.3 %), had primary education, with 17.3% having attended post-primary vocational training for one to three years, and 16.4% had attended an ordinary level of high school. Their experience in the role of CHW had varied from one year to 13 years, with the majority 71.8% having more than five years ‘experience. The amount of training sessions participants had attended varied from 1 to 10

Description of CHWs supervisors. Ten supervisors of CHWs participated in this study. Seven males and three females participated in the study. The ages ranged from 26 to 50 years old, with a mean age of 35. All ten key informants had a bachelor's degree in a health-related domain. Six of them degree in public health, one in environmental health, two in clinical psychology and the other one has an undergraduate degree in clinical medicine and community health. Their experience in the role of CHWs supervisor varied from three months to ten years. However, six of them had less than one-year experience in their position at the time of the interview.

Table 1

Characteristics of the CHWs who Participated in the Study

N=110			
Age in years	Mean	(44.34[8.2])	
	Mode	41	
	Maximum	65	
	Minimum	25	
	Categories	**Frequencies**	**Percentages**
Function of the participants	ASM	79	71.8
	Cell coordinator	31	28.2
Education level	Primary school	73	66.4
	Former Post-primary vocational training	19	17.3
	Ordinary level of high school	18	16.4
Experience in the role of CHW	Less than 3years	12	10.9
	3 to 5 years	19	17.3
	6 to 9 years	54	49.1
	10 and above	25	22.7
Number of training attended*	1	8	7.3
	2	11	10.0
	3	13	11.8
	4	7	6.4
	5	6	5.5
	6	19	17.3
	7	21	19.1
	8	14	12.7
	9	2	1.8
	10	9	8.2

*This included any kind of training received by each participant since she is in the CHW role. Reported training sessions included a broad range of educational opportunities that may have included induction training, initial training, refresher training, and updates at monthly meetings.

Thematic Findings

As analysis generated similar findings from the interviews with supervisors and focused groups discussion with CHWs therefore, themes are presented together with quotes as supporting evidence from both groups of participants. Analysis of the data generated two central themes underpinning how CHWs gained and enhanced the knowledge and skills required to perform their role: 1) Formalized training among CHWs, which included the subthemes of didactic training workshops, supervision, and monthly meetings, and 2) Informalized training, with subthemes of informal peer to peer mentorship training, ongoing support , valuing peers as a reliable resource, moving toward formalized peer to peer mentorship model with its benefits, its facilitators, and challenges of peer to peer mentorship.

Formalized Training among CHWs

CHWs and the supervisors were asked about the way CHWs gained knowledge of their tasks and responsibilities to carry out the CHW role in the community. The responses included didactic training workshops, supervision, and monthly meetings.

Didactic Training. All participants shared that whenever there was a new training package or program to be implemented, all concerned CHWs ideally would receive didactic training on that component. Among the different ways CHWs gained knowledge and skills, didactic training, even if it is occasional, was the training strategy preferred by most of the CHWs as reported in this quote: "…The effective way is didactic training. I started this function in 2009, because of many pieces of training I received, me too I am able to train my colleagues" (CHW from HC 2). When funding was available or a new program to implement, the health centres in collaboration with district hospitals and RBC, organized the didactic training and invited CHWs to attend that training at the health centres as reported in the following quotes:

“when there is that opportunity of the training, we call them here at the health centre and teach them in class”(C&EHO from HC 5).

When C&EHO were asked about how often they offered initial training and refresher training, they reported that there was no set schedule as they were reliant on available NGO or project funding:

> There is no known time to train CHWs. It depends on the Ministry of Health. The ideal, we should train them every year. Then, continue to supervise them in their villages to see if they are doing things the ways things are supposed to be done (C&EHO from HC 4).

Other participants stated that they gained additional knowledge after receiving their training from the teaching materials given to them by the health centre: “you can reach home without remembering what you learnt. The books and other didactic materials given to us are very helpful because I use to look at them and read the book to remind me what we learned" (CHW from HC 5).

When didactic training was available, it was offered for a couple of days, which were not adequate to cover the amount of content that CHWs were expected to learn as expressed by the participants. The package of Community Based Maternal and Newborn Health (CBMNH) has many things that CHW are required to know to undertake their role competently. Many CHWs reported not understanding all topics during the didactic training and sought help from their colleagues. After the training, competent and knowledgeable CHWs took the initiative on themselves to explain to their peers what they did not understand. Frequently, cell coordinators were also requested by the supervisors to train the new and refresh other CHWs in their cells.

> For a new CHW, after the orientation session, I tell her to go to look at the cell coordinator in order to help her in whatever she wants to know. I also tell her to call me whenever she has a problem (CEHO from HC 5).

As a CHW stated:

> Our supervisor requested me to help the new CHW to know what to do while waiting for the initial training. The supervisor gave her books and other materials. Then, I helped her to know everything she will do during the visits of pregnant women and some time we use to go together to show her practically how things are done (CHW from HC4).

Didactic trainings are occasional, and yet CHWs are elected in the villages to replace their colleagues for different reasons. Most of the newly elected CHWs received a brief orientation session provided by the C&EHO about their responsibilities and picked up the materials that they would use in their daily activities. After that orientation, new CHWs were advised to go to look at the cell coordinator or other competent CHWs to teach them what they were to do.

Supervision. Supervision is among the strategies designed to offer 'on-the-job' training of CHWs. All participants reported that supervision was not regularly done, with some CHWs reporting to never have been supervised since they began their CHW role. According to C&EHO participants, reported there was an expectation that each CHW would be supervised at least once in a term of 3 months, due to limited transportation, heavy workload, and diverse geographical location of the villages, C&EHO could not regularly supervise CHWs as required. As one C&EHO explained:

> …we are in the mountainous region, and I have five cells [regions]which some of them are far from the health centre. It is not easy for me to supervise them while there are no financial means available for supervision… There is no transport [motorcycle or vehicle]

> and to pay for everyday transport is not possible because the health centre does not have enough money for supervision. We do not have the sponsor [Funder] to support the activities of CHWs. It is the health centre alone to manage the CHWs. I can spend the whole term without reaching out to every CHW (C&EHO from HC 10).

Both CHWs and the C&EHO reported that the main activities of the supervision included: auditing reports submitted to the health centre, looking at the storage of the drugs, and checking the completeness of the registers of women and girls of reproductive age, and documenting pregnant women.

> When I visit them in their village, I focus on checking how they complete the registers, how they offer service to the population, and how they keep materials and its hygiene…. For the CHW who is not performing well, we give her advice on how to do things. If she doesn't change and continue to do wrong things, we look at how to replace her in the role of CHW (C&EHO from HC 3).

Due to the challenges mentioned above, some C&EHO supervised the CHWs mainly when they had other responsibilities required of them in the village or cell to support them to carry out such activities: "…We supervise CHWs when they are in the activity of weighing the children in their villages or when they are compiling the reports in order to report the collect indicators…" (C& EHO from HC 5).

Essentially, supervision to provide training opportunities for CHWs was not regularly completed. Instead, supervision tended to focus on the evaluation of administrative tasks and record-keeping, rather than skills development of CHWs.

Monthly meetings. CHWs held monthly meetings to compile reports of activities done in their villages, which is required by each cell and health centre. According to the participants,

C&EHOs occasionally used this opportunity to update CHWs knowledge needed within their role: “There is no known time to train them [CHWs], but when there is an available fund, we train them. If we have a new thing for CHWs, we teach them during the monthly meeting” (C&EHO from HC 6). A similar process occurred at the cell level, where cell coordinators (experienced CHWs) used monthly meetings as an opportunity to share knowledge with other CHWs: *“*every month we meet to compile the report, we take this opportunity to share the knowledge. Furthermore, when we meet at the health center, our supervisor takes the time to remind us what we do” (CHW from HC 4).

Resources shaped access to formalized training. The strategies to deliver formalized training to CHWs were hampered by limited resources. Didactic training, supervision, and refresher training depended on the availability of funding. Ideally, newly elected CHWs would be given an induction training by the C&EHO at the health centre while waiting for the initial training. However, due to the lack of funds to pay expenses associated with the induction training and initial training, newly elected CHWs underwent an orientation session for a few hours, and then C&EHO sent them to seek help from the cell coordinators or other experienced CHWs, as reported by the participants.

> A newly elected CHW must be trained by me. But due to lack of funds, I take the books that she will use and call her here at the health centre for an orientation session about her role. Then I link her with the cell coordinator to continue helping her in whatever she wants to know (C&EHO from HC 2).
>
> …I was elected to be a CHW in the period when there was no training planned. I came here to the health centre, and I had a conversation with our supervisor. She gave me an

orientation session for some hours and showed me the CHW who will help me to know what to do (CHW from HC 7).

C&EHO were aware of the need for refresher training to update CHWs on their practice, but it was not completed due to the lack of funding. Supervision to develop the skills of CHWs was not regularly done primarily because of a lack of funding to cover the cost of transportation, and per diems of supervisors: "Ahhh... There is no known determined time that they must be trained. They are trained when there is an available sponsor [funder] who can release the fund to train CHWs on any given package" (C&EHO from HC 1).

As CHWs did not receive a salary for the work they performed, formalized training was seen by CHWs as an opportunity to receive some small financial compensation. Consequently, participants stated that some newly elected CHWs stated a preference for formalized training: "You can have a wish to teach your newly elected peer in the village, but she refuses by saying let's wait for the HC to train me in order to get the training allowances" (CHW from HC 1). Informal, peer to peer mentorship was a strategy adopted by C&EHOs and CHWs to compensate for the gap in formalized training of CHWs, caused by limited resources as reported by participants.

Informalized Training

In addition to didactic training workshops, supervision, and monthly meetings, CHWs and C&EHOs highlighted informal training, which included the sub-themes of peer to peer mentorship as a strategy to compensate for the lack of availability of formalized training, supporting on-going learning, peers as a trusted resource, and ways to move forward.

Peer to peer mentorship as a strategy to compensate for the lack of formalized training. Informal peer to peer mentorship was the main strategy used by new CHWs to learn

and update their knowledge and skills as there was no predictable nor sustainable fund to train every newly elected CHW. As noted by participants, training opportunities depended on the availability of sponsors to fund training. Therefore, predictable and consistent training opportunities were notably absent. Participants reported that most of the time, newly elected CHWs did not receive induction training at the HC by the trained C&EHO. Instead, CHWs often gained knowledge and skills from their peers in the community, and during monthly coordination meeting. Seeking out support from a peer CHW was a strategy used by all CHWs to compensate for the lack of formalized training, as expressed in the following quote: "…Since I was elected in 2015, I didn't get the training; I received only the training of TSAM in 2018. I was working based on the knowledge gained from my colleagues" (CHW from HC 6).

Learning is a dynamic, ongoing process. Informal peer to peer mentorship was also valued among those who had received formalized training that occurred to support ongoing knowledge and skill development:

> Learning is a process. You cannot understand all things at the same time, after training while being at home, if I met a problem, I call my colleague for help. For instance, I use to call my colleague to help me to send a rapid SMS. In our daily activities, we help one another where necessary. If you don't understand something, you seek help from the colleagues" (CHW from HC 2).

Some CHWs reported also gaining knowledge from public health messages heard on the radio: "Sometimes when we are in our village at home, we open the radio and hear the health messages about the activities of CHWs and this helps us to gain also some knowledge" (CHW from HC 1).

To enhance their knowledge, some CHWs reported the use of written resources, such as books they received from the HC in order to gain information about their CHW role. All new

CHWs who participated in this study reported receiving knowledge and skills first from their peers when they were first elected to be a CHW:

> I was first trained by the cell coordinator. Thereafter, because I am somehow educated (I completed post-primary education in different arts) I tried to read the books I have, and from them, I continued to increase my knowledge (CHW from HC 9).
>
> …when a new CHW is elected while there is no training planned. She is taught by the colleagues who show her what to do by using the counselling card. For example, how to visit a woman who has delivered, a pregnant woman and how to send the rapid SMS (CHWs from HC 3).

Valuing peers as a reliable resource. All CHWs appreciated the way they were taught by their peers, and some of them went on to help their colleagues based on the knowledge gained from their peers. Different testimonies acknowledged the help received from the peers and wished peer to peer mentorship to be used more formally as a training strategy for CHWs because it helped them to understand in a very practical and applied way what to do in their villages:

> Me, I am new in this role of CHW. I got the official training after 2.5 years but during that time I was performing well even, our supervisor was surprised by the way I was working without being officially trained. All knowledge and skills used were gained from my colleagues, who taught me what to do. This approach of peer mentorship is very very important (CHW from HC9).

The most challenging task CHWs sought help for from the peers or supervisors was RapidSMS as expressed in the following quotes:

> Even if I was able to use the phone, but it was my first time to hear about rapid SMS. The cell coordinator took her time to come and teach me the rapid SMS, now I know it (CHW from HC8).
>
> RapidSMS was very difficult for me. I was about to resign in the role of CHW because of RapidSMS. I sought help from my colleague, and she helped me to understand the rapidSMS. Now I am able to send the rapid SMS (CHW from HC6).

All the CHWs and the C&EHOs reported having used informal peer to peer mentoring as a training strategy in their daily practices. In fact, due to lack of training opportunities that were offered by the C&EHO at the health centre, supervisors of CHWs often linked newly elected CHWs with other experienced CHWs to provide informal training:

> …There are CHWs who are very competent. Most of the times we request them to help us in teaching others who are new or weak because CHWs feel free to ask questions to their peers than they do for me" (CEHO from HC 5).

Moving toward formalized peer to peer mentorship. All participants were asked to share their insights about the desirability of formal peer to peer mentorship in their community. Based on their experience of helping one to another, all CHWs and their supervisors confirmed that more formalized peer mentorship was desirable, while also offering their perspectives on the perceived benefits, ways peer to peer mentorship could be undertaken, and potential perceived challenges of peer to peer mentorship.

Potential Perceived Benefits of Peer to Peer Mentorship

All participants discussed how peer mentorship could be very beneficial to the CHWs themselves and the supervisors. Some C&EHO reported that peer mentorship could ease the work of supervising and training CHWs. In addition, this model could help CHWs improve their

knowledge and skills, in part because of the freedom they felt to discuss and ask questions between themselves without being afraid to ask the question:

> It can be very adequate to train CHWs because even if we say that we visit them once in a term, most of the time we do not visit everyone due to many attributions we have. If we could have that CHW who can teach them, it will be very productive because she will support our work (CEHO from HC 4).

> It is good to be taught by your colleague! When you are in training there are things that you cannot ask every time, but when you are with your colleague, you feel free to ask everything you want. There is an opportunity to demonstrate the practice in order to understand… It is very good to be taught by a competent CHW (CHWs from HC 8).

If peer to peer mentorship was done in the cells, CHWs expressed how this could reduce the money spent on the transport of CHWs and this could save their time in having to frequently attend to the HC. "… If the training is done in our villages or cells, the money which is spent for our lunch and transport can be used for another activity in relation to the CHWs and might be important to our country*"* (CHWs from HC 9).

C&EHOs and CHWs also felt that peer mentorship could improve the skills of CHWs because it will focus on skills demonstration more so than theory.

> This can help them to share their experience and learn good practice from one to another rather than learning from someone who is not CHW and who do not practice what they do (C&EHO from HC 6).

> We know each other when you do not understand what your colleague teaches you, it is possible to find another time to look through the teaching again than when you are

> trained by a people that you will never meet again to ask him or her what you didn't understand well (CHWs from HC 7).

Factors that Could Facilitate Peer to Peer Mentorship

There are several factors that participants felt could facilitate peer to peer mentorship in the community. Supervisors and CHWs in different health centres reported having experienced and knowledgeable CHWs who could teach their peers:

> This is possible and feasible. The cell coordinators use to teach other CHWs. For instance, we train the new CHWs in our cells, and it is very helpful for them. If they meet a problem, they also call us for further explanation, and we continue to make a regular follow up of what they are doing. We have many CHWs that we have trained ourselves (CHWs from HC 8).

> We have competent CHWs who can do that once they are officially given that role of mentor. When we are in the meeting, there are some CHWs who give strong additions or comments to what I say, and I find them very competent in this domain of CHWs. If given this role, they can do it correctly (C&EHO from HC 5).

The supervisors and CHWs felt that the peer mentorship could be done at the cell level where CHWs from the villages could meet at the cell office to be mentored by one experienced CHW. The staff from the health centre could then support the mentors to ensure accurate mentorship and teaching of the right content.

> We can mainly train the mentors, then look at the place, for instance, at the cell office where they can meet to teach others. There is a need also of person to monitor the implementation of this activity (C&EHO from HC 8).

> We usually have a monthly meeting at the cell level to compile the reports. This peer mentorship also can be done at the cell level. The cell coordinator can take that responsibility to train others (CHWs from HC 5).

Materials are also available in the community that they could use in teaching one to another. As the CHWs are neighbours and share the same culture and language, participants felt this could facilitate the learning process. In addition, CHWs met for other occasions and stated that these occasions could be used for peer to peer mentorship.

> They know each other. Everyone knows the weakness and the strength of others, for the one who is weak, they can help her intensively. Another thing, they are neighbours, this can facilitate this teaching. They know the context and the culture in which they are working more than another person. They can do that better because they are familiar (C&EHO from HC 8).

> We share the same language and culture that can help in knowledge translation among us. We are united, and we love each other (CHWs from HC 9).

Possible Perceived Challenges with Peer to Peer Mentorship

Despite the factors that participants felt could facilitate peer mentorship, there were a number of challenges they reported. CHWs were overloaded with many things to do in the community, and even if the CHWs were volunteers, they would need per diem or incentives during peer to peer mentorship activities to motivate them and to minimize out-of-pocket expenses. Participants reported concerns that when CHWs learned their role from peers, they did not receive any compensation for their time or efforts "…for you when you train us, you give us per diem but when we are training our colleagues, we don't get anything" (CHW from HC 9).

Participants were concerned that the additional role of peer to peer mentorship would increase their workload and take them away from other income-generating activities. CHWs typically had other significant activities to attend to, including many domestic activities and some of the CHWs' partners would not allow them to engage in peer mentorship without payment to help them support their families.

> We have many activities to do in our families together with this role of CHWs… There is a challenge of our partners in our families. If you are using most of your time in the activities that do not generate income for the family, it can be the source of the conflicts in the family (CHWs from HC 2).

Supervisors themselves recognized the significant workload required of the CHWs and the lack of financial incentives they were provided with:

> The health center and the sector administration use them in many different things, and this takes too much time for them [CHWs]. They are all cultivators. Imagine!? The sector may call them three times a week to the office and we also at the health centre we need them here at the health centre once or two times a week! Finally, we are using all of their time in the function that they are not paid for! How are they going to survive in their family? This is a big challenge (C&EHO from HC 9).

Summary

In summary, CHWs gained knowledge and skills in different formal and informal ways. They mainly learned their role through peer to peer informal mentorship, monthly coordination meetings, supervision, and rarely through didactic training. Financial resources hampered formalized training and facilitated informal training. All CHWs and C&EHO showed that experienced CHWs were able to support their peers to learn what to do in their practice. All

participants thought that formally integrating peer to peer mentorship could be feasible in the community if the reported challenges were addressed. Formalized peer mentorship could be fruitful to the CHWs, supervisors and the community in general as it is revealed in the interviews and FGDs conducted.

Discussion

CHWs serve as a solution to limited healthcare services within all Rwandan communities. To be effective, they require adequate training and continued follow up. The aim of this study was to explore how CHWs gain and enhance their knowledge and skills in their role. The results of this study demonstrated different ways CHWs gained and enhanced their knowledge and skills. CHWs also offered their insight into peer to peer formal mentorship in the communities. CHWs gained and enhanced knowledge and skills, mainly through peer to peer informal mentorship and monthly coordination meeting. Initial training, refresher training, and supervision were less frequent. The participants revealed that due to the lack of initial training for most of the newly elected CHWs, and gradual decrease of knowledge and skills for the previously trained CHWs that many CHWs sought help from their peers to be able to perform their tasks in the community.

Most of the CHWs sought help from experienced CHWs who reported teaching their peers frequently on a voluntary basis or by request of their supervisors. The CHWs supervisors also shared that due to a lack of funds to train CHWs, they provided an orientation session of some hours to new elected CHWs, and then linked them with cell coordinators or other experienced CHWs to help them gain knowledge of their tasks in the community.

Based on the testimonies of the CHWs and the supervisors, informal peer to peer mentorship helped all CHWs to gain and enhance their knowledge and skills. Cell coordinators

train the new CHWs by going together to visit the pregnant women and the newborns in order to show them the skills and do the report together. CHWs reported that they were able to carry out their tasks in the community due to the knowledge and skills gained from their peers and suggested this approach of training as very helpful for them to learn the knowledge and skills. Findings from this research align with others who have reported peer mentorship of CHWs as effective in knowledge translation, improving clinical skills, and increasing confidence and job satisfaction (Puchalski Ritchie et al., 2016). In addition, peer to peer mentorship was reported as effective, less expensive, well received, and valued by the CHWs themselves. Due to the lack of funds for training, refresher training and supervision of CHWs in Rwanda as reported by CHWs' supervisors; this strategy of peer to peer mentorship may be leveraged to reinforce the training of CHWs.

The findings of this study show that supervisors of CHWs know that supervision must be done for every CHW at least once in three months, but practically, supervision was only carried out occasionally due to lack of transportation, no funding for per diems, competing priorities with many other responsibilities of the supervisors, the geographical disposition of the villages, and the high volume of CHWs to be supervised. The little supervision that was provided tended to focus on checking the books and registers for completeness, verification of the monthly report, and feedback based on the observed faults rather than teaching the CHWs. These findings are consistent with a survey of CHWs in Rwanda conducted by Liverpool School of Tropical Medicine (LSTM) which showed that 89 % of supervisors focused their time with CHWs on reviewing of registers (LSTM, 2016b). Due to this aspect of the supervision, many CHWs did not realize the supervision as a training strategy to increase their knowledge and skills. This kind

of supervision has been found as a demotivating factor for CHWs performance as revealed by the study conducted in Mozambique by Ndima et al., (2015).

Participants of this study noted that when there was new training to be implemented, the training strategy for CHWs was didactic training. When funding was available to pay the expenses of the training, CHWs attended short-term training at their health centres as reported by the participants. But, when there was new knowledge or updates on the existing packages, CHWs obtained this knowledge during monthly coordination meetings. The literature shows that a didactic training strategy is good when used for newly elected CHWs for their initial training in order to prepare them for their role in service delivery (Scott et al., 2018). However, initial training must be augmented by repetitive and longer refresher sessions of training to help individuals compensate for the little knowledge and fewer skills conveyed during the shorter initial training in order to be able to provide quality care to the community they serve (Virginia et al., 2008). In Rwanda, CHWs may or not receive initial didactic training, but refresher training for CHWs is not guaranteed.

As the findings of this study demonstrate, training and refresher training for CHWs occurred occasionally, with most newly elected CHWs starting their job without any initial formal training. These findings are similar to those of a qualitative assessment of client and care provider perspectives on Rwanda's evolving community health worker system which showed that most of the new CHWs lacked initial training and sought help from their colleagues (Condo et al., 2014). In this study, the most sought-after area of support by CHWs from their peers was how to communicate using RapidSMS. This finding is consistent with the findings of Musabyimana et al., (2018) in their study about perspectives of users and beneficiaries of CHWs mHealth tracking system for mothers and children in Rwanda, who showed that among the

challenges faced by CHWs is working with colleagues who have never been trained on RapidSMS. CHWs carried the burden of doing their own work while also trying to teach new CHWs who did not have any previous knowledge of the role.

The main challenge to effectively training CHWs in Rwanda was limited resources as reported by participants of this study. The participants reported that initial training, refresher training, and supervision depended on the availability of funds. When funding was not available, CHWs organized training among themselves. This issue of resource constraints is not new in many sub-Saharan countries (Majee et al., 2019). The researcher demonstrated that CHW programs have been constrained in their achievements because of a lack of resources to fund the ongoing training, transportation, and incentives of CHWs (Kumar, Nefdt, Ribaira, & Diallo, 2014). However, the success of the CHW program depends on the effectiveness of the training offered to them (Abdel-all et al., 2017).

The CHWs and their supervisors expressed that peer to peer mentorship may be a solution to overcoming the issue of training for CHWs. They shared that peer mentorship is highly feasible in Rwanda due to the availability of competent and experienced CHWs who help to train their peers as they were already carrying out informal peer to peer mentorship in their daily activities. Furthermore, CHWs are neighbors sharing the same culture, and speaking the same language. These are some features that can facilitate peer mentorship and knowledge translation.

Due to the structure of CHW program in Rwanda where CHWs are based at the village level and meet to conduct compilation of their monthly report, all participants suggested the cell level as the site for group peer mentorship. They suggested that one or two mentors at the cell level be trained to train their peers in small groups and then return to the village for skills

demonstration with a pregnant woman or newborns in their villages. This was suggested by the participants to reduce the long walking distance during mentorship and the opportunity to reach out easily to the clients in the community for practical sessions in their villages where they are known by the community members.

The CHWs and their supervisors perceived many advantages of peer mentorship such as but not limited to: freedom of CHWs to ask questions to their peers more than other person, ease of meeting in their community without travelling, availability of the mentor at any time, learning skills from the person who practice what they do, consolidation of their friendship and social value in their community, and to support the C&EHO in monitoring of the CHWs.

However, there are several challenges that need to be considered, such as an increase in the workload for CHWs who would take on the mentor role. CHWs have many responsibilities in their role as a CHW, in addition to their personal and family responsibilities. Peer mentorship has the potential to increase their workload and reduce the time for other paid work for their families. The need for financial motivation to compensate for CHW mentor's time and to motivate them as peer mentors has been reported by CHWs from other countries. The role of CHW takes their time that they could use in their activities and claims also for incentives (Sanou et al., 2016). However, CHWs and supervisors showed that once the challenges of incentives either financial or no financial are resolved, peer mentorship is feasible and can be continually effective for all CHWs at low cost for the government or other stakeholders.

The participants also reported that the money used for accommodation and transportation for didactic training may be used to train peer mentors who will continually train the newly elected CHWs and offer refresher training to CHWs to enhance their skills. This can be a motivating factor for CHWs and can reduce the attrition of CHWs while contributing to the

improvement of maternal and newborn care, and the wellbeing of the community in general as Josiah Willock, Mayberry, Yan, & Daniels,(2015) showed that peer training of CHWs increased their motivation and retention.

Implications of the Study

The results of this study have implications for education, policy, practice, and research. CHWs are providing care to families at the frontline, and provide care to people in their communities, and serving as a vital intermediate between the community and health facilities (Christopher et al., 2011). They contribute to more accessible healthcare services for all people, especially in remote areas (Scott et al., 2018). Evidence demonstrates that CHWs have had a considerable impact on reducing the rates of maternal/newborn death in Rwanda; however, there are still substantial advancements that could be done in their training to enable them to provide quality care for the population continually.

The findings of this study highlighted a gap in the education and training of CHWs. Many newly elected CHWs started their role without initial training and sought help from their peers. RapidSMS was highlighted as the most challenging task CHWs seek help for, further training on RapidSMS was needed as well as on other components of CBMNH. For participants in this study, peer to peer informal mentorship was the main source of knowledge and skills for CHWs. However, the quality of that informal peer mentorship is not well known. There may be a risk of translating inaccurate knowledge and skills among CHWs if not well monitored and consequently, this can lead to unsafe practice. As CHWs are willing to teach one to another and the fact that peer mentorship has been shown to be cost-effective and adequate in knowledge and skills development (Puchalski Ritchie et al., 2016), peer mentorship may be an effective way to

formally train CHWs in Rwanda to overcome funding constraints, which was expressed by participants as the leading cause of gap in training of CHWs.

Findings of this study showed that training, refresher training, and supervision of CHWs depended on the availability of adequate and dedicated resources. Rwanda is among low-income countries but with the ambition to continually increase its economy. Based on the contribution of CHWs in healthcare delivery, there is a need to resource the training of CHWs effectively. Even if the CHW supervision is not regularly conducted, the findings of this study show that the supervision tends to focus on administrative aspects of the role rather than enhancing MNCH knowledge and skills. Supervision of this nature has been found to have a negative impact on the motivation of CHWs (Ndima et al., 2015). There is a potential need to adequately teach people who train and supervise CHWs about supportive supervision in order to help CHWs manage people in the community and keep a good reputation as a caring profession. Furthermore, transport and time allocation for supervision based on the number of CHWs to supervise must be taken into consideration and adequately resourced.

This research contributed to the body of knowledge in this domain of CHWs. To the best of my knowledge, many studies have been done on a community health program, but none had explored the various ways in which CHWs gain and enhance knowledge and skills in both formal and informal ways within the Rwandan context. The results of this study showed different ways CHWs gain knowledge and skills where informal peer to peer mentorship which has not been formalized as a training strategy used in Rwanda for CHWs yet was revealed to be the most commonly used approach. This new insight offers an opportunity for policymakers to acknowledge and resource both informal and formal approaches to CHW training.

However, this study has highlighted opportunities for additional research. Most of the participants (CHWs and their supervisors) spoke about CHWs supporting each other in their daily activities. They have a good prior relationship, the same culture, and language, and some of them are more experienced to the extent that they can teach their colleagues. Considering the gap in the training of ASM-CHWs, research is needed on the implementation and effectiveness of peer mentorship. Nevertheless, the CHWs expressed already being overloaded in their role, and their own living activities together with CHW role. They expressed a need for incentives to help them in their daily activity in order to allocate enough time in their role of CHWs and peer mentorship. A study about the financial and non-financial motivation of CHWs may help to improve the community health program.

A quantitative study on the training of CHWs to further determine the gaps in training strategies for CHWs would be beneficial. Furthermore, exploration of CHWs practice can inform the stakeholders on the level of knowledge and skills of CHWs and the source of that skill in order to address this issue of the gap in training.

Limitation of the study

The data collection was done approximately one month after refresher training of CHWs in the southern province. This may have influenced the results of this study than if the data collection could be completed before this training as that training was the first training received for many CHWs.

Some CHWs' supervisors from Ruhango and Gicumbi districts did not respond to the invitation to participate in the study, and this may have limited the exploration of different experiences of CHWs in all districts supported by the TSAM project.

Time and financial constraint did not allow member checking to validate the transcripts and the findings of this study from the participants.

Conclusion

CHWs gain the knowledge and skills to perform their duties through formal and informal ways. Most of the CHWs primarily develop knowledge and skills through peer to peer informal mentorship and monthly coordination meetings. While didactic training, refresher training and supervision are also among the strategies used for CHWs to gain knowledge and skills, they are not regularly done and depending on the availability of resources. Supervision was occasionally done and focused on administrative duties rather than enhancing competences. To overcome this issue, many CHWs and newly elected CHWs sought help from their peers. The testimonies of supervisors and of the CHWs themselves, highlighted the advantages and importance of peer to peer mentorship such as freedom of CHWs to learn from their peers, hand-on skills demonstration, and availability of mentor whenever needed. They affirmed the importance of informal mentorship and supported the integration of formal peer to peer mentorship as an important training strategy. However, challenges to integrating a peer to peer mentorship model of training included a perceived loss of training incentives and an increased workload among CHWs mentors. All in all, peer mentorship of CHWs has been shown to be effective and appreciated by the CHWs themselves. This strategy may help the Rwandan community health program to reinforce the training of CHWs.

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Chapter Three

Implications for Practice, Education, Research and Policy

Rwanda has a shortage of health personnel to deal with health promotion, disease prevention, management of infectious diseases, non-communicable diseases, and maternal, newborn and child health (MoH, 2015b). The establishment of CHWs within the Rwandan health care system was one of the strategies adopted to support access to healthcare services to all Rwandan, especially in remotes areas (Condo et al., 2014). The work of CHWs have contributed to the reduction of maternal, newborn, and child mortality rates, and have increased medical access and management for under-five infectious diseases in the community (RGB, 2017). However, the evidence shows that CHWs are not effectively trained, and supervised (Majee et al., 2019). This study was conducted to explore how CHWs develop knowledge and skills to be able to fulfill their role as required. In this research, the findings indicate that CHWs were offered limited training opportunities and reported several challenges related to access to training within their role. To this end, there are implications and recommendations to CHW practice, education, research, and policy to improve the training and effective usage of CHWs in Rwanda.

Implications for Practice

The findings of this study showed a gap in training of CHWs to acquire the knowledge and skills required to perform their tasks in the community. Many of the new CHWs started their role without training and sought help from their peers. This demonstrates that they are performing the role without having the required knowledge and skills to engage with pregnant women and their newborns effectively. Untrained CHWs or CHWs with minimal training, calls into question issues of safety in the provision of care to the people in the community.

Furthermore, the participants showed that supervision, a noted strategy for training, focused on accurate administrative reporting rather than supporting increased knowledge and skills development. To enhance the practice of CHWs, adequate training and supportive supervision are highly suggested.

CHWs also reported that they are overloaded with the number of tasks that are required within their role, alongside many different meetings they are required to attend that extend beyond their own daily living activities. All these challenges can have a negative impact on their ability to engage in the CHW role effectively such as demotivation and turnover. Based on the way CHWs are used in the community by the HC and local leaders, there is a need to revise and determine the tasks of CHWs and the institutions that are allowed to use CHWs in order to enhance their practice. Furthermore, people in charge of supervision of CHWs would benefit from training about supportive supervision to improve their practice with CHWs.

Implications for Education

CHWs have no prior education in the health domain, and most have only completed primary school. Research indicates that knowledge and skills acquired by CHWs during didactic training decrease over time (Lopes et al., 2014). To be effective, CHWs require adequate training and ongoing training opportunities. United State Agency for International Development (USAID) recommends refresher training for CHWs every six months to reinforce the initial training, update them on new skills, and ensure the accuracy of their practice (Crigler, Hill, Furth, & Bjerregaard, 2011). Nevertheless, the findings of this study showed that initial training and refresher training are not consistently done in the Rwandan community health program. Trainings depend on the availability of resources; consequently, CHWs spend years without training or refresher training.

It is crucial to adequately train CHWs before they start their role in the community to equip them with knowledge and skills in what they will be doing in the community to ensure safe practice and care quality to the community. The systematic review of existing reviews on CHW programs shows that effective training should focus on hands-on practical component rather than class-based training and should be followed by supportive supervision rather than bureaucratic or punitive supervision to enhance the competences of CHWs (Scott et al., 2018). The training strategies of CHWs in Rwanda might consider enhancing the 'hands-on' approach to the development of skills and competencies of CHWs. They should focus on skills demonstration and regular supportive supervision by skilled workers or experienced CHWs to enhance their practices.

It may be beneficial for the MoH and its partners to strategically resource and plan the initial and ongoing training of CHWs to reinforce the knowledge and skills of CHWs. The use of CHWs supervisors for training may be a good approach to train new elected CHWs. But financial resources are necessary to cover the training expenses in health centres. An important strategy for knowledge and skill development that emerged from the research findings was peer to peer informal mentorship.

Participants reported peer to peer mentorship as helpful in learning the CHW role and at times, it was the main form of training available. Supporting peer to peer mentorship may serve as an important and economically advantageous strategy to support the ongoing training of CHWs in Rwanda. Evidence shows that peer mentorship is effective in knowledge and skills development, cost-effective, and highly appreciated by the CHWs themselves (Puchalski Ritchie et al., 2016). Formalized peer to peer mentorship may be an alternative training strategy as

CHWs who participated in this study reported that they have competent and experienced CHWs who can mentor their peers.

CHWs noted RapidSMS as the main issue they seek help for during informal peer to peer mentorship. The participants frequently expressed a lack of knowledge and skills in organizing and sending RapidSMS. This RapidSMS is one of the indicators used by the MoH to provide Performance Based on Finance (PBF). This issue has also been reported by Musabyimana et al., (2018) who showed that the main challenge of CHWs is a lack of training in RapidSMS. There is a need to continually educate CHWs on RapidSMS to enhance their knowledge and skills. This will also help establish some financial motivation based on the number of completed CHW tasks documented and reported using RapidSMS.

The findings show that the supervisors of CHWs perform evaluative supervision rather than supportive supervision to train CHWs in their role. They may not have ever been taught how to offer supportive supervision of CHWs during their studies at university. This implication calls the college of medicine and health sciences that produce these supervisors in collaboration with the community health program desk in MoH to include the component of CHWs packages and supportive supervision in the curriculum of these students who will be at the end of their studies in the position of CHWs supervisors.

Implications for Research

This study contributed to the body of knowledge on the training strategies used for CHWs to gain knowledge and skills to perform their role. The findings of this study showed that CHWs learn primarily from their peers, at least initially, to be able to perform their assigned tasks in the community. The peer to peer learning strategy was, in part, reported as a way to

compensate for the lack of material and human resources required to provide formal and ongoing CHW training as outlined in the Rwandan Ministry of Health MNCH training manual (MoH, 2010). The combination of formal and informal training (peer mentorship, reading materials, media, and monthly meeting at cell level) strategies may be important considerations to accommodate the learning needs of CHWs and be fiscally accountable. Research, including cost analysis, on the integration of formal and informal training strategies, would be relevant research.

This study used a descriptive qualitative design. Findings showed a gap in training, refresher training and supervision of CHWs, but it did not measure the extent of this gap or the health implications of this gap on maternal/newborn outcomes. Quantitative research to determine the magnitude of the training gap among CHWs and its implication on MNCH outcomes would be valuable. The new CHWs start their job without initial training and seek help from their peers. A study assessing the practice of CHWs may help to know the effectiveness of peer to peer mentorship and the performance of CHWs.

Future research can assess the knowledge and skills of CHWs' supervisors on MNCH and supportive supervision to improve supervision toward formative rather than evaluative.

The findings of this research showed that CHWs were motivated, in part, by the money they get during didactic training. A systematic review of factors that influence the performance of CHWs in low and middles income countries showed that training opportunities positively influence CHWs satisfaction, motivation, and performance (Kok et al., 2015). Previously conducted research showed that a heavy workload, lack of training opportunities, and lack of remuneration for time and travel were among the main factors that demotivate CHWs (Majee et al., 2019). Furthermore, Sanou et al., (2016) showed financial incentives and opportunities for

training to be the major motivation of CHWs in Nigeria, Uganda, and Burkina Faso. Future research to explore the motivation of CHWs and better understand what needs to change from the perspective of CHWs who intend to leave their role to inform policymakers of the actions that must be taken to recruit, motivate and retain volunteers in the CHW role would be important.

Implications for the Policy

A policy that governs the use of CHWs in the Rwandan health system is available and clear (MoH, 2015b). The cascade model of training for CHWs from central level to train trainers from district hospitals who will train the health personnel at HC level who, in turn, will train and supervise CHWs is clear (LSTM, 2016a). However, the findings of this study demonstrated a gap in the implementation of this policy. According to the policy, newly elected CHWs should be initially trained by the C&EHO at HCs while waiting for the official training. But the results showed that these new CHWs are linked by the C&EHOs to experienced CHWs or cell coordinators to train them due to limited financial resources for CHWs training. In fact, the policy is well written but not always implemented as stated, and there is an opportunity for a policy review of CHW training and its implementation.

The findings show that within the participants of this study, informal peer to peer mentorship was the primary source of knowledge and skills for CHWs. Based on the evidence that peer mentorship is appropriate in training of CHWs and affordable to the countries with limited resources (Puchalski Ritchie et al., 2016), policymakers may prepare peer mentors and officially use this training strategy for training CHWs in their communities. The participants showed that CHWs are used by the HCs and the local leaders from sector level to the village level in other activities beyond supportive care practices and this takes them too much time while

they are not paid for all of these activities. Considering the workload of CHWs together with their daily income-generating activities, policymakers may further define the tasks of CHWs in the community and the institutions that are allowed to use CHWs. This burden on CHWs may harm their practice and motivation. It may also push them to leave this role due to lack of time to work for their living activities.

Conclusion

This research explored CHWs training experience to support MNCH within the community. The findings of this research point to several opportunities to reconsider the integration of formal and informal training strategies for CHWs. Several challenges to the provision of CHW training were highlighted that may contribute to the review of training policy for CHWs. Gaps in the training of CHWs in Rwanda were identified. Solutions are recommended to MoH and its partners to build the capacity of CHWs toward improved community health program and care quality to the people in their communities. Peer to peer mentorship was highlighted as a learning alternative, especially for new CHWs to the role when formalized training was very limited or unavailable.

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Appendices

Appendix A: Semi-Structured Interview Guide

Semi-Structured Interview Guide

Pre-amble

This study aims to explore how CHWs obtain and enhance knowledge and skills. You have the right to skip any question that you do not feel comfortable to respond. All information provided will be audio recorded once we agreed on the appropriate moment to start recording. In your response do not mention identifiers of any people otherwise these identifiers will not be included in the transcripts. It is helpful if you listen carefully when others are speaking.

Thank you and welcome to the interview.

1. Describe the strategies used to train CHWs?
    a. PROBE: What are the different ways in which CHWs gain knowledge and skills? OR what are the strategies used in your setting to help CHWs gain required knowledge and skills?
2. How often do you train and supervise CHWs?

    PROBE: Tell us how frequently you provide refresher training to CHWs and how frequently you supervise them in their villages or cells?
3. Describe what do you do mainly when you supervise CHWs in their villages?

    PROBE: What are your main activities when you visit the CHWs in their villages or cells?

4. It can happen that an elected CHW start her/his job when there is no planned training in that time, how does this CHW gain knowledge and skills to be able to perform her/his task?

   PROBE: If a CHW is replaced for any reason, how the new elected CHW gain knowledge and skills to perform her role in the community?

5. Describe how CHWs are helping each other to perform their functions in their respective cells and villages? How does this mutual help happen?

   PROBE: Sometime CHWs seek help from their peers. Is this mutual help happening among the CHWs you supervise? What do you know about it?

6. Peer mentorship is an approach in which an experienced and knowledgeable CHWs help their peers to improve their knowledge and skills for continued learning.

   -What are the benefits of this approach?

   - What are the challenges do you think may be associated with this peer mentorship model among CHWs?

   - How can this model be designed and implemented?

   PROBE: Peer mentorship is a training strategy where experienced and knowledgeable CHWs train her/his fellow CHW. Are there any benefits or disadvantages that can be associated with this training strategy in your setting? Based on your experience in monitoring CHWs activities, how do you think this strategy can be used among the CHWs?

Appendix B: Semi-structured FGD guide

Semi Structured FGD guide for CHWs

Pre-amble

This study aims to explore how CHWs obtain and enhance knowledge and skills. You have the right to skip any question that you do not feel comfortable to respond. All information provided will be audio recorded once we agreed on the appropriate moment to start recording. For CHWs participating in FGD, you are reminded to maintain the confidentiality of the information provided by your fellow participants and to respect the idea of others. In your response do not mention identifiers of any people otherwise these identifiers will not be included in the transcripts. It will be better to listen to others and speak when given a speech.

Thank you and welcome to the FGD.

2. Describe how CHWs gain and enhance knowledge and skills in their role of providing care in the community?
    a. Probing questions: A. How are you trained to be able to perform your duties in the community?
    b. What are the different ways in which you gain knowledge and skills? OR what are the strategies used in your setting to help you gain required knowledge and skills?
3. Describe the strategies or ways of training you find most effective in learning the knowledge and skills to be a CHWs?

PROBE: To be competent in your daily duties what learning strategies have been most effective based on your experience in the role of CHW?

4. An experienced and knowledgeable CHW can help in the training of less knowledgeable CHW. Do you find this possible in your context? Explain why and how this can be done? Or If you have sought a help from your peer, how do you appreciate that help?
5. Has anyone sought support or advice from other CHWs, if yes, why have you looked for that help and who would you go to for that help? and how did he/she help you?

PROBE: Please describe for us the help received and why s/he has preferred to look for help from that colleague.

6. If any CHW among you have offered to help a colleague to help him to perform his/her tasks in the community, how have you done that?

PROBE: Is here any CHW who has helped her colleagues? Tell us how you helped her.

7. Describe any benefits in experienced and knowledgeable CHWs to helping their less experienced peers?

PROBE: Tell us the advantages of a knowledgeable CHW to teach or show her colleague how things are done.

8. Describe any challenges or disadvantages in experienced and knowledgeable CHWs to helping their less experienced peers?

PROBE: Tell us of any inconveniences related to more knowledgeable CHW to show her colleague how things are done

9. How do you think these challenges or disadvantages can be overcome to enhance the mutual help between CHWs?

PROBE: Are there ways or means to control the negatives impacts or inconvenience caused by this approach of CHWs teaching each other themselves?

10. What are the factors that can facilitate peer support among CHWs in your community?

PROBE: Tell us the elements that can facilitate CHW to support or teach her fellow

11. Please tell us factors or elements that can hamper this approach of CHW to support or teach her fellow CHW

Thank you for your time!

Appendix C: Socio Demographic Information of CHWs Participants

Basic information and sociodemographic characteristics of CHWs

1. age_____
2. Sex _____
3. Your role: ASM or cell coordinator _____
4. Education level_____
5. Experience in the role of CHW_____
6. Number of training received since your CHW role? _____
7. How often do you get refresher training? _____
8. How often are you supervised by in-charge of CHWs at health center in your villages?

   _____

9. Based on your experience, what is the main activity or purpose of the supervision?

   _____

Appendix D: Socio Demographic Information of the Supervisors

Demographic Questions for In-charge of CHWs at Health center

7. Age of the participant ……
8. Gender of the participant…….
9. Job title of participant……
10. Education level…….
11. Years of experience in current role……

Appendix E: Letter of Information and Consent Form for CHWs

Project Title: Exploration of Knowledge and skills Development among Community Health Workers in in Rwanda.

Principal Investigator:
Lorie Donelle, RN, PhD, Associate Professor
Research Chair Arthur Labatt Family School of Nursing
Faculty of Health Sciences at Western University.

Co- Investigator:
Schadrack NGABONZIZA
A master's candidate at Western University.

Letter of Information

This project is initiated as part of completing degree requirement of master's student Schadrack NGABONZIZA at Western University in London, Ontario, Canada under the supervision of Dr Lorie Donelle. It is funded by the Training Support and Access Model (TSAM) a Canadian project to improve Maternal, Newborn and Child Health in north and south province of Rwanda. Among the activities of TSAM project is training of Community Health Workers CHWs. This research is directed to In-charge of CHWs at health centers and the CHWs themselves to explore how CHWs gain and enhance knowledge and skills. The results will help the TSAM project to contribute to the design and implement training strategies that can benefit CHWs and the community in general.

1. **Invitation to Participate**

You are being invited to participate in this research project to explore Community Health Workers' (CHWs) training because you are in a CHW role and have information on how CHWs obtain and enhance knowledge and skills to perform their role in the community.

2. **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.

3. **Purpose of this Study**

The purpose of this study is to explore how CHWs obtain and enhance knowledge and skills so that this information can inform future educational and training strategies that might be appropriate to be used to strengthen the knowledge and skills of CHWs in Rwanda.

4. Inclusion Criteria

CHW who take part in maternal and newborn care at regional Health Centers (HC) involved in the TSAM project in the north and south provinces in Rwanda are eligible to participate in this study. All CHWs currently in service are eligible to participate in this study.

5. Exclusion Criteria

CHWs at HC who are unable to communicate verbally at the time of interview, CHWs who are not currently in service and individuals who do not have the willingness to participate in the study are not eligible to participate in this study.

6. Study Procedures

If you agree to participate, you will be asked to participate in Focus Group Discussion (FGD) for CHWs at the Health Center and you will be asked about how CHWs obtain and enhance knowledge and skills within their role of CHW. It is anticipated that the entire task will take approximately 60 minutes for each FGD, over one session only. The FGD will be conducted at the Health Center. The number of CHWs to participate in FGD will depend on the number of cells served by the health center. Digital audio-recording of the interview is required and if you do not wish to be recorded, you should not participate in this study. Another part of the study will be to interview CHWs supervisors at health centers individually.

7. Possible Risks and Harms

There are no known or anticipated harms associated with participating in this study. The possible risk is privacy breach. To minimize this risk, we will instruct the participants to maintain the confidentiality of their fellow participants.

8. Possible Benefits

You may not directly benefit from participating in this study but the information you provide will make a contribution to the enhancement of training strategies that is appropriate for CHWs and may benefit CHWs as a whole to strengthen their knowledge and skills. The society will benefit from this study by receiving the quality care from skilled CHWs after implementation of a training strategy adapted for CHWs.

9. Compensation

CHWs will be given five thousand Rwandan francs (5000 frw) equivalent to 7.70 CAD for transportation and meals to cover the costs to participate in this study. If you have started the FGD with the researcher and do not complete the entire study for any reason, you will still receive your transport and meal plan. The fee will be offered in cash to the participant by the student researcher at the end of data collection (FGD).

10. Voluntary Participation

Participation in this study is voluntary. You may refuse to participate, refuse to answer any question or withdraw from the study at any time you feel to do so with no effect on your future in the role of Community health worker. If you decide to withdraw from the study, the information that was collected prior to you leaving the study will still be used. No new information will be collected without your permission.

You do not waive any legal right by signing this consent form

11. Confidentiality

Researchers will take every precaution to maintain confidentiality of the data. During the digital audio-recorded focus group discussions you are asked to refrain from disclosing information that will identify you or others. To minimize this risk, please maintain the confidentiality of your fellow participants. The study team will seek to maintain your confidentiality as outlined below. All data will be stored in a locked cabinet in Dr. Lorie Donelle's research office at Western University. The transcripts of the audio recordings will not have any identifying information on them and will also be encrypted and stored on the laptop of the student researcher and will be transferred electronically to a secured project site at Western University on the computer of the Principle Investigator, Dr. Lorie Donelle. Data will only be accessed by members of the research team, and computer files of all data will be password protected and encrypted. While we do our best to protect your information there is no guarantee that we will be able to do so. Representatives of the University of Western Ontario Health Sciences REB may require access to your study-related records to monitor the conduct of the research. During data collection, at the stage of obtaining consent, the consent form will be sealed in the envelope separate from collected demographic characteristics. The recorded FGD will be stored on the laptop protected with password and will be encrypted. The transcripts will also be encrypted and stored on the laptop of the student researcher and securely stored on computer of the Principle Investigator, Dr. Lorie Donelle.

After data collection, the principal investigator will keep any personal information about you in a secure and confidential location for a minimum of 7 years. A consent form with your name will be kept by the Rwandan lead investigator Dr. Tumussime David in a secured place, separate from your study file. Non-identifiable data will be kept for 7 years after the study is completed and will then be shredded and destroyed to maintain confidentiality based on Western University policy. For the publishing of this study, your name will not be used, and no identifying information will be linked to the data for the purpose of anonymity.

12. Contacts for Further Information

If you require any further information regarding this research project or your participation in the study you may contact Dr Lorie Donelle, Tel: extension , Email: _____ Principle Investigator and Schadrack NGABONZIZA, Tel: or , Email: _____ student research assistant.

If you have any question about your rights as a research participant or on the conduct of this study, you may contact the Office of Research Ethics , email: at western University or Chairperson of the College of Medicine and Health Sciences (CMHS) IRB or the Deputy Chairperson from University of Rwanda.

13. Publication

If the results of the study are published, your name will not be used. If you would like to receive a copy of any potential study results, please provide your Email and contact number on a piece of paper separate from the consent form. If you would like to receive a copy of any potential study results, please contact Dr. Lorie Donelle at

14. Consent

Before participating in the study, you will sign the consent form to certify that you understand the information presented, and that you want to participate in the study without coercion. You understand that participation is voluntary, and you may withdraw from the study at any time.

Consent Form

Project Title: Exploration of Knowledge and skills Development among Community Health Workers in in Rwanda.

Study Investigator's Name: Dr. Lorie Donelle RN, PhD

Co investigator's Name: Schadrack NGABONZIZA master's candidate

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.

I consent to interviews being audio recorded ☐

Participant's Name: _____

Participant's Signature: _____

Date: _____

Person Obtaining Informed Consent: _____

Signature: _____

Date: _____

Appendix F: Letter of Information and Consent Form for the Supervisors

Project Title: Exploration of Knowledge and skills Development among Community Health Workers in in Rwanda.

Principal Investigator:
Lorie Donelle, RN, PhD, Associate Professor
Research Chair Arthur Labatt Family School of Nursing
Faculty of Health Sciences at Western University.
Co- Investigator:
Schadrack NGABONZIZA
A master's candidate at Western University.

Letter of Information

This project is initiated as part of completing degree requirement of master's student Schadrack NGABONZIZA at Western University in London, Ontario, Canada under the supervision of Dr Lorie Donelle. It is funded by the Training Support and Access Model (TSAM), a Canadian project to improve Maternal, Newborn and Child Health in north and south province of Rwanda. Among the activities of TSAM project training of Community Health Workers (CHWs) is included. It is directed to In-charge of CHWs at health centers and the CHWs themselves to explore how CHWs gain and enhance knowledge and skills. The results will help TSAM project to design and implement an appropriate training strategy that can benefit CHWs and the community in general.

1. **Invitation to Participate**

You are being invited to participate in this research project to explore Community Health Workers' (CHWs) training because as an 'In-Charge of CHWs' you have information on how CHWs obtain and enhance knowledge and skills to perform their role in the community.

2. **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.

3. **Purpose of this Study**

The purpose of this study is to explore how CHWs obtain and enhance knowledge and skills so that this information can inform future educational and training strategies that might be appropriate to be used to strengthen the knowledge and skills of CHWs in Rwanda.

4. **Inclusion Criteria**

In-Charge of CHWs at Health Centers (HCs) supported by the TSAM project in the north and south provinces in Rwanda are eligible to participate in this study.

5. Exclusion Criteria

In-charge of CHWs at HC who are unable to communicate verbally at the time of interview.

6. Study Procedures

If you agree to participate, you will be asked to participate in an individual interview at the Health Center and you will be asked about how CHWs obtain and enhance their knowledge and skills within their role of CHW. It is anticipated that the interview will take approximately 30 minutes for the interview over one session only. Digital audio-recording of the interview is required and if you do not wish to be recorded, you should not participate in this study. Another part of the study will be the FGD with CHWs at health center.

7. Possible Risks and Harms

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

8. Possible Benefits

You may not directly benefit from participating in this study but the information you provide will make a contribution to the enhancement of training strategies that is appropriate for CHWs and may benefit CHWs as a whole to strengthen their knowledge and skills. The society will benefit from this study by receiving the quality care from skilled CHWs after implementation of a training strategy adapted for CHWs.

9. Compensation

There is no compensation for participating in this study.

10. Voluntary Participation

Participation in this study is voluntary. You may refuse to participate, refuse to answer any question or withdraw from the study at any time you feel to do so with no effect on your future in the role of In Charge of CHWs. If you decide to withdraw from the study, the information that was collected prior to you leaving the study will still be used. No new information will be collected without your permission. You do not waive any legal right by signing this consent form.

11. Confidentiality

Researchers will take every precaution to maintain confidentiality of the data. During the digital audio-recorded focus group discussions you are asked to refrain from disclosing information that will identify you or others. Should any identifying information be disclosed during the interview process, it will not be included in the transcript. All data will be stored in a locked cabinet in Dr. Lorie Donelle's research office at Western University, data will only be accessed by members of the research team, and computer files of all data will be password protected and encrypted. While we do our best to protect your information there is no guarantee that we will be able to do so. Representatives of The University of Western Ontario Health Sciences REB

may require access to your study-related records to monitor the conduct of the research. . During data collection, at the stage of obtaining consent, the consent form will be sealed in the envelope. The recorded interview will be stored on the laptop protected with a password and will be encrypted. The transcripts will not have any identifying information on them and will also be encrypted and stored on the laptop of the student researcher and will be transferred electronically to a secured project site at Western University on the computer of the Principle Investigator, Dr. Lorie Donelle.

After data collection, the principal investigator will keep any personal information about you in a secure and confidential location for a minimum of 7 years. The consent form with your name will be kept by the Rwandan lead investigator Dr. Tumussime David in a secure place, separate from your study file. Non-identifiable data will be kept for 7 years after the study is completed and will then be shredded and destroyed to maintain confidentiality based on Western University policy. For the publishing of this study, your name will not be used, and no identifying information will be linked to the data for the purpose of anonymity.

Contacts for Further Information

If you require any further information regarding this research project or your participation in the study you may contact Dr Lorie Donelle, Tel: extension , Email: _____ Principle Investigator and Schadrack NGABONZIZA, Tel: or , Email: _____ student research assistant.

If you have any question about your rights as a research participant or on the conduct of this study, you may contact the Office of Research Ethics , email: at western University or Chairperson of the College of Medicine and Health Sciences (CMHS) IRB or the Deputy Chairperson from University of Rwanda.

Publication

If the results of the study are published, your name will not be used. If you would like to receive a copy of any potential study results, please provide your Email and contact number on a piece of paper separate from the consent form. If you would like to receive a copy of any potential study results, please contact Dr. Lorie Donelle at ext. or

Consent

Before participating in the study, you will sign the consent form to certify that you understand the information presented, and that you want to participate in the study without coercion. You understand that participation is voluntary, and you may withdraw from the study at any time.

This letter is yours to keep for future reference.

Consent Form

Project Title: Exploration of Knowledge and skills Development among Community Health Workers in in Rwanda.

Study Investigator's Name: Dr. Lorie Donelle RN, PhD

Co investigator's Name: Schadrack NGABONZIZA

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.

I consent to interviews being audio recorded ☐

Participant's Name: _____

Participant's Signature: _____

Date: _____

Person Obtaining Informed Consent: _____

Signature: _____

Date: _____

Appendix G: Ethical Approval from the University of Rwanda

UNIVERSITY OF RWANDA

COLLEGE OF MEDICINE AND HEALTH SCIENCES

CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 12th /11/2018

NGABONZIZA Schadrack
School of Medicine and Pharmacy, CMHS, UR

Approval Notice: No 374/CMHS IRB/2018

Your Project Title ***"Exploration of Community Health Workers Training in the Districts Supported by TSAM Project in Rwanda"*** has been evaluated by CMHS Institutional Review Board.

		Involved in the decision		
		Yes	No (Reason)	
Name of Members	**Institute**		**Absent**	**Withdrawn from the proceeding**
Prof Kato J. Njunwa	UR-CMHS	X		
Prof Jean Bosco Gahutu	UR-CMHS	X		
Dr Brenda Asiimwe-Kateera	UR-CMHS	X		
Prof Ntaganira Joseph	UR-CMHS	X		
Dr Tumusiime K. David	UR-CMHS	X		
Dr Kayonga N. Egide	UR-CMHS	X		
Mr Kanyoni Maurice	UR-CMHS	X		
Prof Munyanshongore Cyprien	UR-CMHS	X		
Mrs Ruzindana Landrine	Kicukiro district		X	
Dr Gishoma Darius	UR-CMHS	X		
Dr Donatilla Mukamana	UR-CMHS	X		
Prof Kyamanywa Patrick	UR-CMHS		X	
Prof Condo Umutesi Jeannine	UR-CMHS		X	
Dr Nyirazinyoye Laetitia	UR-CMHS	X		
Dr Nkeramihigo Emmanuel	UR-CMHS		X	
Sr Maliboli Marie Josee	CHUK	X		
Dr Mudenge Charles	Centre Psycho-Social	X		

After reviewing your protocol during the IRB meeting of where quorum was met and revisions made on the advice of the CMHS IRB submitted on 26th October 2018, **Approval has been granted to your study.**

Please note that approval of the protocol and consent form is valid for **12 months**.

You are responsible for fulfilling the following requirements:

1. Changes, amendments, and addenda to the protocol or consent form must be submitted to the committee for review and approval, prior to activation of the changes.
2. Only approved consent forms are to be used in the enrolment of participants.
3. All consent forms signed by subjects should be retained on file. The IRB may conduct audits of all study records, and consent documentation may be part of such audits.
4. A continuing review application must be submitted to the IRB in a timely fashion and before expiry of this approval
5. Failure to submit a continuing review application will result in termination of the study
6. Notify the IRB committee once the study is finished

Sincerely,

Date of Approval: The 12th November 2018

Expiration date: The 12th November 2019

Professor Kato J. NJUNWA
Chairperson Institutional Review Board,
College of Medicine and Health Sciences, UR

Appendix H: Ethical Approval from Western University

Western Research

Date: 12 December 2018

To: Dr. Lorie Donelle

Project ID: 112621

Study Title: Exploration of Community Health Workers 'Training in the area supported by TSAM project in Rwanda.

Application Type: HSREB Initial Application

Review Type: Delegated

Full Board Reporting Date: 15January2019

Date Approval Issued: 12/Dec/2018 15:00

REB Approval Expiry Date: 12/Dec/2019

Dear Dr. Lorie Donelle

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above mentioned study as described in the WREM application form, as of the HSREB Initial Approval Date noted above. This research study is to be conducted by the investigator noted above. All other required institutional approvals must also be obtained prior to the conduct of the study.

Documents Approved:

Document Name	Document Type	Document Date	Document Version
Dec 10 2018 3 revised LOI for incharge of CHWs	Written Consent/Assent	10/Dec/2018	3
Dec 10 2018 3 revised LOI of CHWS	Written Consent/Assent	10/Dec/2018	3
Dec 10 2018 3 revised Semi Structured FGD guide for CHWs	Focus Group(s) Guide	10/Dec/2018	3
Dec 10 2018 3 revised Semi structured interview guide for Key informants	Interview Guide	10/Dec/2018	3
Dec 10 2018 LOI for CHWs in Kinyarwanda.	Translated Documents	10/Dec/2018	1
Dec 10 2018 Revised EMAIL SCRIPT FOR INCHARGE OF CHWS	Email Script	10/Dec/2018	2
Dec. 10 2018 LOI for incharge of CHWs in kinyarwanda	Translated Documents	10/Dec/2018	1
NOV 2018 Revised_Research Proposal for training of CHwS	Protocol	28/Dec/2018	2

Documents Acknowledged:

Document Name	Document Type	Document Date	Document Version
Dec 10 2018 LOI for CHWs in Kinyarwanda.	Translation Certificate	10/Dec/2018	1
Dec. 10 2018 LOI for incharge of CHWs in kinyarwanda	Translation Certificate	10/Dec/2018	1

No deviations from, or changes to, the protocol or WREM application should be initiated without prior written approval of an appropriate amendment from Western HSREB , except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University HSREB operates in compliance with, and is constituted in accordance with, the requirements of the TriCouncil Policy Statement: Ethical

Appendix I: Visa Approval from the National Institute of Statistics of Rwanda

REPUBLIC OF RWANDA

Kigali, ...16 JAN 2019....

N°...0021/2019/10/NISR

NATIONAL INSTITUTE OF STATISTICS OF RWANDA
P.O. Box 6139 Kigali
Tel: +250-571035 Fax: +250-570705
E-mail : info@statistics.gov.rw

Schdrack NGABONZIZA
University of Rwanda
College of Medicine and Health Sciences
KIGALI

Dear Sir,

RE: VISA Approval

Reference is made to your letter dated December 17th, 2018 requesting for authorization to conduct a study on "*Exploration of Community Health Workers' Training in the District Supported by TSAM Project in Rwanda.*"

After examining your request and according to the law N° 45/2013 of 16/06/2013, stating on statistical activities organization in Rwanda, we have the pleasure to inform you that the Visa is granted. Therefore, the findings should not be considered as official statistics as it is a pure qualitative study and should not be disseminated as such. However, the NISR would also encourage you to work closely with the Ministry of Health (MoH) for contextual support.

Thank you for your collaboration.

Yusuf MURANGWA
Director General

CC: - Ministry of Health

Curriculum Vitae

Name: NGABONZIZA Schadrack

Post-secondary education and degree

- 2017-2019 In progress master's degree at Arthur Labatt Family School of Nursing Faculty of Health Sciences, Western University, London, ON, Canada

- 2011-2013 Bachelors' degree at University of Rwanda,
  College of medicine and health sciences, School oh Health sciences,
  Department of Clinical medicine and community health.

- 2006-2008 Advanced diploma A1 at University of Gitwe, Rwanda
  Faculty of general Nursing.

Related works

- Presentation and Course Facilitation at the University of Western Ontario during my studies 2017 to 2019.

- Tutorial assistant at university of Rwanda from 2015 to 2017
  School of Health sciences, Department of Clinical medicine and community health.
- Nurse at University teaching Hospital of Butare (CHUB) from 2009 to 2015.

Volunteering work

- Supervision of Clinical officers' student at CHUB 2014-2015

Scholarship and Awards

- Scholarship to pursue master's studies at the University of Western Ontario by Training Support Access, Model, Maternal, Newborn, and Child Health (TSAM-MNCH) project in Rwanda from 2017 to 2019.

Conference Presentation

- Peer reviewed presentation of the findings of my thesis entitle" Exploration of CHWs'training in the districts supported by TSAM project in Rwanda" in the coordination meeting of TSAM project of Rwandan and Canadian team held on June 7th, 2019, London. ON, Canada.
- Poster presentation at third annual Power & Global Health day held at Western on 14th November, 2019.