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Community Health Workers and Trainers Perspectives on Education and Practice: A Qualitative Case Study in the Context of Maternal and Child Health in Rwanda

Damilola Toki, *The University of Western Ontario*

Supervisor: Lloy Wylie, *The University of Western Ontario*

A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Health and Rehabilitation Sciences

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Abstract

Achieving global health-care goals hinges on a health workforce that is available, competent, and productive. Chronic health worker shortages impede the abilities of health systems to provide equitable services, especially in low-resource settings.

Global consensus on bridging health workforce gaps calls for alternatives such as using community health workers (CHWs) to achieve healthcare aims. CHWs are laypeople who are closely connected with communities and provide frontline health services. Although CHWs are an integral part of workforces in many countries, with potential to inform global health systems, CHW programs continue to operate on the fringe and are fraught with challenges.

This dissertation applies a critical pedagogical lens to study CHW education and practices in Rwanda. Identifying CHWs and trainers as key stakeholders, this work brings their perspectives to the fore. The dissertation a) unpacks CHWs' and trainers' experiences with CHW education and practices, b) discusses preferred pedagogical approaches for optimized CHW education, and c) highlights drivers, enablers, and challenges of community maternal and child health work.

This work comprises three integrated manuscripts along with introduction, methodology, and discussion chapters. The first manuscript contributes to broad health-care systems discussions on addressing worker shortages with a focus on CHW programs and calls for critical systems thinking to be applied to CHWs' engagement. The second examines CHW education from the perspectives of CHWs and trainers. The third discusses enablers, drivers, and challenges of community health work, highlighting inherent assumptions and ethical issues. It also unpacks burdens and support needs identified by CHWs.

Qualitative case study methodology was used to investigate the perspectives of 16 CHWs and 10 trainers on CHW education and practices. Data was analyzed using thematic analysis, mind mapping, and NVivo software. The data reveals gaps in CHW education and practices, and highlights contextual factors shaping their work.

This thesis contributes to knowledge about CHWs within health systems, approaches to optimize CHW programs, and CHW education. The results suggest holistic systems-thinking approaches situating CHWs within varying sociocultural, educational, and practice-specific contexts should be adopted in designing CHW educational programs. Furthermore, it demonstrates the benefits of engaging CHWs and trainers as key stakeholders.

Keywords

Community Health Workers, Adult Education, Health Systems, Pedagogy, Global Health Workforce, Maternal and Child Health, Systems Thinking, Task Shifting, Low Resource, Low Literacy

Summary for Lay Audience

Health systems are struggling to meet the needs of people across the world. One of the difficulties is a shortage in the number of health-care workers needed to provide services. Governments and health-care leaders in Rwanda agreed that women known as “community health workers” (CHWs) should be recruited to take care of the healthcare needs of pregnant women in their communities. CHWs are local women without professional education who are trained to carry out health work. Although many organizations are training CHWs, there is a lack of research where the workers and their trainers are asked what they have to say about their education and the work they do in communities. This information is especially important because there are many CHWs providing health-care services in countries around the world.

This research undertook a case study of community health work in maternal health in Rwanda. Sixteen community health workers and ten trainers were asked about their education, teaching preferences, and working conditions. Four approaches to facilitate CHW education were identified: 1) the power of storytelling using pictures and real-life scenarios, 2) effective educational design for learning, repetition of learning materials, learning from peers and doing role plays, 3) using their own experiences, knowledge, and relationships, and 4) paying attention to the workers’ practical needs. Three approaches to facilitate CHWs capacity to work in their communities were also identified: 1) more educational support, 2) wages – their present work is unpaid, and 3) essential health-care equipment.

The research findings show there is a need to change the way CHWs are being educated. Methods that are more participative, interactive and build on the knowledge CHWs already have are recommended. Also, there is a need to change the way CHWs work, to compensate them for their work, and provide them the support they need to be effective.

CHWs are very important to health systems, but there are ways to improve the way they are educated and supported within the system. Addressing these issues using information from the workers themselves and their trainers will help people design better educational and work packages for CHWs.

Co-Authorship Statement

I, Damilola Toki, acknowledge that this thesis includes three integrated manuscripts that evolved from collaborative endeavours under the supervision of Dr. Lloy Wylie and committee members Dr. Elizabeth Anne Kinsella and Dr. Sandy DeLuca, who will be co-authors on publication of manuscript(s) resulting from this thesis. In the three manuscripts, primary intellectual contributions were made by the first author: who conducted the literature reviews, researched the theoretical underpinnings and methodology, collected and coded data, and led the data analysis and writing of manuscripts.

The contribution of the co-authors, Drs Wylie, Kinsella and DeLuca was primarily through the supervision of the research, theoretical and methodological guidance, reflexive dialogue, and intellectual and editorial support in crafting the work for publication

Dedication

This work is dedicated to my parents and daughter.

For mum, whose educational dreams were truncated, with a triple burden of care enforced on her at an early age.

For dad, who aborted his PhD dreams and chose to fund his family with scarce resources.

For my second mum Lino, lost to me in the cold grips of Dementia. I hear your voice at every turn.

For my beautiful daughter, an enthusiastic bundle of bold colours and expressions.

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Preface

The Reflective CHW

Up the hill, I trudged under the scorching sun

I paused and scanned the horizons

In that one moment, I was flooded with thoughts

Thoughts of all the things I had left undone

My farmland untilled, supper uncooked, my husband's furious glare

For a split second, the burden felt unmanageable

My feet faltered on the slopes and I wavered in my heart

While I paused, the clouds gathered

Furious raindrops pelted my unprotected self

Chilled my very being and I despaired...

But in my heart, I heard the cries of labour pains mixed with fear

My heart spoke to me as my feet flew down the slopes

Drenched to my skin, I forged ahead on the muddy slopes

My heart whispered, 'the burden is your gift and contribution'

Yes! I whispered as I hurried to keep my sister alive

Damilola Toki, 2021

“This poem was inspired by this research and is my own reflection on some aspects of the dissertation findings, not that of the participants.”

Chapter 1

1 Introduction

This dissertation contributes to the global discourse on strengthening health systems related to bridging chronic health workforce gaps. The World Health Organization (WHO) defines health workforce as “all people engaged in actions whose primary intent is to enhance health” (WHO, 2006, p. 1), and identifies it as one of the six building blocks of health systems (WHO, 2007a, 2010a). The WHO, in their 2007 report on human resources for health, categorized a well-performing health workforce as one which is available, competent, responsive and productive (WHO, 2007a).

The WHO first declared a health workforce crisis in its 2006 world report, which estimated a global shortage of almost 4.3 million doctors, midwives, nurses, and support workers by 2015 (WHO, 2006). Furthermore, the report indicated the gaps in the supply and demand for health workers would be more concentrated in low-resource countries compared to high-income countries (WHO, 2006). A more recent report by the WHO titled, *Universal Truth: No Health Without a Workforce*, projected a global shortage of 12.9 million health workers by 2035 and reinforced the disproportionate distribution of health workers across the globe (Campbell et al., 2013). A comparison of findings from these reports reflects a downward trend in the availability of human resources for health. As a result, health workforce shortages underscore suboptimal population health outcomes in the majority of countries grossly affected by the crisis.

Against a backdrop of chronic health worker shortages and global pandemics, health systems across the globe continue to grapple with the impact of shortfalls in the health workforce, such as inequitable distribution of health-care services and other health-care access-related gaps (Byskov et al., 2019). As a result, the world is faced with a higher burden of diseases and poorer health outcomes among vulnerable populations, such as women and children. According to current estimates, countries most affected by health worker shortages constitute more than 95% of all maternal and child deaths (Campbell et

al., 2013; Huang & Finegold, 2013; Musoke et al., 2021; Premji et al., 2021; Shang et al., 2021; WHO, 2006).

Beginning in 2006, the quest by global stakeholders for sustainable solutions in addressing the health workforce crisis led to a refocus on primary health care (PHC) as the way forward to ensuring equitable access to health-care information and services, thus revisiting the Alma-Ata declaration (WHO, 2007a, 2018). According to the WHO and United Nations Children's Fund (UNICEF),

PHC is a whole-of-society approach to health that aims to ensure the highest possible level of health and wellbeing and their equitable distribution by focusing on people's needs and preferences (as individuals, families, and communities) as early as possible along the continuum from health promotion and disease prevention to treatment, rehabilitation, and palliative care, and as close as feasible to people's everyday environment. (WHO & UNICEF, 2018, p. 2)

The global refocus on primary health care and a global consensus for the expansion of service delivery approaches beyond hospital-based care paved the way for bridging health workforce gaps with alternate health workforces, such as community health workers (CHWs) within health systems (Assefa et al., 2019; Gilmore & McAuliffe, 2013; Koon et al., 2013; Maria et al., 2021; Seidman & Atun, 2017). The WHO defines a CHW as

any health worker who performs functions related to health-care delivery; was trained in some way in the context of the intervention; but has received no formal professional or paraprofessional or tertiary education, should be members of the communities where they work, be selected by the communities, be answerable to the communities for their activities and should be supported by the health system. (WHO, 2015, p. 1)

Specifically, the inclusion of CHWs as a pillar within health systems is aimed at increasing equitable access to health services through community level interventions provided by an alternate cadre of service workers, skilled or unskilled (Laurenzi et al.,

2020; Najafizada et al., 2015; USAID, 2010). Although varying models and definitions of CHWs exist within health systems strengthening discourse, this thesis work adopts the WHO definition for CHWs and is focused on the role of CHWs as it relates to increasing access to maternal and newborn and child health services, particularly in Sub-Saharan Africa (SSA).

Within the context of community health work, this chapter sets the stage by highlighting health worker shortages, gaps in CHW education and the challenges encountered in practice, captured from the perspectives of CHWs and their trainers. Furthermore, it underscores the need to recognize CHWs' and trainers' voices as key stakeholders with valuable insights on ways to strengthen CHW interventions.

1.1 Dissertation/Thesis Overview

In this introductory chapter, the thesis is introduced as a whole, outlining the purpose of this work, and exploring my positionality as a researcher. Several core concepts which were drawn upon to explain the theoretical underpinnings of the work are also described and defined. The chapter concludes with an explanation of how each manuscript builds upon the next, contributing to the broader implications of this scholarly work.

The aim of this research aligns with the WHO's call for innovations in human resourcing for health, a global quest to identify best practices, as well as approaches and challenges associated with the implementation of CHW interventions (WHO, 2018b). Therefore, this critical scholarly work is positioned within international calls for research on CHW interventions. Providing the backdrop for this work was the Training, Support and Access Model (TSAM) for Maternal, Newborn and Child Health (MNCH), a program that contributed to continuing professional development in emergency care and access in maternal, neonate and child health in Rwanda under six thematic areas: 1) community health, 2) mentorship, 3) cross-cutting themes of gender, ethics, inter-professional collaboration, and gender-based violence, 4) maternal mental health, 5) research, and 6) program evaluation and policy. That project provided the platform to conduct research into CHW training and education within the context of MNCH.

1.2 Rationale

According to the WHO, more than 66% of all maternal deaths occur in SSA countries, with approximately 62% of maternal deaths occurring from preventable and treatable complication such as hypertensive disorders, hemorrhage, and sepsis (Schneeberger & Mathai, 2015). Lack of access to health care and services drives these high rates of maternal mortality – often due to pregnancy-related complications – including mortality among children under five on the African continent (WHO, 2010a). Global efforts to reduce maternal mortality and morbidity in these settings are hindered by a shortage of skilled health workers. As a result, there has been an increase in the proliferation of CHW programs as a stopgap to health worker shortages, especially in developing countries (Dawson et al., 2014; Liu et al, 2011; Mundeve et al., 2018; Mwai et al., 2013; USAID, 2010; WHO, 2006). Stakeholders continue to invest resources into CHW programs in a bid to support equitable access to health care (Lewin et al., 2010; Naimoli et al., 2012, 2014).

Despite evidence supporting CHWs' contributions to improving maternal and child health outcomes, there are many barriers to their effectiveness within health systems, including lack of formal professional education and lack of compensation or recognition of their roles (Lassi et al., 2012; Pallas et al., 2013). As CHW education represents one of the fairly significant barriers to CHW effectiveness, it is presented as a key focus area under this dissertation. Although education is a key determinant of CHWs' efficiency and success within health systems; factors such as a paucity of research on how CHWs prefer to learn and implementation of vertical programs by stakeholders pose a challenge to CHW education and practice (Funes et al., 2012; Lightfoot & Palazuelos, 2016; Wiggins et al., 2013). In addition, education is often undertaken with little consideration for the unique positioning of CHWs as adult learners and how this impacts their learning.

Furthermore, despite the upsurge in CHW programs, there is little evidence that brings to the fore voices of CHWs and trainers on issues related to CHW education and practice (Bhatia, 2014; Scott et al., 2018). This consequently leads to suboptimal engagement of a critical mass of stakeholders in global conversations geared towards enhancing the CHW role and effectiveness within health systems.

On account of the role and contributions of CHWs to improving health-care access at the community level in SSA, it is imperative to situate their learning and intervention designs in ways that support knowledge acquisition, retention, and practice, thereby empowering CHWs to deliver effective care and improve practice performance. There is also a need to modify educational practices, such as training and development of materials, in ways that align with patterns of knowledge transmission in low literacy settings (Amerson & Strang, 2015). Furthermore, to harness CHWs' potentials within health systems, there is an urgent need for research to identify how CHWs prefer to learn and gain a common understanding of practice challenges. Therefore, the proposed study seeks to address these gaps by exploring CHWs' experiences as learners and consumers of knowledge, and trainers' experiences of CHW education and practice. The research aims to lend a voice for articulating CHW and trainer preferences as it relates to effective education and meeting practice needs.

1.2.1 Background & Context

Although CHWs are identified as critical human resources within health systems, they remain an invisible cadre within health systems (Frontline Health Worker's Coalition [FHWC], 2014). A growing body of evidence reiterates unfair treatment of CHWs and highlights CHWs' sense of disempowerment and disconnect within health systems (Kane et al., 2020). In addition, recommendations to strengthen the design of CHW interventions, including education, lack practice insights drawn from the lived experiences of CHWs and trainers. Therefore, there is a growing call for attention to the collation of evidence on effective strategies, replicable models, approaches, and recommendations for successful implementation of CHW programs, particularly within the context of maternal, newborn and child health (Independent Evaluation Group, 2016; John et al., 2019; O'Donovan et al., 2020; Scott et al., 2018; WHO, 2018c). The term "community health worker" is generic and incorporates roles and responsibilities of all cadres of health-care workers. Within this broad categorization, this dissertation is focused on a category of CHWs, comprising a nonprofessional cadre of health-care team members trained to perform specific functions related to maternal and child health-care delivery.

The broader intent of this thesis is to inform design and implementation approaches for CHW interventions. It aims to achieve this by identifying CHWs and trainers as key stakeholders and bringing to the fore their voices on education and practice approaches.

1.3 Guiding Research Questions

This study was guided by the following research questions:

1. What are CHWs' perceptions of the benefits and challenges of education in the field?
2. What are CHWs' recommendations for improving education?
3. What are CHWs' and (trainers') perceptions of the state of current practices in the area of maternal and child health?
4. How do CHWs and (trainers) perceive drivers, enablers, and challenges to practice in the area of maternal and child health?

1.4 Historical Perspective of Community Health Programs

Community health programs are driven by activities of CHWs at the community level. This model of care dates back to the 1950s with China's "barefoot doctors" and Thailand's village health volunteers as foremost examples within the literature (Campbell & Scott, 2011). These examples set the stage for the proliferation of similar programs throughout developing countries. On this platform, lay community members were trained to provide primary health care, providing care in rural areas where few qualified doctors wished to work or settle (Roemer & Dias, 2016). The evolution toward this approach to health-care delivery in the 1960s stemmed from the inability of the modern Western medical model to meet health-care needs of rural and poor populations in the developing world (Perry et al., 2014). With the magnitude of morbidities and mortalities from preventable diseases, an increased focus and attention was given to the barefoot doctor concept as an innovative model of health-care delivery. In direct alignment with the WHO's quest for alternate models of care centred on social justice, equity, community

participation, disease prevention, decentralization of services and the use of community-based workers, the increasingly popular concept gave rise to the publication of best practices to leverage the skills of CHWs in the field. The book published by the WHO in 1975, titled *Health by the People*, formed the intellectual foundation for the Alma-Ata conference which informed the global direction for Primary Health Care (Perry et al., 2014).

1.5 Rwandan Context

Rwanda is a low-income country centrally located in SSA, bordered by Uganda to the north, Tanzania to the east, Burundi to the south and the Democratic Republic of Congo to the west. Rwanda has affectionately come to be known as the country of a “thousand hills” with an area of 26,338 square kilometers and an estimated population of 12,659,993 (UN, 2019; UNDP, 2018). A disproportionate majority live in rural areas, with 84% of Rwandese living in rural areas.

Rwanda operates a centralized health-care system, with the Ministry of Health responsible for providing leadership and oversight to public and private service delivery points in the country and governing all public and private health facilities. Within the context of maternal health, Rwanda emerged as a pacesetter for other African countries by achieving the millennium development goals (MDGs) with an 84% reduction in maternal deaths between 1992 and 2015 (Abbott et al., 2017). However, despite this feat, maternal and child mortality remains high with etiologies comparable to other African countries, including postpartum hemorrhage, postnatal infection, and neonatal infections (National Institute of Statistics of Rwanda & ICF International, 2015; Ngabonzima et al., 2020). The government of Rwanda identified a shortage of human resources in the health sector as a challenge to meeting health-care needs of the people (Uwizeye et al., 2018). Likewise, the rural/urban disparity in population density and mountainous landscape further impede citizens’ access to health-care services. Against this backdrop, CHWs play a critical role in the country’s effort to ensure equitable access to health care (Ministry of Health, 2018).

1.5.1 Overview of Rwanda's CHW Program and TSAM's role

Rwanda commenced its community health program post-genocide in 1995 with the goal of strengthening the capacity of decentralized structures for community health service delivery in response to access gaps and the need to reverse poor maternal and child health outcomes. From the inception of the community health program in 1995, the total number of CHWs within the health workforce has grown from 12,000 to 58,298. (Ministry of Health, 2013). CHWs are selected based on the following criteria: (a) able to read and write; (b) aged between 20 and 50; (c) willing to volunteer; (d) living in the local village; (e) honest, reliable, and trusted by the community; and (f) elected by village members. Each village is assigned a total of four CHWs who meet these parameters. One of the four CHWs is known as the Animatrice de Santé Maternelle (ASM) who is tasked with maternal, newborn and child-related health promotional activities including: (a) follow up of pregnant women and their newborns, (b) malnutrition screening, (c) community-based provision of contraceptives, (d) preventive noncommunicable diseases, (e) prevention and behaviour change activities, and (f) household visits.

Although evidence indicates CHWs are instrumental to improved maternal, newborn and child health in Rwanda, factors such as gaps in education and attrition are identified by the government as challenges infringing on the effectiveness of the program (Liverpool School of Tropical Medicine: Centre for Maternal and Newborn Health, 2016).

1.5.2 Overview of the TSAM Project and Community Health Component

The Training, Support and Access Model (TSAM) for Maternal, Newborn and Child Health (MNCH) in Rwanda was a four-year multimillion-dollar project funded by Global Affairs Canada, with cash and in-kind contributions from Western University, York University, the University of British Columbia, and Dalhousie University, implemented from 2016 to 2020. The project sought to strengthen the health sector's response to improve MNCH. The project engaged multisectoral partnership approaches in establishing a sustainable, cost-effective model of training, mentorship, and outreach for continuing professional development in emergency and routine MNCH service delivery.

Against this backdrop, the project worked collaboratively in action teams on community health (CH) and five other areas. Activities related to the research for this thesis fit within the CH theme of the project.

Specifically, The CH TSAM Model addressed challenges related to MNCH knowledge gaps among ASMs through training and refresher training, provision of education materials and resources for community health work. Within this context, the project supported training and provision of job aids in six districts and two provinces, namely: Rulindo, Gicumbi, and Gakenke districts in the North Province and Gisagara, Muhanga and Ruhango districts in the South Province. From October 2017 to March 2019, the project trained a total of 1744 CHWs clustered around 68 health facilities in the north and 1381 CHWs clustered around 45 health facilities in the south. This thesis work leveraged TSAM's community health training to explore community health work and education provided to CHWs from the perspectives of CHWs and trainers.

1.6 Researcher Reflexivity

At the onset of my doctoral course work, I identified myself as operating from a positivist paradigm. My primary training as a physician predisposed me to a worldview where reality was objectively and scientifically constructed. Positivist paradigms give credence to observations in line with scientific methods or unchanging universal laws (Crotty, 1998). Within this context, researchers often view reality as a structure, while participants are perceived as responders (Berkovich, 2018). This may in turn lead to a limited understanding of participants' realities and the varying ways in which they are construed. With further progress on my doctoral journey, I experienced a paradigm shift in my approach to reasoning and sense-making. My transition into the social constructionism paradigm was birthed through interaction with professors, peers, learning materials, and engagement with various theories over time.

Social constructionism purports that knowledge is constructed within varying cultural and historical contexts and occurs as individuals engage with their environment. (Barrett et al., 2020; Crotty, 1998). Consequently, knowledge is argued to arise from relationships between individuals, the world around them, and transmitted within a social context

(Crotty, 1998). For the researcher, this approach creates room for consideration of how personal biases, beliefs and experiences may influence the research work (Dodgson, 2019). The researcher's conscious and deliberate effort in understanding the role of self in how knowledge is created ensures they situate themselves in the research work and the effect it may have on participants, social contexts and how data collection/analysis is enacted (Berger, 2015). Furthermore, reflexivity brings to the fore the underlying beliefs and values that formed the basis of the researcher's choice of methodological approach (Reid et al., 2018). Consequently, the researcher is enabled to unpack tensions that may arise from discordance between their positionality and participants' socially constructed realities and varying contexts (Brunero et al., 2015). Applying this to the thesis work provided an understanding of how community health work is carried out by eliciting perspectives of CHWs and trainers on CHW education and community health work from multiple socially constructed viewpoints.

The key defining moment which shaped my thesis work occurred while studying *Pedagogy of the Oppressed* by Paulo Freire (2000) under my field-specific learnings. The Freirean model resonated with permutations which I had not yet been able to name or identify in practice. Freire was concerned with a shift from the banking model of education towards a more liberating model of education. He called for a problem-solving approach to learning, characterized by a learning environment in which people are empowered to critically reflect upon their circumstances and arrive at solutions through dialogue and interactions. Furthermore, he emphasized the need for education to be grounded in peoples' experiences and realities. This began my quest into critical pedagogy. In my previous role as a public health practitioner, I was tasked with conceptualizing, designing, and formulating implementation strategies for CHW programs. Within this role, I struggled with understanding the drivers for the tension and discordance between boardroom/planning concepts and field/implementation realities of CHW programs. Furthermore, donor expectations related to remuneration, training and ideas about how the field work should be conducted added an additional layer of tension in regard to providing strong programming. Learning about critical pedagogy and health systems provided insight into some of the tensions experienced in my public health role. I must recognize and be forthcoming with this perspective because this lens has forever

influenced my views, including how I approached my research design, data collection, analysis, and dissemination.

1.6.1 My Positionality as a Researcher

My training as a physician and practice realities at the early stage of my career as a clinician crystallized the importance of prevention as central to effective health care especially in low- and middle-income countries. This motivated a career switch from clinical medicine to public health in a quest to make meaningful contributions to the development and implementation of grassroots interventions focused on health promotion, wellness, and self-determination for community members at the population level. As a service delivery manager at the Planned Parenthood Federation of Nigeria (PPFN), a non-governmental and member association of the International Planned Parenthood Federation (IPPF), for over eight years, I managed multiple donor-funded grants implemented at facility and community levels. These initiatives aimed to improve maternal and child health, sexual reproductive health, and to increase access to quality family planning information and services. In addition, under the “buddy/sister” member association initiative of the IPPF Africa region, I participated in experiential exchange programs in Kenya, Mozambique, Swaziland, Ethiopia and South Africa. These placements exposed me to program intervention design and implementation within the context of different African countries and cultures. Furthermore, these experiences increased my awareness of health-care access barriers and challenges faced by women and children in African countries. In particular, my experience in program-implementation design, training of service providers and community health work within the context of maternal and child health served as a foundation underpinning my thesis work.

In addition, my past experience working closely with CHWs opened my eyes to the disjuncture between how interventions are planned and the realities of CHW education and practice. While working on a five-year project funded by the MacArthur foundation, with a focus on strengthening CHW interventions in north-east Nigeria, I was tasked with an urgent in-field reprogramming of the CHW education component of the project to better suit the educational needs of the CHWs. This experience changed my perception of

CHW education and showed that engaging alternate approaches to teaching, such as the use of songs, graphics and less didactic approaches, were helpful in educating CHWs within the project. Furthermore, this experience shaped my understanding of the complexity of CHW work within health systems and birthed my interest in exploring CHW experiences and perceptions of their education and practice.

Determining the researchers' position as an insider or outsider is important when considering similarities and differences between the researcher and the participants (Dodgson, 2019). I am a Nigerian, a West African by geographical classification. I started out on my research journey with the notion of being considered an insider under a broad African context. However, scholars interested in positionality assert that researchers may have multiple identities (Bourke, 2014). It soon became clear that my citizenship as a Nigerian intending to conduct research in Rwanda was associated with grey areas that had potential to create tension for field work. My "outsider within" status in Rwanda became glaringly obvious as I was conferred a dual positionality of being an insider in a broad African context and an outsider within the Rwandan context. This aligns with the body of evidence indicating researchers frequently hold complex positionalities, being both insider and outsider at the same time (Adeagbo, 2021; Roberts, 2018). While I often passed as a Rwandan citizen on account of my phenotypical features, my outsider status was consequential along more bureaucratic lines which presented varying degrees of difficulty in accessing the field.

Although most challenges encountered resided within bureaucratic domains, my insider/outsider status was constantly negotiated within the contexts of national identity, university affiliation, and language. Navigating these roadblocks required coming to terms with my outsider identity within a sister African country, understanding cultural differences, maintaining a posture of humility, openness, and a willingness to be guided.

My inability to speak the local language (Kinyarwanda) was a drawback. Using a translator and alternating from question to translation to back-translation felt impersonal and emphasized my outsider status. Sharing a common language would have increased understanding of nuances in the linguistics which most likely were lost in the translation,

even though field notes describing body language and vocal intonations were made. Communicating back and forth between English and Kinyarwanda was a limiting factor when describing certain experiences even when the translator was proficient in both languages and had an extensive vocabulary.

1.7 Chapter Overview

In order to better situate the research questions within the broader health systems context pertaining to the use of CHW programs in bridging health workforce shortages, the next chapter presents the methodological approaches used, and then the third chapter explores concepts of health systems and the health workforce. Chapters 4 and 5, presented as two individual manuscripts, present the key findings of the field research, showcasing perspectives of CHWs and trainers on CHW education and practice respectively. The final chapter concludes the thesis with a broader consideration of study implications and recommendations. While each chapter is written as an independent paper for publication in an academic journal, they cohesively build upon one another as they emerged through the process of this work. Manuscripts arising from this research will be submitted for publication following the completion of my doctoral degree.

Chapter 2

2 Methodology and Methods

Within this chapter, the study methodology and methods are presented. This chapter presents an overview of critical pedagogy, implementation science and methodological assumptions. Next, the methods section addresses the overall design of the study, how participants were accessed, details regarding the collection and analysis of data, and quality criteria related to the study.

2.1 Methodology

Selecting appropriate research methods depends greatly on the questions being asked (Elliott, 1999). As such, the research objectives played a major role in determining the methodological approach adopted. The purpose of this research is twofold. First, to gain insight into the perceptions and experiences of education by CHWs, in order to draw out their preferences for educational approaches that support and enhance their learning. Secondly, to explore the perception of community maternal health work from CHWs' and trainers' perspectives. The study aims to support the optimization and strengthening of CHW education and practice drawing on feedback from CHWs and trainers. On account of the complexities in which CHW education and practice occur, case study methodology was identified as suitable for undertaking the thesis work.

Case study research is a strategy involving an empirical investigation of a particular contemporary phenomenon, holistic description, and analysis of a single entity or social unit within its real context (Merriam, 1998). Case study research has several advantages; key to this work is its effectiveness as a research approach when the object of study takes place in a real-life context (Merriam, 1998). Case studies are used where the boundaries between the phenomena under study and the context are not clearly evident (Stake, 2000, 2005; Yin, 1989, 1999). Stake (1995) highlighted the pluralistic nature of issues and multiple contexts in which they occur, such as political, social, historical, and especially personal contexts as a rationale for adopting case study methodology in research.

Case study methodology emerged as a good fit for evaluating CHW education and practice due to the dynamic interplay of multiple factors and complexities of the operational contexts of community health work. Furthermore, the particularistic nature of case study methodology is deemed beneficial when seeking to generate in-depth understanding of a specific topic or program, to generate knowledge and enhance understanding of practice towards strengthening professional practice and policy formulation (Merriam, 1998, 2009; Simons, 2009).

2.2 Implementation Science

Within the purview of public health, an implementation science (IS) lens was engaged in framing the study based on its suitability for studying intervention processes, translation into evidence-based approaches, and its applicability for incorporating the findings into guidelines within the public health domain (Kroelinger et al., 2014). Implementation science is defined as “the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services” (Eccles & Mittman, 2006, p. 1). The last two decades witnessed a paradigm shift within research domains from knowledge diffusion towards implementation. As a result, the potentials of implementation science for advancing research gained popularity (Demiris et al., 2014). In contrast to traditional clinical research which has a dominant focus on eliciting the scientific basis for cause and effect, IS offers broader scope and consideration for varying contexts related to providers, organizations, and broader health systems (Bauer et al., 2015).

Within the context of health-care systems, promising and empirically tested interventions often fail to achieve expected results and may not be replicable in different contexts (Kelly, 2013). Towards reversing this trend, IS approaches offer a platform upon which researchers and stakeholders are able to carefully examine rolled-out innovations with the goals of refining current interventions and creating innovative strategies to improve quality of care (Demiris et al., 2014). The study leverages IS’s potential benefits for the exploration of evidence-based practice with the goals of identifying and addressing implementation gaps at multiple contextual levels (Bauer et al., 2015). Within this

context, it creates generalizable knowledge that can be applied across settings in responding to questions arising and meeting specific intervention needs (Nordstrum, 2017). Specifically, IS seeks to assess factors that influence continued intervention effectiveness, such as barriers to effective implementation, and understanding of various contexts, complex interactions that have a bearing on the implementation process, and evidence-informed practices (Jackson et al., 2020; Nordstrum, 2017). Within the public health context, IS is beneficial in capturing successful implementation strategies for replication and tailoring implementation approaches to offer the maximum benefits for all stakeholders. Thus, IS serves as the link between effective interventions, practice, and health-related outcomes (Newhouse et al., 2013).

Taking all the above into account, case study methodology using a critical lens within the domains of IS was deemed appropriate for this work due to its suitability to answer “how” and “why” questions, where the focus is on processes (Yin, 2014), and “what” questions intended to understand the case (Merriam, 1998; Yin, 2014). Given the lack of literature on the phenomenon of interest from a Rwandan context, qualitative data was collected using methods such as semi-structured interviews, document analysis of policy briefs and national guidelines, as well as other relevant documents (e.g., Rwandan National Community Health Policy) related to community health, specifically those associated with maternal and child health interventions.

2.3 Theoretical Framework: Critical Pedagogy

This thesis is guided by critical pedagogical theoretical approaches. “Critical pedagogy” is a collective term describing theoretical perspectives with a focus and push for transformative, empowering, and transgressive educational experiences (Giroux, 2004, 2010; McLaren, 2000; McLaren & Kincheloe, 2007). Critical approaches to education often explore and question existing practices with a view to present different ways for undertaking education. Within this context, education is often viewed as a means to social justice and change (Freire, 2000; Aslan-Tutak et al., 2011). These perspectives gave direction to examining community health workers’ (CHWs’) and trainers’ experiences of how education is provided to CHWs and maternal CHWs in Rwanda.

Within the critical pedagogical paradigm, this work is anchored in anti-oppressive modes of education as posited by Paulo Freire. Identified as a problem-posing approach to learning, the Freirean model is characterized by a learning environment in which people are empowered to critically reflect upon their circumstances and arrive at practical solutions through dialogue and interactions (Freire, 2000). Departing from a banking-model approach to learning, critical pedagogical approaches view learners as beings giving birth to knowledge and potentially transformed in teaching and learning contexts (Freire, 2000). This approach incorporates experiential knowledge brought forward by trainees such as CHWs, and their lived experiences and operational contexts into their learning experience. Furthermore, built on the premise of social construction of reality, critical pedagogical approaches recognize the social construction of meaning. They posit that the world must be approached as an object to be understood and known through the efforts of learners themselves within the context of their experiences, lived conditions and circumstances (McLaren, 2000). The study objectives are centred around eliciting how learning is enacted through the transformative power of indigenous knowledge, which brings to the fore how residents of an area understand themselves in relation to their natural environment, and how they organize knowledge, cultural beliefs, history, teaching and learning to enhance individual and communal lives (McLaren & Kincheloe, 2007).

2.4 Description of the Case

The case studied was the didactic in-class training of CHWs under the Training, Support and Access Model (TSAM) described in Chapter 1. The TSAM's community health component provided education to maternal CHWs (known as Animatrices de Santé Maternelle, ASMs) through training and provision of job aids in six districts namely: Rulindo, Gicumbi, and Gakenke districts in northern Rwanda and Gisagara, Muhanga, and Ruhango districts in southern Rwanda. The case was bound by two geographic districts, the ASM group of CHWs, two CHW education groups (one group from the north and one group from the south) provided through one organization and one source of funding.

2.5 Sampling of Respondents

The CHWs and trainers interviewed were not intended to be a representative sample of all CHWs and trainers involved in maternal community health work in Rwanda. The aim of recruitment was to have a sample of people involved in community health work willing to provide insight to the research questions, based on differing perspectives and experiences related to education received/provided and maternal and child health-related community health work.

Against this backdrop, the CHWs selected were unpaid and unlicensed laypeople, closely connected with the communities they served. The majority of respondents were older married women between 35 and 60 years of age, recruited according to government-specified criteria. Predominantly farmers, maternal CHWs in Rwanda support preventive health measures and improved access to appropriate curative maternal and child health services through the conduct of door-to-door visits and follow-up with identified pregnant women.

On account of the informal volunteer nature of their role, maternal CHWs in Rwanda performed assigned tasks alongside farming, other income-generating activities and domestic roles. In addition to routine home visits for health education and promotion related to antenatal, delivery and post-partum care, CHWs are often called upon to accompany pregnant women to health facilities for pregnancy-related care and facility-based delivery.

Purposive sampling was used to select participants based on the inclusion criteria. This sampling strategy was deemed appropriate as a way to include a variety of perspectives in the analysis. The purposive sampling approach seeks out groups, settings, and individuals where (and for whom) the processes being studied are most likely to occur (Denzin & Lincoln, 2011). Purposive sampling was employed in order to target CHWs and trainers who had experienced education provided under the TSAM community health program, and had knowledge considered relevant for shedding light on the research questions (Patton, 2002; Thorne, 2016).

2.6 Participant Recruitment

The recruitment process began after ethical approval (see Appendix A) was received from the University of Western Ontario's Research Ethics Board (REB) and the institutional research ethics board for the University of Rwanda (see Appendix B).

With the support of the TSAM program manager in Rwanda, participants were selected from the Rwandan national database for trainers and CHWs using the inclusion and exclusion criteria. Prospective participants were invited to participate in the study over the telephone using a script developed for this purpose (see Appendix C). To ensure coercion did not occur under the process, it was emphasized that the study was not administratively linked to TSAM or the Rwanda Biomedical Center, and there was no potential for adverse impact on CHW or trainer roles. In total, 26 people were interviewed: 16 CHWs and 10 trainers. Recruitment tools for this study included a letter of information and consent form (see Appendix D), and a telephone script.

2.6.1 Participant Community Health Workers

The inclusion criteria for the CHW participants were: (a) CHWs trained in the last 36 months under the TSAM project, (b) CHWs trained in the maternal, newborn and child health intervention part of the TSAM project, (c) willing to participate in an interview, and (d) could understand, read, and speak either English or Kinyarwanda.

Exclusion criteria consisted of: (a) CHWs whose primary responsibilities did not involve maternal community health field work and (b) CHWs unwilling to participate in the study.

2.6.2 Participant Trainers

The inclusion criteria for the trainer participants were: (a) persons that had at least one-year experience providing and/or planning training for CHWs, (b) willing to participate in the study, and (c) could understand, read, and speak either English or Kinyarwanda. Exclusion criteria consisted of (a) trainers who did not provide trainings to CHWs, and (b) trainers who were unwilling to participate in the study.

Inclusion and exclusion criteria were put in place to ensure that the participants were able to comprehend and respond sufficiently to the interview questions.

2.7 Data Gathering Strategies

Data gathering included three key aspects: 1) the review of policy documents, guidelines, and reports, 2) semi-structured interviews with CHWs, and 3) semi-structured interviews with trainers. This allowed for multiple data sources, which is in keeping with accepted data collection approaches when using case study methodology (Merriam 1998; Stake, 2000, 2005; Yin, 1989, 1999). A detailed description of the methods used to collect data are described below.

2.7.1 Review of Policy Documents and Guidelines

Document analysis is defined as; “a systematic procedure for reviewing or evaluating documents both printed and electronic (computer based and internet transmitted) materials” (Bowen, 2009, p. 27). Within the context of qualitative research, document analysis may provide clues, additional insight, and context, and reveal values underlying policies while providing depth to a case (Bowen, 2009; Merriam 1998; Simons, 2009).

Against this backdrop, this dissertation began with a review of documents to understand the context in which maternal health related community work and the TSAM project were implemented in Rwanda. The documents reviewed comprised official policies, strategies, and program evaluation reports. These documents provided background context which, coupled with the rich experience of the participants, lent profound insight into CHW education and practice.

Identification of relevant documents was undertaken using four key criteria: a) government documents on community health programs in Rwanda, b) government documents on CHW education in Rwanda, c) relevant reports on CHW programs in Rwanda, and d) the research questions. The document identification and acquisition process was facilitated by asking for relevant documents from the community health TSAM manager and an independent internet search. Data extraction was completed as follows: Documents were skimmed to get an overview and sense of the content; this was

followed by in-depth reading to extract information and identify categories relevant to the research (information was exported to Excel and MS Word). Finally, the extracted body of the documents was interpreted within the context of the research questions (Bowen, 2009; Dalglish et al., 2021). Findings from the review provided context, strengthened the findings, and provided greater understanding of the case (Baxter & Jack, 2008).

Specifically, findings from the document analysis indicated that CHWs constitute an integral part of the Rwandan health system and showcased strong policy backing and government goodwill for the national CHW program. However, despite evidence that existing plans and policies centred on the use of CHWs bridge health-worker shortages in Rwanda, findings were consistent with gaps identified in the literature related to CHW education and practice. The documents showed that factors such as attrition of CHWs, absence of national guidelines on CHW educational content, gaps in educational frequency, and duration and dependence on donor interest negatively impact the Rwandan CHW program.

Furthermore, documents indicated that insufficient financial resources and vertical donor programs led to a discordance between how the Rwandan CHW program is envisioned in policy documents and the implementation realities. While the national documents revealed a robust plan for adoption of community-based strategies for improving maternal and child health, alongside significant reliance on CHWs as vehicles for change, documents revealed significant gaps in the articulation of processes and approaches for strengthening CHW education and practice within the Rwandan health sector. These findings corroborated recommendations brought to the fore by CHWs and trainers, provided insight into the context of CHW programs in Rwanda and provided a comprehensive backdrop for exploration of CHWs' perception and experiences of their education and practice.

2.7.2 Semi-structured Interviews

Semi-structured interviews were conducted at selected health centres across southern and northern Rwanda using developed study guides. The parameters investigated were tied to the research questions and explored experiences of education received by CHWs/

provided by trainers, and community health work. Health centres were selected that were centrally located and easy to access by participants. Interviews were conducted over a period of three weeks; the length of the interviews ranged from 45 to 60 minutes. The details of the study were first discussed with CHWs and trainers prior to the interview sessions by way of reviewing the letter of information (refer to Appendix D) which explained the study and the research process. For participants who agreed to be interviewed, informed consent was obtained from them at that time. During this process, I encouraged participants to ask any questions they might have and clearly explained that participation was voluntary, outlined confidentiality and privacy procedures, and reiterated that they may withdraw from the study at any time prior to data analysis. Copies of the letter of information were provided to participants to keep for their own records.

Pseudonyms were assigned to all participants to preserve anonymity and confidentiality. Pseudonyms which de-identified the data from the participant reflected the region, district, language of interview, respondent's number and participant's consent or refusal to be quoted. All of the interviews were audio-recorded and transcribed verbatim. During the interview, a bilingual field translator fluent in Kinyarwanda and English provided verbatim translation in real time. She conveyed questions and responses between participants and me. Secondly, I hired an independent bilingual consultant who provided a second level of verbatim translation and transcription of the audio-recordings of all interviews using forward and backward translation principles (Lopez et al., 2016). In line with the principle, audio recordings of the interviews were first transcribed verbatim in Kinyarwanda, followed by back translation to English. Documents were finalized by comparing for accuracy and adjusted as required. To ensure the integrity of the data, all translators and transcriptionists signed a confidentiality agreement (Appendix E). Field notes were made by the primary researcher during and after each interview to document observations, including facial expressions, emotions and body language expressed during the interview. According to Phillippi and Lauderdale (2018), field notes may provide additional insights and corroborate what was expressed orally.

2.8 Data Analysis and Interpretation

Data analyzed for the case included transcribed semi-structured interviews with CHWs, transcribed semi-structured interviews with trainers, a review of relevant policies, guidelines and reports and my field notes. In case study analysis, data from multiple sources are converged in the analysis process as a way to understand the case as a whole. Consequently, the converged data informed the result without existing as stand-alone data sources.

Data analysis was carried out in three stages, in a stepwise manner to ensure rich rigor under the process (Tracy, 2010). The three stages included 1) thematic analysis; 2) mind mapping, and 3) applying NVivo qualitative software for systematic coding.

2.8.1 Stage One

The thematic analysis process was guided by three steps, namely, holistic analysis, selective analysis and detailed analysis using a stepwise approach (Kinsella & Bidinosti, 2016). During this phase, I immersed myself in the data and broad themes, overall reflections, initial thoughts or impressions, notes, similarities, or differences. First, using the research questions as an anchor for the analytic process, all transcripts were read holistically to get a sense of the whole, then the data were selectively read for “parts” of the “whole”. This was followed by detailed reading with a focus on identification of passages, key words, and phrases that elicited an understanding about what CHWs and trainers had to say about their experiences of education and community health work.

2.8.2 Stage Two

Mind maps provided visual representation of key ideas (Buzan, 2003). Mind maps consisting of visual diagrams fanned out with thought bubbles were used to bring together key ideas/themes and draw connections in a visual and nonlinear way (Dhindsa et al., 2011). This enabled a focus on how participants represented different associations and tracking of emergent themes from the data (Tattersall et al., 2011; Wheeldon & Ahlberg, 2012). The mind maps provided the backdrop for regular meetings with the research team to discuss and to create a dialogue around the emergent themes and

preliminary findings. Once the team was confident and in agreement that the themes represented the predominant ideas articulated in the data (those most frequently expressed by CHWs), I organized the data according to these predominant emergent themes and transferred the data to NVivo software 12.0,2018.

2.8.3 Stage Three

The NVivo qualitative software program was used for systematically coding the themes. Within this context, it provided a comprehensive approach to data management which allowed for sorting, clustering, and comparison of codes between and within subgroups in support of themes under the study and allowed for quick and easy retrieval of data (Houghton et al., 2015).

2.9 Quality Criteria

For the purposes of this study, I applied Tracy's eight quality criteria for evaluating qualitative research (Tracy, 2010): worthy topic, rich rigor, sincerity, credibility, resonance, significant contribution, ethics, and meaningful coherence.

2.9.1 Worthy Topic and Rich Rigor

Tracy (2010) described a worthy topic as interesting or evocative, and centred on issues that challenge assumptions and practice. A literature review of the knowledge base on CHW programs, education, and community health work related to maternal and child health in Africa was undertaken. Findings from the literature review highlighted the topic as an emerging area of research worthy of further study and the value of exploring the experiences of CHWs within health systems. Furthermore, engaging a critical lens for the literature review highlighted the gaps and assumptions underpinning implementation of CHW programs, and showcased potential areas for further exploration in optimizing CHW programs.

According to Tracy (2010), factors such as the use of multiple theoretical constructs, data sources, contexts and demonstrated care in the data collection and analysis process lends rich rigor to research. Rich rigor was achieved through the use of multiple theoretical constructs which brought to the fore the varying contextual factors that shape experiences

of CHWs in the areas of education and practice within health systems. Furthermore, within the body of the research, all processes related to data collection, data analysis and data organization were richly described and explained in detail before and after field entry.

2.9.2 Sincerity and Credibility

Self-reflexivity and transparency in qualitative research serve as markers for sincerity (Tracy, 2010). Self-reflexivity enables a researcher to assess personal biases and motivation for undertaking the research (Tracy, 2010). Self-reflexivity was achieved through a process of personal assessment and questioning geared towards eliciting my own pre-assumptions, judgments, and prior experiences to become fully aware of myself. In addition, meeting with the project team (in Canada and Rwanda) and responding to inquiries related to my motive for the research, choice of location and trust related to my outsider status helped situate my position as a researcher. The ensuing vulnerability as a researcher facilitated humility, negotiating access, trust, and openness to the experiences of my participants (Tracy, 2010). Transparency was achieved through being explicit about how this topic was approached, by clearly articulating my theoretical perspectives, documenting decisions made along the way in field notes and journals, and clearly sharing my location as a researcher. Reflexivity took place individually and as a team continuously. During the collection and analysis process, I debriefed my research supervisors on a regular basis. My research supervisors also read provided feedback on the data analysis process and gave approval for emerging themes. Additionally, my detailed field notes documented the study progression.

“Credibility refers to the trustworthiness, verisimilitude and plausibility of the research findings” (Tracy, 2010, p. 842). The degree to which findings from qualitative research can be depended upon for consistency, accuracy, replicability, and reliability is indicative of the credibility of the research (Tracy, 2010). “Credibility in turn is informed by practices such as thick description, triangulation or crystallization, and multivocality and partiality” (Tracy, 2010, p. 843). Credibility was achieved by thick description of the research process. In-depth details of the research findings tailored towards showing readers experiences of CHWs and trainers were presented. Drafts of findings were

reviewed by my supervisors to ensure accurate and detailed description was provided. Being true to the participants' perspectives is another way to demonstrate credibility (Thorne, 2016). For this study, individual 45 to 60-minute semi-structured interviews enabled participants share their experience about the study topic. The interviews were audio recorded and transcribed verbatim and reviewed for accuracy to enhance credibility.

2.9.3 Resonance and Ethics

According to Tracy, resonance refers to the ability of the research to “meaningfully reverberate and affect an audience” (2010, p. 844) The author recognized aesthetic merit, evocative writing, generalizability and transferability as ways to promote resonance in qualitative research (Tracy, 2010). Resonance was achieved using approaches related to naturalistic generalizability and transferability. Within these contexts, findings are presented using rich descriptions and the testimonies of participants were presented using direct quotes.

Incorporating ethics into qualitative research, beyond ethics board approval, is indicative of the quality of the research. Ethical practices can be broadly categorized into procedural, situational, relational, and exiting ethics (Tracy, 2010). The various components are geared towards fostering trust, safeguarding participants, respect and presenting findings in ways devoid of unexpected consequences. Ethics was addressed in this study by obtaining free and informed consent from participants and making sure participants were fully informed and able to withdraw consent before commencement of data analysis. In addition, the letter of information was provided to participants ahead of the data collection. Taking additional measures to maintain privacy and confidentiality included the use of pseudonyms and alphanumeric codes, using password-protected data files, and locked file cabinets for documents.

2.9.4 Significant Contribution and Meaningful Coherence

Significant contribution refers to the ability of qualitative research to extend knowledge, deepen understanding and insight within the contexts of practice, policy, or existing body of knowledge (Tracy, 2010). The findings from this research advances knowledge on

community health worker education and practice by bringing to the fore experiences of CHWs and trainers as stakeholders and recommendation for optimizing CHW programs.

Meaningful coherence was achieved by ensuring all processes related to the research were guided by the aims, objectives, and research questions. Furthermore, the research supervisors regularly reviewed the dissertation and generated knowledge for alignment with proposed goals and congruence.

2.10 Conclusion

In this chapter an overview of the methodology and methods of the empirical aspect of the dissertation has been presented. Chapters 4 and 5 (manuscripts) present the findings from the study.

Chapter 3

3 Health Systems and the Health Workforce

The World Health Organization (WHO) defines health systems as “all organizations, people and actions whose primary intent is to promote, restore or maintain health” (WHO, 2007a, p. 2). Globally, health systems remain weakened by health-care inequities, access barriers, inefficient distribution of the health workforce and a host of other factors (Byskov et al., 2019; Fulton et al., 2011). Weakened health systems are linked with poor health outcomes and low performance on health indicators such as maternal and child health morbidity and mortality (Agyepong et al., 2017; Countdown to 2030 Collaboration, 2018).

The COVID-19 pandemic exacerbated long-standing health systems gaps, unveiling health-care inequities and disparities among population groups across the globe (Lal et al., 2020). Notably, richer countries often referenced as the gold standard for health-care systems were plunged into crisis in the wake of factors such as increasing resource constraints, health worker burnout, health worker shortages and movement of tasks across cadres (Silvestris et al., 2020; Vervoot et al., 2021).

Over the decades, Sub-Saharan African (SSA) countries have been disproportionately affected by health worker shortages on account of factors such as a severe deficit in skill mix and an imbalance in the distribution of skills of limited, yet expensive professionals available (WHO, 2006). The magnitude of health systems devastation, burden of disease, and access gaps in treatment and care experienced in the region lent a heightened sense of urgency to health systems strengthening efforts (Lehmann et al., 2009). Against this backdrop, the majority of SSA countries adopted health workforce innovations such as engagement of alternate cadre of workers with less specialization to increase access to health-care services (Deller et al., 2015). The current state of global health systems presents the opportunity to discuss contribution and inherent gaps in the implementation of health workforce innovations within the context of health systems strengthening efforts in SSA countries. Within the broader concept of health systems strengthening, the double aims of this theoretical discussion paper are a) to outline connectivity between

health systems strengthening, universal health-care coverage and innovations for addressing health workforce shortages through community health workers (CHWs), and b) to engage a critical systems thinking lens in highlighting implicit imperialistic assumptions embedded within the conceptualization and implementation of CHW interventions in African settings. This paper sets the tone for Chapters 4 and 5, which further expound on challenges and opportunities for advancing CHW interventions within the context of CHW education and practice.

3.1 Health Systems Strengthening: Linkages with Universal Health Care and Sustainable Development Goals

Health systems strengthening is defined as purposeful effort(s) to improve performance of health systems (Kieny et al., 2017). Health systems strengthening is hinged on optimizing six critical blocks: service delivery, health workforce, information, medical products, financing, and leadership and governance (WHO, 2007a). These six building blocks underpin strategies and approaches adopted in optimizing health systems (WHO, 2007a). The 2000 WHO report on health systems indicated that health systems goals are achieved when health-care services are provided in ways that are efficient, accessible, and equitable using available resources (WHO, 2000). As a result, the degree to which citizens are able to access health-care services is indicative of health system's performance (Sanogo et al., 2019). Global stakeholders emphasize health systems strengthening as the lynchpin in the global discussion on universal health care (UHC) and sustainable development goals (SDGs) (World Bank, 2017).

According to the World Bank, UHC refers to access to quality health-care services coverage and financial risk protection for all persons at the country level (World Bank, 2017). The WHO itemized UHC coverage as the primer for attaining equitable access to health care and improved population health within health systems (Fusheini & Eyles, 2016; Kieny et al., 2017; Onarheim et al., 2015).

SDGs seek to achieve optimum population health, and the degree of national progress towards UHC coverage may serve as a marker for measuring progress towards SDGs

(Callister & Edwards, 2017; Gera et al., 2018). Achieving universal health coverage is dependent on dynamic interaction between multiple factors. Of these factors, availability of health workforce remains critical to achieving equitable health-care access (Fried et al., 2013).

3.2 Context of Health Workforce and Health Systems in Developing Countries

The WHO itemized health workforce shortages as the most critical issue facing health-care systems and emphasized the connectivity between access to health services and having the right people with the right skills, in the right place, at the right time (WHO, 2003, 2007a). A recent report on the global health workforce projected a shortfall of 18 million health workers by 2030 (WHO, 2018c). Although there is a chronic shortage of well-trained health workers globally, SSA countries with the greatest public health threats remain the most affected (WHO, 2006). The region houses only 3% of the world's health workers and has an estimated world health expenditure of only 1% (WHO, 2006).

Furthermore, there is a severe deficit in skill mix and an imbalance in the distribution of skills of limited, yet expensive professionals within the region (WHO, 2006). The impact of the interplay of these poor indicators on health systems functioning is further compounded by a mismatch between available skill mix and local healthcare needs of the people. As a result, these regions experience a higher prevalence of diseases, morbidities, and mortalities from a wide range of preventable diseases and health issues (WHO, 2006).

In 2016, the WHO reported on health workforce forecast requirements for UHC and SDGs, estimating a worsening of needs-based health worker shortages in African countries. The report stated African countries would require the greatest annual increase rates in health worker supplies to meet the SDG index threshold (WHO, 2016).

Addressing the global health workforce crisis requires holistic consideration of all areas of workforce needs, including morale boosting needs of local workforces. However, achieving this feat requires a paradigm shift from the use of linear strategies towards more comprehensive systems approaches in solving health workforce related challenges within health systems (WHO, 2006; World Bank, 2017).

As part of broader health systems strengthening efforts, the call to strengthen health workforces in ways aligned with broader health systems approaches birthed the “task-shifting” agenda within SSA (WHO, 2006). Task shifting is defined as a process of delegation, whereby tasks are moved, where appropriate, to less specialized health-care workers (WHO, 2007b). Within health systems, task-shifting interventions are often engaged to reduce health inequities by decentralizing health-care provision to communities, leading to decreased reliance on more highly trained and less accessible health-care professionals (Orkin et al., 2018).

3.3 Task Shifting: Health Workforce Reverse Innovation

Attaining health for all in SSA remains a herculean task due to complex interactions between multiple systemic and socioeconomic factors. According to the *Working Together for Health* report (WHO, 2006), an estimated 57 countries have a critical shortage of health-care workers; 36 of these countries, which contribute 24 % of the global disease burden, are situated in SSA. Despite the vast burden of disease in the region, only 3% of the global health workforce is in the African continent (Deller et al., 2015). The problem of shortage of health-care providers has reached a critical level in many SSA countries, necessitating the need for rapid expansion of the human resources for health pool (Campbell & Scott, 2011). This expansion is identified as crucial for curtailing the spread of diseases and meeting basic health-care needs.

Furthermore, the region is plagued with disproportionate disparity between population size and physician ratio. An estimated 0.3 physicians are available for every 1000 people, compared to 1.2 and 2.0 in middle- and upper middle-income countries (Joshi et al., 2014). Also, inequitable distribution of health-care workers exists between urban and rural areas. Despite the demonstrated higher need for health-care providers and large population sizes, health-care provider availability is lowest in these areas (Schneeberger & Mathai, 2015). These factors create significant challenges for the provision of both facility- and community-based health care, including services for maternal and newborn health (Deller et al., 2015). Against this backdrop, meeting the healthcare needs for

populations in SSA is hinged on creating an alternative workforce structured around community and consumer needs (Joshi et al., 2014).

In response to aforementioned factors, task shifting emerged as a service delivery innovation aimed at bridging access gaps brought about by a breakdown in health-care systems and infrastructure in low-income countries (Lehmann et al., 2009). The underpinning principle is the assumption that less specialized and non-professional cadres of health-care teams can take on some responsibilities typically undertaken by more specialized workers as a cost-efficient approach (Deller et al., 2015). According to the WHO report on *Global Strategy on Human Resources for Health: Workforce 2030*, task shifting explores ways in which cost-effective interventions can be used in delegating tasks to other cadres within the health workforce (WHO, 2016).

Adoption of task-shifting modalities provides tailored measures for addressing the health systems gaps of workforce shortages, skill-mix imbalances and inefficient distribution of the health workforce (Fulton et al., 2011). Identified as an important approach for maximizing health worker performance in resource poor countries, task shifting in SSA offers an immediate stopgap. This stopgap has the dual advantage of being suitable and easily deployable within available resources and contributes to long-term plans for fixing dilapidated health systems (Bhushan & Bhardwaj, 2015).

The transfer of tasks to health-care workers with shorter training and fewer qualifications is expected to make efficient use of available human resources and ease service delivery bottlenecks (Guilbert et al., 2013; WHO, 2007b). Within this context, task-shifting interventions are often engaged to reduce health inequities through the decentralization of health-care services to communities, thereby decreasing reliance on more highly trained and less accessible health-care professionals (Orkin et al., 2018). In practice, a wide range of its application exists such as task shifting among health-care professionals, with nurses and midwives acquiring increased roles and responsibilities to movement of tasks to non-health-care professionals such as CHWs or other new cadres of non-professional staff (Fulton et al., 2011). Specifically, differences in health-care indices among countries in SSA necessitates the need to tailor task-shifting approaches to each individual

country's context and needs. Consequently, task shifting is implemented as a complex health systems intervention with an expansive scope, transcending application as a narrow clinical intervention (Colvin et al., 2013). Currently, various approaches to task shifting for the purpose of increasing access to health care are currently implemented in SSA countries and globally. Although, more frequently used in low- and middle-income countries, adoption of task-shifting initiatives within health systems is not restricted to low-resource settings only (Maier, 2015; Maier et al., 2018). Specifically, the scope of this paper is limited to the application of task shifting to CHWs within the domain of maternal and child health in low-income countries.

3.4 Reverse Innovation: Engaging CHWs in Middle- and Low-Income Countries

Attempts at addressing shortages in the health workforce led to efforts focused on rapid expansion of the human resources for health pool. This brought about emergence of alternate workforces, such as models of CHW programs structured around community and consumer needs (Campbell & Scott, 2011; Joshi et al., 2014). Application of task shifting within the context of maternal and child health fueled incremental deployment of CHWs and proliferation of CHW programs within health systems, particularly in SSA. Within this context, task shifting from midwives and obstetricians in resource-poor settings to other providers is centred on strengthening the health workforce for improved global maternal health outcomes (Dawson et al., 2014). Furthermore, as part of health systems strengthening efforts, adoption of CHW programs is identified as a key approach for levelling health inequities, with the potential for dramatic positive impact on the health of women in Africa (WHO, 2010a). Although descriptions and tasks assigned to CHWs varies by country, the members of this emergent health workforce are distinguished by a lack of professional, paraprofessional or tertiary education (Lewin et al., 2010; O'Donovan et al., 2018). Specifically, within the health workforce, absence of formal professional health-care education or certification differentiates CHWs from health-care workers such as doctors or nurses (Pallas et al., 2013).

3.5 Historical Perspective of Community Health Programs in Sub-Saharan Africa

Although there is renewed interest in CHW programs globally, this model of care dates back to the 1950s with China's "barefoot doctors" and Thailand's village health volunteers as foremost examples within the literature (Campbell & Scott, 2011). These examples set the stage for the proliferation of similar programs throughout developing countries. On these platforms, lay community members were trained to provide primary health care (PHC) in rural areas where few qualified doctors wished to work or settle (Roemer & Dias, 2016). The revolution toward this approach to health-care delivery in the 1960s stemmed from the inability of the modern Western medical model to meet healthcare needs of rural and poor populations in developing world (Perry et al., 2014).

The magnitude of morbidities and mortalities from preventable diseases focused attention on the barefoot doctor concept as an innovative model of health-care delivery. This model of care was in accord with the WHO's quest for alternate models of care, centred on social justice, equity, community participation, disease prevention, decentralization of services and the use of community-based workers. This revolution gave rise to best practices for using CHWs in the field, published by the WHO in 1975 in a book titled *Health by the People* (Newell & WHO, 1975). This book formed the intellectual foundation for the Alma-Ata conference which informed the global direction for PHC (Perry et al., 2014).

In SSA, the 1978 Alma-Ata declaration itemized PHC as the vehicle for achieving "Health for All". Rollout of PHC initiatives lent visibility to the strategic role of community health programs in achieving the WHO's vision of Health for All by the year 2000 (Christopher et al., 2011). The Alma-Ata declaration pinpointed health as a fundamental human right, while advocating for individual and community participation in all processes pertaining to health-care planning. It focused PHC as a key component of health systems. It also highlighted the role of health-care provision at the grassroots level, with government and individual self-reliance and self-determination in achieving healthy communities (WHO, 1978).

Specifically, the emphasis of the Alma-Ata declaration on strategic benefits of CHW use in the delivery of basic health-care services at the village level authenticated the use of CHWs in health-care delivery (Haver et al., 2015). This created a unique niche for community health programs in health systems' response to the crisis of inadequate human resources for health. Furthermore, the advent of HIV AIDs and its vicious sweep across developing countries brought about a revisit of community health programs using task-shifting initiatives. Rapid increases in new infections, overburdened health systems and the ferocity of the HIV epidemic set the stage for innovation in the global HIV response. Compared to other disease entities, vulnerability, and infection of health workers with HIV progressively led to a decline in the number of health workforce members. This in turn had a weakening impact on global response to HIV in SSA (WHO, 2006). The need for a comprehensive approach and community involvement in the HIV response engendered development of new institutions and regional cooperation in the HIV response (WHO, 2006). Against this background, a repositioning of recognition of lay people's participation and critical role in their own health agenda instead of being passive recipients, contributed to the re-emergence of interest in the use of CHWs (Bigirwa, 2009).

3.6 Community Health Workers in Maternal and Child Health: Roles and Contributions

The health of women and children are intricately interwoven and are key elements that demonstrate the state of the health system on a national scale. They constitute a most at-risk population, suffering multiple morbidities and mortality in the wake of poor health systems (Schneeberger & Mathai, 2015). In developing countries, women of reproductive age, newborns and children constitute more than half the total population. This group disproportionately suffer poor health outcomes across a broad spectrum of maternal and child health indicators.

According to the WHO 2010 *Progress Report on African Maternal Health Issues*, more than 99% of maternal deaths occur in developing countries, with nearly half of these occurring in SSA (WHO, 2010a). Women living in SSA have a higher risk of dying while giving birth than women in any other region of the world. In the African continent,

giving birth is identified as the leading cause of death in women aged 15 to 19 (WHO, 2010a). Although the rate of maternal mortality varies significantly across the world, it represents the most inequitably distributed health indicator globally. Currently, 1,000 women die per 100,000 live births in SSA, compared to 24 deaths per 100,000 live births in European countries.

Although various factors ranging from health-seeking behaviours of women, place of residence and lack of power in predominantly patriarchal societies interface in a very complex mix, health systems failure has a critical role in perpetuating these negative outcomes for women and children in SSA. Specifically, the WHO emphasizes lack of access to health care as a culprit responsible for the perpetually high rates of maternal deaths due to pregnancy-related complications and deaths of children under five in the African continent (WHO, 2010a). This severe shortage of health-care workers, particularly in rural areas, continually thwarts global efforts to achieve universal access to maternal and child services and reverse poor pregnancy and childhood outcomes (Dawson et al., 2014).

Against this background, the need to strengthen health systems with a focus on addressing health worker shortages through CHW programs was identified as one of the three key approaches with potential for dramatic positive impact on the health of women in Africa (WHO, 2010a). Addressing the healthcare needs of women and children requires adoption of strategies which simultaneously provide services for women and children. The interconnectivity between the two population subsets lends an unethical angle to interventions that deal with health issues of women while ignoring their children and vice versa (WHO, 2005). Therefore, interventions designed to mitigate maternal morbidity and mortality, such as CHW interventions, are designed for service provision to children alongside mothers at facility and community levels.

CHWs showcase the long-standing role of community members in public health promotion and protection (Liu et al., 2011). Specifically, CHWs attenuate the health-care human resources crisis by providing essential maternal and childcare at households while simultaneously serving as links to facility-based services (Bigirwa, 2009). This approach

promotes the supply of an integrated package of care to both mother and child and eliminates factors inhibiting the desire to seek facility-based care such as consideration for childcare. In the last two decades, programs involving CHWs evolved as an integral part of health systems in developing countries. The ensuing adoption of incremental shifting of tasks to CHWs within the maternal health-care teams is hinged on scientific evidence demonstrating improvements in maternal morbidity and mortality indices across African countries (Grant et al., 2017).

The design and nature of CHW programs focused on improving maternal and child health have the strategic advantage of increasing user acceptability by community members. This characteristic addresses identified obstacles to the success of large-scale expansion of facility-based health programs (Liu et al., 2011). For example, the selection from and residence of CHWs in local communities provide a platform for effective extension of care to underserved populations such as women, children, and the elderly. Using this approach, services are taken directly to these users, eliminating barriers constituted by cost of transportation or assistance in accessing care at the facility level. Furthermore, CHW programs are shown to be a culturally adept approach to the provision of people-centred primary health-care provision. The proximity of CHWs to the grassroots enable the delivery of health promotion and complex health counselling interventions to the grassroots population (Scott et al., 2018).

The unique role of CHWs as intermediaries between the community and formal health system such as health-care facilities enable the support the continuum of care through services provided by CHWs. It facilitates provision of referral services to community members as needed (Condo et al., 2014). On account of this peculiarity, CHWs are able to effectively serve as a bridge between community and formal health systems (Naidoo et al., 2019; Schneider & Nxumalo, 2017). In most settings, CHWs are supervised by formal cadres such as nurses and midwives stationed at the facility. Interactions with more formalized cadres are reported to strengthen CHWs' performance, foster job satisfaction and may boost a sense of legitimacy with community members and the health system (Hill et al., 2014).

The use of CHWs in driving focused community interventions such as maternal and child health initiatives provide an equitable platform in reaching women and children in rural and hard-to-reach areas with evidence of effectiveness (Nkonki et al., 2017). Interactions between development of positive and trusting relationships and community participation is accountable for successful use of CHWs in improving maternal health (Grant et al., 2017). The role played by CHWs in health education about best practices in pregnancy, birth and newborn care to women's and community support groups contributes significantly to improving integrated maternal, newborn, and child health in SSA (Lassi et al., 2012).

3.7 Critical Systems Thinking and Health Systems

Modern health systems are socially complex organizations with intricately connected challenges and bottlenecks which fall within the category of wicked problems (Periyakoil, 2007). Wicked problems are characterized by dynamic interplay of multiple factors which defy application of linear or simple-fit interventions (Elia & Margherita, 2018; Peters, 2017). Health systems performance is closely linked to levels of efficiency and interactions between various factors within and outside the health systems (George et al., 2019). The degree to which performance-related drivers, multiple actors and varied contextual factors are successfully aligned has a bearing on overall health systems functioning (Samuels et al., 2017). As a result of these complex interactions, health systems are fraught with complex problems (WHO, 2010b).

Against this backdrop, the dynamic and complex nature of health systems create a unique niche for application of critical systems thinking approaches in appraising health systems. Critical systems thinking approaches present an expanded platform for scrutinizing various components of health systems with the broad goals of optimizing performance. This is in alignment with the call for adoption of holistic approaches; cognizance of the complex interconnectivity between health systems components, power dynamics and varied interests among stakeholder groups within health systems (Adam & de Savigny, 2012).

Critical systems thinking offers dual concepts of systems thinking and social theory in appraising complex health systems for issues related to power imbalance, inequities, and a host of other factors (Jackson, 2019). Specifically, critical theory elicits dominant ideologies, and brings to the fore less visible perspectives and voices related to a given area of interest (Callaghan, 2016). Systems thinking enables the engagement of expanded and holistic approaches in viewing, communicating, and understanding relationships that underpin and shape how systems function (Phillips & Stalter, 2020; Stalter et al., 2016). Within health systems strengthening discussions, systems thinking enables sense-making of local contexts and varying stakeholders' perspectives by unpacking linkages, and complex interactions within the health systems (McGill et al., 2021; Ribesse et al., 2015; Rwashana et al., 2014). Evaluating chronic health systems gaps using a critical system thinking lens supports the identification of workable solutions and facilitates collaborative problem solving from multiple stakeholder perspectives (Lembani et al., 2018; McGill et al., 2021).

Within the context of CHWs, critical systems thinking lends insight into frequently neglected challenges arising from assumptions undergirding the conceptualization, design and implementation of CHW programs in many SSA countries. CHW programs represent complex entities with national and local contexts (Schneider & Lehmann, 2016). For CHW programs to be effective, there is a need to understand the relationships between the various parts and adoption of a comprehensive approach such as systems thinking in appraising health systems (Schneider & Lehmann, 2016). Application of systems thinking to CHW programs shows that frequently referenced specific characteristics of CHWs only partly determine their performance. Instead, this approach brings to the fore the impact of wider community and health systems-related factors on the effectiveness and performance of CHWs (Schneider & Lehmann, 2016). Critical systems thinking offers a platform for global stakeholders' consideration of the varied contextual factors underscoring effectiveness of community health work and embeddedness within health systems.

3.8 Critical Systems Thinking and CHW Programs

Evidence indicates the emergence of CHWs as an integral part of the primary health systems workforce, particularly in SSA countries (McCord et al., 2012; Schneider and Nxumalo, 2017). Health systems in many low- and middle-income countries increasingly draw on CHWs for advancing population health, levelling health inequities through cost effectiveness and health-care access benefits (Naimoli et al., 2014; Nkonki et al., 2017; Scott et al., 2019). Within the context of maternal, child and overall population health, evidence shows CHWs are effective in improving health outcomes (Lu et al., 2020). However, despite increased expansion and dependence on CHWs as critical human resources within health systems, they often remain invisible and not necessarily a part of the formal health sector (Frontline Health Workers Coalition, 2014; Tseng et al., 2019). CHWs often operate on the fringe of health systems, excluded from health sector planning with no clear pathways to integrate them into the formal health sector. On account of this, their contributions within health systems are often overlooked, leading to poor coordination and inefficiency of CHW programs within health systems (Schneider & Nxumalo, 2017). In addition, there is a lack of consensus on standardized approaches for the conceptualization, design and implementation of CHW interventions in the majority of health systems (Lassi et al., 2012; WHO, 2010b). Within the global platform, a renewed interest in CHWs as an emergent health workforce provides the opportunity to explore issues related to effectiveness and identification of ways CHW programs can be strengthened within health systems (Perry et al., 2017).

CHW programs are often centrally coordinated by external donors who may lack in-depth understanding of operational contexts. Isolated western perspectives of intervention conceptualization and design may bring about a disconnect between field realities, operational contexts and fit (Ammerman et al., 2014; Frontline Health Workers Coalition, 2014). Resultantly, there is an increase in lack of fidelity and misalignment between proposed intervention designs and implementation realities in many African settings (Ammerman et al., 2014; McKay, 2020).

A growing body of evidence reiterates the unfair treatment and potentials for disempowerment of CHWs within health systems (Kane et al., 2020). Effort and time put

into community health work by CHWs is often classified as volunteerism. Poor perception of value and contribution of CHWs within health systems may obscure stakeholders' recognition of CHWs as legitimate service providers resulting in poor compensation of CHWs (Spencer et al., 2010). This is consistent with literature indicating women's engagement in productive work is often less visible and less valued compared to their male counterparts (Nawaz & McLaren, 2016). This practice may potentially increase suffering and the burden of care placed on women within health systems (Delaney & Macdonald, 2018). Towards reversing this trend, critical scholars emphasize the need to revisit unquestioned assumptions related to care willingness, enforced voluntary commitment and impact of macro policies supporting utilization of free labour from women (Power, 2020).

Inadequate funding coupled with restricted use of existing funding continue to truncate the efficiency of CHW programs in the majority of SSA countries (Spencer et al., 2010). According to the 2020 report, *Strengthening Primary Health Care Through Community Health Workers; Closing the 2 Billion Dollar Gap* by USAID, an estimated 60 % of CHW program funding is provided by external donors. Funds are often spent on vertical disease interventions and influenced by donors' areas of focus or spending preferences (USAID, 2020). This pattern of funding leads to fragmented and poorly integrated CHW programs within primary health systems in many SSA countries (Gichaga et al., 2021). Multiplicity of players may bring about coordination challenges, resulting in inefficient use of funds and overlapping efforts at country level (Gichaga et al., 2021).

As well as the aforementioned system-level factors, CHW-specific factors such as education, drivers, and enablers may impede community health work. CHW education is identified as a key determinant of their performance and efficiency within health systems (Musoke et al., 2018; Scott et al., 2018). Although CHW education is often flagged as a barrier to formalizing CHW cadres within health systems; evidence indicates current practices related to pedagogical approaches, frequency of educational sessions and presentation of educational materials may be ineffective in educating CHWs (Kambarami et al., 2016). Similarly, a host of practice-related factors such as formalized incentives, intrinsic drivers and practice challenges have an impact on how well CHWs function

within health systems (John et al., 2019). Details of findings and CHWs' insights for bridging educational and practice-related gaps and assumptions are presented in manuscript format in Chapters 4 and 5 of this work.

3.9 Conclusion

Health workforce innovations such as the engagement of CHWs are often disconnected from the formal health systems in ways that indicate the absence of well-articulated plans for grafting this cadre of workers into the formal systems. This has the potential to undermine community embeddedness of CHWs, overlook their contribution within health systems, foster disconnection from tasks and reduce motivation (Scott et al., 2018). In addition, this practice raises questions around equity, fairness and ethical fit of task shifting in the absence of optimum provision for the needs of workers. CHWs' embeddedness within functioning health systems and community support is crucial for optimized performance (McCord et al., 2013; Schneider & Nxumalo, 2017).

Consequently, implementation of CHW interventions must be undertaken with the understanding of complex contextual challenges faced by CHWs and community members. In this way, drivers for optimized CHW effectiveness such as education, culture, support, and supervision will be mainstreamed from the conception phase of intervention designs. This would in turn empower CHWs in navigating complex relationships within the community and the health system (Grant et al., 2017). For holistic design of CHW programs, stakeholders and policy makers must work together in formulation of policies which will reposition CHWs as complementary entities within the formal health-care system (Bigirwa, 2009). In conclusion, there is a need to explore formalization of CHW cadres within health systems in ways that create clear pathways for career development and effectiveness. These pathways will encompass creation of mechanisms for training, support, coordination, and feedback between CHWs, the formal health system, communities, and various stakeholders.

Chapter 4

4 “Show Us So That We Can See It and Know It Exists”: Voices from the Field, Pedagogical Approaches to Support Community Health Worker Education in Rwanda

Community health workers' (CHWs') contributions to improving health outcomes of communities, particularly in low-resource settings, are increasingly being recognized. There is a global move toward the adoption of CHW programs due to their effectiveness in bridging lingering shortages in human resources for health (Christopher et al., 2011; Grant et al., 2017; Haver et al., 2015). CHWs provide cost-effective essential health care geared towards reversal of negative health outcomes (Abdel-All et al., 2017). Nomenclature for CHWs is diverse and varies by country, including different definitions of roles, responsibilities, recruitment, remuneration and training approaches. One distinguishing feature of this group of workers is the lack of systematized professional, paraprofessional or tertiary education (Ballard & Montgomery, 2017; Lewin et al., 2010; O'Donovan et al., 2018).

According to the World Health Organization's (WHO's) *Guideline on Health Policy and System Support to Optimize Community Health Worker Programmes* (2018c),

Community health workers provide health education and referrals for a wide range of services, and provide support and assistance to communities, families and individuals with preventive health measures and gaining access to appropriate curative health and social services. They create a bridge between providers of health, social and community services and communities that may have difficulty in accessing these services. (2018c, p. 22)

Against this backdrop, CHW programs complement the work of formally qualified health workers, providing ad hoc workers with specified responsibilities within health systems (Mwai et al., 2013).

Recent calls to increase access to health-care services by repositioning CHW programs within health-care systems brought renewed attention to efforts to strengthen the performance of CHWs (Ormel et al., 2019; WHO, 2015, 2018c). CHWs have demonstrated effectiveness in providing a wide range of services across multiple disease entities (Cometto et al., 2018). This has drawn attention to the unique role of CHWs in advancing access to health services globally, supporting the vision of universal health coverage. Multiple interrelated factors influence performance and effectiveness of CHW programs, with education identified as a key determinant of performance in the field (Kok et al., 2017). This paper focuses on education, bringing to light CHWs' perceptions of effective educational methodologies and pedagogical approaches that can improve practice in the field.

4.1 Community Health Workers and Maternal Child Health

The WHO 2010 progress report on African maternal health issues reported that more than 99% of maternal deaths occur in developing countries, with nearly half of those occurring in Sub-Saharan Africa. Within the African continent, giving birth is identified as the leading cause of death in women aged 15 to 19 (WHO, 2010a).

Gaps in the availability of human resources for health, particularly within the public sector, are central to the maternal health challenge (Hodin et al., 2016). A severe shortage of health-care workers, especially in rural areas, continues to thwart global efforts to achieve universal access to maternal and child services, including meeting the sustainable development goals for maternal health (Dawson et al., 2014; Freer, 2017). Meeting goals for maternal health requires adoption of culturally suitable community-based interventions in addition to service provision in formal health institutions (Mamo et al., 2019). Against this background, CHWs are shown to provide a range of preventive interventions for maternal and child health with some evidence of effectiveness, particularly in low- and middle-income countries (Gilmore & McAuliffe, 2013; Grant et al., 2016). Furthermore, CHWs enable access to a continuum of care in their role as intermediaries between communities and the formal health sector (Condo et al., 2014; Theobald et al., 2016).

The index study is set in Rwanda: although Rwanda attained the maternal health targets of the millennium development goals (Abbott et al., 2016), the state of maternal health measured by key indicators is comparable to other African countries (Gurusamy & Janagarai, 2018; Sayinzoga et al., 2019; Thompson et al., 2018). Currently, Rwanda's CHW program, adopted in 1995 to address challenges related to health-care access and a shortage of health-care providers, stands as the backbone of local health services (Samuels et al., 2017).

Evaluation of effectiveness of CHW programs often focuses on clinical and financial outcomes, giving little attention to the human-centred perspective of CHW programs. This implies there are gaps in understanding contextual complexities in which many CHW programs occur and calls to advance the evidence base for CHW programs using context-specific methods (John et al., 2020; O'Donovan et al., 2020; Scott et al., 2018). The current study responds to this call by eliciting the perspectives of CHWs to advance contextual knowledge about the ways in which CHW education can be strengthened.

4.2 Education for Community Health Workers

Absence of tertiary or formal education among CHWs and the need for continuous education pose threats to successful rollout of CHW programs. This absence of formal professional health-care education or certification differentiates CHWs from providers such as doctors or nurses (Lewin et al., 2010; Pallas et al., 2013). CHW education is a key driver for effectiveness, associated with a positive influence on performance, motivation to work, and job satisfaction. Ineffectiveness of CHW programs is often rooted in inadequate training regimens (Kok et al., 2015; Lopes et al., 2014; Paul et al., 2014). The degree to which CHWs are able to effectively carry out assigned tasks and navigate practice realities is largely influenced by the content, methodology, and values of CHW education (Paul et al., 2014; Wiggins et al., 2013). Educational requirements for CHWs should be understood in reference to local health system contexts, pre-existing capacities of CHWs, and the roles CHWs are expected to play (Scott et al., 2018). Consequently, for education programs to be effective, an important consideration in planning and curriculum development should be recognition of the literacy levels of CHWs.

The majority of CHWs identify as adult learners. Many have lower than average literacy skills, underlining the need for educational approaches which place little demand on the ability of CHWs to read or utilize training manuals (Green et al., 2013). Against this backdrop, prioritization of alternate pedagogical approaches over text-dense traditional approaches may offer promise in improved educational outcomes for CHWs (Amerson et al., 2015).

Despite the importance of education to CHW effectiveness, there is a paucity of research on how CHWs prefer to learn. Gaps exist in the literature on effective intervention strategies and CHWs' preferences for pedagogical approaches supportive of their learning (Altobelli, 2017; Lightfoot & Palazuelos, 2016). Implementation of CHW programs often occurs on the fringe of health systems, such that they are fragmented and centred around meeting specific donor interests. This practice frustrates efforts to replicate best practices due to a lack of sufficient evidence about effective strategies (Cometto et al., 2018; Tulenko et al., 2013). Evaluation of CHW education is often undertaken from a theoretical standpoint, whereby training is evaluated based on specific thematic streams with minimal focus on competence, content, and identification of effective pedagogical approaches (Abdel-All et al., 2017; Lopes et al., 2014; Moleta et al., 2017; Plowright et al., 2018). Similarly, the WHO's 2015 report indicates that available literature often fails to provide linkages and information on effective approaches for building competencies and performance among CHWs.

Recent guidelines from WHO (2018c), recommend a balance between theoretical and practical pre-service training using a range of methodologies. Practice realities highlight the need to re-align CHWs' education in ways that incorporate alternate pedagogical strategies to ensure materials are relevant and understandable in a low literacy context (for example, using narratives, oral practices and enhanced readability of materials) (Amerson et al., 2015; Green et al., 2013). Literature indicates CHWs are inadequately engaged in focused dialogue, elucidating effective pedagogical approaches suitable and more aligned to their literacy and learning needs (Nguyen et al., 2014). Although discussions on strengthening CHW education indicate global progress and momentum in

the right direction, voices of CHWs must be brought to the fore in the identification of challenges and recommendation for strengthening education interventions.

4.3 Purpose

The purpose of the study was to investigate CHWs' perceptions of education methodologies and pedagogical approaches that support their learning. Two key research questions framed the study: What are CHWs' perceptions of the affordances and challenges of education in the field? What are CHWs' recommendations for improving education?

4.4 Methodology

This study was undertaken as an exploratory single case qualitative study within the domains of implementation science, which engaged a critical lens to examine CHWs' perceptions of their education (Kroelinger et al., 2014; Merriam, 1998; Yin, 2014). Case study fosters intensive, holistic description and analysis of a single entity, phenomenon, or social unit (Merriam, 1998). Its use in the current study was centred on its suitability to address questions related to the phenomenon of learning in a particular, bounded educational and geographic context (Yin, 2014). Case study is often used when boundaries between the studied phenomenon and context are unclear (Stake, 2000, 2005; Yin, 1989, 1999). Implementation science, on the other hand, affords an avenue for studying intervention processes, for translating these into evidence-based approaches, and for incorporation of the findings into future guidelines within the public health domain (Kroelinger et al., 2014). This case study, implementation science, approach provided a holistic platform for understanding CHWs' perceptions of the education received, contextual factors driving how they acquire and retain knowledge, and educational preferences for learning.

4.4.1 Boundaries and Parameters of the Case

The case was bounded by two geographic provinces, two groups of CHWs, two CHW education groups provided through one organization and one source of funding. The case focused on the perceptions of participants of in-class education for maternal health

CHWs, known as Agent de Santé Maternelle (ASM). The uncertified education sessions were implemented over a period of three days, with daily sessions spanning approximately seven hours. Using theoretical and practical approaches, sessions covered a variety of topics including description of ASM tasks and responsibilities, interpersonal communication skills, registration of women and girls within the reproductive age group, identification of pregnant women, danger signs in pregnancy, conducting home visits, and use of rapid sms in reporting. Overall, one education session was provided to CHWs in each district over a two-year period (2017–2019). The case was geographically bounded to Gisagara, Ruhanga and Muhanga districts in southern Rwanda and Rulindo, Gakenke and Gicumbi districts in northern Rwanda.

4.4.2 Parameters of the Case

The case study focused on analysis of CHWs' perceptions of education methodologies and pedagogical approaches that support their learning. The case study involved interviews with CHWs (reported here), document review, and interviews with trainers (reported separately). The document review provided contextual and background information for the case study and indicated a trend towards generalized description of CHW education without provision of specific details regarding approaches to educational design and implementation. The primary data reported in this article entails a qualitative analysis of interviews with maternal CHWs in Gisagara, Ruhanga and Muhanga districts in southern Rwanda and Rulindo, Gakenke and Gicumbi districts in northern Rwanda.

4.4.3 Participants and Data Collection

Ethics approval for the study was obtained from the Research Ethics Boards at the University of Western Ontario and the University of Rwanda. Maternal CHWs were recruited using purposive sampling. The Training, Support and Access Model project (TSAM) program manager helped identify potential participants from the national CHW database and facilitated recruitment. Potential participants were provided with the study information. Potential participants were provided with the study information. With their permission, contact was initiated with participants who indicated interest. Sixteen CHWs

were interviewed from two cohorts of students across six districts in southern and northern Rwanda.

4.4.4 Data Analysis

All the interviews were audio recorded and transcribed. Participants were given pseudonyms to preserve confidentiality. Interpretation and translation were carried out in two steps to enhance accuracy. A bilingual interpreter from the same culture as the participants translated verbatim in real time, representing a conduit conveying questions and responses between interviewer and interviewees (Kapborg & Bertaro, 2002). This was followed by a second layer of translation using the principles of forward and backward translation (Lopez et al., 2016). Within this context, an independent consultant transcribed audio recording of the interviews verbatim in Kinyarwanda, followed by back-translation to English. Documents were finalized by comparing for accuracy and adjusting as required.

Thematic analysis was carried out in three steps using the research questions as an anchor for the process: Holistic analysis (reading for a sense of a whole), selective analysis (identifying important parts, i.e., passages that elicit understanding), and detailed analysis (identification of meaningful words and phrases) (Kinsella & Bidinosti, 2016). The analysis brought to bear what CHWs said about their learning experiences. During this time, the researcher engaged in mind mapping (Buzan, 2003) as a means to demonstrate and track emergent themes (Tattersall et al., 2011; Wheeldon & Ahlberg, 2011). In qualitative research, mind maps enable researchers to focus on how participants represent different associations, showing linkages (Dhindsa & Anderson, 2011). Using mind maps, connections between key ideas/themes were represented in a visual and nonlinear way. The researcher continued to create mind maps and identify emergent themes, meeting regularly with research team members to engage in dialogue about findings and discuss emergent themes. The researchers iteratively collapsed and reworked the themes.

Once the team was confident and in agreement that the themes represented the predominant ideas articulated in the data (those most frequently expressed by CHWs), the

researcher transferred the data into NVivo software for systematic coding and clustering in support of each of the four themes presented in this paper.

4.5 Results

Four key themes were identified related to education methodologies and pedagogical approaches that CHWs reported as supporting their learning.

4.5.1 Visual and Story-Based Learning

A major theme related to the preferred use of visual and story-based learning methods in training. A number of CHWs expressed discontent with the prevalent practice of didactic and verbal descriptions.

CHWs frequently expressed preference for the use of visual and story-based approaches to education. Participants discussed how visualizing content through simulation videos or projections made content more relatable and enhanced their sense of the seriousness of the material. As one participant described,

During the training sometimes they say they wish they could show us. Last time they were training us about sexually transmitted diseases, and they said that they will request screens and install them here so that we see it so that we can know it exists, otherwise when we are learning in class, we don't take it seriously. Till now what we have learned is talking about the content, they talked to us. Now we have targets to reduce maternal and child death rates, but when we just learn it and we have not yet seen it we cannot know, but if we had videos showing us how it happens, then it will wake us up so we know the things we will meet in real life or hear in real life. (GKK01Y)

Several participants indicated how the use of images facilitated effective education, suggesting that it shows content and helps with speed of learning and recall of content. One participant linked use of images with greater motivation to engage in study time to revise training materials at home. She explained that when images are used, the trainer is compelled to provide an explanation of what the image depicts but when given a book,

she tends not to engage with the materials. When describing how she learns best, she stated,

When they show us images, we learned so quickly. They show you images and you link them with what you have learned. You may give me a book and I just keep it home and don't make time to read it. But when they are images, it means you will even explain to me what these images mean. And then if I take the book home, I may generate some time to read it. And when I look into it, I start to recall they said this means this and this. And then I can recall that that's how we learned it. (GMK07Y)

Some participants explained that image-based training materials – similar to their field tools for educating women – would be more effective for their education. For many CHWs, this approach was described as boosting their understanding. A CHW said that the use of images helped her understand better and be more effective when she was using the image-based materials provided for field work to educate women. She explained that understanding of the materials by CHWs themselves would increase trust and credibility when they teach in the community. The CHW described,

I think images would even be better than writing. Like I said, when we are going to teach women, we have cards and we use them; they make it easy... one side would have an image, the other words, so, I would show them the image while I am reading the words and they guess, it could be the danger signs like a bleeding woman, a woman going for antenatal care or even a woman looking for the baby's clothes. The more we understand the better it becomes teaching them otherwise if we did not understand it ourselves, they wouldn't believe it. So, the images are really helpful. (GKK19Y)

Many of the participants described how the use of scenario-based stories facilitated effective education. They explained that stories accompanying image illustrations is an important approach which could boost understanding, thinking, knowledge retention, and recall of lessons learned. One participant expressed the desire for expansion of use of stories to include the use of scenario-based stories depicting different outcomes resulting

from choices made by pregnant women so as to deepen comprehension of training content. Explaining how stories are important in education, she said,

Stories are very important ... we want stories of men going with pregnant women, stories differentiating women who go to the health centre, a story of someone who delivered in a health facility and someone who did not, and the difference, the advantages of delivering at the health facility and the disadvantages of delivering at home, and the importance of antenatal care. (GKK16Y)

A few of the CHWs identified the use of stories as a means to facilitate peer-to-peer interaction and learning during training. Use of stories was associated with studying together, sharing ideas and interacting with colleagues. As one CHW stated, “What would help us would be like stories, with stories we can talk to each other, exchange ideas” (GMK08Y).

Interestingly, only one participant identified writing as the best way for effective education. She described taking notes during training sessions as a way to aid recall content stating, “I think the best way is in writing, we use the notes to remind ourselves” (GBK09Y).

4.5.2 Peer-to-Peer Learning

CHWs’ preference for peer-to-peer learning through role play was a major theme. Participants expressed a desire for opportunities to share experiential knowledge and practice-based expertise that CHWs possess from experience in the field. CHWs pointed to the value of peer-to-peer learning approaches, suggesting these enhanced and promoted participation in the learning experience.

Participants frequently discussed the value of peer-to-peer experiential learning, describing it as allowing for a two-way exchange of knowledge, opportunities to self-correct, a means to offer support to peers, and as empowering for CHWs. Participants discussed how interaction with colleagues also enhanced relationships with peers. One participant explained how CHWs transitioned from strangers to bonding as peers. She described how learning together fostered togetherness: “During training, for instance, the

CHWs, we did not know each other. But becoming CHWs brought us together and we get trained together about what we all don't know. Finally, we gain knowledge all together" (GBK09Y).

Many of the CHWs explained that peer-to-peer learning using role play helped to simulate field realities during the education sessions. Participants discussed how they learned quickly when role playing at assigned tasks under a trainer's guidance, through observation and feedback among peers and trainers. Several participants emphasized the importance of visualization to their knowledge acquisition process, indicating that role play effectively bridged gaps between didactic knowledge transfer and translation to practice. One CHW associated practicing in groups through role play with higher levels of comprehension compared to reading and listening to a lecture. She explained that this approach challenged depth of understanding and the translation of acquired knowledge to practice. She described,

Sometimes you understand something but putting it in practice becomes a problem. So we would be in like five groups, then we see how each group perform their own way, you see the difference, then the trainer steps in and points out some areas to correct, it made us understand better. Otherwise reading or listening only, was not helpful, honestly, I did not get it well. (GNK04Y)

Some participants said peer-to-peer interaction through role play promoted effective learning beyond what they deemed achievable through didactic teaching. One of the participants described,

The most satisfying style for me is play role in groups. It's better than just talking, and we write down, we play out how to visit the mothers and sometimes we even include babies, then if there is a mistake, we correct according to what we learned. Maybe we forgot something, or there is something we have to change; we can correct between us. (GKK01Y)

Several participants shared that they found peer-to-peer interactions enhanced retention and knowledge retrieval from memory in practice. One participant highlighted how

listening to her colleagues share ideas in group sessions was one of the more effective approaches. She shared that thinking of such experiences in practice facilitated knowledge recall:

Working in groups has helped me a lot, especially when I am teaching a woman. I remember better when we are in groups, as one person may know something that another person does not remember and so on. We gather information, everybody is saying what they remember. This way, it is easy to remember because you can remember who said it. (GKK16Y)

Another participant suggested that role play could be a useful approach to evaluating how well lessons have been understood. She described,

The role play helps us to understand things quickly; for example, if we are 28 people in the training and then you take three people to demonstrate through role play what was taught, it is a good way of evaluating how well lessons have been understood. If we are in training like 28 people, 3 can play a role and the rest would follow. (GKK02Y)

CHWs provided insight into how peer-to-peer learning, with experiential learning and role play, fostered engagement, drew the experiences of CHWs in the field into the learning material, and contributed to easier recall in practice. The majority of participants valued role play as an educational approach which fostered participation, relationship building, and empowerment in the learning process.

4.5.3 Responsive Educational Design

Many respondents shared ideas about how to design training that could more fully respond to their educational needs. Many of the CHWs talked about the realities of being older, the concurrent demands of domestic and homemaker roles, and the implications for their learning.

CHWs emphasized design of education sessions in ways that would enhance learning and facilitate retention and recall of the educational content. Specific suggestions included

increased frequency of education sessions, refresher sessions, and longer duration of sessions. Participants discussed how opportunities for ongoing education at regular intervals could improve the volume of information they could retain and increase their capabilities and efficiency in performing tasks. One participant described the relevance of training to field realities as follows:

If we consider what we have learned so far, we try. But like I said, we are old, and we need continuous trainings. We have been practicing what we learn, for example, we learned that we have to visit women the first day from the hospital after delivery, the fourth day, and the seventh day. If the baby was born with more than 2.5 kgs we stop there. If the baby was born with less than 2.5 kgs we have to visit them a fourth time. So, if we get more training, it will empower us more so that we can do more for the women. (GKK19Y)

All participants expressed the desire for ongoing refresher education to promote memory of the educational material. Most of the participants indicated how over time they began to forget aspects of their training, suggesting that refresher sessions could reinforce knowledge as recollection decreases, and boost knowledge retention. One participant who attributed provision of refresher trainings to improved efficiency said,

That is what I ask you for, refresher trainings! Training improves knowledge, there are times when the knowledge starts to deteriorate; but when they refresh, you update again. Sometimes, we tend to forget somethings that we are taught during the training or the organization that trained us. My suggestion would be to keep reminding us about what we were taught and our role. It is important to have more of these trainings. I think more training will make a difference because after a while, we tend to forget somethings, but regular trainings could keep us sharp. (GKK02Y)

Several participants shared that the realities of their lives included domestic demands, and the multiple roles they play create challenges to refresh their own learning. As one of the CHWs said,

Because we combine it with our daily life, they [educators] need to be refreshing us. It requires trainings so that we get reminded. It would be better. We repeat the materials, and we master it better. It is not that we don't know, but because we mix it with domestics, it is better that we get refreshers. (GMK07Y)

A participant explained that the demands of domestic responsibilities made retention of learning more difficult as CHWs did not have time to focus on the educational material when not in an educational environment. This was central to the need for refresher education sessions. She stated,

In fact, teaching is a continuous process. We have a lot of needs at home. So, when we come here, we do what is here. And when we go back home, we do our domestics as our responsibilities. Hence, teaching is continuous process as many times as possible so that even those who forget can recall. (GBK09Y)

Several participants expressed preference for short intervals between trainings and refreshers. CHWs frequently suggested that biannual or quarterly frequency of educational sessions would help bridge knowledge gaps and facilitate knowledge retention and recall. One CHW explained that only learning about a topic once posed a problem as it brought about inadequate capacity of CHWs to address challenges encountered in practice:

One of the problems we face is that, for example, I have probably received training [on a particular topic] in my eight years of work, but I think these kinds of trainings should be on a regular basis. Otherwise, when we face a challenge during the work, we are unable to answer. (GNK04Y)

The majority of participants suggested it was difficult to recall training content after a lengthy interval. One participant linked an interval of one year of no training with difficulty in her memory and recall of content. She described expectations of total recall from CHWs as unrealistic if refresher trainings were not provided in a year: "I think we should have more trainings because some things we forget and some things we put to practice, if one-year ends and another starts, we cannot still be remembering everything"

(GKK16Y). Another participant underlined the competing demands on CHWs and the need to reinforce learning: “In my understanding, we usually have many things that we do. I wish that we have training on maternal and child health at least quarterly” (GMK07Y).

Several respondents suggested a preference for a minimum of five continuous days of training for effective education. Participants explained that the current practice of conducting training over one to three days often led to a hurried delivery of content resulting in challenges for retention and comprehension. Several participants suggested educational design should allow enough time for learning, review, and interaction with trainers and peers. In addition, some participants recounted being distracted by worries about other responsibilities at home during training. As one participant described,

Sometimes we are trained in one or two days, but we are grown-ups and sometimes we are here thinking about the things to do at home, it requires continuous teaching for us to master these things. When we come for trainings, it is usually one to three days; it never goes beyond that, we are volunteers, we come here willing to learn so that we can help our communities, if we could have at least five days trainings it would be really helpful, we don't. (GKK19Y)

One participant explained that the hurried manner in which dense content was taught made a lot of the educational content difficult to learn well. She described,

The challenge that we face is that they teach us in a hurry, and we understand well a few things and there are a lot of things we don't memorize well, which is why I would request that they train us for a longer period. The lessons I learned a year ago I may not remember them well now except that I can always go through my books and review. Which brings me back to point I said earlier, we don't memorize everything because we learn a lot of things in a short period. (GK27Y)

Another participant described insufficient training and disrupted learning for CHWs. She said,

One of the problems we face while at the workshop has to do with few days allocated for the training. By the time we are beginning to understand and be active, the training is over we try to remember and practice everything the way they teach us, but for example for the past eight years we only had two trainings; what we need is continuous training. (GNK04Y)

A few participants expressed preference for content delivery in sequential blocks indicating this approach would facilitate gradual buildup of knowledge and retention. A few participants suggested presentation of content in more manageable learning units would facilitate better understanding. As one participant stated,

I will insist on giving us proportional material to learn. For example, we have to cover four chapters in a day, maybe if we could only cover three or two chapters that day and we repeat them enough so that we can understand them better. A course could be having 15, 30 topics to cover in a short period; maybe if we could cover only a few and then we cover the remaining another day. (GKK27Y)

A participant expressed preference for content delivery by topic area, followed by ensuring comprehension prior to introduction of a new topic. Detailing a stepwise delivery of content, she described,

You would train us on maternal health first of all. You explain to us so that everybody understands it. Then you train us on newborn specifically until we understand. It would depend on how many days you have planned for it. The minimum number of days that I've seen as adequate for a training is five days. From Monday to Friday. (GMK07Y)

Along the same lines, another participant discussed how sequential blocks could be applied to teach CHWs steps in conducting home visits, a key deliverable of the role. She described,

After teaching on visits for pregnant women, the next time you teach how many times we should visit a pregnant woman, like we know we should make three visits, then you would teach them how often to visit a child and you also teach

them on family planning after. You keep teaching until you reach child vaccination. (GKK02Y)

CHWs' perspectives afford insights into how education sessions could be designed to be responsive to their learning needs. In particular, participants highlighted the need for more opportunities to review learning, longer sequences of training sessions (i.e., five days versus one to three days, smaller blocks of content, more time for integration of content, more opportunities to review material, and recognition by trainers of how other responsibilities compete for CHWs' energy and attention both during and after training.

4.5.4 Coordinated Training Logistics

Another major theme related to the impact of "training logistics" on learning. CHWs frequently expressed preference for coordinated logistical practices, including reliable payment of training allowances and adequate provision of food and drink during training sessions, as supportive of their involvement. Participants discussed how adoption of practices focused on meeting their comfort and needs enabled concentration and enhanced their learning experience.

Several participants explained that non-provision or delayed payment of training allowances created frustration and decreased their ability to concentrate while in the education session. Participants discussed how timely provision of the training allowance was financially empowering and enabled them to outsource certain domestic and personal activities which would require their attention while attending training sessions. Many CHWs identified improved logistics related to training allowances as a significant component supporting access to education sessions. One CHW described feeling frustrated and wanting to give up being a CHW when she attended education sessions without timely provision of training allowances. She described,

When there are allowances to be given to us during the training, they take long to reach us. Maybe that can be improved on a little bit. They do it the way they have prepared it. In case they have planned something for us like ticket, it comes very late like in the following month and yet you have said that you are going for a

training. When it takes that long, you feel like giving up on being a CHW. And you ask, “Aren’t you going to give us something?” and they say no. (GKK02Y)

Several CHWs shared perceptions of training organizations as having a nonchalant attitude, with inadequate attention paid to the personal costs to CHWs of attending education sessions. Several identified that the provision of allowances was dependent on organizational goodwill and discretion and not centred around the needs of CHWs. Participants explained that logistical bottlenecks such as untimely provision of training allowances posed significant challenges for participation in training sessions.

Many participants indicated they were saddled with financial costs and multitasking efforts behind the scenes, such as preparing meals for family members, in order to attend education sessions. Participants described that they often hired help for their domestic duties based on anticipation of training allowances. When these were not forthcoming, CHWs discussed disruption in their personal lives, as well as inability to focus, concentrate and acquire knowledge during the educational sessions due to these distractions. One of the CHWs described the challenge as follows:

Another problem we face while in training has to do with our allowance during training. It does not come in time. That sometimes hinders some of our other plans and concentration at the training. About the per diem, it is not given on time. For example, even now there are some that we have not yet received, it becomes a problem because we leave others to do our duties for us when we come here and then we have to wait a month, 3 months. (GNK04Y)

A number of CHWs associated the degree to which they organized themselves at home with how effectively they were able to participate in the education. One CHW illustrated how well education content was received when an allowance – described as tickets – was provided to address domestic needs while in session:

It is good when they train us and gave us even tickets. Then you could even hire someone at your home helping for domestics because you know you will get a ticket at the end of the training. After the training, you pay her from the ticket.

And the training they gave us, you could sit comfortably and follow because you know you have left somebody doing your domestics. But if it is for training without ticket, you first finish your domestic works before you attend the trainings. But when there are some tickets, you leave someone home and respect the attendance time of the training. (GMK07Y)

Some of the CHWs identified logistical components such as the provision of meals or snacks during training as important for effective learning and concentration. One of the CHWs described the ideal training session as involving provision of food, suggesting this should be prioritized on account of the length of time spent in sessions:

Depending on the training they are going to have, I would first plan for the course of the training. If it is lunch, I prepare it or also collect their per diem because that is a whole day that they spend in the training. (GBK10Y)

Another participant suggested incorporation of break times for reflection, provision of food, and remuneration of transport fare, or to make transportation arrangements, as CHWs frequently travelled long distances to reach training venues and often arrived hungry:

When training, we should give people some time to rest and think about what they have learned. Then food security, then make sure they have the transport for the training that can help, because some of us we live far and that makes them be late. (GKK23Y)

Several CHWs expressed frustration with short notification for meetings and educational sessions; they explained that having no control of the timeframes in which training occurred was disruptive to their family lives. One participant reflected on the challenges:

According to me, the most challenge is the unplanned meetings for us. For example, you see that I am a mother too. I have to take care of my children and everything at home. So, you can understand that when they call us and ask us to come immediately, for me it is a big challenge. (GKK20Y)

A few of the participants expressed preference for closing early so they would arrive home before dark. Most of the participants explained that they travelled significant distances to training venues such that they arrived home late at night and still had to return to training venues early the next day. One of the CHWs explained:

When we come to training, we leave many other responsibilities at home: children, domestic animals that need to be fed, so you can see. At least we start early, but the closing time, because some of us get home at night when it's dark while you will also come back the next morning. We should be closing early.
(GBK09Y)

CHWs identified a range of training session logistics transcending curriculum development and content delivery that could promote learning by decreasing distractions and discomfort for learners. The majority associated effective logistics and planning with the provision of timely training and travel allowances, attention to their well-being through provision of meals and refreshments, adequate advance notice of training dates and times, and recognition of family lives that need to be organized to allow for attendance.

4.6 Discussion

CHWs are increasingly being used and recognized for their contributions in strengthening fragile health systems (Perry et al., 2014). Education of CHWs is a key determinant of effectiveness in practice and how well tasks are performed. Lack of formal education, coupled with the novelty of CHWs' role, confounds the systematic implementation of CHW education globally. Furthermore, little research points to CHWs' perspectives, particularly on issues related to perceptions of education methodologies and pedagogical approaches that support their learning.

Prevailing pedagogical practices often fail to meet the needs of culturally and linguistically diverse groups such as CHWs (DeCapua et al., 2018; Marshall & DeCapua, 2013). For CHW education programs to achieve desired results, a shift towards realistic educational delivery approaches that enable learners with divergent literacy levels to

establish clear, logical connections between training content and desired results is essential (Ghanizadeh, 2017). Few studies harness the strength of CHWs as adult learners to gain insight into the challenges and enablers of their education (O'Donovan et al., 2018).

This study contributes to an emergent body of knowledge on effective pedagogical approaches for CHW education with a view to strengthen its implementation. The study harnesses the attributes of CHWs' reflections as adult learners on their perceptions of educational approaches, and insights for strengthening CHW education. Governments, donor agencies, nongovernmental organizations and other key stakeholders may wish to consider these findings in the design and implementation of CHW education.

Drawing on the findings, the following discussion considers four pedagogical insights arising from this work that have the potential to advance meaningful design within CHW education programs.

4.6.1 Recognizing the Pedagogical Power of Image- and Scenario-Based Story Telling

CHWs identified adoption of visual and story-based learning approaches as enhancing their learning. Recognizing the pedagogical power of image- and scenario-based story telling may be an effective strategy for the delivery of CHW educational content.

Didactic and traditional approaches to education can pose a challenge to CHWs' abilities to effectively acquire, comprehend, retain, and recall educational content, particularly in situations where literacy may be an issue. CHWs suggested that visual modalities invoking real life contexts were powerful and allowed them to visualize the situations they were learning about. This is in keeping with evidence suggesting that appropriate visuals enable lower literate learners to make connections and reconstruct knowledge beyond what is possible when "text-dense" materials are used (Choi & Bakken, 2010). The use of visuals may enhance comprehension and recall in adult learners by simplifying the complex process of comprehension through the pedagogic power of images (Choi, 2011). This is achieved through simplification of action sequences by

presenting complex materials in ways that reduce the mental burden posed by text dense materials (van Beusekom et al., 2016).

This process can empower those who may struggle with dense written texts to take ownership and participate in their learning processes (van Beusekom et al., 2016; Choi & Bakken, 2010; Doak et al., 1996). Furthermore, use of visuals such as pictures may serve as clues for memory recall. Images have been observed to support older adults' recall of educational materials (Houts et al., 2001, 2006).

Preference for scenario-based stories aligns with cultural methods of knowledge transfer, such as through narratives. This falls within the domain of narrative pedagogy and critical pedagogy (McLaren & Kincheloe, 2007). Critical pedagogy recognizes and seeks to revive indigenous epistemologies by repositioning the transformative power of indigenous knowledge transfer through story (McLaren & Kincheloe, 2007; Rana & Culbreath, 2019). This approach reckons with ways in which residents of an area understand themselves through story and in relation to their natural environment, and recognizes that how people organize knowledge, cultural beliefs, history, teaching and learning is pivotal to learning (McLaren & Kincheloe, 2007).

With the aid of visuals and scenario-based stories, teaching is engaged in ways that support learners' interpretation and exploration of experiences for shared meanings and understanding. Co-construction and shared meaning are achieved through dialogue and discussions between trainers and learners (Walsh, 2011). This approach aligns with cultural learning approaches prevalent in the learning environment. Engaging with narrated experiences allows learners to think through and analyze situations, while constructing meaning in ways that support easy knowledge retention (Gazarian et al., 2016; Hermansen, 2015). Adult learners retain knowledge through reflection on multiple inputs such as conversations, music, and visually oriented illustrations (Jubas et al., 2015). Consequently, use of less text-dense and didactic educational approaches in CHW education aligns with meaning-making processes employed by adult learners. The reflective process which takes place with this approach is an active process entailing integration of experiential knowledge brought forward by learners and critical

engagement with knowledge put forward during educational sessions (Schön, 1987). The constructivist lens adopted in undertaking a mental back-and-forth process in meaning-making from narratives requires participation of listeners in ways that promote memory retention and understanding (Easton, 2016).

4.6.2 Capitalizing on Experience, Practice-Based Knowledge, and Relationships

Medical education literature identifies peer-to-peer learning and role playing as innovations in education which foster experiential learning and critical thinking among students (Smith et al., 2018). The learning processes and value brought to education through such approaches intersect with CHWs' expressed preferences for learning with peers, and through practice-based scenarios and role play. Although differences exist between health-care workers, benefits of peer-to-peer learning and use of simulations such as role playing described in the literature may be transferable to community worker education.

Adult learners undergo learning as a social process, brought about through interaction with others. Incorporating social interaction with peers in real life contexts emphasizes experiential, active and collaborative learning in ways that foster retention and recall. This brings to the fore a reflective process which integrates real-world scenarios and experiences of students in the development of knowledge (Kotzé & Massyn, 2019; Ngo et al., 2018). Ease of retention and recall may be brought about by reflection and conscious comparison between presented educational information and experiential knowledge in arriving at the desired learning outcome (Schön, 1987). Furthermore, peer-to-peer learning is hinged on the principle that learners construct knowledge through collaborative sense-making of experiences (Rooney, 2012). In the context of CHW education, the simulation of practice reality through role play creates an experience that supports learning (Rooney, 2012; Vizeshfar, 2019). Through collaborative interaction, learners acquire new knowledge and skills in group settings and develop shared meaning (Jauregui et al., 2017). Peer-to-peer learning is often associated with comfort and ease of learning due to the removal of power dynamics between trainers and learners (Mayo, 2013). Consistent with the findings, the social congruence brought about by similarity of

roles among peers allows for the presentation of information in ways peers find relatable (Loda et al., 2020). Literature suggests that engaging students in peer feedback has a positive impact on students' learning motivation, attitudes and achievement (Hwang et al., 2014; Lai & Hwang, 2015; Tseng & Tsai, 2007). Peer-to-peer interactions and feedback allow students to reflect and acquire knowledge while observing peers (Hwang & Chang, 2021). Simulation-based learning using role play has been shown to facilitate learning that shapes practice and is relatable (Bearman et al., 2018). Literature also suggests that women rely on their social networks for learning and juxtaposition of new ideas with personal knowledge and experiences (Nam, 2020). This has implications for CHW education as the majority of CHWs are women.

4.6.3 Reasonable Expectations, Reinforcement of Material, and Opportunities for Review

There is a significant gap in the literature on feedback from CHWs around educational design and tailoring education to their learning needs (Lewin et al., 2010; Plowright et al., 2018). CHWs' insights can offer guidance into the successful arrangement of educational content and delivery approaches (Redick et al., 2014). The majority of studies discuss and categorize CHW duties with little evidence of participatory approaches through which the CHWs' perspectives on issues relating to their role are heard (Oliver et al., 2015). The absence of CHWs' voices cuts off a vital source of insight into their experiences of education and educational design.

The call for increased frequency and expanded and sequential content delivery aligns with evidence on the importance of adapting course content to target individual learning styles. Flexibility in the way course curricula are designed and adapted to accommodate learning needs can foster effective educational approaches (Nkhoma et al., 2014; Siribié et al., 2016). Plowright et al. (2018) suggest that insufficient frequency and lack of flexibility in accommodating CHWs' unique needs as learners contribute to educational challenges.

CHWs often linked practice-based education with preparedness for practice reality. Practice-based educational sessions coupled with increased frequency of training for

CHWs has been associated with increased retention, facilitation of knowledge application, and positive impacts on learning (O'Donovan et al., 2020; Javanparast et al., 2012; Missingham, 2013; Yu et al., 2019). Provision of refresher trainings enhance performance of CHWs in practice by aiding memory and recall (Smith et al., 2018). Irregularity of educational sessions has been associated with retention and memory recall challenges (Abdel-All et al., 2017). Furthermore, shorter periods of training blocks paired with assessment have been found to be an effective approach to CHW education (Shelton et al., 2011). This is consistent with reports highlighted by CHWs in the study of lost skills and knowledge in the absence of refresher training.

4.6.4 Attuning to the Pragmatic Needs of Community Health Workers

CHWs in the study presented personalized views of some of their pragmatic needs and the impact of training logistics on their education. The World Health Organization reported that lack of planning impedes successful implementation of CHW programs (WHO, 2018). The majority of CHWs are volunteers who offer their services for free, often at the expense of personal needs (Vareilles et al., 2017). Within this context, optimal logistical support can foster a sense of being fairly treated, self-efficacy and sense of self-esteem which translate to effective engagement with all aspects of task completion, including attendance at educational sessions (Paul et al., 2014; Vareilles et al., 2017).

Factors such as a friendly training environment, consideration for characteristics of recruited CHWs such as age, household duties, social class and wealth have been highlighted as essential for creating responsive educational interventions (Kok et al., 2015). These factors, alongside a welcoming organizational climate, positive relationship with trainers, and supportive group dynamics in educational sessions, can enhance CHWs' capabilities to learn (Kok et al., 2015). Attention to CHWs' practice environments can have positive impacts on learning outcomes (Javanparast et al., 2012). CHWs' concerns around practice and the way it intersects with their communal and family lives should be addressed in the design of educational sessions in order to support effective learning (Abdel-All et al., 2017). Addressing the logistical needs of CHWs

related to transportation arrangement, provision of snacks and meals, childcare arrangements, timely delivery of stipends or expenses, and advanced planning for dates of education sessions, may enhance community health workers engagement. This is significant as engagement characterized by the degree of involvement, willingness, and desire to participate in educational experiences is directly proportional to effectiveness of the learning process (Nkhoma et al., 2014).

4.7 Conclusion

Addressing health systems challenges such as shortage of human resources requires a synergetic approach in maximizing resources within formal and community-level settings. Although evidence showcases the potentials and contribution of CHWs as an alternate health workforce, significant gaps exist in the area of CHW education. In order for CHWs to effectively bridge human resource gaps within health systems, there is a need to provide education in ways that foster knowledge retention and recall in practice. To this effect, it is recommended that educational design for CHWs be undertaken with consideration for their needs and unique characteristics as adult learners.

Chapter 5

5 Drivers and Challenges of Community Maternal and Child Health Work in Rwanda: Perspectives of Community Health Workers and Trainers

The 1978 Alma-Ata declaration itemized primary health care (PHC) as a way forward in advancing population health (Christopher et al., 2011; Haver et al., 2015; Ozano et al., 2018; WHO, 2018c). Global consensus on PHC paved the way for community participation in revitalizing health-care service delivery, particularly in low-resource regions (Chipukuma et al., 2018; Medcalf & Nunes, 2018). One way in which community participation has been amplified in PHC is through the development of community health worker (CHW) programs. CHWs are a cadre of skilled and unskilled service workers who have close links to particular communities and provide frontline health services (Pallas et al., 2013; Perry et al., 2014; Wahid et al., 2020).

Inclusion of CHWs as a pillar within health systems aims to increase access to health services through community-level interventions provided by an alternate cadre of service workers (USAID, 2010). CHW programs leverage the proximity of CHWs to the grassroots where they provide basic health services (Condo et al., 2014, Scott et al., 2018). Evidence shows CHWs are effective in the provision of a range of preventive interventions (Bukhman et al., 2020; Grant et al., 2017; Kok et al., 2015; Perry et al., 2014; WHO, 2018c).

Within this broad context, nomenclature for description of CHWs varies by country, including differences in definitions of roles, responsibilities, recruitment, remuneration and training approaches (Mobula et al., 2015; O'Donovan et al., 2018). Despite the wide variation, a lack of professional, paraprofessional, or tertiary education differentiates this group from other cadres within the health workforce (Lewin et al., 2010; Mlotshwa et al., 2015).

The 1980s witnessed a surge in CHW programs followed by a decline due to factors such as shifting government policies, funding cuts and insufficient evidence on efficacy of CHW programs (Bhutta et al., 2013; Strachan et al., 2012).

Over the last decade, global stakeholders have renewed commitment to Alma-Ata principles, highlighting PHC as the lynchpin for attaining universal health care and sustainable development goals (B-Lajoie et al., 2014; WHO 2018a). The refocus on PHC, coupled with lingering deficits in the health workforce, has lent new visibility to the effectiveness of CHWs in the delivery of basic preventive and curative services within health systems (O'Donovan et al., 2020; Perry et al., 2017; WHO, 2018c; WHO & UNICEF, 2018). CHWs now form an integral part of health systems in many low- and middle-income countries, connecting communities to formal health institutions (Kok et al., 2019). Against this backdrop, there is increased momentum by stakeholders towards strengthening CHW roles within health systems (Tulenکو et al., 2013).

5.1 Advancing Maternal and Child Health through Community Health Workers

The WHO identifies lack of access to health care as a cause of high rates of maternal deaths from pregnancy-related complications and mortality in sub-Saharan African (SSA) countries (WHO, 2010a). Despite a global drop in maternal mortality ratios over the last three decades, ratios in developing countries remain 14 times higher than in developed countries (UNFPA et al., 2019). Suboptimal states of maternal and child health are directly linked to health workforce shortages in the region (Dawson et al., 2014; Haver et al., 2015; Mugo et al., 2018). According to the Global Health Observatory data from the World Health Organization (WHO), only 3% of the world health workforce is found in SSA (WHO, 2018b). The significant gap in health workforce and the need for improved access to maternal and child services in many African countries necessitated increasing use of CHWs within the health workforce. Within the context of maternal and child health in low-income countries, CHWs have proven effective in reducing maternal and child morbidities and mortalities through health promotion activities (le Roux et al., 2020; Saprii et al., 2015). As a result, many SSA countries continue to scale up CHW programs as a way to increase access to basic health-care services, including maternal and child health related services (Ludwick et al., 2014; Mays et al., 2017).

Despite increased uptake of CHW programs, there are gaps in the literature regarding factors that contribute to success and failure of CHW interventions (Burke et al., 2018;

D'arcy et al., 2019; Kim et al., 2016; Perry et al., 2017). Although CHWs play a critical role in increasing access to health-care services in many African countries, coverage of population-level evidence on maternal, newborn and child health (MNCH) interventions remains low and often improperly documented (Bhutta et al., 2013; Christopher et al., 2011; Vareilles et al., 2015).

In addition, CHWs are often absent from health systems debate on issues related to implementation of CHW programs (Oliver et al., 2015). As a result, there is a paucity of evidence about CHWs' experiences, perceptions of practice, or insights into opportunities, barriers and motivations for community health (CH) work (Condo et al., 2014; Kok et al., 2017; Strachan et al., 2012). As reliance on CHW programs increase within health systems, it is imperative to explore CHWs' experiences for insight and knowledge on effective ways to support CH work (Kane et al., 2020; Moshabela et al., 2015; Tulenko et al., 2013).

Global calls for research on CHW interventions present opportunities to document successful strategies, replicable practices and challenges related to implementation of CHW programs (Agarwal et al., 2019; Bukhman, 2020; Ormel et al., 2019). Identifying CHWs as key stakeholders, this work draws on insights from CHWs and their trainers in advancing knowledge about drivers, enablers, and challenges of CH work.

5.2 Overview of the Training, Support and Access Model Project

This study was carried out under the Training, Support and Access Model (TSAM) for MNCH project. Funded by Global Affairs Canada, the 5-year project focused on the development of a sustainable, cost-effective model of education for health professionals. The project achieved this through the provision of training, providing ongoing mentoring, coaching and outreach for continuing professional development in emergency care and access in MNCH in Rwanda. The project contributed to local health systems under six thematic areas including 1) community health (CH); 2) mentorship and continuing professional development; 3) cross-cutting themes such as gender, ethics, inter-

professional collaboration, and gender-based violence; 4) maternal mental health; 5) research; and 6) program evaluation and policy.

5.2.1 Community Health Component, Training, Support and Access Model

In Rwanda, the selection process for CHWs is guided by government-specified criteria as follows: (a) able to read and write; (b) aged between 20 and 50; (c) willing to volunteer; (d) living in the local village; (e) honest, reliable, and trusted by the community; and, (f) elected by village members. Using these parameters, each village is assigned a total of four CHWs. One out of the four CHWs is known as the Animatrice de Santé Maternelle (ASM) who is tasked with MNCH health promotion activities which include (a) follow-up with pregnant women and their newborns, (b) malnutrition screening, (c) community-based provision of contraceptives, (d) preventive noncommunicable diseases, (e) prevention and behaviour-change activities, and (f) household visits (Ministry of Health, 2013).

Against this backdrop, the CH TSAM Model addressed challenges related to MNCH knowledge gaps among ASMs through training and refresher training, provision of education materials, and resources for CH work. Within this context, the project supported training and provision of job aids in six districts, and two provinces, namely: Rulindo, Gicumbi, and Gakenke districts in the North Province and Gisagara, Muhanga and Ruhango districts in the South Province of Rwanda. From October 2017 to March 2019, the project trained a total of 1744 CHWs clustered around 68 health facilities in the north and 1381 CHWs clustered around 45 health facilities in the south. Findings from this study are specific to the CH component of the project.

5.3 Purpose of the Study

Given growing recognition of CHW effectiveness in advancing maternal and child health, (WHO, 2018c) as well as a global focus on strengthening CHW performance within health systems (Kok et al., 2019; WHO, 2018c), the purpose of this study was to identify the drivers, enablers and challenges to community maternal and child health work, as reported by CHWs and trainers in Rwanda.

5.4 Research Questions

Two questions framed this study:

1. What are CHWs' and trainers' perceptions of the state of current practices in the area of maternal and child health?
2. How do CHWs and trainers perceive drivers and challenges to practice in the area of maternal and child health?

5.5 Method

5.5.1 Methodology

This study was undertaken as a case study within the domains of implementation science. Case study fosters empirical investigation of a particular phenomenon or social unit within its real-world context using multiple sources of evidence. Case studies tend to investigate “how” and “why” questions related to the phenomenon of study (Merriam, 1998; Yin, 2014). Implementation science on the other hand, enables the study of intervention processes, translation of findings into evidence-based approaches, and development of guidelines within the public health domain (Kroelinger et al., 2014). This case study, implementation science, approach provided a holistic platform for understanding CHWs' and trainers' perceptions of maternal community health.

5.5.1.1 Context and Boundaries of the Case

The case was bounded by two geographic districts, two groups of CHWs, two CHW education groups provided through one organization and one source of funding. The case focused on the perceptions of maternal CHWs (known as ASMs) and trainers on drivers, enablers and challenges to CH work. The case was geographically bound to six districts in southern Rwanda and northern Rwanda.

5.5.1.2 Parameters of the Case

The case study was framed around an analysis of CH work along the purview of drivers, enablers and challenges in practice. The case study involved interviews with CHWs (reported here), document review, and interviews with trainers (reported here). The

document review provided contextual and background information for the case study and unveiled a trend towards increasing attention to CHWs' practices and motivation needs. The primary data reported in this article entails a qualitative analysis of interviews with CHWs and trainers in Gisagara, Ruhanga and Muhanga districts in southern Rwanda and Rulindo, Gakenke and Gicumbi districts in northern Rwanda.

5.5.2 Participants

Ethics approval for the study was obtained from the Research Ethics Boards at the University of Western Ontario and the University of Rwanda. The TSAM project, through the CH manager and Rwanda team members, assisted in the recruitment and coordination of interviews with CHWs and trainers. Over a period of three weeks, the primary researcher visited six districts in southern and northern Rwanda and interviewed a total of 16 CHWs and 10 trainers. The trainers were three national master trainers and seven CH-specific trainers. National master trainers coached the CH-specific trainers on new/refresher knowledge of CHW educational content and deliverables while CH-specific trainers provided trainings for CHWs and supervised CH work.

5.5.3 Data Collection

Two interview guides (one for students and one for trainers) were developed, informed by study questions and a review of the literature. Semi-structured in-depth interviews were carried out with 26 participants using dedicated rooms at health facilities in Gisagara, Ruhanga and Muhanga districts in southern Rwanda and Rulindo, Gakenke and Gicumbi districts in northern Rwanda. The researcher facilitated and recorded the interviews, while translation from English language to Kinyarwanda was provided according to each participant's language preference.

5.5.4 Data Analysis

All interviews were audio recorded and transcribed. Participants were given pseudonyms to maintain confidentiality. Forward and backward interpretation from English to Kinyarwanda was provided verbatim by a bilingual interpreter as needed (Lopez et al., 2016). An independent consultant was hired for transcription of audio recordings of the

interviews verbatim in Kinyarwanda, followed by back translation to English. Following translation, thematic analysis was carried out in three steps which included holistic, selective, and detailed analysis (Kinsella & Bidinosti, 2016).

Mind maps were subsequently created for visual representation of emergent themes (Buzan, 2003). Mind maps were then compared to one another and analyzed for consistency and for repetition of themes. The researcher met regularly with research team members to engage in dialogue about findings and discuss emergent themes. A final set of data approved by team was transferred into NVivo software for systematic coding and clustering of emergent themes.

5.6 Results

Themes related to drivers, enablers and challenges of maternal CH work as identified through the analysis are presented below.

5.6.1 Drivers

5.6.1.1 Commitment to Improving Maternal and Child Health.

Commitment to improving maternal and child health was identified as a driver for undertaking CH work. CHWs frequently discussed their commitment to maternal and child health, noting the work as contributing to a national agenda: “We have to take care of ours, the country loses when we lose the mother or the baby” (GKK01Y). Many CHWs discussed how the work of CHWs was meaningful and impactful in the historical context of high rates of maternal death. For example,

I feel happy that deaths have reduced. We used to be worried when someone was pregnant. Burying people all the time from maternal deaths did not make us happy. Now, I contribute to reducing maternal and child health by visiting mothers early in pregnancy to remind them of danger signs and sensitize them to go to the health facility as early as possible. (GKK02Y)

CHWs regularly commented on their contributions to improving maternal and child well-being in particular regions, as exemplified in the quote below:

In my eight years of work, one thing that I have done well in my village is sensitizing against home or on the road deliveries. We don't have this anymore, this is very important because in the past we used to have many cases of maternal and child deaths, but I can't remember the last time I heard of one. (GNK04Y)

5.6.1.2 Concerns About Inherent Risks of Home Births

Another driver for CHWs' work was the perceived risks for women and children associated with home births. CHWs repeatedly discussed how a perception of inadequate follow-up in cases of home births influenced their practices:

You can do all that is required of you in following up a woman but in the end, she delivers at home. It is sad because even the health centre will think you did not do a proper follow-up on the woman. Because I don't want this to happen under my care, I keep going to talk to pregnant women. (GKK17Y)

Another CHW described how worry over pregnancy-related complications when women deliver at home motivated CH work:

When you have a pregnant woman in the village, you are worried because you think of all the complications that could happen on your watch. Some women may have the intention to deliver at home. So, you sensitize them until you know they have changed their mind to go to the health centre for delivery. (GKK16Y)

5.6.1.3 Commitment to Social Responsibility

Commitment to social responsibility spurred by surviving the genocide was identified as a driver by one CHW. In her words,

I joined the community health workers willingly as my way of giving back to the country. I am a survivor of the Rwanda genocide against Tutsis of 1994; I have to work as a way of saying thanks to God for surviving. I will work until I cannot anymore, or I am dismissed from duty. (GKK19Y)

5.6.2 Enablers

5.6.2.1 Training (CHWs)

The most cited enabler of CH work, by both CHWs and trainers, was training. CHWs frequently linked knowledge acquired during training to improved capabilities to enact care for mothers and children. CHWs variously described success stories from the field. A CHW explained,

I learnt a lot and I liked it. I learned how to care for the health of mothers and children, I learned about child health such that I can even teach my colleagues. I am able to follow women and teach them well because of the training. I once taught a woman how to handle a newborn baby with low birth weight until the baby was well; that made me very proud. What we learnt helped me gain more confidence and I have a better approach to teaching women and carrying out my duties. (GKK23Y)

CHWs frequently discussed how training repositioned them as educators in the community and qualified them to function in new capacities which were not previously possible:

I have learnt a lot of helpful things in the training, and the trainings I have received are important to me as a CHW and to my family. Knowing that I have more knowledge than the average neighbour in my village is important to me. On the field, I do what I have been trained on. When there is a community meeting, I take advantage to educate women and tell them that I will be happy if they come to me whenever they have any problem on pregnancy. During meetings in my village, I get to give talks to everyone about what is on the agenda. Things like giving birth at a health centre, the importance of early check ups at the hospital. This has benefitted me as an ASM. Before I was trained, I couldn't be called to give talks in such meetings, and I could not advise someone to attend antenatal at hospital because I did not know how to do that. (GKK02Y)

Several CHWs discussed the training as enabling self-confidence, and a positive sense of self and one's capabilities. Some noted personal changes such as improved social and communication skills, transformation from being shy and unable to speak in large gatherings to becoming capable of speaking up at community meetings, and teaching groups of people. A participant explained,

The training is very helpful because we learn new things. I used to be shy, I could not stand in front of people and speak and teach but now I can go and teach because of the trainings that we received. Sometimes not even using the teaching materials they gave us but just what I have in my head. Sometimes I stand in front in a community meeting, and I teach about family planning to the people there. Before the trainings I used to be shy, fearful and I could not hold a needle to inject it to someone but now I have no issue with it. (GMK08Y)

Many CHWs indicated that training centred around relating with women in the community enhanced their interactions and rapport with women. As one participant described her pre- and post-training experience and how it shaped her capabilities to relate to women in the field,

I learned a lot of things and gained more knowledge, including how to talk and convince women so that they can go for antenatal care. For example, I used to be shy, if you called me before the trainings I wouldn't have agreed to come. But now even if the president called me to meet him, I would go and talk to him without any problem. Second thing I learned is how to behave with women, I feel better because they told us that we will meet challenges, and we met them, but we knew how to deal with them. (GKK19Y)

5.6.2.2 Training (Trainers)

The majority of trainers also indicated that training increased competence and capabilities of CHWs. Many trainers discussed how education transformed CHWs' practices in various ways by helping them develop more practical skills in the field, understand the rationale for recommended protocols such as antenatal care visits, accept more

responsibility for decision-making; initiate routine follow-up independently, provide essential support for pregnant women in crisis and gain more confidence to work independently.

A trainer explained,

Before the trainings on maternal and child health, they didn't know so much, they didn't know how to handle a woman who delivered at home. We would see it with the calls we received when someone delivered at home, but now they know how to handle the baby and take both the mother and the baby to the health centre; they now know how to call for an ambulance when it is urgent. They did not know the importance of having at least four antenatal care visits before delivery but now they know, and they teach the women, send them to the hospital and remind them of their antenatal visits through text messages. They follow a woman until she delivers. They have gained confidence and don't worry about their work in the communities anymore. (GKK20Y)

Several trainers discussed how training enabled improved maternal and child health outcomes at the community level. A trainer stated,

What pleased me the most is the impact our trainings has in the communities. Now, the community health workers treat more patients than the health centres and the health posts. The fact that they practice what they learn like maternal and neonatal care, they have reduced the maternal and child death rate in a considerable level, then they have reduced the death of children in the communities caused by malaria. Makes me realize that our trainings are really important. (MGE25Y)

Trainers frequently linked the training of CHWs to growth of knowledge at the community level:

The training helps community health workers perform their activities. I think the training helps in two ways. The community health workers get knowledge on a component and that knowledge helps the community because they teach them.

Community health workers are with the community, such that the knowledge goes from them completely to the community. (MKE18Y)

5.6.2.3 Trust of the Community

A second enabler of the work of CHWs identified in the data was the trust of the community. The trust bestowed by community members was frequently discussed as important for CH work, and often linked with pride in the CHW role. As one CHW stated,

I think the trust that people in the village have in me is the most important. They admire me, they always say that I try my best. When they see me walking down the road with my books they say, “That’s our CHW passing.” They always stare and greet me. As a community health worker, that is a good achievement, and it makes me feel proud. (GKK02Y)

Another CHW explained how community recognition facilitated pregnant women’s trust in CHWs and opened avenues for women to talk more freely about their health concerns: “Knowing what your job is, pregnant women approach you and talk to you freely without any difficulty because of how she sees you in the village” (GMK07Y). CHWs frequently discussed being the first people women call for help with health-related issues on account of the trust in their role:

Women trust us a lot; when they have some issues, we are the first people they call to help. For example, if a woman feels she has some pains, she sends a kid to come wake us up without even telling her husband. (GKK19Y)

One trainer pointed out how trust of community members allowed CHWs to perform tasks in the villages: “Villagers trust them more and this allows community health workers to perform their tasks” (MGE26Y).

5.6.2.4 Care for Others

Another enabler identified in the data was genuine care for others. The caring nature of CHWs was often brought to the fore through the practices they described which went

beyond the call of duty. One CHW explained how she helped women by sharing her resources: “From the little I have and sometimes I don’t have much, I always try to help. For example, if I have two kilograms of something to eat, I offer half a kilogram for her to survive” (GMK09Y).

The majority of CHWs spoke about taking on tasks to care for women beyond the formal aspects of their roles. CHWs described various scenarios in which they engaged in other activities to assist women:

I cannot visit a woman and she tells me that she doesn’t have a place to plant vegetables or she doesn’t have the strength and there is no one to help her. In such cases, I personally do the planting. So far, I have personally planted vegetables for five women, taught them how to reap them and gave them my own manure because they didn’t have any. They are reaping those vegetables even now. (GKK01Y)

Sometimes something is wrong, so I talk to her and help her out in any way that I can. Sometimes they don’t have clothes to cover the baby, so I help sourcing clothes for them. I even deliver food to them in case they don’t have someone else to help them. (GKK22Y)

5.6.3 Challenges

5.6.3.1 Lack of Essential Healthcare Equipment

The most consistent barrier identified by CHWs was the lack of essential equipment for CH work. Lack of gloves was frequently identified as a challenge in cases where women delivered babies at home. One CHW pointed out the irony of the disjuncture between the training and the reality: “They trained us on how to care for a woman who delivered at home. But when you find a woman who is about to deliver at home, we don’t have gloves or something to clean the baby. We find this so challenging” (GKK01Y). CHWs also explained how the absence of essential tools posed a challenge to carrying out their duties at night. As one CHW said,

The biggest challenge is the lack of tools for the night. In our area there are no lights on the streets, we need torches, boots and gloves. Without them working at night is very challenging because you require a torch until you get to the health centre. (GMK07Y)

Another CHW described out how the lack of equipment at night could also put patients at risk:

The journey at night is challenging because you cannot see. Sometimes you bring a pregnant mother to the health centre at night, and this puts the mother at a risk of falling. Even though you may wish to use your phone light, sometimes it is not charged. (GNK04Y)

5.6.4 Overworked but Unpaid

Another challenge identified by CHWs and trainers was the absence of incentives; the work of CHWs is largely done on a volunteer basis. Several CHWs suggested incentives would recognize the intensity and challenge of maternal and child health-related community work and help CHWs take care of their own basic needs. As one CHW pointed out, “We work hard. Giving us incentives is needed because the work is so hard” (GBK09Y).

A number of trainers indicated CHWs often left their income-generating work to perform CHW duties. The need for incentives was linked to basic needs of women and their families that were not compensated due to time away from income-generating work. A trainer stated,

Most of them are farmers, they have a life and families to feed. As volunteers, they have to follow up on pregnant women. For example, when a woman is going to deliver, they have to be there. That means they won't be farming. So sometimes they wish we compensated them, so they can feed their families in comfort. (GME12Y)

Another trainer pointed out the tension for CHWs of providing voluntary services in the community without remuneration: “Community health workers work hard to provide quality services in the community, but they have their families and other things to do. I am suggesting that incentives should be added to encourage them” (GKK20Y). Another participant pointed out that CHWs are motivated by duty to the community, but that motivation could perhaps be increased if an incentive such as an allowance were available:

If there is no incentive, you may feel unmotivated. It is better if there are incentives, maybe give an allowance. The work we do is our duty in our community, but if there was an allowance, that could motivate us to do better. (GKK02Y)

5.6.5 Lack of Boundaries

Also identified in the data, another challenge to practice related to lack of boundaries with CHW work. Some CHWs discussed how factors such as use of personal funds posed a challenge in practice. One CHW recounted,

I recall a woman who called me to accompany her. I went to see her. She did not have money for transportation, and I could see she was in labour. That day, I sacrificed and paid her transport with my own money and she came to the health centre. For me it was a challenge to pay for her. (GBK10Y)

The majority of CHWs indicated the lack of specified work hours and the unpredictability of those hours, created challenges in their domestic lives. As one CHW explained,

A challenge is when we are called yet, we have something we are doing at home. Sometimes there is no one else to take care of the children at home. Sometimes you are called at night really late, I usually wake my husband up to accompany me because I cannot walk at night alone. (GKK16Y)

Another spoke of her husband’s negative reaction to the intrusion of CHW work demands into their home life at night: “There are times a phone rings at midnight and my husband complains saying, ‘Isn’t this job a problem?’” (GKK02Y).

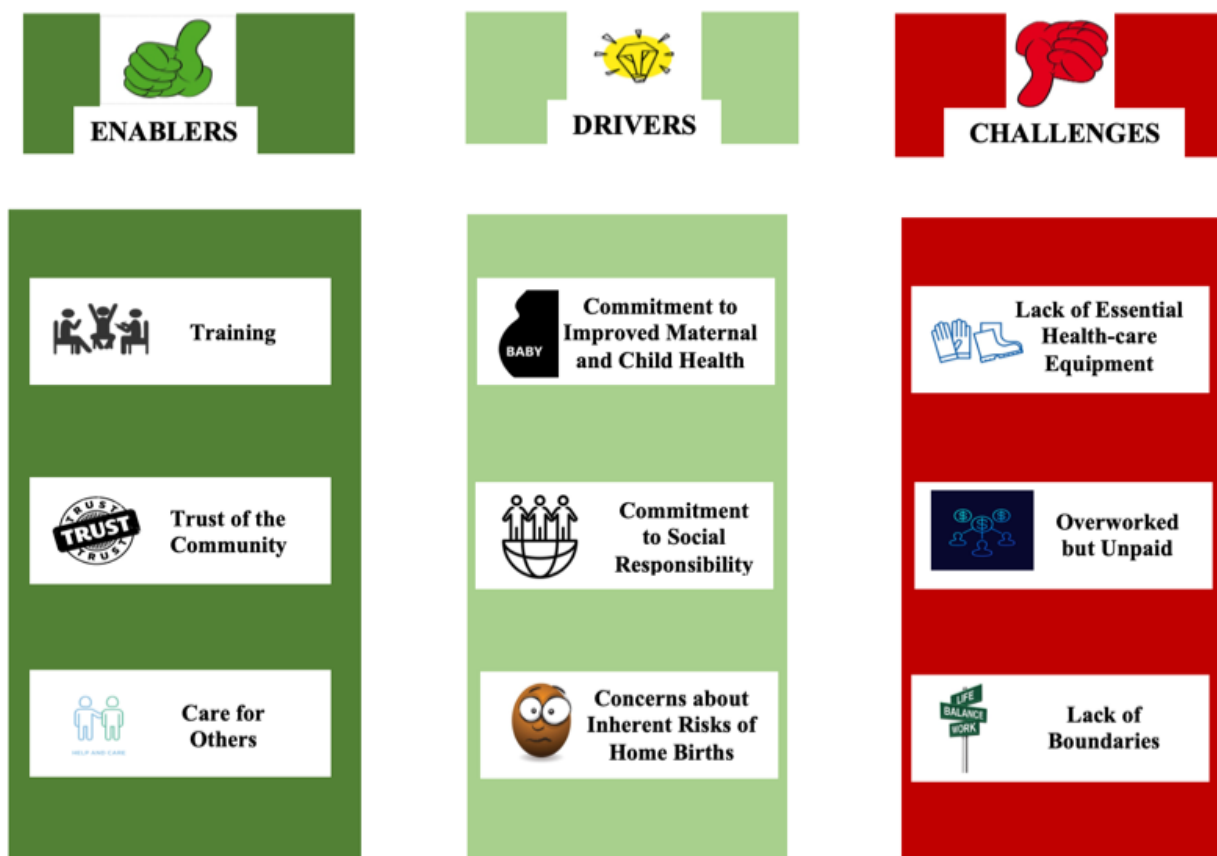


Figure 1. Summary of Drivers, Enablers and Challenges to Community Health Work

5.7 Discussion: Implications for Practice

In this study, we sought the insights of CHWs and trainers to better understand the drivers, enablers and challenges of CH work within the context of maternal and child health. Three major factors that governments, donors, and stakeholders interested in CHW intervention can explore in relation to the findings include intensified educational

support, provision of formalized incentives and wages, and availability of essential health-care equipment.

5.7.1 Intensified Educational Support

A key factor that participants in this study identified as enabling CH work is training. Participants variously indicated training improved capabilities to enact care for mothers and children, enhanced interactions and rapport with women, and boosted CHWs' self-confidence. Frequent exposure to trainings has been documented to contribute to outcomes related to CHW empowerment such as increased confidence, self-esteem, and self-efficacy (D'arcy et al., 2019; Kok et al., 2015; Winn et al, 2018). Increases in self-confidence among CHWs may boost ease of task completion leading to community confidence in CHWs' capabilities (Mhlongo et al., 2020; Scott et al., 2018). Likewise, training can boost motivation for doing their work among CHWs (Kigozi et al., 2020).

Governments, funding agencies and stakeholders can consider creative ways to offer continuous, CHW-friendly educational support. The implementation of CHW programs should be designed with opportunities for frequent training and refresher trainings with the goals of bridging knowledge and practice gaps. From the perspectives of CHWs and trainers, training and re-training of CHWs is essential to support performance and effectiveness within the role.

5.7.2 Provision of Formalized Incentives and Wages

Participants in this study considered provision of incentives important for CH work. The majority of CHWs described CH work as difficult. CHWs frequently discussed how they lost income when called away from other income-generating activities such as farming for CH work. This resonates with a growing body of evidence indicating CH work should be fairly compensated, commensurate with efforts and time spent by CHWs (B-Lajoie et al. 2014; Pallas et al., 2013; Saprii et al., 2015). Although intrinsic factors may drive CHWs' uptake of CH work, a lack of financial compensation can lead to de-motivation to participate (Ornel et al., 2019).

Critical scholars highlight the ambiguities of volunteering in low-resource settings, indicating volunteer jobs may present lost opportunities for income (Prince, 2015; Maes et al., 2019). Findings from this study indicate CHWs frequently take on these roles in addition to domestic and income-generating roles. Unpaid work may increase the burden of care on CHWs and undervalue their contribution within the health workforce. Similarly, a host of intersecting contextual factors may predispose CHWs to disempowering experiences within health systems (Delaney & Macdonald, 2018; Kane et al., 2020; Kok et al., 2019; McKay, 2020; Prince, 2015).

There is a critical need for an equity-informed review of volunteerism related to CH work. Complexities associated with the varying nature of CHW programs require context-specific multi-pronged pathways for incentivizing CHWs. In terms of equity, formalized incentives such as monthly salaries, functional monetary schemes, or microfinancing options are amongst other creative ways of compensating CHW work.

5.7.3 Availability of Appropriate Tools and Essential Health-Care Equipment

Basic essential field tools such as gloves, rainboots, torch lights and carrier bags were identified as important to CHWs capabilities to carry out their work. This is in keeping with literature on CHWs' perceptions of factors that facilitate their effectiveness (Boakye et al., 2021). Evidence indicate that a lack of essential health-care equipment may lead to job dissatisfaction and demotivate CHWs from undertaking CH work (Aseyo et al., 2018). Furthermore, lack of essential health-care equipment may foster a loss of credibility with community members as CHWs may not be able to meet the expectations of care from community members (Kok et al., 2017). Challenges such as reduced visibility at night and walking without protective gear in the rainy season may discourage CHWs from carrying out their routine tasks (Aseyo et al., 2018).

It is recommended that communities implementing CHW programs ensure that CHWs have appropriate equipment to support their work and safety. Stakeholders should prioritize the uninterrupted supply of field tools as part of CHW program design and planning. The absence of relevant tools for performing assigned tasks within

communities may render CHWs ineffective, undermine efforts to train CHWs, and be demotivating for all involved. Stakeholders may wish to explore options for strengthening supplies at the community level.

5.7.4 Respect for Boundaries

CHWs identified a lack of boundaries as a key challenge in practice. The majority of CHWs are members of the communities they serve and while this facilitates access of the community members to CH services, it may inadvertently blur the boundaries between CH work and the personal lives of CHWs (Laurenzi et al., 2020; Scott et al., 2018). Findings from this study are consistent with literature highlighting challenges relating to the lack of respect for CHWs' personal lives arising from their proximity to communities (Maes, 2015; Ozano et al., 2018). Evidence indicates CHWs may be expected to operate from an obligated sense of selflessness, sharing limited resources with clients and work unspecified hours while keeping up with the demands of their domestic, income-generating and caregiver responsibilities (Laurenzi et al., 2020; Lusambili et al., 2021; Mlotshwa et al., 2015). Within this context, CHWs often incur work-related expenses while caring for clients, despite having limited resources themselves, creating situations that may be emotionally and economically draining for CHWs (Geldsetzer et al., 2017; Glenton et al., 2013; Maes, 2015; Mlotshwa et al., 2015).

It is recommended that the work-life balance of CHWs should be prioritized in the design of CHW programs. Clear boundaries dissociating CH work from CHWs' personal lives and boundary-setting strategies should be incorporated as part of CHW program design and implementation. Tensions arising from the demands of CH work may place a severe strain on CHWs, abuse their altruistic nature, and disrupt their work-life balance. Stakeholders may wish to explore ways of preventing the overlap of CH work and personal lives of CHW in ways that respect personal boundaries without placing undue burdens on CHWs. In addition, assumptions related to provision of service on demand arising from the proximity of CHWs to clients should be reviewed through a fairness and equity lens.

5.7.5 Trust of the Community

Trust emerged as an enabler for undertaking CH work. CHWs associated trust bestowed by community members with increased recognition and community acceptance. These factors in turn fostered a sense of pride in their role as CHWs. Findings from the study are consistent with literature highlighting the positive impact of the trust of the community as it relates to increased confidence, recognition and overall CHW performance (Enguita-Fernández et al., 2020; Kok et al., 2017; Okuga et al., 2015).

Achieving positive outcomes from interactions between CHWs and community members is dependent on the level of interpersonal trust built over time (Anstey Watkins et al., 2021). The recruitment of CHWs from communities where they live plays a key role in building trust with community members. The ensuing sense of relatedness, familiarity with CHWs and CHWs' knowledge of the local health issues may increase adherence to the education provided by CHWs (Aseyo et al., 2018; Druetz et al., 2015; Gustafson et al., 2018; Kok et al., 2015, 2019; Puett et al., 2015). Evidence shows that the trust of the community, alongside the recognition of CHWs within those communities, constitutes a nonfinancial reward that motivate participation in CH work (Kok et al, 2015; Okuga et al., 2015). While proximity to communities is shown to foster the trust of community members in this study, issues related to trust and confidentiality may pose a challenge to CH work. CHWs play multiple roles and navigating complex interpersonal relationships may serve as a barrier to CHW acceptability, especially in the context of infectious diseases (Grant et al., 2017).

Considering the impact of the trust of the community on CHW performance, stakeholders may wish to incorporate strategies for relationship and interpersonal trust-building in the design of CHW programs. In addition, attention should be given to incorporating modules within CHW education related to upholding clients' confidentiality.

Stakeholders may wish to incorporate strategies for relationship and interpersonal trust-building in the design and planning of CHW programs. The trust of the community is central to the acceptance of CHW services by community members. Lack of trust arising from confidentiality breaches may lead to a loss of connectivity with community

members. Stakeholders may explore incorporating modules within CHW education related to upholding clients' confidentiality.

5.7.6 Potential for the Gendered Exploitation of CHWs' Altruistic Nature

Participants in the study indicated both the desire to care for others and to contribute towards national growth were central to their decision to become CHWs. This finding is consistent with literature highlighting the altruistic nature and willingness to care for others as key consideration for taking on CHW roles (Busza et al., 2018; Chowdhury et al., 2019; Greenspan et al., 2013). These deeply held values by CHWs enable continued CH work in the face of diverse practice-related challenges. While this suggests the majority of CHWs do not take up CH work for financial or other external rewards, the magnitude of responsibilities shouldered by CHWs in many countries may extend beyond the fair limits of altruism. The arduous and unpaid nature of CHW work, undervaluing of CHWs' contributions, underpinned by the bias that caregiving work lies within the domains of women's duties may foster the nuanced and gendered exploitation of the altruistic and caring nature of CHWs. Female CHWs are predominantly unpaid and work longer hours in care-related positions while the male CHWs take on income-generating roles (Friedemann-Sanchez & Griffin, 2011; Maes & Kalofonos, 2013; Musoke et al., 2018).

The double burden of poverty arising from unpaid work on poor rural women raises questions related to fairness and justice in the ways CHWs are engaged within health systems (Mundeva et al., 2018).

As a result, CHWs may be exposed to unintended harm related to burnout from work overload, emotional and financial stress, and lost income-generating opportunities (Friedemann-Sanchez & Griffin, 2011; Maes, 2012). Although CHWs may derive satisfaction from achieving personal goals of helping others, community health work is carried out at a cost on women which is often overlooked (Maes et al., 2019).

It is recommended that stakeholders consider the labour and gendered implications of CH work on rural women during the design and planning of CHW programs. Building the

CHW workforce on the good will of rural women may perpetuate gender inequities and frustrate the good intentions of CHWs. Stakeholders should explore strategies for incorporating best practices relating to provision of paid opportunities for female CHWs, specified hours of work, opportunities for recognition and adequate compensation as part of routine CHW deployment.

5.8 Conclusion

By bringing the voices of CHWs and trainers to the fore, the findings offer practical knowledge and insights into ways CHW programs may be strengthened. This work identifies supportive practices and offers recommendations for optimizing CHW programs within health systems. Furthermore, the findings shed light on contextual factors within social, cultural, economic, and health sectors which may disrupt CHW performance within health systems. The findings present resources for critical reflection on ethical issues related to the burden of voluntary work on CHWs and suggestions of opportunities for strengthening CHW programs.

Chapter 6

6 Thesis Summary, Implications and Reflections

In this chapter, I revisit the questions explored within this dissertation, linking them to the findings and the implications of the research. I discuss the implications of this work for health systems, community health worker (CHW) education and community health work in light of the findings of the research and the dissertation as a whole. A preliminary literature search revealed gaps in research into CHW education and practice, and insufficient recognition and representation of CHWs as key stakeholders. These issues stirred my interest to explore CHWs' experiences with education, practices within health systems, and the contextual factors shaping the enactment of community health work. In addition to CHWs, I explored trainers' perceptions of CHW experiences due to their educator, supervisory and mentoring roles to CHWs within health systems. Lastly, I discuss the quality criteria used to evaluate this work, ending with a discussion of strengths and limitations, and future directions.

My dissertation was completed using an integrated manuscript style. Collectively, the manuscripts point to approaches for optimizing CHW education and practice. Within this paper, I reflect on emergent themes from the three manuscripts presented as part of my dissertation.

Specifically, my dissertation sought to inquire into the following research questions:

3. What are CHWs' perceptions of the affordances and challenges of education in the field?
4. What are CHWs' recommendations for improving education?
5. What are CHWs' and (trainers') perceptions of the state of current practices in the area of maternal and child health?
6. How do CHWs and (trainers) perceive drivers, enablers, and challenges to practice in the area of maternal and child health?

The first manuscript (Chapter 3), entitled *Health Systems and the Health Workforce*, emerged from an exploration of current literature on the associations between health

systems, health workforce, universal health coverage, and health-related sustainable development goals within the contexts of equitable access to health care and improved population health. This manuscript contributes theoretical and practical knowledge pertaining to broad health systems, deployment of CHWs within health systems, and illustrates issues for consideration during conceptualization, design, and implementation of CHW interventions. In this manuscript, I discussed task shifting with a focus on engagement of CHWs in the provision of maternal and child health related services in Africa. The paper culminates with the application of a critical systems thinking lens in discussing assumptions undergirding the conceptualization, design, and implementation of CHW programs and how these factors impact operations and the integration of CHWs within health systems (see Chapter 3 for a detailed discussion). The chapter invites further dialogue on CHW support needs and adaptations that health systems need to embrace, or create space for, in order to optimize CHW interventions.

Further, this manuscript raises awareness of the potentials for exploitation of CHWs and suboptimal consideration of the contextual factors influencing community health work through the stakeholders' design of CHW interventions.

The second manuscript (Chapter 4) titled *Show Us So That We Can See It and Know It Exists: Voices from the Field, Pedagogical Insights from Community Health Workers in Rwanda*, arose from the investigation of maternal CHWs' perceptions of education methodologies and pedagogical approaches that support their learning. The chapter presents the empirical contributions of this dissertation to CHW education and illustrates gaps and recommendations for optimizing CHW education. I discuss CHW education in light of the findings with a focus on four dimensions arising from the study that contribute to further conceptualizations of CHW education, namely: visual and story-based learning, peer-to-peer learning, responsive educational design, and coordinated training logistics (see Chapter 4 for a detailed discussion). This work extends boundaries about conceptions of CHW education to consider CHWs' pedagogical needs and contextual dimensions that play a role in shaping how CHWs learn and retain knowledge in practice. It pays particular attention to CHWs' and trainers' recommendations for

education and preferred pedagogical strategies deemed suitable for enhanced learning and knowledge retention among CHWs.

The third manuscript (Chapter 5) titled *Drivers and Challenges of Community Maternal and Child Health Work in Rwanda: Perspectives of Community Health Workers and Trainers*, advances knowledge of CHWs as a cadre within the health workforce. The chapter presents the empirical contributions of this dissertation to optimizing community health work and illustrate the drivers, enablers and challenges associated with undertaking community health work. In addition, it explicates the burden of community health work on CHWs and unpacks related ethical issues of undervaluation of CHWs' contribution within health systems. This chapter contributes to discussions and the body of work calling for an equity-informed review of stakeholders' assumptions about how CHW interventions are designed and deployed within health systems, including the potentials for exploitation of rural women undertaking community health work.

The purpose of linking this present chapter to the rest of the dissertation is to discuss the broader implication of this study within health systems, CHW education and CHW practices within health systems, including recommendations for future directions. Aligning with calls for optimizing CHW roles within health systems, my dissertation examined CHW experiences to understand broader contextual factors, tensions and practices with health professions education that have a bearing on how community health work is enacted on a day-to-day basis. Through taking a more critical approach to understanding of CHWs' and trainers' experiences of the education provided to CHWs and community health work, this work aimed to highlight pedagogical strategies that enhance CHW learning and knowledge retention and to contribute to knowledge about CHW support needs within health systems. This work calls for realistic design and planning of CHW educational interventions and practice in ways that situate CHWs as an integral part of the health workforce and are responsive to the various contextual factors that shape day-to-day realities of community health work within health systems. These implications are explicated below in relation to the themes which emerged from my dissertation.

6.1 Implications for Health Systems

This dissertation is aligned with literature highlighting the importance of the health workforce to achieving broader health systems goals of equitable access to health services. In several publications, the World Health Organization (WHO) broadly discussed health workforce shortages as a critical challenge facing health-care systems with profound impact on population health, with the gaps concentrated in low-resource countries (WHO, 2003, 2007a).

While discussions related to health worker shortages have been ongoing for almost two decades, current projections show a worsening in the availability of health workers with an estimated global shortfall of 18 million health workers by 2030 (WHO, 2016c, 2018c). Availability of health workers has a direct impact on the state of global health systems and underscores the dismal state of the health sector in many countries. Various scholars highlight linkages between weakened health systems, health workforce crisis challenges related to high burden of diseases, access gaps, inequitable distribution of health-care services, and low performance on key indicators related to maternal and child health (Agyepong et al., 2017; Countdown to 2030 Collaboration, 2018; Haver et al., 2015; Schneeberger & Mathai, 2015). Evidence from the literature indicates that global health systems goals of universal health coverage (UHC) and health related sustainable development goals (SDGs), which aim to address healthcare challenges, are dependent on the health workforce (WHO, 2016).

I argue that the intricate nature of the interconnectivity between UHC, SDGs, the health workforce and equitable access to health-care services presents a deepening quagmire for broad health systems strengthening. While UHC is central to attaining equitable access to health-care services, it also doubles as a marker for measuring progress towards health-related SDGs within local country contexts (Fusheini & Eyles, 2016; Gera et al., 2018; Onarheim et al., 2015). Arguing in support of linkages between UHC and health-related SDGs, Gera et al. stated, “UHC is now the critical yardstick for countries to measure and track progress toward the ‘Sustainable Development Goals’ (SDGs)” (2018, p. 1). I argue in support of evidence indicating that overcoming health workforce shortages is central to achieving UHC and health related SDGS and forms the basis of well-functioning health

systems. The WHO 2016 report titled *Working for Health and Growth: Investing in the Health Workforce* emphasized the importance of health workforce to health systems, addressing health inequities and access gaps. The WHO stated,

Health workers are the backbone of strong, resilient health systems. Universal health coverage and guaranteed global health security are only possible with adequate investment in the health workforce. Health workforce shortages are increasing the inequities in access to health services, causing preventable illness, disability and death, and threatening public health, economic growth and development, as starkly demonstrated by the Ebola outbreak in West Africa (2016c, p. 15).

Against this background, the need to strengthen the health workforce in ways aligned with broader health systems birthed the “task shifting” agenda (WHO, 2006). Task shifting is defined as “a process of delegation, whereby tasks are moved, where appropriate, to less specialized health-care workers” (WHO, 2007b, p. 3). In Chapter 3, I discuss extensively on health systems’ response to addressing the health workforce crisis through task shifting in Africa. I argue that task shifting within health systems is anchored on finding local and sustainable approaches for mitigating the health workforce crisis in ways aligned with leveraging on the human resources available. Explicating the assumptions underlying the adoption of task-shifting initiatives, Deller et al. (2015) stated, “task shifting builds on the assumption that less specialized health workers can take on some of the responsibilities of more specialized workers in a cost-effective manner without sacrificing the quality of care.” (2015, p. S24). Many authors have cited benefits of task shifting related to cost efficiency, efficient use of available health workforce, increased access of the population to health-care services, improved maternal and child health, and community participation (Fulton et al., 2011; Guilbert et al., 2013; Lassi et al., 2012). Although task-shifting modalities are implemented across the globe, evidence presented in the literature shows that low-resource countries leverage more task-shifting initiatives in bridging health workforce gaps.

Drawing upon a critical lens, this work extends the conversation on identified bottlenecks associated with the movement of tasks to CHWs within the context of maternal and child health in Africa. According to the WHO, a CHW is defined as

any health worker who performs functions related to health-care delivery; was trained in some way in the context of the intervention; but has received no formal professional or paraprofessional or tertiary education, should be members of the communities where they work, be selected by the communities, be answerable to the communities for their activities and should be supported by the health system (WHO, 2015, p. 1).

The WHO highlighted the higher risks of dying from pregnancy and birth related events in Africa compared to any other region of the world (WHO, 2010a). The inadequacy of the existing health workforce for the provision of maternal and child health related services prompted the widespread “task shifting” to CHWs as an approach for increasing access to maternal and child health-care services in the region (WHO, 2010a). Literature is rife with evidence emphasizing the use of CHWs in the provision of health promotion and educational activities related to pregnancy, birth, delivery, and newborn care brought about significant improvement in maternal, child and newborn health in the region (Gilmore & McAuliffe, 2013; Grant et al., 2017; Lassi et al., 2012). However, despite constituting an integral part of the maternal and child health workforce in Africa, CHWs remain poorly integrated into the health systems and excluded from health sector planning (Schneider & Nxumalo, 2017; Tseng et al., 2019). The WHO, highlighting the discrepancy between the integral role of CHWs within health systems and challenges associated with CHWs programs stated,

Although they should be considered as an integral part of primary health-care strategies and of the health system, CHW programs are often fraught with challenges, including poor planning; unclear roles, education and career pathways; lack of certification hindering credibility and transferability; multiple competing actors with little coordination; fragmented, disease specific training; donor-driven management and funding; tenuous linkage with the health system; poor coordination, supervision,

quality control and support; and lack of recognition of the contribution of CHWs (WHO, 2018c, p. 19).

Furthermore, scholars argue that factors related to the presence of multiple implementation partners, penchant for implementation of vertical programs, and non-recognition of CHWs as formalized service providers in many settings impede the effectiveness of CHWs (Ammerman et al., 2014; Frontline Health Workers Coalition, 2014; Lassi et al., 2012; Kane et al., 2020; Spencer et al., 2010).

Using a critical lens, I argue stakeholders working in the area of CHW programs need to approach the design of CHW educational and practice interventions within the context of the broader health systems. Evidence presented in the literature on the fragmented and vertical approaches to implementation of CHW educational and practice-related programs contribute to exclusion from health sector planning and continued existence on the fringe of the health systems in many countries. The complexity of the contextual factors underpinning the effectiveness of CHW educational and practice-related programs requires the application of systems thinking approach in building linkages between the various components with health systems with influence on CHW programs. Along these lines is a need for the review of the current pathways for educating and engaging CHWs within health systems in ways that promote efficient, judicious use of CHWs and optimized education for CHWs. This is in alignment with the call for adoption of holistic approaches which are cognizant of the complex interconnectivity between health systems components, power dynamics and various underlying contextual factors (Adam & de Savigny, 2012). As a possible solution, implementation of CHW interventions within the context of task shifting in Africa should be undertaken with the understanding of complex contextual challenges faced by CHWs and community members. This would in turn inform the sense-making of local contexts, varying stakeholders' perspectives, and complex interactions that impact how CHW work is enacted in practice (McGill et al., 2021; Ribesse et al., 2015; Rwashana et al., 2014).

6.1.1 Implications for Donor Agencies

The dissertation study findings add to the body of critical literature highlighting the role played by donor agencies in the suboptimal integration of CHW programs within health systems. In the majority of low- and middle-income countries (LMICs), external donors are responsible for an estimated sixty percent of CHW program funding (USAID, 2020). As a result, donor agencies have tremendous decision-making power on how resources are distributed within health systems.

The heterogeneity of donors' focus areas contribute to fragmentation and asynchronized implementation of CHW programs in ways that compound gaps. There is a need to question the dominance of vertical donor-funded CHW programs and push for increased buy-in to existing government framework and identified priority areas for optimizing CHW education and practice. There is a need for continued advocacy for integrating donor priority areas in ways that cohesively address gaps with a focus on maximizing resources and improved impact within health systems. In addition, policymakers should prioritize formulation of policies that guide donor entry and prioritization of broader health systems strengthening of CHW programs.

6.1.2 Implications for Policymakers

The results of this study add to the body of critical literature highlighting the need for changes in the formulation of health systems policies that involve task shifting to CHWs. Leveraging on the availability of rural women without clear pathways for formalization of the emergent cadres within health systems undermines the integral role CHWs play in advancing maternal and child health. CHWs frequently described tensions that arose from unmet needs, such as non-regularized work hours, and the burden of community health work. There is a need for policymakers to validate the roles of CHWs through policies that improve the support provided to this cadre of providers.

In addition, these results illuminate the need for policy formulation informed by systems thinking approaches which consider the varying contextual drivers influencing CHW performance and experiences within health systems. I suggest that this lens be used in health sector reform and in planning to further situate CHWs within the conditions that

shape their education and practice. Policies should be formulated in ways that transcend mere improvement of health systems to also enhance integration of CHWs and improve their experiences. This would in turn empower CHWs in navigating complex relationships within the community and the health system (Grant et al., 2017).

6.1.3 Potential for Nuanced Exploitation of Rural Women

This dissertation uncovered the nuanced and gendered issues related to engagement of CHWs within health systems. Although this emerged as an accidental finding within the dissertation, it aligns with existing literature highlighting the potential for exploitation of rural women within health systems. Many scholars point to the fact that women are often engaged to work as CHWs on account of factors such as proximity to the communities, availability to work and marital status (Gustafson et al., 2018). While the goals of promoting equitable access to health care may justify the recruitment of CHWs from their communities of origin, the predilection for selection of females as CHWs is often informed by the assumption that females are better suited to undertake care-related work (Musoke et al, 2018). Maes and Kalofonos (2013) corroborated this finding, stating, “women predominate in unpaid health-care roles in sub-Saharan Africa, due to biases that caregiving is ‘women’s work’ and to fewer formal employment opportunities for women” (2013, p. 57). Engrafting women into care-related work in this manner may support the continued disempowerment of women, particularly in low-resource settings. Furthermore, the gendered nature of community health work may foster inequitable distribution of tasks in ways that facilitate gender inequity especially within the African context. Despite the fact that there are fewer men than women in this role, evidence indicates male CHWs have higher chances of working in paid positions compared to their female colleagues (Friedemann-Sanchez & Griffin, 2011). This practice is enshrined within strongly held cultural and gendered roles apportioned to men and women.

Factors such as high volume of work, lack of a formalized reward system and the continued reliance on the goodwill of women may support the incessant cycle of poverty and weaken women’s economic power. I argue that CHWs may be open to exploitative practices within health systems in ways that further increase their vulnerability. The design of CHW educational and practice-related interventions should be undertaken in

ways that recognize the contribution of women through formalized pathways for employment. Furthermore, there is the need to revisit the notion of basing community health on volunteerism. CHWs have busy lives and often allocate their time between other responsibilities and their CHW role in ways that may disrupt their work-life balance, and place significant burden of care on rural women. I argue that CHW educational and practice-related interventions should be designed in ways that recognize the multiple roles CHWs undertake within communities, and global stakeholders ought to explore the formalization of task shifting to CHWs in ways that create clear pathways for career development and recognition of CHWs as legitimate service providers. These pathways will encompass the creation of mechanisms for training, support, coordination and feedback between CHWs, the formal health system, communities and various stakeholders. Evidence presented in the literature indicates there is a significant lack of recognition of CHW within health systems and the voices of CHWs are frequently excluded from global discussions on strengthening CHW programs. My dissertation demonstrates that CHWs and trainers are key stakeholders with profound insights into community health work drawn from their experiences. As a result, suboptimal recognition of CHWs as stakeholders presents missed opportunities for leveraging their wealth of knowledge in advancing CHW programs within health systems. The integration of CHW interventions within broader health systems planning would enable consideration of CHW support needs and repositioning of CHWs as an essential cadre within the formal health system.

6.2 Implications for CHW Education

CHWs are distinguished from other cadres within the health workforce by the lack of professional, paraprofessional, or tertiary education (Ballard & Montgomery, 2017; Lewin et al., 2010). Findings from this study corroborate a growing body of evidence highlighting the relevance of education for CHW performance and efficiency within the health workforce. Many scholars emphasize the role of education as an enabler for community health work, which may double as an incentive for CHWs (Kok et al., 2019; Lopes et al., 2014; O'Donovan et al., 2018; Wiggins et al., 2013). Assigned roles and the actual field realities of CHWs are largely influenced by content, methodology, and values

of CHW educational interventions. Wiggins et al. (2013) argue that the delivery approaches and educational content which CHWs are exposed to, shape their perception about tasks, duties, and roles at the community level (Wiggins et al., 2013).

Findings from participants presented in this dissertation clearly demonstrate that the quality and adequacy of education CHWs receive has a bearing on how they perceive their role within the broader health systems context, and how the community recognizes and embraces CHW services. CHWs considered themselves distinguished from other members of the community on account of education received (Oliver et al., 2015). However, CHWs expressed concerns related to the varying quality of education received, ineffectiveness of shorter education intervals for learning, and a preference for ongoing and refresher education as a way to boost knowledge retention and recall. A study by Oliver et al. in 2015 corroborated this; the authors state, “CHWs see this as vital, as something that distinguishes them from being just another concerned member of the community but felt that training has been inconsistent and of variable quality” (Oliver et al., 2015, p. 15). Plowright et al. (2018) suggest that insufficient frequency and lack of flexibility in accommodating CHWs’ unique needs as learners contribute to existing gaps related to CHW education. The majority of CHWs have a basic/elementary education prior to undertaking community health work. On account of this, continuous exposure to educational materials supports learning, retention and recall in practice. Increased frequency and exposure to educational content was clearly described by participants in this dissertation as supportive of learning, knowledge retention and recall, while shorter intervals ranging from one to three days were considered ineffective and problematic for learning. Evidence from the literature frequently suggests that flexibility in the way course curricula are designed and adapted to accommodate learning needs can foster effectiveness of educational approaches (Nkhoma et al., 2014; Siribié et al., 2016). This is particularly true in the case of CHWs who frequently have other roles and responsibilities which may interfere with their learning.

Despite the significant role played by education in how well CHWs function within the health workforce, gaps exist in the design and delivery of CHW education. Health system-specific factors relating to the presence of multiple donors, vertical educational

interventions, lack of standardized guides and a lack of fit between CHWs' educational needs and education provided often intersect with CHW-specific factors in undermining CHW education (Funes et al., 2012; Lightfoot & Palazuelos, 2016; O'Donovan et al., 2018). I argue that the majority of existing CHW training programs take an empirical approach, focusing on disease-specific entities without drawing on experiential and local knowledge of CHWs in facilitating their learning. O'Donovan et al. (2018) corroborate that approaching CHW education in this manner may obscure understanding of broader systems and contextual factors which underpin how CHWs perform their tasks (O'Donovan et al., 2018).

Findings from this dissertation point to how the lack of standardized curricula for CHW education across the globe truncates the goals of CHW education. In interviews for this study, participants frequently expressed concerns about the varying approaches in which education was delivered. Inconsistencies in duration, delivery approach, content presentation, and expectations from CHWs and trainers create a continuous web of ineffectiveness in CHW education. Lightfoot and Palazuelos (2016) highlight that the lack of clear standards guiding CHW education may impede the effectiveness of educational programs. Aligning with evidence presented in the literature, I argue that the heterogeneity demonstrated in the implementation of CHW education coupled with the varying educational modalities available presents a challenge for identification of best practices, leading to widespread inability to replicate educational factors that support CHWs' learning and educational needs.

Furthermore, the fact that CHWs are adult learners with clear knowledge of what effective education is to them was clearly demonstrated in this dissertation and CHW respondents provided clear descriptions of what ideal education means for them. This attribute of CHWs is often overlooked in the design of educational interventions. Literature is rife with evidence indicating the absence of CHW voices in the conversations related to the design and approaches for optimizing their learning (Bhatia, 2014; Scott et al., 2018). Within this context, CHWs emphasized a preference for pedagogical strategies that engage the use of visual and story-based approaches, role plays and peer-to-peer approaches. CHWs explained that learning in the absence of

visuals did not facilitate their learning, knowledge retention and recall. This aligns with existing literature indicating the power of visual modalities, use of narratives and scenario-based stories in meeting the educational needs of older adults with varying literacy needs such as CHWs (Choi & Bakken, 2010; Doak et al., 1996; van Beusekom et al., 2016). In addition, pedagogical preferences stated by CHWs within this dissertation align with literature indicating the use of narratives and story-based methods may be more attuned with cultural and indigenous approaches of knowledge transfer (McLaren & Kincheloe, 2007; Rana & Culbreath, 2019).

Current education is provided in a downstream flow which excludes CHW participation in their education. Consequently, the CHW educational landscape is fraught with challenges such as ineffective formats, lack of optimum practical sessions and the use of trainers with little or no knowledge of CHWs' operational contexts (O'Donovan et al., 2018). For education to be effective, the foremost consideration in planning and curriculum development must be recognition of CHWs as adult learners and the design of educational content in ways better aligned to their learning needs and their contextual realities. I posit that enhancing the role of CHWs within communities requires education that is conceptualized with the cultural perspectives, characteristics, literacy needs and uniqueness of CHWs in view and validated through active participation of CHWs in the development process. Consequently, situating CHW education within the varying socio-cultural, institutional, and relational entities at play in their learning is recommended.

Findings from the dissertation related to the preference for the use of more experiential and practice-oriented approaches versus the current predominant use of text-dense and didactic educational approaches align with existing literature. Schön (1987) argued that despite evidence supporting how experience shapes knowledge acquisition, many conventional learning platforms remain guided by application of theories and techniques steeped in systemic scientific knowledge. He further explained that the sense-making process used by adult learners engages an active reflective process which entails integration of experiential knowledge brought forward by learners and critical engagement with knowledge put forward during educational sessions (Schön, 1987).

Furthermore, the majority of methods and designs found in the literature and discussed in the findings of this dissertation are consistent with what Freire (2000) referred to as the banking system of education, where knowledge is viewed as “deposits” of information. Within this context, education is provided with the intention to fill information gaps of CHWs. This potentially results in the objectification of learners as vessels for deposits of information, without a focus on the agency of the learner or their potential empowerment (Freire, 2000). Presented as a problem-solving approach to learning, the Freirean model is characterized by a learning environment in which people are empowered to critically reflect upon their circumstances and arrive at solutions through dialogue and interactions (Freire, 2000). Through this model, learning is enacted through a process of back-and-forth questioning between the trainer and trainee which enables co-intentionality in learning. Consequently, learning is experienced as an active process of doing and not merely a process for receiving deposited knowledge. Beyond didactic approaches, it incorporates participatory methods in educating CHWs such as the use of role plays in simulating thematic areas in ways that enhance acquisition and retention of knowledge. This way, CHWs are able to connect, analyze and visualize health issues under discussion in ways that enable effective knowledge transfer and recall in practice.

I argue that the use of critical pedagogical approaches theorized by Paulo Freire give direction about promising strategies for optimizing learning and retention of knowledge for CHWs. This approach considers CHWs’ lived experiences and the contexts in which they operate and has the potential to restructure the hierarchal educational relationship between trainers and CHWs. On this platform, students experience learning as an active process of doing and not merely a process for receiving deposits of knowledge.

For CHW education to achieve intended goals, education should be approached as a platform for the empowerment of CHWs. I argue that there is the need for stakeholders working in the area of CHW education to align educational content to the audience in ways that engage pedagogical approaches better suited to adult learners, drawing on their experiential knowledge, and cultural approaches for knowledge translation in enhancing CHW learning, in contrast to the use of text-dense didactic approaches.

6.2.1 Implications for CHW Education in Rwanda

Although the TSAM project concluded in Rwanda, the implications for CHW education and practice in Rwanda explicated in this research are aligned with broader implications for CHW programs. For CHW education to achieve the goals of empowering CHWs with information and knowledge required to carry out their tasks, there is a need to review how CHWs are trained and engaged within the Rwanda health system. Although the Rwandan CHW program is engrafted into the health systems framework there, there is a need to formalize CHWs as health-service providers in ways that recognize their contribution and address their remuneration and support needs.

Findings from CHWs and trainers show that current approaches to educating CHWs in Rwanda are suboptimal. Findings highlight gaps such as protracted intervals between trainings, short duration of training and the use of varying pedagogical approaches in education. CHWs in Rwanda identify as adult learners with other responsibilities which influence knowledge retention. Consequently, there is a need for adoption of more experiential based learning approaches that draw on CHW experiences and articulated preferences in pedagogical approaches, educational curriculum design and practice. This would in turn improve CHW effectiveness and overall contribution to the Rwandan health system.

6.3 Methodological Implications

The research shows the value of employing qualitative methodology and methods to explore the experiences of CHWs and their trainers in education and realities of practice. The literature predominantly presents quantitative research on CHW interventions, however, using this approach does not provide insight into the experiences and perceptions of CHWs and trainers as key stakeholders on community health work or into CHW learning and CHW support needs. The use of a qualitative case study methodology resulted in a number of unique insights not seen in the quantitative studies. Information from the interviews provided a rich description of the participants' lived experiences of community health work education and practice. The data collected provided useful

information, developing an in-depth story about the realities of education received for CHWs, community health work, better understanding of the contextual factors influencing how community health is enacted, and drawing the attention of key stakeholders to opportunities for optimizing CHW programs.

6.3.1 Limitations and Strengths

This thesis is not without limits. This was a case study done within the context of Rwanda and one educational intervention. The aim of the study was not to achieve generalizability, but to raise insights about the experiences of CHWs and their trainers relating to CHW education, and to highlight contextual factors that shape community health work. There is no claim that the experiences of the CHWs and trainers detailed in this dissertation can be generalized to all CHWs and trainers in every country across the globe. My claim is that by investigating experiences of CHWs and trainers under the community health component of the Training, Support and Access Model (TSAM) project in Rwanda, using critical lenses, can point to problems and challenges associated with how CHWs are educated, as well as consideration about how they are deployed within the health workforce. The findings bring to the fore salient insights from my participants, drawn from their experiential knowledge and unique positioning within the communities. While well-intending stakeholders from Western countries may devote funds and create educational and practice-related interventions deemed as the gold standard for engaging CHWs, the pervasive lack of insight into varying contextual drivers of CHWs' learning and practice has a negative impact on efficient use of scarce resources, quality of education and on sustainability of CHW programs. In addition, this dissertation is not about sharing experiences of CHWs in Rwanda in an unmediated way designed to critique the CHW program in Rwanda; it is an analysis of their education and practice from a critical viewpoint that serves to reveal challenges and opportunities for improving community health work.

A key limitation within the dissertation was my inability to speak the local language. Within the context of many African countries, language serves as a vehicle for socialization, culture, bonding, and meaningful interaction. The inability to interact with participants in the local language presented a missed opportunity for capturing intricate

nuances and inflections. Although a back-and-forth process of translation was engaged, which entailed interview questions and participants' responses being translated in real-time verbatim, it is important to recognize that there were particularly animated conversations with CHWs and trainers that I was not able to fully comprehend which could have enriched the findings. I felt particularly incapacitated by my inability to convey in their language appreciation and commend the CHWs I encountered on their selfless contributions and vast undertakings in their role as CHWs.

Despite these boundaries, this dissertation also had a number of strengths. The opportunity to interact with CHWs in their own settings, going to their villages, created a platform for deep interaction; the sense of control projected by CHWs in these settings mitigated power-related barriers in ways that ensured rich data. A particular strength of this case study was the variety of CHWs' experiences which provided incredible insights into their work, in ways that may be absent from the literature on CHWs in Rwanda. This dissertation also makes an important contribution to the limited body of research bringing to the fore CHW voices and insights into CHW education and community health work. Furthermore, it addresses important gaps in the literature related to advancing knowledge on pedagogical approaches that effectively support CHWs' learning, and the drivers, enablers and challenges of community health drawn from the experiential knowledge of the realities of day-to-day practice.

6.4 Research Implications

Findings from this dissertation show the adoption of CHW as an integral part of the health workforce in the absence of clear pathways for formalization and incentivising them within health systems is problematic. While CHWs are key to advancing the goals of universal care coverage and equitable access to health care in many countries, lack of health systems approaches for their engagement may undermine performance and effectiveness, exploit the good will of CHWs and are fraught with ethical issues. Further research needs to continue to focus efforts towards critically exploring the formalization of CHW cadres within health systems, unpacking Western assumptions underpinning the design of CHW interventions and standardization of CHW education in ways that meet their pedagogical, literacy and context-specific needs within health systems. In addition,

there is a need to explore the issues arising from the use of alternate cadres similar to CHWs within the context of health systems in high income countries. I hope to build on this work through future research into the ways that task shifting initiatives are implemented across the globe, comparing low middle-income countries and North America.

6.5 Return to Reflexivity

The dissertation process taught me humility and re-oriented my worldview on the importance of contextual drivers and varied perspectives to the construction of reality. With hindsight, my training as a physician and later a public health programmer provided a positivist backdrop which was both nuanced and dominant in how I approached knowledge prior to this work. This prescriptive approach underscored my assumptions about who CHWs were and how CHW educational and practice-related programs should be designed. I attest to the fact that I started my PhD program full of ideas of what I would bring to the fore in advancing knowledge on CHW programs. However, in my interactions with CHWs, my horizons were broadened by CHWs and my orientation reshaped through the recounted experiences of CHWs in ways that transcended knowledge sealed in the pages of a book. I left the field with a lingering sense of discomfort with how CHWs were being drawn into the health systems in ways that demanded so much of them but gave little in terms of support and meeting their needs.

Secondly, interactions with my participants and becoming embedded in their stories as they discussed the difficulties of their education, practice and the burden they carried as CHWs was humbling. The graciousness and largesse with which these low-resource rural women carried out their tasks, coupled with hearing first hand how factors such as lack of salaries and recognition impacted their lives was emotionally challenging for me. I realized I may have perpetuated harm in my previous life as a programmer in the ways I designed CHW interventions without insight into how community health work is enacted. Overall, my dissertation taught me the importance of the co-construction of knowledge, and the understanding that the world can be approached from multiple perspectives and solutions may be convoluted and not necessarily linear in practice.

Lastly, I learned humility as a researcher through my field-entry process. Navigating the multiple bureaucratic bottlenecks in gaining access to Rwanda as a Nigerian/Canadian provided several opportunities for discouragement and rethinking my chosen research path. This process shaped my appreciation of the finer details related to stakeholder engagement and field entry.

I will always be grateful for CHWs who taught me the real cost of community participation and involvement in advancing population health.

6.6 Conclusion

This case study presented the findings from 16 CHWs and 10 trainers, to reveal insights drawn from experiences and perception of CHWs and trainers on the community health worker education, and to unpack how their practice is shaped within the sociocultural and health systems context. Informed by critical pedagogical and critical health systems perspectives, findings revealed four overarching themes related to CHW education. These included 1) recognizing the pedagogical power of image- and scenario-based storytelling, 2) educational design for optimal learning, reinforcement of material and opportunities for review, peer-to-peer learning and role play, 3) capitalizing on experience, practice-based knowledge, relationships, training logistics and readiness to learn, and 4) attuning to the pragmatic needs of CHWs.

Within the context of CHW education and practice, the findings revealed three overarching themes related to the drivers, enablers, and challenges of community health work. These included: 1) intensified educational support, 2) provision of formalized incentives and wages, and 3) availability of essential health-care equipment.

In addition to responding to calls to add CHWs' perspectives to this area of study, implications for health systems, CHW education and the ethics of CHW interventions are forwarded.

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Appendices

Appendix A: Ethics Approval from Western University Research Ethics Board



Date: 27 June 2019

To: Dr. Lloy Wylie

Project ID: 114046

Study Title: Exploring training and capacity building from Community health workers and trainer's perspective; a case study of implementation in northern and southern Rwanda

Short Title: Community Health Workers and Sexual and Reproductive Health in Rwanda

Application Type: NMREB Initial Application

Review Type: Delegated

Full Board Reporting Date: 05/Jul/2019

Date Approval Issued: 27/Jun/2019 09:31

REB Approval Expiry Date: 27/Jun/2020

Dear Dr. Lloy Wylie

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the above mentioned study, as of the date noted above. NMREB approval for this study remains valid until the expiry date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

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
Confidentiality-Agreement	Additional Consent Documents	24/May/2019	Version 1
Interview Guide for CHWs	Interview Guide	21/Jun/2019	2
Interview Guide for Trainers	Interview Guide	21/Jun/2019	2
Letter of Information and consent_4	Written Consent/Assent	26/Jun/2019	4
Telephone recruitment script	Recruitment Materials	24/May/2019	version

No deviations from, or changes to the protocol should be initiated without prior written approval from the NMREB, 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.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Katelyn Harris, Research Ethics Officer on behalf of Dr. Randal Graham, NMREB Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Appendix B: Ethics Approval from University of Rwanda



UNIVERSITY of
RWANDA

OFFICE OF THE DEPUTY VICE CHANCELLOR
FOR ACADEMIC AFFAIRS AND RESEARCH

Kigali, 18 / 07 / 2019
Ref. No: DVC-AAR.546./2019

Damilola Toki
Elbom College, University of Western Ontario

Dear Damilola

RE: RESEARCH AFFILIATION

Reference is made to your application letter to the Directorate of Research and Innovation requesting for Affiliation to University of Rwanda.

On behalf of the UR, I am pleased to inform you that you are accepted to UR as a Research Associate to enable you to conduct a study entitled "*Exploring training and capacity building from Community Health Workers and trainer's perspective; a case study in northern and southern Rwanda*". The affiliation will be from 1st August to 30th August 2019.

Your supervisor will be Dr. Madeleine Mukeshimana, from University of Rwanda Directorate of Research and Innovation and a senior Lecturer at the College of Medicine and Health Sciences (Tel: +250785256459; email: angemado@gmail.com).

At the end of your study, you will deposit two copies of research results to the Directorate of UR Research and Innovation.

The University of Rwanda wishes you a successful research undertaking in Rwanda.

Kind regards,

Professor Nelson JUMBA
Deputy Vice Chancellor for Academic Affairs and Research
University of Rwanda



Cc:

- Principal, College of Science and Technology
- Director of Research and Innovation, UR

Appendix C: Telephone Recruitment Script



Telephone Script

Hello, may I please speak with

Hi, this is Francine, TSAM Manager calling from the TSAM Rwanda office .I am calling today to ask if you are interested in a research study we are conducting. The study is being conducted by Dr. **Lloy Wylie and Damilola Toki** and will look at perceptions and experience of training by CHWs and trainers under the TSAM project. The study is to understand how CHWs prefer to be trained and supported for health education/promotion in the field. Findings from the study support improvements in the education of CHWs in ways that align with CHWs learning styles

Would you be interested in hearing more about this study? *If no, thank you for your time and have a great day.*

If yes, I am now going to read you the letter of information over the phone .Do you have any questions?

[Answer any questions they may have in line with the LOI]

Do you agree to participate in this study?

**If yes, continue with scheduling interviews*

**If no, thank you for their time and have a great day*

Appendix D: Letter of Information and Consent

Running head: LETTER OF INFORMATION



LETTER OF INFORMATION AND CONSENT

Study Title: Exploring training and capacity building from CHWs and trainer's perspective; a case study in northern and southern Rwanda

Principal Investigator:

Lloy Wylie, BA, MA, PhD
Associate Professor, Schulich Interfaculty Program in Public Health

Co-Investigators:

Damilola Toki, MD, MPH, PhD(c),
Faculty of Health Sciences,

David Cechetto, Bsc, MEd, MSc, PhD
Professor and Director of Rebuilding Health in Rwanda

Name of Funder: The Train, Support and Access model (TSAM) project is funded by Global affairs Canada.

Conflict of Interest:
None to declare.

LETTER OF INFORMATION

Letter of Information

1. Introduction:

I am Damilola Toki, a PhD candidate working under the supervision of Dr. Lloy Wylie an Associate Professor in the Schulich Interfaculty Program in Public Health at University of Western Ontario in Canada. We invite you to take part in a research study to explore your experiences of training as a CHW/trainer under the TSAM project and to add your voice on how best to adapt training to CHWs's needs. Using your feedback, a framework that supports improvements in education for specific competencies required for CHWs, which builds on community ways of learning and community embedded learning approaches, will be developed. We plan to interview approximately 16 Community health workers and 10 trainers under the TSAM project

2. Background:

Evidence show training is a key determinant of CHWs' effectiveness. The proposed study will focus on training of CHWs under the "Training, Support and Access Model project (TSAM) in Rwanda. Specifically, training conducted for maternal CHWs under the project .The lived experience of CHWs and trainers on training received will be explored to increase insight into how CHWs are trained, how they prefer to learn while highlighting various pedagogical strategies to support CHW learning and knowledge retention

3. Purpose of the Letter:

This letter is to give you information to help you decide if you would like to take part in this study.

4. Purpose of the Study:

The purpose of this study is to understand your experiences of training as a CHW/trainer in order to find out how to meet the needs of CHWs. Also, to add your voice on how best to adapt training to suit CHWs learning, enhance learning and knowledge retention in an empowering, bottom-up approach. To get a feedback from you on the best information delivery approaches to help you retain knowledge

5. Who is Eligible to Take Part?

You can take part if you:

- Are a CHW trained in the last 36 months under the TSAM project
- Are a CHW under maternal and child health intervention of the TSAM project
- Are able to actively participate in an interview
- You can understand, read, and speak either English or Kinyarwanda

Trainer:

- Have at least one year experience of providing /planning training for CHWs under the TSAM project
- Are able to actively participate in an interview
- You can understand, read, and speak either English or Kinyarwanda

LETTER OF INFORMATION

6. What Taking Part Means:

If you agree to take part, you will meet with the researcher, the PhD student. A translator will be available for you if needed, the translator will not be anybody who has any power over your work. The researcher will describe the study in more detail and answer any questions you might have. If you are still interested in taking part and understand what the study is about and what is expected, you will need write your name on a consent form, date and sign the document. Your name is being collected to show you consent to being interviewed and your responses will not be linked to your name. You will be interviewed by the researcher with an interpreter if needed. The interview will take 45 minutes to 60 minutes. The researcher will ask you questions about your experiences of training/capacity building under the TSAM project and your work as a CHW/Trainer. You will be audio-taped during the interview, this is mandatory so as to capture everything you say. The audio recordings will be used to transcribe your response by the researcher and will be permanently deleted once completed. You will be assigned a study code that will indicate the region, district, language used for interview, your respondent number and whether you agree the researcher uses your quotes or not. This study code is unique to you and will be given to you to keep. The researcher will not retain a record of which study code pertain to your name. If you wish to leave the study at any point, you will need to give the researcher your unique study code to help us remove your information from the study. We want to use health care centers for the interview as they are a private place.

7. Voluntary Participation

Taking part in this study is voluntary. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study at any time. Taking part in this research study or dropping out will not affect your work as a CHW or trainer. You do not waive any legal right by consenting to this study.

8. Withdrawal from Study:

If you decide to leave the study, you have the right to ask the researchers for withdrawal of information collected about you by contacting the researchers using the study phone number and providing your unique study code. If you wish to have your information removed, please let the researcher know and your information will be destroyed from our records. You are able to withdraw your information without any limitation prior to the start of data analysis. Once data analysis starts, you will not be able to withdraw your information

Possible Risks:

There is no known risk associated with participating in this study.

9. Possible Benefits:

You may not benefit personally directly from taking part in this study. However, what we learn from this study will have implications for stakeholders interested in implementation of CHW programs in low literacy settings. Specifically, to strengthen CHW training, with broad relevance to education for empowerment of adult learners with no prior professional education within task shifting initiatives.

LETTER OF INFORMATION

10. Confidentiality of the Information You Provide:

Confidentiality will be fully protected in this study. Anonymized data will be collected. The data will be stored on a secure server at Western University, signed consent forms will be kept in the principal investigator's office at Western for a period of seven years. The signed consent forms will be securely shredded, and all anonymized study records will be permanently deleted by the local PI seven years after the study, in line with UWO requirement. Audio-recordings will be permanently deleted from the recording device immediately after the accuracy of transcription is confirmed. Direct quotes from participants may be included in publications and presentations but no personal identifiers will be included.

Where required, a translator will be used to make communication easy under the interview. The translator will not be anybody that has any power over your work. The translator will sign a confidentiality agreement that ensures the information you provide under the interview will not be shared with anybody else outside the researcher. Representatives of Western University's Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research.

11. Costs and Compensation:

There is no cost to taking part in this study. To thank you for your time, we will cover any transportation costs and provide lunch.

12. Questions about the Study:

If you have questions about the study, please call Damilola Toki, co-investigator.

The REB is a group of people who oversee the ethical conduct of research studies, they are not part of the research team. Everything you discuss will be kept confidential.

This letter is yours to keep for future reference.



LETTER OF INFORMATION

Consent Form

Project Title: Exploring training and capacity building from CHWs and trainer’s perspective; an implementation case study in northern and southern Rwanda

Primary Investigator’s Name: Lloy Wylie

Co-investigator’s Name: Damilola Toki

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

I agree to the use of quotes provided by me but that do not identify me in sharing the results of this research

YES NO

Participant’s Name (Please Print):

Participant’s Signature: Participant’s Thumb print.....

Date: Month: Day: Year:

My signature means that I have explained the study to the participant named above. I have answered all questions.

Person Obtaining Informed Consent (Please Print):

Signature: Date: Month Day..... Year.....

Interpreter’s Name: (Please Print):

Interpreter’s signature:.....Date: Month.....Day:..... Year:.....

Appendix E: Confidentiality Agreement

Running head: CONFIDENTIALITY AGREEMENT



Confidentiality Agreement

Project Title: Exploring training and capacity building from CHWs and trainer's perspective; an implementation science case study in northern and southern Rwanda.

Principal Investigator:

Lloy Wylie, BA, MA, PhD

Associate Professor, Schulich Interfaculty Program in Public Health

Co-Investigator:

Damilola Toki, MD, MPH, PhD(c),

Faculty of Health Sciences,

CONFIDENTIALITY AGREEMENT

2

I understand confidential information will be made known to me as (please check all that apply):

[] Interpreter/transcriber

[] Project staff

for a study being conducted by Dr. Wylie and Damilola of the Department of health sciences, western university. I agree to keep all information collected during this study confidential, and will not reveal by speaking, communicating or transmitting this information in written, electronic (disks, tapes, transcripts, email) or any other manner to anyone outside the research team.

I agree to follow the guidelines for data protection/storage by Western university

YES NO

Name of Assistant: _____ (please print)

Signature of Assistant: _____

Date: _____

Name of Principal Investigator: _____ (please print)

Signature of Principal Investigator: _____

Date: _____

2

2

Appendix F: Interview Guide for CHWs

Running head: INTERVIEW GUIDE



Appendix B

Interview Questions (CHWS)

Demographic Data

1) Kindly give me information about yourself:

a) Age (years): _____

b) Education level: No education Primary Secondary Tertiary

Other (please specify) _____

c) How long have you been a CHW (ASM): (Years, Months) _____

d) What language are you comfortable being interviewed in (English language, Kinyarwanda)?

INTERVIEW GUIDE

Appendix 2: Interview Guide

1. What is your current practice; what you do when you go door to door visits your community?
2. What sort of cases do you see in the community? And what do you do to help them?
3. What are some of the successes and challenges in community health promotion/ education?
4. What is the greatest challenge(s) you have in performing your duties?
5. Do you feel comfortable with using what you have learnt from TSAM in the field?
6. What did you think in general about the TSAM training?
7. We're going to now talk about the training in specific areas (tell them the areas).

- a. Did you get training in Maternal and child health?

Probes:

- i. What did you think about it?
- ii. How did it help?
- iii. Was it relevant to your work?
- iv. Were there any gaps?

- b. Teen and unplanned pregnancies

Probes:

- i. What did you think about it?
- ii. How did it help?
- iii. Was it relevant to your work?

INTERVIEW GUIDE

iv. Were there any gaps?

c. Family planning

Probes:

i. What did you think about it?

ii. How did it help?

iii. Was it relevant to your work?

iv. Were there any gaps?

d. Sexual health?

Probes:

i. What did you think about it?

ii. How did it help?

iii. Was it relevant to your work?

iv. Were there any gaps?

8. Were you trained to work in teams?

9. What were the overall benefits of the TSAM training?

10. What was the best thing about the training for you?

11. What were the overall challenges of the TSAM training?

12. Do you think there is anything is missing from the training?

13. How could the training could be improved?

14. How do you like to learn? What teaching styles work best for you and other CHWs?

Probe: Music? Stories? Videos? Drama? Text?

INTERVIEW GUIDE

15. What resources or tools were you given for your work?
16. Are the resources useful and easy to use for you? For the families you support?
17. How would you improve those resources?
18. Are there other resources you need? Or that mothers & families need?
19. Is there anything else you would like to share about the TSAM training or resources?

Appendix G: Interview Guide for Trainers

Running head: INTERVIEW GUIDE



Appendix B

Interview Questions (Trainers)

Demographic Data

1) Kindly give me information about yourself:

a) Age (years): _____

b) Education level: No education Primary Secondary Tertiary

Other (please specify) _____

c) How long have you been a trainer: (Years, Months) _____

d) What language are you comfortable being interviewed in (English language, Kinyarwanda)?

INTERVIEW GUIDE

Appendix 2: Interview Guide

1. What training do you provide?
2. Who is the training done with?
3. Do you feel the training is relevant for CHWs and their work in the field?
4. What is the greatest challenge(s) you have in performing your duties as a trainer?
5. How did the training help the CHWs?
6. What did you think in general about the TSAM training?
7. We're going to now talk about the training in specific areas (tell them the areas).

- a. Did you give training in Maternal and child health?

Probes:

- i. What did you think about how the CHWs learnt in class?
- ii. Was it relevant to the CHWs work in the field?
- iii. Do you think it will help CHWs in their work?
- iv. Were there any gaps?

- b. Teen and unplanned pregnancies

Probes:

- i. What did you think about how the CHWs learnt in class?
- ii. Was it relevant to the CHWs work in the field?
- iii. Do you think it will help CHWs in their work?

INTERVIEW GUIDE

iv. Were there any gaps?

c. Family planning

Probes:

i. What did you think about how the CHWs learnt in class?

ii. Was it relevant to the CHWs work in the field?

iii. Do you think it will help CHWs in their work?

iv. Were there any gaps?

d. Sexual health?

Probes:

i. What did you think about how the CHWs learnt in class?

ii. Was it relevant to the CHWs work in the field?

iii. Do you think it will help CHWs in their work?

iv. Were there any gaps?

8. Do you train CHWs to work in teams?

9. What were the overall benefits of the TSAM training?

10. What was the best thing about the training you give?

11. What were the overall challenges of the TSAM training?

12. Do you think there is anything is missing from the training?

13. How do you feel the training could be improved?

14. Do you think the training style works for CHWs?

15. Do you have any idea how trainings can be done for CHWs?

INTERVIEW GUIDE

Probe: Music? Stories? Videos? Drama? Text?

16. What other resources or tools do you provide for CHWs?
17. How would you improve those resources?
18. What other resources do you think CHWs need?
19. Is there anything else you would like to share about the TSAM training or resources?

Appendix H: Glossary

Access is a measure of an individual's or populations' physical, economic, sociocultural and psychological abilities to make use of health services (WHO, 2010).

Coverage refers to the proportion of individuals who have received a health service or benefitted from an intervention among the total number of individuals who require the services (WHO, 2010).

Health equity is the absence of unfair, avoidable, and remediable differences in health status among groups of people. Health equity is achieved when everyone can attain their full potential for health and well-being (WHO, 2021).

Health services include all activities whose primary aim is to diagnose a clinical condition or promote, restore or maintain the health of the community members (WHO, 2017).

Health systems consist of all the organizations, institutions, resources, and people whose primary purpose is to improve health (WHO, 2006).

Health worker refers to an individual who participates in activities whose primary aim is to enhance the health of a population or health of another individual (WHO, 2017).

Health workforce/Human resource for health: The health workforce can be defined as “all people engaged in actions whose primary intent is to enhance health.” (WHO, 2006)

Low-income country is a country with a Gross National Income per capita of \$1,005 or less in 2016 (World Bank, 2017).

Maternal health refers to the health of women during pregnancy, labour and delivery and within 42 completed days of delivery (WHO, 2017).

Millennium Development Goals are a global declaration by governments, the international community, civil society, and the private sector to accomplish tangible goals for development and poverty eradication between years 2000 and 2015 (UN, 2014).

Motivation refers to the intrinsic factors that promote service delivery and the extrinsic factors that induce or compel CHWs to provide services (Armstrong & Taylor, 2014).

Pedagogy entails learning oriented towards social goals (Hinchliffe, 2001)

Quality (of health care) is the extent to which the provided health services increases the likelihood of positive health outcomes in line with professional knowledge and standards. It considers adherence to documented standards and responsiveness to recipients' needs (Lohr & Schroeder, 1990).

Sustainable Development Goals are a set of 17 goals adopted by the United Nations in 2015 which aim to build on the Millennium Development Goals to sustain economic, social, and environmental development. They seek to achieve human rights for all individuals, empowerment of women and girls, and gender equality (UN, 2019).

Task shifting is defined as a process of delegation, whereby tasks are moved, where appropriate, to less specialized health care workers (WHO, 2007b).

Universal health coverage (UHC) means that all individuals and communities have access to quality services without financial hardship (WHO, 2017).

Utilization is a quantitative measure of health service used by a population.

Curriculum Vitae

Name: Damilola Toki

Post-secondary Education and Degrees: Ladoke Akintola University of Science and Technology
Nigeria
2005 Bachelor of Medicine and Surgery (MD)

Western University
London, Canada
2017 Master of Public Health (MPH)

Western University
London, Canada
2021 PhD(c)

Honours and Awards: Dr. M. Abdur Rab Public Health Excellence Award
2017

Related Work Experience

Health Promoter, Vaccine Liaison
Middlesex London Health Unit
2021

Research Assistant, Health Equity Action Research Lab
2018

Programme Manager, Service Delivery
Planned Parenthood Federation of Nigeria (PPFN), Abuja, Nigeria
2009–2016

State Team Lead, Polio Vaccination Program
United Nations Children’s Fund (UNICEF), Kano, Nigeria
2008

Medical Officer
Gadri Institute for Infectious Disease and Research, Abuja, Nigeria
2008–2009

National Defense College Clinic, Abuja, Nigeria
2007–2008

Medical House Officer
University College Hospital, Ibadan, Nigeria
2006–2007

Presentations:

Toki, D. (2013). *Scaling up SRH/HIV integrated services to survivors of Violence against Women (VAW) and the use of community engagement for prevention of VAW in Mararaba community in Nigeria* [Poster presentation]. International Conference on HIV/AIDs and STIs in Africa (ICASA), Cape Town, South Africa.

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