Community-orientated primary health care: Exploring the interface between community health workers, the healthcare system and communities in South Africa

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DECLARATION

I, **Hlologelo Malatji**, declare that this thesis is my own unaided work. It is being submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in Public Health at the University of the Witwatersrand, Johannesburg. The work has not been submitted before for any degree or examination at this or any other university.

I am aware that plagiarism is wrong, and I confirm that this thesis is my own unaided work except where I have explicitly indicated otherwise. I have read the sections on referencing and plagiarism in the Wits Plagiarism Policy. I have followed the required conventions in referencing the thoughts and ideas of others. I understand that the University of the Witwatersrand may take disciplinary action against me, including suspension or permanent expulsion, if there is an evidence that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.

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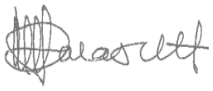

Date of submission

02 April 2024

DEDICATION

I dedicate this body of work to all community health workers (CHWs) in South Africa and beyond. May their struggle for recognition in the healthcare system be realised soon.

PUBLICATIONS ARISING FROM THE RESEARCH

This PhD thesis is based on three original research articles. In all the articles, I am the lead author and participated in the conceptualisation, data collection and management, coding and analysis, and compiling the final write-up. The articles' citations are as follows:

1. **Malatji, H.,** Griffiths, F. & Goudge, J. Community-orientated primary health care: Exploring the interface between community health worker programmes, the health system and communities in South Africa. *PLOS Global Public Health*, (2023). https://doi.org/10.1371/journal.pgph.0000881
2. **Malatji, H.,** Griffiths, F. & Goudge, J. Mobilisation towards formal employment in the healthcare system: A qualitative study of community health workers in South Africa. *PLOS Global Public Health*, (2024). https://doi.org/10.1371/journal.pgph.0002226
3. **Malatji, H.,** Griffiths, F. & Goudge, J. Supportive supervision from a roving nurse mentor in a community health worker programme: a process evaluation in South Africa. *BMC Health Service Research* 22, 323 (2022). https://doi.org/10.1186/s12913-022-07635-w

Additional publications related to this PhD work

4. Tseng Y, Griffiths F, de Kadt J, Nxumalo N, Rwafa T, **Malatji H.** & Goudge J. Integrating community health workers into the formal health system to improve performance: a qualitative study on the role of on-site supervision in the South African programme. *BMJ Open*, 2019; 9:e022186. https://doi: 10.1136/bmjopen-2018-022186
5. Goudge J, de Kadt J, Babalola O, Muteba M, Tseng Y, **Malatji H**, Rwafa T, Nxumalo N, Levin J, Thorogood M, Daviaud E, Watkins J. & Griffiths F. Household coverage, quality and costs of care provided by community health worker teams and the determining factors: findings from a mixed methods study in South Africa. *BMJ Open*, 2020;10:e035578. https://doi: 10.1136/bmjopen-2019-035578
6. Griffiths F, Babalola O, Brown C, de Kadt, **Malatji H,** Thorogood M, Tseng Y. & Goudge J. Development of a tool for assessing quality of comprehensive care provided by community health workers in a community-based care programme in

South Africa. *BMJ Open*, 2019; 9:e030677. https://doi: 10.1136/bmjopen-2019-030677

7. Goudge, J., Babalola, O., **Malatji,** H. et al. The effect of a roving nurse mentor on household coverage and quality of care provided by community health worker teams in South Africa: a longitudinal study with a before, after and 6 months post design. *BMC Health Service Research* 23, 186 (2023). https://doi.org/10.1186/s12913-023-09093-4

CONFERENCE PRESENTATIONS ARISING FROM THIS THESIS

1. **Malatji, H**., Goudge, J & Griffiths, F. Factors enabling and disenabling the services provided by community health workers: A case study of selected districts in South Africa. **Poster presentation at the South African Public Health Association of South Africa (PHASA) Conference held in Cape Town, August 2019.**
2. **Malatji, H**. Community Health Workers to the fore. **Oral presentation at the 9th Child Health Priorities Conference held in Johannesburg, September 2018.**
3. **Malatji, H**., Goudge, J & Griffiths, F. Community-orientated primary health care: exploring the interface between community health workers, health system integration and communities in South Africa. **Oral presentation at the Faculty of Health Sciences Biannual Research Day, Johannesburg, September 2022.**

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ACRONYMS AND ABBREVIATIONS

Abbreviation	Description
CHW	Community Health Worker
FM	Facility Manager
OTL	Outreach Team Leader
PHC	Primary Health Care
PHCF	Primary Health Care Facility
COPC	Community-Orientated Primary Care
DOH	Department of Health
PDOH	Provincial Department of Health
LMIC	Low and Middle Income Country
KI	Key Informant
CR	Community Representative
CRI	Community Representative Interview
CHP	Centre for Health Policy
NEHAWU	National, Education, Health and Allied Workers Union
WBOT	Ward-based Outreach Team
NGO	Non-Government Organisation
NCD	Non-communicable disease
NC	Communicable disease
NM	Nurse Mentor
FGD	Focus Group Discussion
UHC	Universal Health Care
SDG	Sustainable Development Goals
WHO	World Health Organization

ABSTRACT

Background: To achieve universal health coverage, low and middle income countries (LMICs) are extending primary health care (PHC) services using community health worker (CHW) programmes. However, CHWs are marginalized within the healthcare system. Community-orientated primary health care (COPC) and supportive supervision are two interventions being used to strengthen CHW programmes.

Primary aim: To understand whether and how the COPC and supportive supervision approaches strengthen CHW programmes in South Africa.

Methods: Data was collected between 2016 and 2019 using qualitative methods in nine PHC facilities in rural and semi-urban areas of Mpumalanga and Gauteng provinces, South Africa. Purposive and snowball sampling techniques were used to recruit participants. The participants included: CHWs, supervisors, facility staff members and community members. Data was collected using focus group discussions, individual interviews and observations, and was analysed thematically.

Findings: In line with the COPC approach, there were efforts to engage communities in the implementation of the CHW programmes but community members prioritised other challenges such as lack of housing and running water. In some facilities, in-service training increased CHWs knowledge and skills but challenges such as lack of supervision, lack of resources and outsourced employment without benefits demotivated the CHWs (Paper 1 / Objective 1, Published).

In response to challenges, in the semi-urban sites, CHWs unionised to present their grievances to government. This resulted in an increase in stipend but not permanent government employment. During the height of the COVID-19 pandemic, when decision-makers recognised the essential role of CHWs higher remuneration was secured. CHWs in rural areas were not active in demanding permanent employment (Paper 2 / Objective 2, Published).

Supportive supervision provided by a nurse mentor over 14 months, (1) trained CHWs and their supervisors resulting in increased knowledge and new skills, (2) addressed their fears of learning and failing and (3) established operational systems to address inefficiencies in CHW core activities (household registration and medication delivery). The intervention was

disrupted by union activities. The communities' demonstrated little interest in the functioning of CHW programmes (Paper/ Objective 3, Published).

Conclusion: Both the COPC approach and supportive supervision can reduce marginalisation of CHW within the health system.

Keywords: CHWs, resources, employment, community-orientated primary health care, supportive supervision, unions, healthcare system, integration, communities, South Africa

CONTENTS

CHAPTER 1: INTRODUCTION TO THE STUDY

1.1 Introduction

The 2030 Agenda for Sustainable Development stresses the importance of leaving no one behind [1]. Across the 17 Sustainable Development Goals (SDGs), 169 targets and 241 indicators, the SDGs highlight amongst other issues poverty, food insecurity, gender inequality, and unequal access to health and education as areas requiring urgent attention at multiple levels. Health is highlighted by SDG 3, which aims to "Ensure healthy lives and promote well-being for all" [2]. SDG 3 aims to attain universal health coverage (UHC) that pursues equitable access to health support and care for everyone, particularly in the low and middle income countries (LMICs) where there is a scarcity of resources and a growing burden of diseases. In support of this goal, the World Health Organization (WHO) proposes countries strengthen care for communicable and non-communicable diseases (NCDs), initiating interventions to prevent the deaths of children under 5 years and reduce maternal mortality etc. [3]. Despite progress being made by individual countries in ensuring the availability of health care, sub-Saharan Africa continue to experience poor health outcomes. The WHO report show half of the deaths of children under 5 years are found in these countries. Further, maternal mortality remains significantly high in these countries [4, 5].

In pursuit of UHC, there is renewed interest in LMICs to make healthcare accessible to all. However, the increasing shortage of health workers makes it difficult for these countries to realise UHC [6, 7]. Consequently, there is a growing reliance on community health worker (CHW) programmes to provide primary healthcare (PHC) [8, 9]. A CHW is widely understood to be a lay health worker characterised by limited training mainly in-service training provided by both government and non-government organisations managing patients at the community level and compensated through a stipend [8, 9]. Over the years, studies in LMICs have reported how CHWs can help marginalised communities to access health care [10, 11]. For example, studies in Malawi, Mozambique and Zimbabwe indicate that CHWs are effective in the early identification of malnourished and underweight children [12, 13], in other countries, the CHWs play a critical role in connecting vulnerable populations to health and social services.

As much as CHW programmes have been instrumental in strengthening access to maternal and child health care, they continue to experience various design and implementation challenges. A review of literature has shown they are poorly integrated into healthcare systems, and consequently, the CHWs have limited access to working tools, supportive supervision, and decent salaries and employment protection [14-17]. Furthermore, the top down approach adopted by programme developers when designing the interventions makes it difficult for communities to be active participants in the programmes [18]. Anecdotal evidence suggests the lack of unionisation in the CHW sector also contributes to the challenges, as the CHWs have no formal bargaining power to demand better working conditions from government.

South Africa is facing a high burden of disease resulting from communicable diseases (e.g., HIV/AIDS, maternal and child mortality), NCDs (e.g., cardiovascular diseases, hypertension, cancer, diabetes) as well as injury and trauma [19]. The South African health system is dominated by the public health sector; as a result, the public health care system is overburdened by those requiring care [19]. In line with international declarations for UHC, South Africa is prioritising the delivery of health services through the PHC model. In contrast to other LMICs, South Africa has a rich history of practicing community orientated primary health care (COPC) originating from the 1940s. The Pholela community health centre in KwaZulu-Natal province is a typical example [20, 21]. COPC is defined as a method or approach used to design and deliver integrated primary health care services in a demarcated area [20]. The approach stresses the importance of delivering care that is comprehensive, prioritises community participation, and as well as the use of multidisciplinary teams to boost service integration (Key Principles). Many years later, at the height of the HIV/AIDS and TB pandemics, non-governmental organisations (NGOs) were leading in the provision of community health care and prioritised care for people living with the diseases [22]. However, the NGOs programmes were often criticised for being disease-specific, fragmented, and poorly coordinated to respond to the rising population health needs [22].

In 2011, the government of South Africa introduced the PHC strengthening model[1], which consist of three arms: district specialist teams, school-based teams and ward-based outreach teams (locally known as the WBOTs) [23]. The WBOTs were introduced to address the inefficiencies of the NGOs' programmes, to regularise the community-based health sector,

[1] The National Department of Health primary health care strengthening model consists of three streams of care namely district specialist teams, WBOTs, and school-based teams [23].

and to strengthen the provision of PHC services. WBOTs are supposed to consist of at least six CHWs led by a nurse in collaboration with a health promoter and environmental officer [23]. Similar to other contexts, the South African WBOTs/CHW programme is experiencing several challenges such as shortage of skilled supervisors to oversee the CHWs activities, resource shortages, and poor links with the healthcare systems and community structures [24, 25]. In the face of these challenges, in some areas, researchers and programme managers secured external funding to support the implementation of the CHW programmes in accordance with the COPC approach as described earlier. This was done to ensure the programmes are attuned and responsive to the needs of the community and integrated into health systems, and community structures to enhance success.

In this PhD study, I explore the interface between the CHW programmes, the healthcare system and the communities they serve in South Africa. I explored the programmes history, care packages, work conditions, CHW unionisation, relationships with healthcare systems and community structures, and the extent of the application of the COPC in the programmes. I also undertook a process evaluation of a CHW and supervisor capacity-building intervention piloted as part of a larger study of CHW programmes named Batlhokomedi. The Batlhokomedi study is described in detail in Chapter 4.

1.2. Problem statement and justification

In the past decade, many researchers have evaluated the performance of CHW programmes in LMICs, however, most evaluations tend to have a narrow focus such as CHWs contributions to mitigating HIV/AIDS, enhancing maternal and child healthcare services and chronic conditions management [26-28]. Since 2011, CHWs in South Africa have been deployed to the nation-wide programme, with increased responsibilities covering preventative, promotive and limited curative roles [23]. Since the inception of the programmes, there has been a growing body of evaluation studies [29, 30], mainly focused on programme performance; however, most of these evaluations are not comprehensive as they focus on specific areas of CHW contribution (e.g., chronic diseases management) [31, 32]. The national CHW programme is being implemented in the 9 provinces[2] of South Africa, with each province adopting the programme at a scale suitable for the context and population needs. The differences in programme adoption have direct and indirect influences on the programme performance and outcomes. There remains a paucity of studies assessing CHWs, supervisors,

[2] Gauteng, North West, Western Cape, Northern Cape, Eastern Cape, Limpopo, Mpumalanga, Free State, and KwaZulu-Natal provinces

patients and community overall experiences, successes and challenges in the national programmes. It was therefore important to explore how these programmes functioned in the different provinces and districts, the challenges faced by the actors (e.g., CHWs), and how long standing approaches to health system strengthening such as COPC and supportive supervision are being used to optimise the performance of the CHWs and overall programmes.

1.3. Research Questions, Aim and Objectives

1.3.1. Research questions

The PhD study was guided by the following broad questions and sub-questions:

How did the CHW programme in Sedibeng, Johannesburg, Tshwane and Ehlanzeni districts apply the COPC approach?

- What is the history of COPC practices in the districts?
- Who is responsible for implementing the COPC initiatives in the districts?
- What type of services do the CHWs provide in the districts?
- What health system and community constraints do the CHWs face in providing services?
- What is the status of COPC applications in the districts?

What are the CHWs' conditions of employment and struggles for recognition in Sedibeng, Johannesburg, Tshwane and Ehlanzeni districts?

- What are the CHWs' conditions of employment in the different districts?
- What strategies are the CHWs using to voice their frustrations?
- Are CHWs part of organised labour?
- What were the outcomes of organised labour in the different districts?

How can a roving nurse mentor help improve the knowledge and skills of CHWs and, facilitate their integration into the healthcare system and community structures?

- What activities did the nurse mentor introduce to help build the knowledge and skills of the CHWs and supervisors?
- How did the CHWs, supervisors, facility-based staff, patients and community representatives respond to the intervention?
- What were the successes and challenges of the intervention?

1.3.2. Research aims

The first aim of the study was to explore and describe the nature of CHW programmes and the application of the COPC approach to semi-urban and rural districts of South Africa. The second aim was to undertake a process evaluation of a CHW capacity-building intervention in a semi-urban district of South Africa (Table 4.1, Chapter 4).

1.3.3. Research objectives

The research had the following objectives:

- To explore how CHW programmes are attuned to community needs, integrated into the healthcare system and community structures, and implemented in accordance with the COPC approach in Sedibeng, Johannesburg, Tshwane and Ehlanzeni districts of Gauteng and Mpumalanga Provinces.
- To describe the CHWs' conditions of employment and mobilisation activities to demand permanent employment in Sedibeng, Johannesburg, Tshwane and Ehlanzeni districts.
- To undertake a process evaluation of an intervention to improve the capacity of CHWs and their supervisors in Sedibeng district, Gauteng province.
- To provide policy recommendations on how CHW programmes can be strengthened to better meet the needs of vulnerable populations.

Table 1.1. PhD aim, objectives, research questions and sub-questions

Aim	Objectives	Research questions	Sub questions
1. To explore and describe the nature of CHW programmes and application of the COPC approach in semi-urban and rural districts of South Africa.	To explore how CHW programmes are attuned to community needs, integrated into the healthcare system and community structures, and implemented in accordance with COPC principles.	How did CHW programmes in Sedibeng, Johannesburg, Tshwane and Ehlanzeni districts apply the COPC approach?	➢ What is the history COPC practices in the districts? ➢ Who is responsible for implementing the COPC initiatives in the districts? ➢ What type of services do the CHWs provide in the districts? ➢ What health system and community constraints do the CHWs face in providing services? ➢ What is the status of COPC applications in the districts?
	To describe the CHWs conditions of employment and mobilisation activities to demand permanent employment.	What are the CHWs conditions of employment and struggles for recognition in Sedibeng, Johannesburg, Tshwane and Ehlanzeni districts?	➢ What are the CHWs conditions of employment in the different districts? ➢ What strategies are the CHWs using to voice their frustrations? ➢ Are CHWs part of organised labour? ➢ What were the outcomes of the organised labour or mobilisations in the different districts?
2. To undertake a process evaluation of a capacity-building intervention in a semi-urban district in South Africa.	To undertake a process evaluation of an intervention to improve the capacity of CHWs and their supervisors in Sedibeng district of Gauteng province.	How can a roving nurse mentor help improve the knowledge and skills of CHWs and their supervisors, facilitate their integration into the healthcare systems and community structures in Sedibeng PHC facilities?	➢ What activities did the nurse mentor introduce to help build the knowledge and skills of CHWs and their supervisors? ➢ How did the CHWs, supervisors, facility staff, patients and community representatives respond to the intervention? ➢ What were the successes and challenges of the intervention?
	To provide policy recommendations on how CHW programmes can be strengthened to better meet the needs of vulnerable populations.	N/A	N/A

1.4. Structure of the integrated narrative

The integrated narrative consists of nine (n=9) chapters.

Chapter 1: This chapter provided an introduction to the research, reflecting on the history of CHW programmes, their contributions and challenges. The research problem and justification for the study as well as the research question, aim and objectives were provided.

Chapter 2: This chapter provides a review of international literature on CHW programmes, past and current challenges and the effectiveness of the programmes. As well as innovative strategies observed in different contexts to strengthen the programmes.

Chapter 3: the organisation of the South African public health care system, primary health care and CHW programmes is provided to give context to the study.

Chapter 4: present the overall PhD and Batlhokomedi study research methods. The chapter focuses on the research design, study sites, population and sampling techniques, data collection methods, and steps followed to ensure research rigour, data management, and analysis methods.

Chapter 5 – 7: These chapters present the research findings in the form of published scholarly articles.

Chapter 5: describes the history of community-orientated primary healthcare, South African nation-wide CHW programmes, programmes relationship with the healthcare system and communities, and evidence of the extent of COPC application in the CHW programmes.

Chapter 6: This chapter builds from Chapter 5 by highlighting CHWs conditions of employment and mobilisation activities towards formal employment in the healthcare system.

Chapter 7: In this chapter, I present the findings of a process evaluation of a roving nurse mentor or supervisor intervention implemented over14 months to build the capacity of CHWs and their supervisors, establish the programme link with the healthcare system and community structures. The intervention was implemented in two PHC facilities.

Chapter 8: This chapter entails an integrated discussion of Chapters 5 – 7. A summary of the three papers is provided, followed by a presentation and discussion of overarching themes in relation to extant literature. The contributions of the study, recommendations for practice and policy and limitations are also provided.

The last chapter, which is **Chapter 9**, provides the conclusion for the study.

CHAPTER 2: LITERATURE REVIEW AND ANALYTICAL FRAMEWORKS

2.1. Introduction

In this chapter, I outline the scope of the thesis focusing on the history and evolution of community health worker (CHW) programmes, challenges confronting the new programmes and evidence of their effectiveness, particularly in resources constrained settings such as South Africa. I also describe community orientated primary care (COPC), supportive supervision and community health systems approaches as some of the approaches used to optimise the performance of the programmes in the settings. These approaches also served as the analytical frameworks for Papers 1, 2 and 3 of this PhD study.

2.2. Overview of CHW programmes: History and advancement

CHW programmes have a rich history originating from Ding Xian, China in the 1920s [33]. In this context, illiterate community members received three months of training to provide basic health care, record births and deaths, offer general health advice, vaccinate against smallpox, and help communities to keep their neighbourhood clean (Table 2.1) [33]. After this era, barefoot doctors[3] were introduced in the 1950s to provide similar services. In the 1960s, community-based health programmes gained popularity to respond to populations health needs [33]. It was during this era that many other countries such as Tanzania and India introduced CHW programmes to respond to their population health needs.

In 1975, the World Health Organisation (WHO) recognised the potential contributions of community-based health programmes in advancing access to primary health care, and the closeness of the programmes to the principles of social justice [33]. The existing programmes embodied the principles of community participation, equity, disease prevention and multi-sectoral approach to care [33, 34]. The 1978 Alma-Ata Conference held in Kazakhstan also advanced the call for the achievement of *health for all*.

[3] Health workers who received basic health training and provided services to residents in rural areas.

Table 2.1 Period and evolution of CHW programmes

Period	CHW programmes evolution
1920s	➢ First introduced in Ding Xian, China using illiterate CHWs; ➢ CHWs received 3 months training; they were responsible for recording births and deaths, vaccinating against small pox, and they provided health talks.
1950s	➢ Barefoot Doctor Programme; ➢ Programme reached millions of people in the rural part of China.
1960s	➢ Recognition of the barefoot doctor programme as a model to extend health services; ➢ Tanzania, Guatemala, Honduras and Venezuela introduce CHW programmes.
Early 1970s	➢ WHO explored new methods to provide health care; ➢ CHW programmes embodied principles of social justice, equity, community participation, and multi-sectoral collaboration; ➢ WHO published a book titled "Health by the People".
1978	➢ International gathering on primary health care in Kazakhstan; ➢ Renewed call for the achievement of *health for all* by year 2000 through PHC.
1970s – early 1980s	➢ CHW programmes with disease-specific focus emerged, mainly operated by non-government organisations (NGOs); ➢ The NGOs programmes experienced challenges such as inadequate training, poor supervision, and the lack of logistical support for CHWs; ➢ Global economic forces such as oil increases weakened funding for health programmes; ➢ Demise of many CHW programmes.
1980s	➢ CHW programmes re-emerged at scale in Brazil, Nepal, India, Bangladesh, and Pakistan; ➢ Many households were reached through home visits by CHWs.
Early 2000s – current	➢ Renewed interest in CHW programmes following the WHO's recommendations on task shifting to manage strain on healthcare systems.

Following the Alma Ata Declaration in 1978, many countries, particularly those experiencing a high disease burden and shortage of health workers, started to develop large-scale programmes to reach vulnerable populations [35]. However, most of these programmes were run and managed by NGOs, with a narrow focus and received minimal support from the government [33, 35, 36]. The NGOs' dependence on government and donors for funding continuously threatened the independence and existence of the programmes. Further, the global economic challenges such as the oil crises experienced in the 1980s made it difficult for resource-constrained countries to continue to invest in health and social welfare programmes [36, 37]. Insufficient funding, poor management, and a global economic crisis all contributed to the collapse of the promising programmes.

From the early 2000s, there was another growing interest in CHW programmes due to the WHO's advocacy for task shifting as a means to lessen the burden on healthcare systems caused by the HIV/AIDS and TB pandemics [38]. During this era, South Africa also saw a rise in the number of NGOs being funded by the government and international donors to

respond to the pandemics [39]. Although the CHWs were instrumental in providing care and support to HIV/AIDS and TB patients, they had no structural linkage with local facilities. This hindered their efforts as it meant they functioned with inadequate training, supervision and without the necessary supplies and equipment [22, 40]. In the pursuit of universal health coverage (UHC) goals, the CHW programmes have since evolved from the disease-specific orientation to be more comprehensive and integrated programmes covering promotive, preventive, and limited rehabilitative and curative functions. However, the new programmes also report challenges such as limited funding and poor integration into the healthcare system and community structures. Efforts to strengthen the programmes hasn't been successful as most of these programmes remain under funded. In the next section, I reflect on some of the documented contributions being made by CHWs in delivering care to needy communities.

2.3. Evidence of effectiveness of the CHW programmes

There has been burgeoning evidence of CHWs effectiveness in maternal and child health care [10], malaria control, and HIV and AIDS prevention and management services in contexts where there is sustained reliance on CHWs [26].

In line with the WHO recommendation for exclusive breastfeeding of babies in the first 6 months of life [42], some countries are using CHWs to educate mothers about breastfeeding. In these countries, the CHWs play a key role in caring for malnourished children and educating mothers about the importance of exclusive breastfeeding and other child nutrition behaviours. A multi-country study found the likelihoods of exclusive breastfeeding was 5 times greater in mothers exposed to CHWs support when compared to a group that wasn't [43].

In other settings, CHWs have been trained to treat serious childhood illnesses such as malaria, diarrhoea and pneumonia [10, 44]. In Bangladesh, CHWs continue to play a key role in training women at the community level on how to prevent diarrhoea, and manage it through preparing and administering oral rehydration salts [45]. As a result of the CHWs' involvement, post intervention studies have identified Bangladesh as one of the countries with the highest oral rehydration salts utilisation.

In 2021, the WHO reported that more than 38 million people were living with HIV/AIDS across the globe [46]. Health systems, particularly in resources constrained settings were struggling to cope with the high prevalence of the pandemic and associated expenditures. The WHO guidelines on HIV transmission, identification of infected individuals and maintenance

of patients on treatment, recognise CHWs as key role players in the battle against HIV/AIDS [46]. Prior to the introduction of the national programmes, South African CHWs working for NGOs provided voluntary HIV counselling, testing services and palliative care services to critically ill patients at health facilities and at the community level [47, 48]. In the national CHW programmes, CHWs continue to get HIV-infected patients to care, trace those who default on their treatment and ensure medication adherence [39, 49]. However, the review of literature has highlighted that the effectiveness of CHWs in HIV care is often hampered by lack of resources, socioeconomic factors (e.g., poverty), limited training and unprofessionalism (e.g., CHWs' inability to keep clients' sensitive information confidential) [50, 51].

CHWs can also be beneficial in high income countries [52, 53]. In these countries, CHWs play an important role in the management of chronic conditions such as hypertension and diabetes [52]. A randomised control trial provided evidence that patients who are on hypertension treatment and receiving regular visits from CHWs are more likely to have the condition under control when compared to those without support [53]. The impact of CHW support was more evident among minority ethnic and low-income earning groups [53].

In the next section, I describe some of the common challenges hindering the performance of CHWs in LMIC settings.

2.4. Challenges affecting the performance of CHW programmes

As mentioned earlier, CHWs are crucial for increasing access to health services in many communities. However, evidence suggests that most CHW programmes are affected by several challenges. Scholars highlight 1) insufficient supervision, 2) limited of supply of resources, and 3) poor relationships with health systems and community structures as some of the critical challenges limiting the performance of the CHWs [14, 15, 54].

To provide comprehensive quality care, CHWs require consistent mentoring and supervision, and studies have shown that most CHWs often function without supervision [55]. This is mainly due to the unavailability of dedicated supervisors, infrequent supervision and distance to the supervision location [55]. In a study conducted in Mozambique where there is frequent supervision, it is often focused more on fault finding than being supportive in nature [56]. The absence of supportive supervision has a negative impact on CHWs productivity [25], as the roles of supervisors include negotiating for crucial resources on behalf of CHWs and attending to other barriers [25, 57].

Poor relations between CHW programmes and healthcare systems also make it difficult for CHWs to access the support and resources they require to deliver care [57]. Studies in South Africa, India and Pakistan have highlighted the hostility that CHWs encounter when interacting with facility-based staff members [57]. The staff often do not regard the CHWs as deserving members of the healthcare systems, and exclude them in the continuum of patient care [58]. A strong relationship between CHWs and facility-based staff provides legitimacy to the CHWs, as perceived by the community [55]. For example, where facility-based staff members cannot attend to patients referred to the facility by CHWs, the community's trust for the CHWs diminishes.

Furthermore, poor community engagement and relationships have emerged as barriers in most CHW programmes [59]. Many programmes are set-up without the participation or involvement of local communities [60]. Where communities are not engaged in programme design and implementation, there is likely to be under usage of services [60]. In contrast, where communities are involved, health programmes receive support from communities and other actors. For example, in Malawi, CHWs were found to be satisfied with their roles and responsibilities because of the support they received from village elders [61]. The village elders ensured the patients being cared for by CHWs adhered to their TB medications, even in the absence of CHWs [61]. In the same study, religious leaders who were familiar with CHW roles encouraged community members to use CHW services. These findings highlight the important role of community stakeholders in marketing and improving the uptake of CHW services.

According to LeBan et al., "CHWs are not panacea for weak health systems, and they require well-structured support from the health system to be effective" [59]. To optimise the performance of the programmes, the WHO recommends countries to integrate the programmes into healthcare systems, make resources and supervision available and pay CHWs fairly [62].

2.5. Approaches to optimise the performance of CHW programmes and analytical frameworks

In response to the challenges confronting the CHW programmes, programme developers are piloting several interventions with the aim of optimising the performance of the programmes. These interventions include incorporating elements integrating the principles of COPC approach and supportive supervision into the programmes to enhance performance. The community health system is also promising to be useful in broadening our understanding of community-based health care and how other systems can be used to strengthen CHW service. Below, I present the evidence of COPC, supportive supervision, and community health system approaches in strengthening community health delivery. In this PhD study, I used these frameworks to explore the implementation of the prior and current CHW programmes in South Africa.

2.5.1. Supportive supervision

CHWs are well positioned to offer care and health information to vulnerable members of the community to navigate the healthcare system and address the underlying causes of inequality [63]. However, in many contexts, CHWs are found to be inefficient in undertaking these roles, and programme managers have partly attributed this to insufficient supervision. Bosch-Capblanch et al. argue that the dominant approach to supervision, which focuses on performance, records inspection, identification and correction of bad practices is insufficient to capacitate CHWs to fulfil their primary roles [64]. In most LMICs, CHWs are on voluntary contracts and they are characterised by high illiteracy, making consistent and quality supervision a critical requirement [55, 65]. However, literature has shown that supervision isn't always available to CHWs. A review of CHW supervision approaches by Westgate et al. found that most CHWs do not have a dedicated supervisor, hence, they receive supervision from facility or district-based staff members [66]. Though these supervisors are instrumental in coaching, mentoring, and ensuring that standard operating procedures are incorporated into the CHWs' routines, their suitability for the role is an area of concern. Supervision by facility-based staff is limited by time constraints, prioritisation of clinical duties, and indirect costs such as transportation to reach the CHWs [64]. Inadequate or absence of supervision can have negative repercussions on CHW job satisfaction, motivation, retention and job performance.

Due to the limitations of the traditional approach to CHW supervision, there is a growing interest in the theory of supportive supervision [55, 65, 66]. Supportive supervision emphasises the human aspect of supervision and involves building reciprocal relationships between workers, healthcare systems, patients, and the community [54, 64]. It prioritises goal setting, identifying and resolving problems and maximising resource use through constructive discussions between the supervisor and supervisee [54]. Supportive supervision is supposed to encompass three important functions namely management (fostering compliance with standard operating procedures), development (putting measures in place to build the knowledge and skills of supervisees), and support (creating an enabling environment where supervisees can talk about their struggles and receive support) [67]. It does not only enhance professional development, but it also stimulates personal change and enhances institutional culture change.

The theory of supportive supervision is closely related to the concept of dedicated supervision. Dedicated supervision embraces the idea of exclusivity in supervision (e.g., employing a supervisor dedicated to CHWs), rather than using a facility-based nurse with clinical responsibilities [66]. A review of advances in CHW supervision found South Africa, Sierra Leonne, Pakistan and Liberia to have recruited dedicated and full-time supervisors to offer supportive supervision to CHWs [66]. In South Africa and Liberia, the supervisors are to dedicate 70% and 80% of their time respectively, to the CHWs [25, 68]. In these contexts, the presence of dedicated supervisors resulted in improved CHWs' work morale and performance.

However, as much as dedicated supportive supervision is ideal, critics have argued that it is expensive to set up and run. For example, there should be dedicated funds to cover travelling costs, clarity of roles and availability of appropriate tools to carry out supervision tasks [54, 69]. Further, there isn't conclusive evidence on the sustainability of supportive supervision gains, as most interventions testing the supportive supervision theory are short term and externally funded. This PhD study added to this body of literature by undertaking a process evaluation of a roving nurse mentor intervention to improve the performance of CHWs and their supervisors in two PHC facilities in Sedibeng district, South Africa. The nurse mentor encompassed the three functions of supportive supervision described by Assegaai and Schneider [67]. CHWs were taught how to complete official forms (e.g., household registration and referral forms), perform critical tasks (e.g., how to monitor patient blood

pressure), and how to collaborate with facility-based staff members and community structures in providing care.

2.5.2. Community-orientated primary health care (COPC)

The COPC approach was pioneered by Sydney Kark and Emily Kark in the 1940s at Pholela Health Centre located in the then Natal (now KwaZulu-Natal Province), South Africa [70]. The Karks changed the practice of PHC from offering curative care for individual patients to an integrated individual, family and community orientated practice [71]. The practice of COPC did not only entail treating illnesses, but also registering a population in a defined community and performing epidemiologic surveys to determine the baseline of diseases as a starting point for evidence-informed health interventions [71]. Unfortunately, due to the advent of apartheid government's racial policies from 1948, which resulted in limited funding for some health programmes, the approach wasn't fully developed and implemented at scale.

From South Africa, the COPC concept emerged in other settings with case studies in the United States of America, United Kingdom, India and Israel [71]. Though the practice of COPC varies across countries, the COPC approach has been used to design services, prevent diseases and promote good health [71]. The approach has been widely embraced for its prioritisation of community participation in decision making and service delivery processes (Table 2.2) [20, 71]. This type of democracy is not a usual feature of traditionally hierarchical systems of health in African contexts, where it is a norm for decision makers not to consult communities when designing health interventions [71]. The practice of COPC also embraces the principle of service integration, and use of multidisciplinary teams (e.g., environmental officers and social services workers) to provide comprehensive care (see Table 2.2). However, reviews of COPC informed interventions have shown limited funding, volunteerism and insufficient community involvement continues to hinder its full application [20, 21]. As a result of these issues, countries hardly integrate the complete COPC approach to strengthen healthcare services. The successful application of COPC requires consistent and long-term financial backing from government to cover operational costs such as workers' salaries, working tools and supervision needs.

Table 2.2: Six key principles of community-orientated primary health care [57, 20]

Key principle	Description
A defined community	➢ There should be an understanding of the geographical location of the community. . ➢ An assessment of local needs and assets should be conducted.
Multidisciplinary approach to care	➢ Health professionals should work in partnership with other professionals e.g., social service workers to diagnose and respond to community needs.
Evidence-based care	➢ There should be regular collection of community, household and community data to meet current needs and to plan for future services.
Comprehensive care	➢ Service package should cover a wide range of conditions.
Integration of care	Health and other services should be provided in an integrated and continuous manner.
Community participation	Communities should be involved in: ➢ Need assessment, ➢ Intervention design, and ➢ Implementation. Where feasible, existing community resources should be used.

In the last decade, some programme developers in South Africa have made attempts to implement community-based health programmes in accordance with the COPC approach. In Tshwane, Johannesburg, Cape Town, and Sedibeng districts, the approach was used to support the roll-out of the national CHW programme [72, 73]. However, the extent of application differs across these districts. Furthermore, the interventions designed to improve the capacity of CHWs, contextual issues, mechanisms of implementation and outcomes remains unclear. For objective 1 of this thesis (Paper 1), I used qualitative methods to explore the implementation of the prior programmes and national programmes, and assessed if the implementation was in accordance with the COPC approach (see Chapter 5).

2.5.3. Community health system

In many contexts, there is a poor understanding of the interface between CHWs, healthcare systems and communities [71]. When studying CHW performance, researchers and policy makers tend to adopt a narrow focus, for example – attributing CHWs underperformance to limited knowledge and training [74]. This is not an accurate way to evaluate CHWs' performance, as there are other role-players and contextual factors affecting CHWs' work and interaction with healthcare systems and communities [75]. The WHO's[4] Health System Building Block framework proposes using the systems thinking approach to study

[4] The HS building block is a framework comprising six core components used by the WHO to describe health systems. The six components are "leadership and governance, service delivery, health system financing, health workforce, medical products, vaccines and technologies and health information systems".

healthcare systems [76]. When applying the systems approach to planning, designing and delivering health services, a CHW programme is considered as a system continuously interacting with other systems such as the healthcare systems and community systems. Integrating the programme into the formal healthcare systems will or may enable easy access to: financing, human resources, information and governance systems, while integration into community systems will or may improve programme coverage [76]. In pursuit of UHC, there is a need for programmes to be integrated into healthcare and community systems to maximise performance and patients health outcomes [77].

A community health system can be defined as "a set of local actors, relationships, and processes engaged in producing, advocating for, and supporting health in communities and households outside of, but existing in relationship to formal health structures" [75] . The actors include people in need of health care, formal and informal caregivers, volunteers, government entities (e.g., department of human settlement, social services, and education), the NGOs and political structures [75]. Contrary to dominant literature, which characterise CHW functions and performance as something distinct from these actors, the community health system approach studies CHW service and associated outcomes in the context of these complex systems.

In a study unrelated to CHWs, community systems were organised and engaged to facilitate a timely response to the 2015-2016 drought in Ethiopia [75]. Community members helped the government by identifying affected areas and unlocking timeous interventions. This was while the government ensured that the community was kept abreast about government efforts to tackle the drought [65]. This study demonstrate how different systems can work together in pursuit of one goal, and the same synergy must be created among CHWs, the healthcare system and communities.

In 2011, CHWs in South Africa moved from NGOs to the national CHW programmes. The move introduced new complexities to the implementation of community-based health programmes. In this PhD thesis, the community health system lens enabled me to evaluate CHWs care in the context of resource shortages, health worker protests, poor relationships with facility staff and communities (see Chapter 7).

CHAPTER 3: STUDY CONTEXT

3.1. South African public healthcare system

During the years of apartheid rule, the South African public health system was fragmented and services were provided along racial lines [78]. Post-apartheid, significant changes were made to the healthcare system, which included the abolishment of user fees and consolidation of the previously racially divided health departments into one national health system through various legislative frameworks [78]. The National Health Plan of 1994 and National Health Act of 2003 sought to address the disintegration of health services by incorporating all health programmes under a single Ministry of Health [78, 79]. The move was meant to ensure health services were being delivered in a well-organised and co-ordinated manner.

In line with the Acts, health care is currently being delivered through three spheres of government namely national, provincial, and local government [80]. At the national level/ government amongst other departments, there is the National Department of Health, which is responsible for the development of health strategy and policy, resource allocation, and health service delivery oversight in the nine provinces. The provincial government's responsibility is to implement national health policies.

In most provinces, the local government consists of districts and sub districts health managements established as part of the District Health System (DHS) of 2001 [78, 81]. The DSH is a decentralisation health strategy introduced to deliver primary health care (PHC) services for a defined population residing within a demarcated administrative area [70]. DSH includes all individuals, groups and organisations providing healthcare services in the district, and this includes regional, tertiary and specialised hospitals, and community health centres and clinics [78]. The community health centres are open daily for 24hrs, while clinics operate for 8hrs (Monday to Friday). Staff members in the community health centres include medical doctors, nurses and rehabilitation therapists; while in the clinics, there are mainly nurses supported by health promoters. The national CHW programme, which was introduced in 2011 (described in 3.3), is attached to PHC facilities [82]. However, in districts where there is no infrastructure to accommodate the CHWs within the PHC facilities, local facilities such as schools and churches are being used to house the CHW teams. The teams maintain links with the local PHC facility for supervision and resource allocation purposes.

3.2. Primary health care: A historical and current view

South Africa has a long history of PHC practice. As described earlier, the history dates back to the work of Sydney Kark and Emily Kark in the 1940s when they were tasked with advising the government on the development of a national health system capable of providing equitable and quality services to the African population [70, 83]. The Community-Orientated Primary Care (COPC) approach sought to address two barriers to healthcare, 1) the delivery of clinical care centred on individual care, and 2) the separation of clinical practice from community-oriented approaches to health care. In the 1960s, due to escalating racial tensions and insufficient funding, the 44 health centres established as part of the COPC movement closed down [67].

Four decades later, despite various legislative reforms such as the District Health System and the Clinic Building Programme introduced to strengthen the PHC system, inequities and inefficiencies are still evident in the healthcare system [84]. Many rural health facilities remain under-staffed with insufficient supply of medicine and other critical resources [85]. To ensure everyone has access to quality health services, the South African government is in the process of introducing a health care financing model, the National Health Insurance (NHI) [84, 86]. One of the key interventions in the NHI is the provision of a comprehensive care package through PHC streams, with a dedicated focus on health promotion, preventative and rehabilitative care services [23]. The PHC re-engineering strategy introduced in 2011 by the National Department of Health is one of the approaches by the national government to strengthen PHC services [23]. The strategy's priorities are as follows:

1. "to attain a population-orientation to health care, focused on meeting priority health needs of geographically coherent populations in a comprehensive manner, including prevention, promotion and essential care;
2. to focus on health outcomes aimed at reducing mortality and morbidity from the major causes of ill-health;
3. to develop integrated, efficient and well-supported PHC teams, guided by and accountable to communities;
4. to establish a well-functioning district health system and
5. to pay closer attention to those factors outside of the health sector, namely the social determinants of health."

These PHC services are delivered through three streams of care namely 1) the district-based multidisciplinary teams to support maternal and child health outcomes, 2) school-based teams led by nurses, and 3) ward-based outreach teams comprising CHWs, health promoters, and environmental officers led by nurses.

Table 3.1 The South African PHC streams of care and key performance areas [23]

Stream of care	Key performance areas
District-based multidisciplinary teams	Consist of an anaesthetist, paediatrician, gynaecologist, family physician, advanced midwife and PHC nurse. The team ensures that: ✓ Standard treatment guidelines are followed, ✓ Supervise clinicians. ✓ Strengthen clinical governance, and ✓ Ensure that mortality review meetings are held.
School-based teams	Focus is on schools in quintile 1 & 2, which are non-fee paying schools run by the government. The team ensures that: ✓ All those that attend early childhood development centres and primary schools are fully immunised. ✓ In secondary schools, priority is on building learners' life skills with specific focus on sexual and reproductive health services matters, and the prevention and management of substance abuse. ✓ The above services are provided by a school nurse.
Ward-based outreach teams (WBOT)	These are described in 3.3

3.3. The community health worker programme

In 2011, the South African National Department of Health, through the PHC re-engineering strategy introduced the ward-based primary health care outreach teams (WBOTs), mainly to strengthen the delivery of PHC services and consolidate the patchy work of NGOs [23]. Most of the CHWs who were recruited into the WBOT programme were from the NGO sector where they provided HIV/AIDS and TB care to vulnerable populations [40]. In the NGO sector, the CHWs were described as inadequately trained, poorly coordinated and haphazardly distributed with poor links with local health facilities and communities [40]. The WBOT strategy sought to provide the CHWs with a clear mandate in terms of roles and responsibilities, supervision arrangements and demarcation of the catchment population [23, 40]. Since 2011, the policy has underwent various changes. The recent policy framework and strategy for WBOT (2018/19 – 2023/24) aims to introduce changes on how CHWs are deployed to a more integrated, team-based approach responsible for defined populations and to strengthen interactions between local health systems and community structures.

As described earlier, the WBOTs are attached to local PHC facilities, comprising approximately 8 – 10 CHWs, a health promoter, an environmental officer[5] and outreach team

[5] Some CHW teams are functioning without the support of health promoters and environmental officers.

leader [23]. The WBOT guidelines advise the outreach team leader be a professional nurse with 4 years training. Due to the financial implications of employing this cadre of nurses, provinces have adopted varying models of CHW supervision [40]. During data collection, the Gauteng provincial government was using a combination of enrolled and professional nurses to oversee the CHWs.

As part of the national programme, the CHWs are supposed to receive short-term training focused on household registration, covering the identification of the need for antenatal, postnatal care, monitoring child immunisation and adherence to medication, screening for HIV/AIDS, malnutrition and gender-based violence etc. [23]. The CHWs are expected to undertake these activities under the supervision of outreach team leaders.

As in other low and middle income countries (LMICs), many communities in South Africa are faced with complex socioeconomic challenges such as rising unemployment, poverty and lack of decent housing [87]. The CHWs occupy an important space in the health system, and their proximity to needy communities is considered an important avenue to tackle the various challenges affecting these communities [88, 89]. However, a review of literature paints a concerning picture of the programmes' performance in different areas. Most of the CHW teams are functioning without dedicated supervisors, resources, and they report poor relationships with facility-based staff members and the communities they serve [55, 90].

In terms of resources, the CHWs are functioning without the required resources such as stationary, glucose machines, blood pressure and transportation [25, 91]. They require these resources as they are expected to monitor patients' vital signs and make referral to health facilities during household visits. In rural areas, the CHWs and supervisors also require transportation to reach some parts of their catchment areas.

The underpayment of CHWs is another policy concern for CHWs worldwide [92, 93]. In 2019, the South African CHWs were on 12 months renewable contracts and they were paid a stipend of R2500 (131 USD) per month [94]. Since they were not considered as permanent government employees, they did not have bargaining power to negotiate with the government to improve their conditions of employment [95]. In line with the World Health Organisation (WHO) guidelines of 2018, governments must fairly remunerate CHWs and ensure the availability of career development pathways. This PhD study contributes to this body of literature by highlighting amongst other issues, the tension between the CHWs and the

current government, and CHWs mobilisation activities to compel the government to offer them permanent employment with decent salaries.

3.4. Summary of literature review

The below table summarises what is known about the topic, illuminates the gaps in literature and this PhD thesis' scholarly contributions.

Table 3.2: What is known about the topic, gaps in literature and scholarly contribution

PhD objectives	What is already known and existing gaps in the literature	Scholarly contribution
To explore how CHW programmes are attuned to community needs, integrated into the healthcare system and community structures, and implemented in accordance with the COPC approach. (Paper 1)	Over the years, COPC has been noted as one of the strategies to strengthen the design and implementation of community health care. However, some studies have also shown that programme developers attempting to use the COPC approach were struggling to fully embrace the approach and its key principles such as community participation, and the use multidisciplinary teams to achieve comprehensive care. South Africa is one of the few countries that have explicitly adopted the COPC approach in some districts to implement the prior and current CHW programmes. However, the process of application is poorly documented. There remains a need to investigate the context in which the COPC was adopted, the mechanisms of implementation and associated outcomes.	The research describes how principles of the COPC approach were used to strengthen CHW programmes in urban and rural areas in South Africa. Multidisciplinary teams comprising clinicians and social services workers were integrated into the programme to train and support CHWs. In some sites, the CHWs were empowered with mobile technology to gather data, which was used to inform current, and plan for future care. However, the lack of resources and volatile communities made it difficult for the CHWs to provide comprehensive care.
To describe CHWs' conditions of employment and mobilisation activities to demand permanent employment. (Paper 2)	In many contexts, CHWs are ineffective in their duties due to the following issues: ➢ Insufficient knowledge and skills, ➢ Insufficient or lack of supervision, ➢ Poor supply of working tools, ➢ Poor links with health systems and communities resulting in poor uptake of CHW services, and ➢ Poor remuneration. Most importantly, the lack of unionisation and bargaining power makes it difficult for CHWs to	Using selected case studies in South Africa, the thesis described how worsening conditions (such as lack of resources and meagre remuneration) encouraged CHWs to challenge the government to offer them permanent employment with increased pay. Due to the CHWs' consistent efforts, their monthly salaries were increased by the government.

	negotiate for formal employment and protection.	
To undertake a process evaluation of an intervention to improve the capacity of CHWs and their supervisors in Sedibeng district, Gauteng province. (Paper 3)	Supportive supervision is important to improving the efficiency and effectiveness of CHWs in a resource constrained setting such as South Africa. However, due to the shortage of human resources, many countries do not have enough supervisors to dedicate to CHW programmes. Consequently, health workers in facilities are given extra tasks to supervise CHWs. This means the supervisors/ health workers must split their time between facility duties and CHW programmes. Reviews have shown that this approach results in the under-supervision of CHWs, as the health workers opt to spend most of their time and energy in the facilities.	Although there are various studies evaluating the role of supportive supervision in improving the performance of health workers and CHWs in LMICs. Most of these studies are evaluating supportive supervision contribution in one or two area of CHWs intervention (e.g., HIV/AIDS or chronic care management). Due to the current drive to achieve UHC for all, CHWs are being positioned to deliver comprehensive care to diverse populations. The process evaluation, which I undertook contributes important knowledge on how a roving supportive supervisor can be used to build the knowledge and skills of CHWs in a comprehensive CHW programme, and also facilitate their integration into health facilities and communities.
To provide policy recommendations on how CHW programmes can be strengthened.	N/A	N/A

CHAPTER 4: METHODS

4.1. Introduction

In this chapter, I reflect on positionality, and describe the research design, settings where the studies were undertaken, participant recruitment and sampling strategies, data collection and analysis methods and steps undertaken to achieve research rigour. I also describe the steps followed to manage and keep the data secure as well as the ethical and institutional approvals obtained prior to data collection.

4.2. Researcher positionality statement

In research, it is important to declare one's positionality to help safe-guard against one's pre-conceived ideas and assumptions about the research target groups [96]. Before commencing my PhD studies, I received training in social work within the same university, University of the Witwatersrand, Johannesburg (Wits). The social work curriculum, exposed me to concepts such as social welfare, social development and social security, and how these topics can be used to improve the conditions of vulnerable groups. Further, as part of the training, I was placed in various non-governmental organisations (NGOs) providing services to children, youths, pensioners and African migrants in Gauteng province, South Africa.

As a Black male from a needy background in Mpumalanga, one of South Africa's nine provinces, social work is close to my heart as it is aligned with the difficulties I experienced in my upbringing and the changes I wanted to see happen in my family and community. In 2016, I joined the Centre for Health Policy[6] (CHP) as a data collector to collect qualitative data as part of a 3 year research project, which was investigating the implementation of the national CHW programme in the Sedibeng health district of Gauteng province. Through the project, I interviewed CHWs and their supervisors on their daily routines and functions, and accompanied them on household and community visits. Most of the CHWs and their clients lived under extreme social, economic and health conditions. The CHWs lacked the necessary knowledge, skills and resources to respond to these challenges. As a trained social worker, I felt the need to know more about these group of workers and do something about their conditions.

[6] The Centre for Health Policy is located within the School of Public Health at the University of the Witwatersrand. The centre employs public health researchers, epidemiologists and social scientists to undertake health policy and systems research. It also serves as a training hub for doctoral and postdoctoral researchers.

Since the project was to enter the second and third phase, which was piloting an intervention to improve the capacity of CHWs and their supervisors in the same district, there was an opportunity for a PhD researcher to join the research team. I applied for the PhD position and received funding from the National Research Foundation (NRF) South African Research Chairs Initiative (SARChI) at CHP. My role in the bigger project was to undertake a qualitative process evaluation of the capacity building intervention introduced as part of the project.

Due to my desire to contribute to the development of my community, which is a rural community with far worse conditions (e.g., poor roads, housing and rising unemployment), I felt that my PhD work shouldn't only be limited to Gauteng. Consequently, I reconceptualised the scope of my PhD to include exploratory case studies of CHW programmes in both two provinces, Gauteng and Mpumalanga.

Due to my regular interactions with district health leaders and researchers, I observed some growing tension around prior programmes and the national programmes in Sedibeng and Johannesburg districts. Some of the leaders thought the current national programmes were not in line with respected health service strengthening approaches such as the community orientated primary healthcare (COPC). The implementation of the capacity-building intervention, which comprised a nurse mentor (a professional nurse) was also experiencing various contextual challenges, which the research team did not anticipate. There was a task team that claimed to represent CHWs in the district that was in regular conflict with district management and facility staff. The task team wanted the CHWs to be provided with the resources they required to provide care to their patients and also to be employed on a permanent basis with higher salaries compared to what they were getting. In light of the above issues, I saw the need to explore the CHWs' conditions of employment and mobilisation towards formal employment.

As a result of these events, my PhD extended in scope to explore:

- The nature of CHW programmes and extent to which COPC was applied in their Implementation.
- CHWs conditions of employment and mobilisation towards formal employment
- Undertake a process evaluation of a capacity-building intervention

Collecting data in the two provinces was complex, as the bigger project used a mixed methods approach. The communities were also volatile, characterised by sporadic service delivery and health worker protests. The weekly project and PhD supervision meetings, and engagements with other PhD fellows affiliated with the CHP and Wits School of Public Health helped ease the pressure of working in this space.

4.3. Study design

I adopted a qualitative case study design to explore the interface between CHW programmes, the healthcare system, and communities and to undertake a process evaluation of a CHW capacity building intervention implemented as part of a larger project named Batlhokomedi. The full description of Batlhokomedi is presented in table 4.1 below.

Table 4.1. Description of the Batlhokomedi project

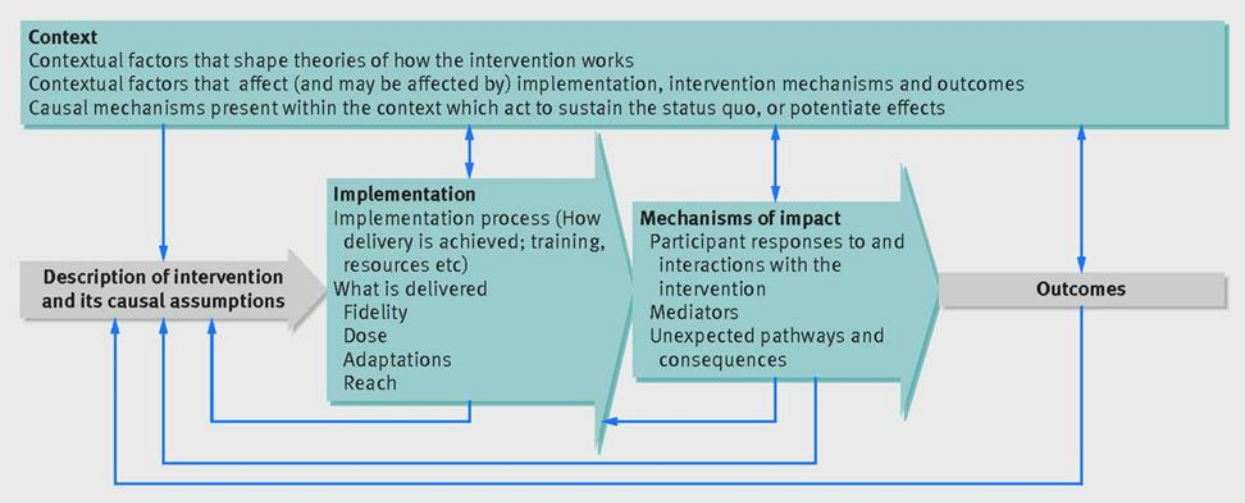
The study was initiated and led by the Centre for Health Policy domiciled at the University of the Witwatersrand, School of Public Health. The three phased mixed-methods study investigated the design and implementation of six CHW programmes in Sedibeng District, Gauteng province. **Phase 1** was a situational analysis of the programmes with variations in supervision (i.e., junior or senior supervisor led) and location (i.e., clinic or health post based teams). The findings revealed that the programmes experienced various implementation challenges such as insufficient supervision of CHWs, limited access to resources and poor relationships with healthcare systems and community structures. These challenges were found to be dominant in programmes led by junior supervisors. CHWs led by senior supervisors were found to have received adequate support in the facility and community [25]. **Phase 2** was the introduction of a 14 month capacity-building intervention in the form of a roving professional nurse (nurse mentor[7]) in two teams/ PHC facilities led by junior supervisors. The intervention was aimed at building CHWs and supervisors' knowledge and skills, support their integration into the health system and community structures. The nurse mentor was experienced in outreach programmes in resource-constrained settings in South Africa. **Phase 3** was the sustainability phase where post intervention coverage and quality of care surveys and qualitative interviews were conducted.

[7] A senior professional nurse employed by the Batlhokomedi study to oversee the CHW and supervisor capacity building intervention in two PHC facilities. The nurse rotated between the two facilities and spent 14 months supporting the teams.

The application of a qualitative design enabled the investigator to gain a deeper understanding of the CHW programmes from the perspectives of CHWs, health facility staff members, community leaders, patients, and programme implementers [97, 98]. Furthermore, owing to differences in the contexts of operation, the adoption of a case study design enabled me to further understandings on how the programmes functioned in the different sites. A case study is an in-depth study of individual, programme or event over a defined period of time [97, 99]. When applying the case study design, a researcher can focus on either single or multiple case studies [100]. In this study, my case studies were multiple CHW programmes located in PHC facilities in two semi-urban and rural provinces in South Africa with unique histories (Section 4.4).

The evaluation of the capacity-building intervention was informed by the Medical Research Council (MRC) process evaluation framework (see Figure 4.1) [101]. In the past, health programmes evaluations were limited to outcomes, thus making it difficult to replicate the results due to the unavailability of process data to explain how a particular outcome was achieved [101-103]. Process evaluation methodology investigates the reach of health interventions, beneficiaries contact with the intervention, if they do, how, and the associated outcome. The MRC process evaluation framework outlines key components of process evaluation methodology. These components relate to the intervention and what it intends to achieve, the implementation process and mechanisms of impact (e.g., participants' responses to the intervention, unexpected pathways and consequences) (see Figure 4.1). The framework also considers different contextual factors such as local cultural practices and belief systems that can enable or hinder the delivery of an intervention. In the current PhD study, this framework was used to undertake a longitudinal qualitative process evaluation of an intervention to improve the capacity of CHW teams in two PHC facilities. The intervention activities, participants' responses and study context were synthesised using the components of this framework. The framework is illustrated below.

Figure 4.1: Medical Research Council Process Evaluation Framework



Source: (Moore, 2015)

4.4. Study setting

The research was undertaken in PHC facilities in four districts, three in Gauteng province (Johannesburg, Sedibeng, and Tshwane) and one in Mpumalanga province (Ehlanzeni). Gauteng and Mpumalanga provinces were selected on the account of their unique history and characteristics. Gauteng is largely an urban province with a reported population of 15 million residents in 2019, with widespread CHW programmes. Mpumalanga was estimated to have a population of 4 335 964, with 402 wards requiring 561 CHW teams to service, and had not fully rolled-out the CHW programme at the time when this study was conducted.

The adoption and implementation of the CHW programme differed in the two provinces. Mpumalanga government funded local NGOs to nominate some of its home-based carers[8] to establish the CHW programme in local clinics. The funded NGOs paid CHWs salaries while resources and supervision were provided by the clinics. In Gauteng, the CHW teams had no links with NGOs, however they were paid through a private company tendered by the provincial government. Furthermore, the availability and convenience of funding also contributed to the selection of CHW teams in the two provinces. The research in Sedibeng was externally funded, and as a result the candidate was able to collect data in multiple PHC facilities. Data collection in Johannesburg and Tshwane district in Gauteng province and Ehlanzeni district in Mpumalanga province were not funded.

[8] Prior to the roll-out of the national CHW programme, CHWs employed by NGOs were commonly referred to as home-based carers. Their roles were mainly to provide home based support care to individuals and households affected by the HIV/AIDS and TB pandemics.

4.5. Study population

The study population were teams of CHWs and their clients, supervisors, facility staff members, community representatives and coordinators of the CHW programmes located in PHC facilities in Gauteng and Mpumalanga province.

4.6. Participant selection and sampling techniques

A combination of purposive and snowball sampling methods were utilised to recruit participants and key informants.

Purposive sampling was used to recruit CHWs, supervisors, CHWs representatives, facility-based staff members, patients and community representatives. When using this technique, the sampling of participants depends on the researcher's interests, judgement and knowledge about the study context [104, 105]. Since the study was interested in the functioning and incorporation of the COPC approach into CHW programmes, I purposively recruited participants who were part of the programmes in the different health districts. As mentioned earlier, part of research was to gain an understanding of COPC practice and to answer this objective, I needed informers who had participated in the prior and current programmes in Gauteng and Mpumalanga provinces. Snowball sampling is used when the researcher anticipate challenges in finding suitable participants for inclusion in the study [106, 107]. When using snowball sampling, the researcher accesses participants through the chain referral approach using the initial participant(s) as the starting points [106]. To access the informants, I asked the initial programme coordinators and researchers I had known through the Batlhokomedi study in Sedibeng district, to assist with the identification of other potential participants in the other districts in Gauteng and Mpumalanga provinces. At the end of data collection, I had recruited and gathered data from informants working for provincial departments of health, municipalities, and higher learning institutions (see Table 4.2).

4.7. Data collection methods

Data was collected between September 2016 and April 2019. I collected the data with the assistance of data collectors recruited as part of the bigger project described in 4.1. Before fieldwork, the data collectors received training in PHC, community health programmes, research methods, ethics and data management.

I used three data collection methods namely: focus group discussions (FGD), one-on-one interviews, and observations (see Table 4.3). The data collection tools were written in English, however where participants struggled to comprehend the questions in the English language, the data collection team was trained to simplify the questions using local or preferred language(s). The most spoken languages in the communities were Sesotho and isiZulu.

4.7.1. Methods for achieving each empirical objective

Objective 1: *To explore how the CHW programmes are attuned to community needs, integrated into the healthcare system and community structures, and also implemented in accordance with the COPC approach.*

To answer the above objective, I conducted FGDs with CHWs in Ehlanzeni, Johannesburg, Sedibeng, and Tshwane. Each FGD had about 10 women participants. After completing consent forms, the participants were asked about their experiences and the challenges they encountered in their role as CHWs (Appendix 6b). Participant observations were also used to capture the CHWs activities and facilitate engagement with patients. Before carrying out the observations, I obtained written consent from each CHW participating in the study. The CHWs were observed during households visits (e.g., the type of services they were providing, and their relationship with patients, the health system, and communities). Some of the observed visits were supervised, while some were unsupervised particularly in the rural areas where the supervisors did not have access to transport.

I also conducted individual interviews with facility managers, community representatives and key informants recruited from government and institutions of higher learning in Gauteng and Mpumalanga provinces (Appendices 9b and 10b). The informants answered questions on the history of COPC, nation-wide CHW programmes, and use of the COPC approach.

Table 4.2: Description of the key informants

Province	Health district	Designation	Total
Gauteng	Sedibeng district	Director for Health Services	1
		CHW Programme Coordinator	1
		Family Medicine Practitioner	2
		Deputy Director for Health Services	1
	Johannesburg	Family Medicine Practitioner	1
		CHW programme Coordinator	1
	Tshwane	Head of School of Family Medicine and Public Health	1
		Public Health Researcher	2
		Family Medicine Practitioner	1
		Sub-district CHW Programme Coordinator	2
Mpumalanga	Ehlanzeni	Deputy Director for Primary Health Services	1
		CHW Programme Coordinator	1
		Outreach Training Officer	1
Total			**16**

Objective 2: *To describe CHWs' conditions of employment and mobilisation activities to demand permanent employment*

Using a structured interview guide, I conducted individual interviews and observations involving CHWs, supervisors, facility managers and facility-based staff members, nurse mentors, task team members and key informants in Tshwane, Sedibeng, Ehlanzeni, and Johannesburg districts.

Through the interviews, I explored the CHW conditions of employment in-depth and the impact of resources shortage on service provision (Appendix 17b). I also engaged the CHW task team[9] who had a mandate to represent their colleagues during district and provincial meetings. The task team leaders/ representatives were asked questions about their efforts to persuade the government to provide permanent employment to CHWs. All the interviews were audio-recorded with the consent of the participants, and each lasted for approximately 45minutes (Appendix 18a and 18b).

I also observed the task team and CHW meetings with the payroll administration company[10], district management, and labour unions to negotiate for better employment conditions. The

[9] CHWs elected to represent the needs of general CHW population in Sedibeng district.
[10] A company contracted by the Gauteng Provincial Government to handle the contracts of CHWs in the province.

observations were conducted with the consent of the task team members. The participants at the meetings were informed about the presence of the researcher in the meetings. Following each observation, I wrote comprehensive notes on the exchanges and conclusions reached.

Objective 3: *To undertake a process evaluation of an intervention to improve the capacity of CHWs and their supervisors in Sedibeng district*

The Batlhokomedi intervention activities were studied using a combination of qualitative (i.e. FGDs, individual interviews and observations) and quantitative methods (i.e. surveys assessing CHW coverage and quality of care at baseline and endline) in two PHC facilities. For this PhD study, I conducted a longitudinal qualitative process evaluation of the intervention.

With the assistance of data collectors, I used individual interviews, FGDs and observations to document the intervention activities over a period of 14 months. A total of four FGDs were held, two prior to the intervention roll-out and two in the months post the intervention to assess if the improvements brought by the intervention were sustained (Appendix 13b). Each FGD had 8 - 10 CHWs as participants. During the FGDs, we discussed CHWs' experiences of the intervention, the benefits they were enjoying as well as successes and challenges. Post the intervention, we explored if the gains of the intervention were being sustained.

To document the activities of the CHWs, supervisors and nurse mentors during household visits and changes overtime, we observed the CHWs alone or with their supervisors and nurse mentor when they provided care to patients. The observations were conducted with a written consent of the CHW(s) being observed. Prior to entering each household, the CHW(s) were asked to inform the householders/patients about the observation. The householders were given the opportunity to agree or refuse the observation. There were no refusals.

CHWs and their supervisors, nurse mentor, facility-based staff, community representatives and patients also participated in individual interviews (Appendices 10b and 11b). During the interviews, we explored their perceptions of the CHW programme, what the nurse mentor was contributing to the programme, successes and challenges resulting from the intervention. The patients were asked to reflect if the care they were receiving had changed over time and why they thought so.

The individual interviews and FGDs duration ranged between 45 minutes to 2 hours each, and were audio-recorded with each participant's permission.

Table 4.3: Data collection method, type of participant and number of interviews per district

Method	Type of participant	Sedibeng district	Johannesburg district	Tshwane district	Ehlanzeni district	Total
Focus group discussion	CHWs	4	2	2	2	**10**
Individual interviews	CHWs	43	-	-	-	**43**
	Supervisors	2	2	2	1	**7**
	nurse mentor	4	-	-	-	**4**
	Facility staff	39	-	-	-	**39**
	Key informants	5	2	6	3	**16**
	Community representatives	21	5	4	11	**41**
	Patients	48	-	-	-	**48**
Observations	CHWs	4	10	3	27	**44**
	CHW + Supervisor	87	9	4	-	**100**
	CHW + Supervisor + Nurse mentor	33	-	-	-	**33**
	Task team	6	-	-	-	**6**
Reports review	Nurse mentor	36	-	-	-	**36**

4.8. Data management

The data collection process generated data in form of audio files, and observation and field notes. The audio files and observation notes were stored in a secure office and locked cabinets at the Centre for Health Policy, University of the Witwatersrand. Only myself, the data collectors, and study supervisors had access to the dataset.

To ensure participants' anonymity, the files were stored using codes (e.g., date, facility, participant code and data collector initials (e.g. 01062022-CHW01-USI-HM). The use of codes to refer to study sites and participants were introduced to minimise the potential risk of participants being identified by their colleagues, supervisors and other external parties from the audio files, transcripts, observation notes and resulting publications.

4.9. Data analysis

I used the thematic analysis method to analyse data [108]. All the interviews were transcribed verbatim by experienced transcribers. Following transcriptions, I went through each transcript to correct errors and address inconsistencies with the transcribers. To bring together pieces of data from each study site, NVIVO 12 and Microsoft word sheet were used to extract data from the observation notes and transcripts. Below, I describe the analysis methods followed for each paper.

For Chapter 5 and 6,I developed a coding system that focused on the history of COPC, evidence of COPC application in the prior and new programmes, as well as CHWs' work conditions and unionisation in each district.

For Chapter 7, which reports on the process evaluation findings, a data coding system was developed. Data focused on CHWs' priority activities (e.g., chronic medication delivery and household registration), and related activities or events (e.g., staff relationships, organisational work systems) was coded. This was followed by a synthetisation of the data to understand how the different role-players (e.g., CHWs) responded to the intervention meant to improve their performance.

For a detailed description of the analysis methods applied for each paper or objective, consult Chapter 5, 6 and 7.

4.10. Ensuring trustworthiness

I used Lincoln and Guba's criteria for ensuring trustworthiness in qualitative studies [109]. Lincoln and Guba identify credibility, confirmability, dependability and transferability as key concepts that qualitative researchers should aim to deliberate on during the research process. The iterative process of listening to the audio-records, reviewing interview transcripts and extracting data to a word document for analysis allowed the researcher a prolonged engagement with the qualitative data, thus ensuring the credibility of the reported findings. The participation of two study supervisors (Professors Goudge and Griffiths) in the extraction and analysis of the data ensured the confirmability and dependability of the findings. The two supervisors also reviewed the extracted data against selected interview transcripts and observation notes to ensure that important data was not omitted in the extraction process. In each of the studies, I provided sufficient descriptive data on the study settings, participant recruitment strategies and participant responses (direct quotations) [109], which illustrated the confirmability and transferability of the data to other contexts.

4.11. Ethical and institutional approvals

The Batlhokomedi study received ethical clearance from the University of the Witwatersrand Medical Ethics Committee (Reference Number: M160354). This PhD study was also cleared by the same ethics body (Reference Number: M180140).

The Districts – Sedibeng, Johannesburg, Tshwane and Ehlanzeni also provided written approval for the researcher to undertake data collection in the PHC facilities and interview district/sub district programme coordinators.

The CHW, supervisors, facility staff, community representatives and patients also provided informed consent before participating in the interviews. The next three chapters (5-7) are published research findings.

RESEARCH FINDINGS

CHAPTER 5 - 7

CHAPTER 5: PhD PAPER 1

This chapter was published by *PLOS Global Public Health*, citation is as follows:

Malatji H, Griffiths F, Goudge J (2023). Community-orientated primary health care: Exploring the interface between community health worker programmes, the health system and communities in South Africa. PLOS Global Public Health 3(2). https://doi.org/10.1371/journal.pgph.0000881

5.1. Title: Community-orientated Primary Health Care: exploring the interface between community health worker programmes, the health system and communities in South Africa

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5.1.1 **Abstract**

Due to insufficient number of health workers and the evidence of the benefits of community health workers (CHWs), CHWs are being deployed to provide health care services to under-served communities. In this article, we explore to what extent the South African CHW programmes introduced between 2009 and 2011 are attuned to community needs, integrated into the healthcare system and community structures, and also implemented in accordance with community-orientated primary health care principles. Using a case study approach, we studied CHW teams in seven primary healthcare facilities located in semi-urban and rural areas of Gauteng and Mpumalanga provinces, South Africa. We collected data using in-depth interviews involving facility managers, CHW supervisors, community representatives and key informants, and focus groups and observations of CHWs. The implementation of community-orientated health interventions remains complex. In the different sites, there were efforts to integrate the views of stakeholders (e.g., political leaders) into the implementation of the CHW programmes. However, many residents were more concerned about access to housing than health services. The CHWs services' were found to be generally comprehensive, however inefficient training, supervision and mentorship limited their effectiveness. The multidisciplinary approach to care, as introduced by some sites, helped enhance the knowledge and skills of some of the CHWs on complex health topics. The roll out of community orientated primary health care services is crucial in a resource-constrained setting like South Africa. However, significant socio-economic issues disrupt community involvement and the effective provision of services. Governments need to provide sufficient funds for training, supervision, supplies and remuneration to help overcome these barriers.

Key words: community health workers, community-orientated primary healthcare, South Africa

5.1.2. Introduction

In response to the call for universal health coverage (UHC) and limited number of health workers, many low and middle-income countries (LMICs) are strengthening the delivery of primary health care (PHC) services using community health workers (CHWs) [8, 110]. CHW programmes gained prominence post the Alma Ata Conference of 1978, which prioritised the strengthening of PHC to provide care to marginalised communities. Many large-scale CHW programmes often led by non-government organisations (NGOs) were introduced to provide the care in LMICs [8]. However due to insufficient investment and fragmentation, the performance of these programmes declined during the 1980s. However, there is now considerable evidence of the expansion and benefits of CHW programmes, particularly for the delivery of maternal and child health services [30, 111]. Reviews show CHW programmes need to be integrated with the community to be attuned to their needs, as well as integrated into the health services to be well resourced, well supervised, and to communicate their community's needs to practitioners and decision makers [14, 62]. There has been a growing interest in community-orientated primary care (COPC). COPC is an approach to health service development and delivery that integrates public health and primary care to deliver targeted services to a defined community [6]. This approach recognises the roles of lay health workers, civil society, non-governmental organisations and government sectors in the planning, designing and delivery of primary health care.

There are six key principles associated with the practice of COPC [5, 6]. Under COPC, there is a need to have a defined community, utilise multidisciplinary approach to care, use evidence to consistently evaluate and strengthen care, and the services need to be comprehensive and integrated into healthcare system and community structures (S1 Table) [5]. Some countries such as Bolivia and Brazil have attempted to implement CHW programmes with a community orientation and in line with COPC principles. However, there are few evaluations of the effectiveness of these programmes [112] and often the initiatives do not embrace the complete COPC approach to primary healthcare development and delivery [6]. In South Africa, a national CHW programme has been implemented as part of strengthening PHC, and in some areas, implementers have tried to ensure that the CHW programme has been implemented with a focus on the COPC principles.

Table 1: Six key principles of community orientated primary care

Principle	Definition
A defined community	There should be understanding of the geographical location of the community and existing resources (e.g., churches and police stations) (assessment of local needs and assets).
Multidisciplinary approach to care	A team of health professionals should work in partnership with staff from social services to diagnose and respond to community problems.
Evidence based care	There should be consistent collection and use of community data to plan a service that will meet the community's needs.
Comprehensive care	The services package should provide care for a range of conditions, and where possible be comprehensive (e.g., promotive, preventative, curative and rehabilitation care).
Integration of care	Health care and other social services should be provided in an integrated and continuous way.
Community participation	Community members should be involved in the assessment of problems and implementation of the interventions, and where feasible existing community resources should be used (e.g., employment of local people as lay health workers).

South Africa has a long history of COPC [70, 73]. In the 1940s, Drs Sydney and Emily Kark in KwaZulu-Natal province pioneered the first practice of COPC in Pholela Health Centre. Their multi-disciplinary approach to care consisted of clinicians, social services workers and lay health workers/ CHWs providing health care services to under-privileged communities. The model, though not widely implemented across the country, helped extend marginalised communities access to health care services. During the 1950s with the Apartheid government, the COPC initiative came under increasing political and financial pressure which led to its demise in the 1960s [70].

Since the end of Apartheid and establishment of democracy in 1994, the provision of community-based health services has been led by NGOs in response to the HIV/AIDS and TB pandemics [22]. However, the NGO programmes were fragmented and single disease-focused, thus neglecting the other needs of individuals and families. In line with international UHC goals, in 2011, the South African Department of Health (DOH) introduced policies to strengthen PHC, and so to improve access to quality health care services [113]. A nation-wide CHW programme (locally known as ward-based outreach teams; WBOT) was introduced across all provinces, providing care for a more comprehensive range of health conditions [114].

The WBOTs comprise at least 6 CHWs, linked to a local PHC facility, serving a defined geographic area, providing a combination of promotive and preventative healthcare services to households, and making referrals to social services workers [23]. The WBOT team is meant to be led by an outreach team leader who is a nurse and supported by a health promoter and an environmental officer. The role of the outreach team leader is to provide field supervision to the CHWs during household visits, ensure the CHWs have the resources that they require (e.g. stationary) to fulfil their duties, and help establish team relationship with community structures. The CHWs receives training on identification of the need for antenatal and post-natal care, monitoring immunization and adherence to long-term medication, screening for malnutrition, TB, gender-based violence, making referrals to health and social services, and following up on patients who need to visit the health facility. The training is delivered in two phases, the first with a written examination (level 1), the second with a practical assessment in the field (level 2). At the time of the study, the CHW worked 6 hours per day, on a 12 months renewable contract earning a monthly stipend of R3 500 (201 USD).

Prior to the roll-out of the nation-wide programme, the majority of the CHWs worked for NGOs providing home-based care. They were absorbed into the national programme in 2011. Some districts in Gauteng province have taken a COPC approach to implementing the CHW programme. In Sedibeng and Johannesburg districts the COPC approach was established prior to the 2011 rollout; in Tshwane the COPC approach was adopted at the same time as the national rollout. More recently selected health districts in Western Cape and KwaZulu-Natal provinces have incorporated the COPC principles into their CHW programmes. [73, 115]. In this paper, we examined whether the programmes as they existed at the time of fieldwork (2018-19 i.e 7-8 years post the nation-wide programme rollout) were being implemented in accordance with the principles of COPC.

5.1.3. Methods

Study design

Drawing on data collected as part of a larger CHW study [25] and doctoral research, we used a descriptive case study approach involving multiple qualitative methods to examine seven CHW teams. The use of case study design is suitable when researchers want to gain concrete, contextual and in-depth knowledge of a phenomenon. The design is further used to explore key features of a particular phenomenon. In the current study, the design enabled us

to examine the practice of COPC in the context of the nation-wide CHW programme, CHWs relationship with the community and integration with the health system [116, 117].

Study sites

We studied seven CHW teams in Sedibeng, Johannesburg, Tshwane and Ehlanzeni districts of Gauteng and Mpumalanga provinces. The distance between Gauteng and Mpumalanga facilities was approximately 500kms or 5hrs drive. These CHW teams and health districts were purposively selected based on their location, history and model of adopting the CHW programmes (S2 Table).

The Sedibeng and Johannesburg districts adopted the COPC approach prior to 2011. The Tshwane district introduced COPC with the introduction of the national CHW programme in 2011. The Ehlanzeni district had not fully implemented the new CHW programme, nor did the leaders of the programme specifically focus on COPC. However, it was included in the study as the programme had reputation of being well run. We also anticipated that the differences between urban or semi-urban, and rural sites would be important, particularly in trying to deliver a community-orientated programme.

Table 2: Description of site, CHW programme and COPC practices

District	Location / Province	CHW programme prior roll out of national programme	Government WBOT programme	Principles of COPC formally articulated by programme leaders
Sedibeng	Peri-urban / Gauteng	Yes, implemented with COPC principles; no additional external funding	Yes, existing programme integrated into Gvt programme	Yes
Johannesburg	Urban / Gauteng	Yes, implemented with COPC principles; with additional external funding	Yes, existing programme integrated into Gvt programme	Yes
Tshwane	Urban / Gauteng	No	Yes, external funding that allowed additional COPC-related activities	Yes
Ehlanzeni	Rural / Mpumalanga	No	Yes, but CHWs remained employed by local NGOs	No

Data collection

The data was collected by the first author, supported by a team of data collectors who were trained in PHC, community-based healthcare services, research methods and ethics. The first author was a male doctoral researcher employed by a research centre undertaking health

policy and systems research. We conducted focus groups, observations, individual interviews and observations to gather data on the CHW programmes (S3 Table). The data collection instruments were in English, however where participants struggled to understand the questions or express themselves in English, the team provided clarity using local languages (Isizulu, Sesotho and Sepulana, an unofficial language spoke in some parts of Mpumalanga province). Data were collected data from September 2016 to April 2019.

Table 3: Data collection methods and number of participants

	Sedibeng		**JHB**	**Tshwane**		**Ehlanzeni**		**Total**
	Team 1	**Team 2**	**Team 3**	**Team 4**	**Team 5**	**Team 6**	**Team 7**	
Focus group discussions with CHWs	1	1	2	2	2	1	1	9
Observations with CHWs and their supervisors*	24	16	19	7	5	10	17	98
Interviews with CHW team	4	4	3	2	1	1	2	17
Interviews with community representatives	-	-	5	0	4	6	5	20
Interviews with key informants	5		2	6		3		16

Note: * Each observation was a full day spent observing 2 or 3 CHW who were working together

Focus group discussions

The data collectors facilitated nine focus group discussions with the CHWs recruited from the seven study sites. Every CHW who formed part of the CHW programme in these sites was invited to participate in the FGD. Where the CHWs exceeded the number suitable for a focus group discussion (7-10 participants), the researchers held two focus groups to accommodate the excess. There were no recorded refusals. Each FGD had approximately 10 participants, all women. Using a structured guide, we explored topics on the nature of their activities while out in the community, their experiences, successes and challenges while providing the services. Each of the discussions was audio-recorded, lasted approximately 2hrs, and was facilitated by the first author while data collectors helped take additional notes relating to the discussion.

Observations

We designed observation templates and refined them using role-plays involving the data collectors. At each site, the data collectors observed a pair of CHWs for a period of 3 days. The CHWs were observed during household visits, the fieldworkers documented the services

they provided and engagements with patients while in the field. Some of the observed visits were supervised by outreach team leaders (OTLs). However, in Ehlanzeni sites, the OTLs were not observed with CHWs, as the supervisors did not go to the households with the CHWs due to transport issues. The data collectors asked the household members for permission before carrying out the observations of the CHWs. There were no reported refusals to participate in the observations.

Interviews

We conducted 17 semi-structured interviews with facility managers, OTLs and community representatives (CR). These participants were purposively selected based on their knowledge and experience of the CHW programmes in the different sites. We asked them about CHW duties in the households, their experience of CHW services, relationship with the healthcare system and community structures. We asked the OTLs and community representatives about the support they provide to the CHWs, the role they played in the community, successes and challenges of the programme. Each interview lasted approximately 45mins and were audio recorded with participant consent.

Furthermore, sixteen key informants (KI) drawn from Sedibeng, Johannesburg, Tshwane and Ehlanzeni districts were recruited using snow-ball sampling technique to participate in the study. The KIs occupied positions of family medicine practitioner, programme coordinator, nurse and academic/ researcher in the healthcare system, local municipalities and institutions of higher learning (S4 Table). We asked questions about the origins of the programme, the practice of community-based health care, and the challenges of rolling out the programmes.

Data analysis

We used inductive approach to identify themes emerging from the data, as well as framework analysis. The first author used a MS word sheet to extract data from the interview transcripts and observation notes from the seven study sites. The information was summarised while retaining important quotations. The author regularly presented the extracted data to the co-authors; this was done to ensure the completeness of the data and that all relevant information was being extracted. The resulting themes were group into broader COPC themes i.e. the nature of community-based health care services, the challenges CHWs encounter in providing services and evidence of COPC principles in the different sites. The themes were compared for similarities and differences in the different sites. The themes were synthesised to

understand the history of the programmes, type of services provided by the CHWs, funding and socioeconomic issues of the communities. Moreover, evidence of COPC principles was also extrapolated from the different programmes.

Ethics approval and participant consent

The larger project was cleared by the University of the Witwatersrand Medical Ethics Committee (M160354) and the Sedibeng health district. The doctoral study also received ethical clearance (M180140) from the same university ethics body, the Johannesburg, Tshwane and Ehlanzeni provincial government research authorities. The participants also provided written informed consent before they could participate in the study.

5.1.4. Findings

In this section, we describe the CHWs, supervisors and key informants characteristics, history and implementation of CHW programmes in the different sites. We then identify and describe evidence of the extent of community orientation of the programme, using the COPC principles as described in S1 Table.

CHWs, supervisors and key informants characteristics

The CHWs were aged between 26 to 61 years. The least experienced CHW had 3 years of service, while the longest serving CHW had 17 years of services. The majority of the CHWs had not completed their high school education, Teams reporting low number of CHWs with high school education where in Ehlanzeni and Tshwane districts (S4 Table).

In terms of supervision, the sites made use of enrolled nurses and professional nurses. The Sedibeng sites used professional nurses and enrolled nurses, while in Tshwane there was a similar supervision model as Sedibeng for one site, the other site used only enrolled nurse (Team 5). Ehlanzeni sites used only professional nurses to provide supervision to the CHWs. The supervisors were aged between 29 to 65 years, and have worked as nurses in different institutions for 4 to 39 years. At the time of the study, the supervisors had been serving as CHW supervisors for 6 months to 5 years.

Table 4: CHWs, supervisors and key informant sociodemographic data

		Sedibeng		Johannesburg	Tshwane		Ehlanzeni	
		Team 1	**Team 2**	**Team 3**	**Team 4**	**Team 5**	**Team 6**	**Team 7**
CHW								
No. of CHWs		16	12	21	23	25	8	11
Age (range)		26 – 53	26 – 51	26 – 42	28 - 47	29 - 50	30 - 58	36 - 61
Years as CHW (range)		4 -12	3 – 12	3 – 8	4 -15	5 - 13	5 - 17	8 - 14
No. of CHWs who have finished high school education		6	8	12	6	11	2	1
Supervisor								
No. of supervisors		3 (Professional nurse & enrolled nurses)	2 (Professional nurse & enrolled nurse)	2 (Enrolled nurses)	2 (Enrolled nurse & Professional nurse)	1 (Enrolled nurse)	1 (Professional nurse)	1 (Professional nurse)
Age (range)		43 – 65	25 – 59	35 – 37	29 - 42	45	35	55
Years as nurse		14 – 36	3 – 39	4 – 5	4 - 9	7	10	17
Years in the programme		0,6 – 4	0 – 4	4	4	5	0,2	5
Key informant								
Level	Academic/ researcher	-		-	2		-	
	Medical doctor	2		1	1		-	
	Nurse	2		1	2		1	
	Programme coordinator	1		-	1		1	
Institution	Government	5		2	3		2	
	University	-		-	3		-	

THE CHW PROGRAMMES AND THE COMMUNITIES THEY SERVE

Sedibeng

Due to increasing cases of chronic diseases and shortage of health workers to provide health care, a community-based health programme was introduced in 2010. Through the assistance of local gatekeepers (i.e., political leaders), health posts (HPs; temporary wooden structures) were introduced in one of the more densely populated areas of Sedibeng district. Nurses and lay health workers (CHWs), selected from local primary health facilities and NGOs respectively, were recruited to work on the programme. The CHWs received training from a team of family medicine specialists to undertake a community diagnosis, involving the collection of individual and household data (e.g., number of householders, income, access to social assistance, self-reported illness etc.), to identify health, social and economic needs.

An unpublished evaluation by members of Sedibeng health team indicated an increase in the number of identified TB, hypertension and child malnutrition cases (S5 Table). However, with the introduction of the nation-wide CHW programme in 2011, the programme was experiencing challenges, as funds and other institutional resources were diverted to the nation-wide CHW programme.

At the time of the study, Team 1 provided services to an informal settlement, shacks made from corrugated iron and plastic, were home to local South Africans and immigrants (S5 Table). Access to running water, sanitation and electricity was limited. The residents relied on water taps installed in central points of the community. The two CHW teams were operating from a health post and PHC facility and led by junior and retired senior nurses. The CHWs provided range of promotive and preventative services including delivering chronic medication to pensioners. The CHWs, using standardized forms, undertook household registration, contact tracing and made referrals to local PHC facilities. However, the CHWs stored the forms in their homes and the information wasn't used to inform the type of care provided to the households.

Johannesburg

In Johannesburg, community orientated care was introduced by family medicine practitioners in one community health centre prior to 2011. The practice was called Chiawelo Community Practice and operated within the community health centre. At the time of the study, it also functioned as one of the local universities teaching and research site. Similar to the Sedibeng team, there were community consultations to gain permission to work in the community. The

catchment area was mapped, and community interviews carried out by CHWs to understand community needs. The team registered 22,000 households. All the registered householders were told about the community practice (e.g. what it intend to achieve and how they will benefit). Patient care was provided by a medical doctor, clinical associate, nurse and a team of eleven CHWs recruited for the practice. The services were limited to the individuals registered under the community practice.

After several years, the initiative stalled as external funding used to set up the practice had come to an end. The CHWs were absorbed into the national CHW programme, resulting in contractual conflicts between the CHWs and programme leaders, as their integration into the national programme meant a reduction in their monthly stipend. At the time of the study, no evaluations had been published on the outcome of the practice; anecdotal evidence suggested an improvement in chronic care management.

This team worked in a diverse area with formal brick housing, hostels (originally built for working miners, but now occupied by families), as well as informal settlements. Communities with formal housing tended to have access to running water and electricity and were relatively affluent; the hostels and informal settlements were not (S5 Table). High levels of crime made it difficult for the CHWs to adequately provide care. A CHW commented "*Many criminals live in this hostel. We are always scared when walking in this area. It is worse because we have to enter the households and provide care*" (CHW, FGD, Team 3). The CHWs preferred to visit their hostel clients in groups, however, this was not always possible; to reach their allocated number of patients they had to split up.

Tshwane

COPC informed intervention was first introduced in Tshwane as part of local government health services, with a group family medicine practitioners and researchers leading the initiative. In 2011, the initiative became part of the nation-wide CHW programmes with external funding. Similar to the Sedibeng district, in Tshwane local schools and churches were used as health posts, particularly in areas where there were few PHC facilities. In rolling out programme, the CHWs mapped the community and undertook a community diagnosis. The CHWs were equipped with tablets with a specifically designed app to gather household and individual data. Data from CHWs' tablets was aggregated by the supervisor and programme leaders for supervision and in-service training purposes.

The programme implementation relied on the CHWs employed by the Department of Health, as part of the nation-wide CHW programme. The CHWs had only been offered 10-day training by the Department and the majority had low literacy levels. The low stipend, lack of working tools and low literacy levels led to a conflict between the CHWs and the Department of Health, and meant the CHWs were often unreliable pool of community workers. Similar to the other health districts that had attempted to implement community-based health services in accordance with COPC principles, implementation of the programme weakened when external funding came to an end.

The two teams were providing services to residents in informal settlement, RDP[11] and formal brick housing. The informal settlements were without running water or electricity, and the majority of the residents were unemployed. In some part of the community, there was sewage in the streets making the area inaccessible by foot and motor vehicle. The CHWs prioritized providing care to patients located in the informal settlements, as many of the residents faced challenges in maintaining medication protocols for chronic conditions. Ensuring patients took their medication as prescribed required frequent visits (Field observation notes, Team 4).

Ehlanzeni

The national CHW programme was introduced in the district in 2011. CHWs, who remained in the employment of the NGOs, were selected to work on the new programme. Their monthly stipend was paid by the provincial Department of Health via the NGO. The two CHW teams were overseen by senior professional nurses based in the local PHC facilities; the CHW also reported to program managers attached to the NGOs. The CHWs undertook a combination of health promotion and preventative roles in the surrounding rural communities. While the CHWs had prior work experience in providing home-based care services, none of the CHWs had received CHW training prior to being inducted into the CHW programmes. The appointed supervisors were unable to provide field support to the CHWs due to lack of transport to accompany the CHWs while visiting households. The supervisors spent most of their time in the facility attending to patients.

In the communities, many households had an unreliable water supply. The majority of the residents didn't have water boreholes and had to use wheelbarrows loaded with 20 liters containers to ferry water from households with boreholes. The area had poor roads,

[11] These are houses that have been built by the government and are given to low-income families, as part of the Reconstruction and Development Programme introduced in 1994.

inaccessible by a motor vehicle. Pensioners often struggled to visit the healthcare facility, as they could not walk or get a lift (Observation notes, Team 6). The CHWs complained about the hindrance of local traditional beliefs in their efforts to provide care. For example, during household visits, the researchers observed a diabetic pensioner with a wound on her foot refusing CHW care; she believed her neighbour was the cause of her poor health and misfortune (Observation notes, Team 6). As local women, the CHWs had to compromise and accommodate the patient beliefs.

Table 5: Descriptions of the CHW programmes and the communities they serve

	Sedibeng (semi-urban)	**Johannesburg (urban)**	**Tshwane (semi-urban)**	**Ehlanzeni (rural)**
Programme inception	• Introduced in 2010 prior to the nation-wide programme • Funded by district management	• Introduced prior to 2011 by family medicine practitioners • Externally funded	• Introduced in 2011 by family medicine practitioners & local university • Externally funded	• Nation-wide programme • Programme partly managed by govt and NGOs
Supervision	Professional and enrolled nurses	Enrolled nurses	Professional and enrolled nurses	Professional nurses
Housing and infrastructure	• RDP • Formal brick housing • Informal settlements with unreliable electricity and water supply	• Formal brick housing • Hostels and informal settlements with unreliable electricity and water supply	• RDP • Formal brick housing • Informal settlement with unreliable water supply • Poor roads	• Formal brick housing • Unreliable water supply and poor roads
Perceived impact of services	• Increase in identified TB, hypertension and child malnutrition cases	• Improved chronic care management	• Improved chronic care management	• Improved access to general healthcare
Sustainability	• Funds diverted to the nation-wide CHW programme	• External funding come to an end • Integrated into the nation-wide programme	• External funding ended • Implementation weakened	• National programme only • On-going

COMMUNITY ORIENTATION OF THE CHW PROGRAMMES

The CHW programmes demonstrated different degrees of the key features of community-orientated primary health care (i.e., analysis of local health needs and assets, use of evidence, service integration, comprehensive care and multi-disciplinary approach to care, and community participation).

A defined community and use of evidence

The Tshwane, Sedibeng and Johannesburg teams gathered data to understand the local context and health needs. CHWs visited households to learn about their perceived needs. Key informant in Sedibeng commented: "*The community participated by identifying its needs, the needs identified by the community were then moderated to come up with a list of urgent needs to be addressed*" (KI, interview, Sedibeng). Undertaking a community diagnosis also allowed the implementing teams to explain the programme to the community and involve the community. The data generated through this process was collated and used to inform the human resources and service requirements for the intervention.

Across the different sites, there was evidence of continuous data collection to inform service delivery. In Tshwane district, as mentioned above, a mobile technology was installed in tablets given to CHWs to records householders' health needs, care provided and schedule follow-up visits. However, due to limited funding, the use of mobile health technology could not be sustained, as lost and malfunctioning tablets were not replaced or repaired. A key informant commented: "*unfortunately, if a technology device is used every day, those devices last for about 2 years. Therefore, you need to budget for a 2-year replacement cycle. Otherwise, it doesn't really work*" (KI, Interview, Tshwane). Key informants and CHWs mentioned the Department of Health did not replace or refurbish lost or damaged tablets. The CHWs who damaged or lost the tablets regressed to the traditional way of collecting and recording patient data on a piece of paper.

In the other districts, there was no use of mobile technology. Instead, household information was recorded on paper, often filed at the CHW homes, and not used to help inform future interventions in the community. However, some of the informants were concerned that under the national CHW programme the use of evidence to guide practice is diminishing. A key informant in Sedibeng commented: "*..... WBOT asks you questions regarding your needs, but only God knows for what, because I haven't seen anyone acting on the collected data… WBOT is designed not to have impact on the health of the people*" (KI, Interview, Sedibeng).

Service integration

To assess CHWs connection with the health system, we examined four features of the programmes - distance/ location from the clinic, supervision, relationships with health workers and referral systems.

Distance / location

In the rural setting, many villages were located far from health facilities. To reduce the time spent walking between their homes, the health facility and the community, the CHW were advised to only report to the facility on Fridays to compile their weekly reports. On the other days of the week, they went straight from their homes to visit households: "*They realized some of us come from far places, so coming to the clinic just to sign in and later go back to the households was impractical."* (CHW, FGD, Team 7). Though this change helped save the CHWs time, it reduced their access to supervision from the facility-based nurses/supervisors. In contrast, in urban sites, the catchment areas were conveniently located closer to the health facilities, and although supervisors lacked transport, they were able to walk or used their own cars.

Supervision

When CHW teams were led by senior nurses who provided thorough supervision, the CHW were more competent, likely to receive support from the facility-based staff members and be respected by the community. More skilled, senior supervisors discussed complex cases with CHWs (e.g., patients refusing care and not adhering to treatment) and where necessary accompanied the CHW to see the patient. However, this was not the case in the rural teams, where, although the supervisors were senior nurses, it was not possible for them to invest sufficient time and resources in the supervision of the CHWs. Some of the CHWs in Ehlanzeni were without a supervisor for a prolonged period during data collection. "*we have not had a supervisor since October last year… when we have problems we tell the facility manager who makes time to assist us*" (CHW, FGD, Team 6). During data collection, a supervisor was appointed and had to undergo an induction by the Department of Health. The other supervisor in Team 7 only saw the CHWs when they reported to the facility on Fridays; during the week she didn't have a vehicle to visit households. The CHWs were allowed to call the supervisor to discuss issues they encountered. However, this was impractical as they were not provided with airtime and couldn't afford buying airtime for work purposes. The contracting NGO was also not providing daily supervision to the CHWs.

Relationships with health care workers

The CHWs in Team 2, led by a senior supervisor, received sufficient support from facility-based staff members, as the supervisor negotiated for their inclusion in facility activities and borrowed equipment (e.g., blood pressure machines) on their behalf. In order to build a good

relationship with facility staff, the supervisors in Johannesburg helped the nurses in the clinic: "*to ensure the patients referred by my people (CHWs) are attended timeously, I make time to assist the nurses in the clinic. I sometimes assist X in the triage room or attend women who are visiting the clinic for family planning services*" (CHW supervisor, interview, Team 3). However, support for CHWs planned activities was not forthcoming: "*I usually go to the facility manager's office and inform her that I am having a campaign based on HIV, TB, vitamin A or de-worming. She will be happy but there will be no assistance, even if I can ask for assistance from the EPI or TB side. They will say, you are independent, you must know these things*" (CHW supervisor, interview, Team 5).

In the rural sites, when the CHW were at the clinic, they used a separate building, not the main clinic; this arrangement isolated the CHWs from the rest of the facility staff members. The team leaders also spent less time with the CHWs, as they only visited the facilities on Fridays.

In the urban sites, the CHWs had a complex work relationship with facility-based health workers. In one of the facilities, nurses used degrading names to refer to the CHW. A CHW commented: "*they call us names like "mamoroto" [someone who is working with urine]… They always chase us around saying we must go to the side where patients' urine is collected*" (CHW, FGD, Team 5). This degrading name was conceived from the CHWs role in the collection of patients' urine as part of their duties within the facility.

Referral systems

CHWs refer cases they cannot resolve at household level to health facilities for further assessment and care. A referral requires cooperation between the CHWs and facility staff (i.e., nurses providing feedback to the CHWs). However, due to CHWs "inferior" status, some nurses did not complete the back referrals, thus hindering CHWs from providing care post referral. A CHW commented: "*we always have to beg to receive the report about the patients that we referred to the clinic*". Another CHW added: "*getting the completed back referral form from the nurses is never easy, I always have to ask my supervisor to get the form from the clinic staff*" (CHW, FGD, Team 1). These issues were more common in teams where the CHWs did not have a senior or present supervisor to mediate between them and facility staff.

Comprehensive and multi-disciplinary approach to care

In exploring the features of comprehensive care and use of multidisciplinary teams to deliver care, the use of experts to provide advice and mentorship, CHWs limited knowledge and skills, and unmet health needs emerged as subthemes.

Expert advice and mentorship

In the urban sites, the CHWs received expert advice and mentorship from clinicians (e.g. medical doctors) and social services professionals in order to provide health promotion, prevention, screening services and referral for a wide range of health conditions. In Tshwane district, the CHWs met with members of a multi-disciplinary team weekly to debrief and receive case guidance. A key informant commented: "*Last week, I attended a meeting in the X clinic where the CHWs and OTL had a review meeting. The multi-disciplinary team consisting of a dietician, doctors, nurses and so forth attended the meeting. They reviewed the difficult cases and advised the CHWs accordingly"* (KI, interview, Tshwane). Similarly, the Sedibeng and Johannesburg teams had the support of medical doctors, nurses and clinical associates. The multi-disciplinary approach benefited the CHWs, as they had access to clinical knowledge shared during the meetings. In these meetings, the CHWs presented complex cases they dealt with in the field and received expert advice or mentorship.

Limited knowledge and skills

However, there were concerns that the CHWs did not possess the knowledge and skills required to implement support interventions aligned to COPC. A key informant in Tshwane district commented: *"you cannot expect people who are at that level of training, who are not managed properly and without team leaders to function well".* To overcome this challenge, for example, the Johannesburg team used external funds to employ, train and retain CHWs with desired knowledge and skills mix. In Sedibeng, the CHWs experienced numerous challenges when offering services to those without residency status: "*Working in this community is never easy for us. The CHWs do visit the householders to provide services, however some the householders do not have identity documents needed to register them for social services*" (CR, interview, Team 1). The CHWs reported these cases to their senior team leaders who couldn't assist as they did not go to the fields with them to offer onsite supervision.

Unmet health needs

The identification of unmet need also appeared to present challenges for the healthcare system. The Sedibeng team during household visits found suspected cases of cervical cancer, and those who needed cataract operations. However, care for such conditions was only available at distant, tertiary hospitals, and required numerous visits. The majority of the householders who received care from the CHWs were pensioners and unemployed women with dependents. They did not have the funds to visit the facilities. As a result, some of the participants deemed the attempt at COPC informed intervention as ineffective, as the identification of community health needs was not matched with available care.

Community participation

One of the key principles of COPC is for health programme developers to engage communities and ensure the services to be provided are relevant to the needs of the community. It is important that there are open channels of communication such that if there is a misunderstanding, issues can be clarified.

Setting up programmes

Each programme consulted local stakeholders such as political and traditional leaders, school managers and local NGOs. In Tshwane, the team worked with local stakeholders to secure space in their schools and churches to be used as health posts. A participant commented: "*After we have introduced and involved the community in our work, implementation went well. The ward councillor even helped us to find a suitable space to use as a health post*" (KI, interview, Tshwane). Another participant added: "*Since we informed them about our programme. We were protected, nothing bad has happened to us because the community know us. If I complain that somebody snatched my phone, they will make sure that they will get whoever took it"* (KI, interview, Tshwane). In Johannesburg at the start of the programme, there was resistance from patients and community, but continuous engagement led by a community liaison officer who was employed to support the programme helped ease the tension between the health team and community. Similarly, in Sedibeng (Team 1), local leaders upon realizing patients visiting the health post queued in the sun or cold weather, volunteered their time to build a temporary shelter for the patients to use while waiting for their turn.

Maintaining on-going relationships with service users

In Sedibeng, when the CHW team 1 struggled to persuade patients to visit the local health facility for further health assessment and treatment, community leaders made time to meet and listen to the CHWs problems (e.g., patients refusing CHWs entry into their households), and addressed the issues with the householders. In the different sites, the CHWs also struggled to access some households to provide care due to the stigma associated with their services. Due to their previous role during the height of the HIV pandemic, their service was associated with providing HIV and TB care. A CHW commented: *"..the clinic sometimes send us to clients who are defaulting on their medication, but because they [clients] don't want to be seen being visited by us, they chase us away*" (CHW, FGD, Team 3).

Engagement with the broader community

In Ehlanzeni (Team 6), a community representative who also served as a member of the clinic committee ensured the clinic was always represented during community meetings she addressed. This leader's initiative helped ensure service delivery and health concerns of the residents were discussed in the same platform. However, community members were only interested in topics such as access to employment, water and decent housing. Many of the communities were politically volatile, with residents were regularly protesting for decent housing and running water. In Sedibeng district, a health post was burned down by members of the community protesting against continuous electricity cuts in the area, while in another unrelated event district health officials were held hostage by CHWs protesting against poor work conditions (e.g. low stipend). These on-going service delivery protests often disrupted the engagements between the health team and community: "*We often have to stop work, because of service delivery protests*" (KI, Tshwane).

5.1.5. Discussion

Our study examined whether the community-based health programmes as they existed prior and after the nation-wide CHW programme were implemented in accordance with the COPC principles. To summarise our findings, we found some evidence of resistance by community members to participate in the design and implementation of the health programmes, as the residents were more interested in other services such as housing. Also, CHWs insufficient health knowledge and skills contributed to the ineffectiveness of the programmes, particularly where the CHWs did not have access to a senior team leader to provide them with supervision and mentorship. However, the multidisciplinary approach to care which saw medical doctors providing in-service training to CHWs in some sites, improved the services

provided to patients. As much as there was an attempt to implement the programmes in accordance with COPC principles, dysfunctional mobile phones for patient data collection, volatile communities and an unsupportive healthcare system limited the effectiveness of the programmes to deliver care. The CHW teams had to navigate these issues to deliver healthcare to residents.

Studies have shown the delivery of community orientated health care requires well-structured support from healthcare systems [59]. A review of literature in LMICs has found many lay health workers did not possess the training and knowledge to provide maternal and child health services, however with continuous clinical support they were able to acquire the knowledge and learn skills to provide quality care [90]. A study in Brazil found community health agents who worked as part of a local family healthcare team, which included doctors and dentists, to be sufficiently supported due to their integration into healthcare systems and community structures [118]. In our study, some programme leaders organised in-service training opportunities for the CHWs to enable them to provide comprehensive care to their clients. However, in our rural sites, contextual factors such as distance and lack of transport often limited the availability of supervision, the CHWs functioned without field supervision. The CHWs who hardly interacted with facility-based workers received less support in their daily functions. The unavailability of senior team members in some sites meant conflicts the CHWs had with members of staff were left unresolved.

CHW programmes can fail due to over-reliance on external funds to set up and implement the programme [5, 6, 18]. For example, in Kenya and Brazil, initiatives stalled when donor funds ran out, and the national governments did not make funds available to continue the initiatives [6,18]. In our study, the programmes studied relied heavily on external resources to recruit, train and retain the CHWs, and unfortunately, when the funds ran out the initiatives stalled. Many of those writing about community-based programmes argue sustainable initiatives require financial commitment from government [21].

World Health Organisation guidelines states communities have a significant role to play in CHW selection, programme implementation, supervision and performance evaluation [62, 110]. However, a review of CHW programmes has shown communities are poorly involved in setting up health programmes, mainly due to external forces which include pressure from donors and technical advisors to achieve quick results, thereby bypassing the slow social

processes required to establish stronger ties between the CHWs and communities [59]. In our study sites, the communities were not involved in CHW selection, programme implementation, supervision or evaluation. The efforts of programme leaders to consult with community members were not met with the same energy. The majority of communities had housing issues, and as a result were less invested in health programmes. The implementing teams had to navigate the community unresponsiveness while delivering healthcare services.

In response to the limitations of CHW programmes, Schneider and Lehmann propose efforts be directed to develop community health systems [75]. The current organisation of CHW programmes are ineffective as they are narrowly focused using CHWs as key drivers of health service delivery. Other sets of actors and systems within the community, that can be tapped into and positioned to improve the delivery and uptake of health services are being neglected and underutilised [75]. In their work on community health systems, Schneider et al recognise the role of non-government organisations, civil society and government sectors (e.g education and social development) in designing and delivering care. Noting countries under investment in CHW programmes, the scholars recommend governments allocate sufficient resources to the health sector for training, supervision, reliable supplies, improved data systems and integration of the programmes into health systems and community structures [77].

The study had several limitations and strengths, first, the CHWs and their supervisors, and the key informants may have provided socially desirable answers in favour of their unique COPC initiatives. To mitigate this, data were collected from different participants located in the different levels of the healthcare systems (e.g. program directors vs. CHWs). This approach allowed us to obtain multiple perspectives of the initiatives and triangulate the data. Second, there isn't a single study on the practice of COPC that has attempted to quantify the principles, this make it difficult to objectively assess whether the implementation of CHW programmes is in line with the COPC principles or not. Third, the data collection tools were in English, this might have resulted in different explanation and interpretation of the interview questions during data collection. The study also demonstrated some key strengths. As far as we are aware, there are limited studies locally that explored the application of the COPC approach in evaluating the design and delivery of community-based care under the nation-wide CHW programme. Existing literature, studies the COPC programmes in isolation [73, 119, 120], thus missing the opportunity to highlight the key design features that can be used to strengthen nation-wide CHW programmes in LMICs.

5.1.6. Conclusion

The implementation of community-orientated primary health care services is crucial in a resource constrained setting like South Africa. However, the implementation of these programmes often get derailed by socio-economic issues dominant in the communities. Poor community participation in the design and implementation of the programmes, limited health system support for outreach teams and unsustainable funds make it difficult for the teams to be effective in the delivery of care. In order to strengthen these programmes, CHWs need to be integrated into healthcare systems so to access supportive supervision, have access to resources, and governments make available funding to implementing teams.

CHAPTER 6: PhD PAPER 2

This chapter was recently published by *PLOS Global Public Health*, with a citation as follows:

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6.1. Title: Mobilisation towards formal employment in the healthcare system: a qualitative study of community health workers in South Africa

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6.1.1. Abstract

In low and middle-income countries, community health workers (CHWs) play a critical role in delivering primary healthcare (PHC) services. However, they often receive low stipends, function without resources and have little bargaining power with which to demand better working conditions. Using a qualitative case study methodology, we studied CHWs' conditions of employment, their struggle for recognition as health workers, and their activities to establish labour representation in South Africa. Seven CHW teams located in semi-urban and rural areas of Gauteng and Mpumalanga Provinces were studied. We conducted 43 in-depth interviews, 10 focus groups and 6 observations to gather data from CHWs and their representatives, supervisors and PHC facility staff. The data was analysed using thematic analysis method. In the rural and semi-urban sites, the CHWs were poorly resourced and received meagre remuneration, their employment outsourced, without employment benefits and protection. As a result of these challenges, the CHWs in the semi-urban sites established a task team to represent them. They held meetings and caused disruptions in the health facilities. After numerous unsuccessful attempts to negotiate for improved conditions of employment, the CHWs joined a labour union in order to participate in the local Bargaining Council. Though they were not successful in getting the government to provide permanent employment, the union negotiated an increase in their stipend. After the study ended, during the height of COVID-19 in 2020, when the need for motivated and effective CHWs became more apparent to decision makers, the semi-urban-based teams received permanent employment with a better remuneration. The task team and their protests raised awareness of the plight of the CHWs, and joining a formal union enabled them to negotiate a modest salary increase. However, it was the emergency created by the world-wide COVID-19 pandemic that forced decision-makers to acknowledge their reliance on this community-based cadre.

Key words: community health workers, employment, labour representation, union, South Africa

6.1.2. Introduction

In pursuit of universal health coverage (UHC), low and middle-income countries (LMICs) are investing in programmes to strengthen the delivery of primary health care services (PHC) to marginalised communities [1]. The community health worker (CHW) programmes gained prominence after the Alma Ata Conference of 1978, which prioritised the strengthening of PHC to provide care to marginalised communities [2]. Since this period, many LMICs have been making attempts to use CHWs to provide care [3]. In some settings, the CHWs have been successful in extending access to PHC services by supporting chronic care management, antenatal and postnatal support and early identification of malnourished children [3-5].

However, in some settings, the programmes fail to deliver on expectations due to limited access to resources (e.g. blood pressure and glucose monitoring machines), low and sometimes irregular remuneration and poor integration into the healthcare system resulting in poor relationships with facility-based staff members [4, 6, 7]. CHWs are mostly women, often with low levels of education, who are expected to work on a voluntary basis, or who are underpaid with no permanent employment security [8]. These employment conditions and the lack of unionisation contribute to CHWs' low work morale, demotivation and high work turnover [1, 9]. Pandya et al argue the provision of incentives, both monetary and non-monetary is crucial to improve CHWs motivation, job satisfaction, and performance, which, in turn, improves retention [8]. Monetary incentives include stable salaries, while non-monetary incentives include the provision of working tools such as uniforms and raincoats.

While the World Health Organisation (WHO) has argued for the optimisation of CHW programmes through fair remuneration schemes and provision of career development pathways, as well as integration into health systems and provision of resources [7], there has been little progress. Unionisation among the CHWs is often low due to CHWs working in isolation or in pairs, with little bargaining power with which to demand better working conditions [15, 20].

In South Africa labour unions have a played a key role in the country's history in opposing Apartheid; the white minority government had enacted labour laws based on race categorisation thus resulting in unfair labour practices [10]. In the 1990s, the Congress of South African Trade Unions (COSATU), an umbrella body of unions, formed an alliance with the governing political party – the African National Congress [11]. As a result, unions participated in government policy discussions, and influenced labour legislation and strengthened employees' rights in the workplace. Public sector unions' alliance with

government enabled the formally employed workers to consistently obtain above-inflation salary increases through centralised bargaining, although union leaders are often criticized for using the alliance to build their own political connections, rather than representing the concerns of ordinary workers [12, 13].

In line with international UHC goals, in 2011, the South African Department of Health (DOH) has attempted to strengthen the delivery of PHC services through various streams of care including the introduction of a nation-wide CHW programme (locally known as ward-based outreach teams (WBOTs)) [14]. The programme intention was for each WBOT, linked to a local PHC facility, to comprise of 6 CHWs who serve a defined geographic area, provide a combination of promotive and preventative healthcare services to households, and make referrals to health facilities and social services organisations [14]. The team was to be led by a nurse and supported by a health promoter and an environmental officer.

Prior to the introduction of the WBOTs, the CHWs were in the employment of non-government organisations (NGOs), mainly providing HIV/AIDS and TB related services at community level [15]. The NGO programmes were fragmented and single disease-focused, thus neglecting the other needs of individuals and families. The WBOTs replaced the NGO-led programmes and absorbed the CHWs on a 12-month renewable contract earning a monthly stipend of R2 500 (136 USD) (at the time of study), their employment was outsourced to either NGOs or payroll administration company. As a result, despite their employment within a nationwide CHW programme, the CHWs had little employment security and were paid a meagre stipend. With high levels of union activity being common in South Africa, informal groupings of CHW have been protesting for several years, demanding better working conditions [19, 20, 26]. In this article, we examine the CHWs' conditions of employment, their struggle for recognition as health workers, and their activities to establish labour representation in South Africa.

6.1.3. Methods

Study design

The data originate from a large project and a doctoral study that investigated the design and implementation of CHW programmes in South Africa. The larger project which was funded included the introduction of a nurse mentor intervention with a specific focus on building CHWs' knowledge and skills, supporting their integration into healthcare systems and

community structures [16, 17]. Together, the two studies adopted a qualitative approach with 7 case studies (each case study being a team of CHWs). Creswell and Clark define qualitative research as an approach used by researchers to gain an in-depth understanding of a particular phenomenon [18]. Through this approach, the researchers undertook an in-depth exploration of the CHWs conditions of employment and mobilisation activities for recognition in the healthcare system.

Study setting

The research was carried out in 3 health districts of Gauteng Province and 1 health district of Mpumalanga Province (Table 1). We applied the maximum variation technique to select the two provinces based on their location (urban vs rural), history and contrasting models of implementing the CHW programmes. The CHW programmes in the three districts of Gauteng province were implemented by the Provincial Department of Health with a payroll administration company contracted to pay the CHWs on behalf of the Department [19]. The Mpumalanga province, where the rural case studies were located, had not fully implemented the national CHW programme [19]. Here, the Provincial Department of Health funded existing local NGOs that provided home-based care services, to deploy some of its carers to constitute the CHW programme in local health facilities [19]. The NGOs remained the primary employers of the CHWs, while supervision and resources were being provided by the health facilities [19]. Though we had an interest in the two provinces, we spent 3 years in one district of Gauteng province. In the other districts, we couldn't stay long due to limited resources.

Sampling and participant recruitment

We employed a combination of purposive and snowball sampling techniques to select the participants for the study [20]. All CHWs and supervisors who formed part of the WBOT/CHW programmes and facility staff members in the PHC facilities were purposively selected to participate in the study. The snowball sampling technique was used to select key informants in government and universities in Gauteng and Mpumalanga provinces (see Table 1). The informants' inclusion criteria was a sustained knowledge of CHW programmes, and involvement in the set-up, implementation and evaluation of the programmes performance in the different sites.

Data collection

The data was collected by the first author and a group of data collectors from 12 September 2016 to 30 May 2019. The first author was a South African Research Chairs Initiative (SARChI) doctoral researcher employed by a research centre undertaking health policy and systems research. The data collectors were qualified qualitative researchers sensitised to the type of activities CHWs undertake. Focus group discussions, individual interviews and observations were used to collect data from the different CHWs, facility staff members and key informants. The research instruments were all in English, during interviews the data collectors translated the interview questions to local languages (i.e. IsiZulu, Sesotho and Sepulana) for participants who did not understand the English language.

Focus group discussions

Ten focus group discussions (FGDs) were held in the different sites, and each FGD had approximately 10 participants, all women (Table 1). All CHWs who formed part of the CHW programme in the PHC facilities were invited to participate in the FGDs, and there were no refusals. We used a structured guide to ask the CHWs about their work conditions, daily activities, resources they require to perform their duties and their engagement with the health facilities and their employer (Department of Health). Each of the discussions was audio-recorded and lasted approximately 2 hours. The first author facilitated the discussions while the data collectors took notes. The notes were typed by the data collectors and formed part of the dataset for analysis.

Table 1: data collection methods and number of participants

	District A*		**District B***	**District C***		**District D***		**Total**
	Team 1	**Team 2**	**Team 3**	**Team 4**	**Team 5**	**Team 6**	**Team 7**	
Focus group discussions with CHWs	1	1	2	2	2	1	1	**10**
Interviews with CHW team leaders	4	4	3	2	1	1	2	**17**
Interviews with nurse mentor	4		-	-		-		**4**
Interviews with task team members/ CHW representatives	6		-	-	-	-	-	**6**
Interviews with key informants	5		2	6		3		**16**
Observations of task team meetings	6 (meetings)		-	-		-		**6**

	District A*		District B*	District C*		District D*		Total
	Team 1	**Team 2**	**Team 3**	**Team 4**	**Team 5**	**Team 6**	**Team 7**	
Reports reviewed	5							**5**

*Since some events being reported are contextual information. The authors have elected not to use the districts' real names in order to protect the identities of the participants.

Interviews

In each PHC facility, we interviewed CHWs and their supervisors, facility staff members and nurse mentor (Table 1). The interviews happened after the observations of the CHW meetings, in order to get clarity on the CHWs' activities. We asked these participants about the CHW programme (i.e. CHWs duties in households, access to resources and supervision, and conditions of employment). Key informants at provincial and district levels were also interviewed.

Furthermore, in District A where we spent a prolonged time in the field, we interviewed CHWs who represented their colleagues at district level meetings and when there were conflicts. The CHW representatives were referred to as a "task team". We asked them about the origin of the task team, engagement with health facilities, district and province, and successes and challenges in advocating for CHWs rights. Each interview lasted approximately 45 minutes and were audio-recorded with participant consent.

Observations

The observations were conducted to understand the CHW activities relating to labour mobilisation aimed at challenging the employer to provide better conditions of employment. With the consent of the CHWs, we observed 6 CHW representatives' meetings with the general CHW population, programme coordinators and the payroll administration company in District A (Table 1). In these meetings, we documented the issues being discussed (e.g. poor pay and lack of working tools) and resolutions made.

Data analysis

As described by Braun [21], we used the thematic analysis method which was inductive to analyse the individual interviews, focus group discussions and participant observation data. The team read through the interview transcripts and observation notes and developed a codebook. The first author HM coded the interview transcripts and observation notes line-by-line, and to ensure the rigour of the findings the coded data and emerging themes were presented to the co-authors (JG and FG). The co-authors verified the coded data against the transcripts. The codes and supporting quotations captured information about the CHWs conditions of employment and activism to challenge the government to provide permanent employment with decent remuneration.

Ethics approval and participant consent

The larger project was cleared by the University of the Witwatersrand HREC Medical Committee (M160354) and the Sedibeng health district. The doctoral study received ethical clearance (M180540) from the same university ethics body, and the Johannesburg, Tshwane and Ehlanzeni provincial government research authorities. The participants provided written informed consent before participation in interviews and focus groups. Before observing CHW in the field and their representative meetings with district management, we checked with those present for verbal consent. We explained there would be no audio-recording made; the researcher will write notes of the deliberations. There were no reported refusals in the study**.**

6.1.4. Findings

The findings comprise of participants demographics, CHWs conditions of employment (i.e. stipend, employment security, career advancement opportunities, work tools and access to supervision), and how these conditions hindered the effectiveness of the CHWs in the different sites. Lastly, the CHW labour mobilisation towards permanent employment with decent remuneration is presented.

CHW, supervisor and key informants' demographics

We studied 7 CHW teams in the health districts of Mpumalanga and Gauteng provinces. The teams' composition ranged from 8 to 25 CHWs per team. The youngest CHW was aged 26 while the oldest was 61 years old. The CHWs also had varying years of service ranging from 3 years to 17 years. The CHW teams had different supervision configurations consisting of

professional nurses and enrolled nurses. The CHWs in Districts A and C were being supervised by professional nurses and enrolled nurses. The supervision arrangement was different in District D, where the CHWs were being supervised by professional nurses, while those in District B were being supervised by enrolled nurses. The supervisors were a diverse group aged between 29 years to 65 years. Before joining the government CHW programme, they had worked in different health institutions for 4 to 39 years. The key informants occupied positions such as programme coordinator and researcher in government departments and universities.

CHWs conditions of employment

Stipend

Across the sites, the CHWs received a monthly stipend of R2 500 (135 USD). The CHWs said that the stipend was insufficient and demotivating them: "…*the government should hear us and increase our stipend, so when we go to the community to motivate and counsel people, they understand us. We cannot talk to people who are frustrated and hungry when ourselves are also frustrated and hungry*." (CHW, FGD 1, District C, Team 2). The CHWs felt undervalued: "*We become de-motivated because of the stipend. Our stipend is too little, and you see the amount of work that we do. We get burned by the sun*" (CHW, FGD, District C, Team 2). The CHWs provided services to patients located in informal settlements, hostels and remote areas. Some of the areas, particularly the hostels and informal settlements were unsafe due to high crime rates.

The CHWs also experienced difficulties in receiving their monthly stipend. In the urban sites, the Provincial Department of Health contracted a payroll administration company to pay the CHWs (Table 2). The company issued a bank card that the CHWs used to access their stipend, however, the card did not have features of a traditional bank card (e.g., cash deposit and transfer options); it was only to receive and withdraw the stipend. The company offices were located far from the reach of many CHWs, who lived and worked in the periphery of the districts, making it difficult to resolve any problems with the card or the stipend.

In the rural sites, where the programme was managed by local NGOs, the CHWs regularly received their stipend late, and would continue working for up to 6 months without being paid: "*Normally, we are getting paid after 3 or 6 months so now we might get paid in October/ November. This is disturbing us. We are always in debt and when we get that amount even if it is back pay it all goes to the creditors*" (CHW, FGD, District D, Team 2).

The sub-district officials were aware of the delayed payment of CHW stipend and expressed how it is important for the CHWs to be formal employees of the department, so they can be paid on time: "*The CHWs receive their stipends from the home-based care organizations (NGOs). The minister mentioned that the CHWs should be part of the department and have PERSAL numbers but due to budget constraints, I don't see this happening soon*" (Government official, Interview, District D). The government official blamed the NGOs for the delayed payment of the CHWs as they always submit paperwork required by the Provincial Department of Health to release funds late.

Employment security

The urban-based CHWs were on 12 months fixed contracts and had to renew the contracts with the payroll administration company each year. This created anxiety among the CHWs: "*What if they wake up and say that they are not renewing our contracts? What are we going to do? We have children and families, the children are waiting on us as their moms to bring them something*" (CHW, FGD, District B). The CHWs also felt the company, as contractor to the Department of Health, was disinterested in their call for permanent employment: "*I can tell you that the payroll administration company doesn't care about us. If our task team says that it has a meeting, the payroll company does not understand or give us the go ahead to attend the meeting. We have to struggle to go to that meeting.*" (CHW, FGD, District A, Team 1).

The CHWs in rural sites were anxious about their contractual arrangement with the NGOs, as their employment was decided by the NGO managers. During our discussions, they seemed unable to openly discuss their employment concerns, as they feared being recalled from the government programme (where there was a possibility of permanent employment) by the NGO managers. The NGO managers had the power to deploy and recall the CHWs from the government CHW programme. These concerns often emerged after the audio-recording had stopped.

Career advancement opportunities

Some CHWs were frustrated by the lack of career progression opportunities in the field, as they wanted to establish a career in health care (e.g., to be trained as nurses). The CHW team in District B had young CHWs with matric qualifications who were interested in furthering their studies. They felt the Department of Health was not making opportunities available for

them: "*In our team, there are people with mathematics and physical science; why can't they take these people so that they could study for something like nursing, pharmacy and so forth? They can see that we love what we are doing. Not all of us have the money to go to private institutions to study. The government is failing us"* (CHW, FGD, District B). One of the CHWs was already studying towards a teaching qualification at a local university. This was not true for the other districts, where the majority of the CHWs did not possess a matric pass, which is a prerequisite to enrol for tertiary education. However, there was still a desire among the CHWs to be trained and promoted into better positions with benefits.

A representative of the CHWs in District A was concerned that the Department of Health provides short training courses but never considers them (CHWs) for promotion after the training: "*After some of them finished and got their certificates; they are still doing the same work, same level, same stipend. That is our biggest challenge. Why are there trainings that don't have opportunities?*" (CHW representative, Interview 1, District A). This view was shared by the CHWs: "*We complete trainings. At least when you have done the training, they should promote you but no we remain in the same posts.*" (CHW, FGD, District B). It appears there was no career advancement opportunities for the CHWs even after completing training.

Resources

When undertaking household visits, CHWs require resources such as blood pressure and glucose monitoring machines, stationary and a raincoat etc. At the inception of the programme, the Department of Health made provisions for the CHWs to have these resources, although some teams did not receive them: "*We only saw the boxes. One sister from clinic X did ask how come we don't have BP machines. We said we don't know. She promised to get us BP machines. We got 2 machines and we had to share them but now there are no batteries*" (CHW, FGD, District D, Team 2). During data collection, the majority of the CHWs still did not have these resources (Table 2).

The lack of equipment affected the CHW activities in the households: "*Some patients expect us to check their blood pressure and sugar level when we visit them. If I don't have the machines, they ask what is the use of me visiting them?*" (CHW, FGD, District D, Team 6). Another CHW commented: "*The patients keep on asking us to measure their BP and blood sugar… we always tell them that we don't have equipment. That makes people to undermine us; they say we are useless*." (CHW, FGD, District B).

A facility manager in District C was aware the CHWs needed resources, however, he felt helpless: "*They received backpacks, but the bags did not have all the equipment. The CHWs are supposed to have blood sugar machines but they don't have them. If the clinic were to distribute the glucose strips to all the CHWs, the clinic will be left with none and that wouldn't be good because they are very costly.*" (Facility Manager, Interview, District C, Team 4).

Space within the health facilities was an issue in both the urban and rural sites. A CHW commented: "… *sometimes we find that our things are missing or when you check your stuff you will find your things rearranged as if someone was looking for something, and you cannot ask anyone about it.*" (CHW, FGD, District C). The CHWs also bemoaned the lack of privacy while participating in capacity-building workshops: "…*we write pre-tests and post-tests weekly. When we write the tests, we need a quiet space to concentrate, but there will be facility staff members going back and forth while we are writing the test. While sitting here, another person would use the microwave"* (CHW, FGD, District C). In the rural sites, the CHWs did not have workspaces in the main facilities, instead they were accommodated in other buildings, which limited interactions and collaboration with facility-based staff members. However, teams with senior supervisors often had access to suitable spaces within the facility, as their supervisors were able to negotiate for them to use the spaces without being interrupted.

Uniforms

The government did not provide the CHWs with work uniform. The CHWs felt obliged to purchase the uniform, as they wanted the community to recognise them as members of the healthcare system. The CHWs felt if they visited the households dressed in private clothes, they will struggle to gain the trust and acceptance of the community. "*It is a must because you have to be presentable to the patients in the community, you cannot go to the community wearing a grey shirt, they will think you are a thief"* (CHW, FGD, District B). To achieve this end, they saved a portion of their stipend to buy the uniform. Some CHWs were unhappy to use their money to buy the uniform: "*The money is little but they still expect us to be presentable when we go to the households. We buy everything that we wear; they don't offer us anything like a t-shirt for work – nothing*" (CHW, FGD, District C, Team 2).

A facility manager in District C agreed that uniform plays a critical role in ensuring the CHWs are recognised as members of the local health facility: "*When someone looks presentable, they gain peoples' trust and attention easily. As long as the CHWs do not have uniform, name tags and continue receiving low stipends, the community will not take them seriously*" (Facility Manager, Interview, District C, Team 4).

Relationship with facility-based staff members

Across the different sites, the CHWs reported complex relationships with their supervisors, facility-based staff members and programme coordinators. Due to their low status in the health system, the CHWs felt neither appreciated nor respected by facility-based staff: "*They disrespect and undermine us but we do respect them, not that we are scared of them" (*CHW, FGD, District B). In some facilities, the CHWs who felt disrespected by facility staff resorted to physically fighting them as a way of asserting themselves (CHW, FGD, District B). Despite poor relationships with co-workers, the CHWs continued to assist the health facilities in their daily functions. We observed the CHWs delivering long-term medications to the elderly, tracing medication defaulters and referring their patients to health facilities for further medical assistance. However, the CHWs felt facility staff members delayed attending to the patients they had referred to the facility, and this affected their ability to bring uncooperative patients for care. These issues were better managed in facilities where a senior supervisor was present. The senior supervisor responsible for Team 1 negotiated with facility-staff members to support the CHWs with timely attendance to referred cases. This arrangement motivated the CHWs and built their work morale.

A facility manager argued there is a need to integrate the CHW programmes into PHC facilities: "*They introduced WBOT as a programme as if it is independent from the clinic hence there isn't unity between the WBOT and facility staff. Even worse they employed managers for the WBOT programme. This implies the facility and WBOT are two different entities. So, when they go to the facility manager to ask for medication, the facility refuses and says that they are finishing their stock*" (Facility Manager, Interview, District C, Team 4).

Supervision

There were visible differences in how supervision was provided at the different health facilities. In the urban sites, every morning before going into the community, the supervisor

provided the CHWs with in-service training focusing on the cases they attended the previous day and accompanied them on household visits to provide support. In the rural sites, CHWs were managed by senior supervisors, but there were no morning meetings before going into the community, and they operated without community supervision as their supervisors were not able to go to the field with them, mainly due to the lack of transport.

Infrequent supervision was a concern for the CHWs and their representatives. In District A, the representatives complained that the supervisors were not investing sufficient time to attend to the needs of the CHWs, instead spent most of their time in the facilities: "*When they get in the clinic, they do clinical work, like children's immunizations, family planning, or whatever. They don't support the CHW programme, you understand? It is the challenge that we have, and you find when the CHWs tell the [CHW representatives] about this, it causes conflict with the supervisors*" (CHW Representative, Interview 2, District A). The representatives were unhappy that the supervisors spent most of their time in the health facilities while they were employed to oversee the CHWs activities in the community. The Department of Health, which is the employer of the supervisors, expect all CHW supervisors to spend 70% of their time in the community, 30% in facilities mainly performing administrative duties related to their functions.

Table 2: Description of CHW programmes and labour representation

	District A (semi-urban)	**District B (semi-urban)**	**District C (semi-urban)**	**District D (rural)**
Programme management	Government			Government; contracted to local NGOs
Salaries disbursement	Paid by a payroll administration company contracted by the government			Paid by NGOs contracted by the government; delays in disbursing salaries
Access to resources	The CHWs lacked basic working resources and tools such as stationary, equipment and office space to store patients' records and receive supervision			
Member of union/ advocacy group	Yes; prior to joining a formal labour union, the CHWs were represented by a task team	Yes	Yes	No

	District A (semi-urban)	District B (semi-urban)	District C (semi-urban)	District D (rural)
Labour mobilisation activities	• Regular protests to demand permanent employment • Facility stay aways	Protests to demand permanent employment	Protests to demand permanent employment	None
Outcomes of task team and union mobilisation	• Monthly stipend increased • Payroll administration company contract not renewed • In District A, the task team negotiated with health facilities to attend to CHWs' needs (e.g. resources)			Monthly stipend increased

CHW labour mobilisation

As described above, The CHWs were frustrated by the lack of working tools, poor remuneration and absence of career advancement opportunities. In this section, we highlight the CHWs' activities to challenge the government to improve their conditions of employment.

The emergence of CHW representation

Prior to joining the nation-wide CHW programme in 2011, the CHWs worked for NGOs providing home-based care services. While in the NGOs, the CHWs established a committee to challenge the exploitation perpetuated by the organisations' management (Table 2). After joining the national programme, representatives of the CHWs were elected to what became known as the task team. The task team is made up of CHWs, lay counsellors and health promoters working in different health facilities within the district. These CHW representatives decided not to become members of established labour unions, as existing unions were perceived as ineffective and with a history of siding with management. A member of the task team commented: "*We have tried to be under a labour union, but whenever they left to go to the negotiations, they did not take us. They don't even take one of us to be a part of the negotiations, even if the person is just an observer*" (CHW representative, Interview 1, District A). Another member added: "*The union that we will agree to be under will be a union that we will be a part of whenever they go to negotiate for us, or whatever. We must be included and we must be a part of that negotiation*" (CHW representative, Interview 1, District A).

The task team operating in District A ensured each of the 4 sub-districts had a representative: "*We have divided ourselves according to clinics; let us say he/she works at facility X. He/she*

is the one who is responsible for the facilities that are closer to her facility. I will also be responsible for facilities closer to where I work. We divide ourselves like that" (CHW representative, Interview 2, District A). The task team members are dependent on donations from CHWs to fund their travelling costs between the facilities.

In Districts B and C, there were also emerging groups of CHWs who advocated for the rights of the CHWs. In the rural sites, where the programme was under the management of NGOs, CHWs did not have formal representation. The CHWs seemed fearful of being outspoken about the need to have a labour union to represent them.

Negotiating for permanent employment

Since 2015, the CHW leaders have led multiple strikes and stay aways in Gauteng province. One strike was triggered by the appointment of the payroll administration company without consulting the CHWs. The CHWs were concerned that the provincial government was able to award a multi-million contract but never considered their demands for permanent employment: "*We wanted to understand why we were tendered without our consent? The department needs our services; why is it outsourcing us when it has money for tenders? That was our concern.*" (CHW representative, Interview 2, District A). Another member of the task team commented: "*We had a strike and spent about 3 days sleeping there. We came back and went back again to fight and spill rubbish in their offices, unfortunately, we fought without any luck*" (CHW representative, Interview 3, District A).

The task team leaders were arrested after embarking on this violent and unprotected strike[12]. During the strike and court appearances, the task team encouraged the CHWs to withdraw their services and to protest in support of their leaders at the court as their case was being heard. Some CHWs were not keen to participate, as it meant leaving their workplace and neglecting patients. Some CHWs who chose not to participate were threatened with violence. A facility staff member commented: *"They all donated a R10 for transport for those who will go and support the task team. The CHWs who wanted to work were receiving threats that they will come for them"* (Nurse Mentor, Interview 3, District A). Following the release of the task team members from jail, the CHWs were ordered to withdraw their services in

[12] Non-procedural, or unprotected strike, is one where the strikers have not complied with the requirements of the South African Labour Relations Act of 1995 before going on strike. This removes the employer's opportunity to develop contingency plans for running the business during the strike.

celebration. A facility staff member commented: "*On Wednesday the 23rd, CHWs' didn't come to work because they were told by the task team to go on a 3 day holiday to celebrate their struggle and past imprisonment of their two task team leaders. There were no formal notification of this holiday and all WBOT leaders, including supervisors didn't know except district management*" (Nurse Mentor, Interview 2, District A).

After the unprotected strike action, the task team members continued efforts to improve CHWs conditions of employment. Within the health facilities, they focused on addressing CHW conflicts with facility staff members and lack of resources: "*We go to the facility and talk to the management and the CHWs about their issues. We request for a space for the CHWs, and if there is no space, the space must be created and they must have the space*" (CHW representative, Interview 2, District A). One of the accusations was that supervisors neglected the CHWs by not going to the community with them, the CHWs are left to fend for themselves while out in the community. The task team also ordered CHWs who were assisting facilities with administrative duties to withdraw their services: **"***She stopped because the task team told her to stop. They must focus on being the CHWs. They are not receptionists*" (Nurse Mentor, Interview 4, District A).

Government officials in District A called a meeting aimed at resolving the tension between the CHWs and supervisors. At this meeting, the CHW representatives verbally abused the supervisors in the presence of the officials: "*Some of the [supervisors] were literally crying and some didn't want to talk. They were busy going up and down, going to the bathroom. They were talking outside. I don't know what they were saying*" (Nurse Mentor, Interview 3, District A). Due to the confrontational approach adopted by the task team, the government officials didn't defend the supervisors or allow the supervisors to speak for themselves. As a result, the supervisors were left exposed at the meeting and the militant approach adopted by the task team created greater hostility between the parties. The nurse mentor reported: "*The task team has more influence than unions or district coordinators because they have control over the CHWs. For example, if they were to call the CHWs today and tell them not to go to work, the CHWs will do exactly that*" (Nurse Mentor, Interview 3, District A).

To resolve the conflicts, at the suggestion of a nurse mentor employed in two of the health facilities where we collected data, the task team was invited to a meeting to discuss areas of discomfort with supervisors and to work as partners. This engagement enabled the

supervisors to be sensitive to the CHWs' attempts to seek improved conditions of employment. Post this meeting, the task team changed their approach to dealing with conflicts: "*When there is a concern, the person who complains is called together with the person that they are complaining about. We meet them in the same room. We listen to the complainant story, at the same time the defendant is present and is also listening and able to respond*" (CHW representative, Interview 2, District A).

In 2018, the Gauteng provincial legislature, an oversight body, initiated a meeting of the CHWs to learn about their challenges in providing community-based care under the national programme. All CHWs from the province were invited to the meeting, those who attended expressed their concerns over their yearly contracts, meagre remuneration, lack of working tools and poor relationships with facility-based staff: "*Mr Motsoaledi [Minister of Health] promised us in November that he is absorbing us. When we were called to Pretoria [National DoH] we thought that we were going to sign contracts as promised but he failed us"* (CHW, FGD, District C). The CHWs expressed their frustration at the lack of progress being made by the Department of Health to provide permanent employment. The legislature promised to attend to the CHWs grievances and provide feedback.

Labour unions

Though the task team held numerous meetings with district management, they had limited negotiating powers, as they could not participate in the Department of Health Bargaining Council (DOHBC). The DOHBC is a formal structure consisting of registered unions, where workers' grievances (e.g., need for improved remuneration) are tabled for consideration by the employer. The task team needed representation in the DOHBC to escalate their demands. In 2018, the CHWs in District A joined the National, Education, Health and Allied Workers Union (NEHAWU), a registered labour union, to represent them in the DOHBC. The union was entrusted with negotiating for permanent employment, decent remuneration for the CHWs and other benefits associated with formal employment (e.g. leave allowance). One of the representatives of CHWs was also co-opted into the union's regional structures. Some CHWs did not join the union, as the decision appeared rushed, with minimal consultation. Others were concerned that they would not be able to afford the monthly premiums.

Outcome of the task team and union mobilisations

When fieldwork ended, the task team and union had not been able to secure permanent employment for the CHWs. However, the union had negotiated with the Department of Health to increase the CHW stipend from R2 500 (136 USD) to R3 500 (192 USD) (Table 2). The CHWs felt motivated by the increment: "*The increase has motivated me because since we got the increase, I have been working harder than before*" (CHW, Interview, District A). Another CHW added with the increment they are able to afford necessities and uniform: "*Like now, there is a yellow T-shirt costing about R150, we are able to buy and pay for transport to come to work. On the other side, we buy groceries at home."* (CHW, Interview, District A).

Although the CHWs were excited to receive the increment, they still wanted to be absorbed as permanent workers by the Department of Health. The union committed to continue engaging the Department on this issue and other concerns such as leave allowance.

In health facilities, the task team recorded some successes, a member of the task team commented: "*In facility X, the CHWs did not have access to a photocopy machine because they did not contribute to the facility budget to buy paper for the photocopy machine… how do you expect someone who is being underpaid to have money for such expenses? We fought for them to have access to the printer*" (CHW representative, Interview 2, District A).

Post the study and during the height of COVID-19 in 2020, when the need for motivated and effective CHWs became much more obvious to decision makers, the semi-urban-based teams received permanent employment with remuneration of between R9-11,000 (500-600 USD). The other CHW teams located in the rural areas did not receive this increment.

6.1.5. Discussion

In the paper, we have reported the CHWs were poorly supervised, resourced and received meagre remuneration, their employment outsourced, without employment benefits and protection. In the semi-urban sites, CHWs established a task team to represent them but refused to join a formal union due to the fear that unions would push management insufficiently for their demands. The task team held regular meetings and led protests against clinic, district and provincial management to demand improved conditions of employment. After the recognition by the local provincial legislature, the task team joined a labour union

(NEHAWU) in order to be able to participate in the local bargaining council. Though they were not successful in getting the government to provide permanent employment, the union negotiated an increase in stipend from R2 500 to R3 500. In contrast, in the rural sites, the CHWs were not actively demanding permanent employment due to their employment contracts being partly managed by NGOs; they were fearful of being recalled from the government programme.

The study findings are in line with the literature, studies in LMICs have shown many CHWs are functioning without the necessary resources and support [6]. The CHWs' lack of critical resources such as medicines, blood pressure and glucose machines make it difficult for them to provide the necessary care [3, 6]. The poor integration of CHW programmes into healthcare systems also demotivates the CHWs, as this means they often have to function without the backing of facility staff members [4, 6, 7]. The CHWs need health system support to provide comprehensive and quality health support to marginalised communities.

The study also reported that CHWs felt stuck as there were no career progression opportunities for them. The 2018 WHO guidelines for the optimisation of CHWs performance recommended countries make available career progression pathways for CHWs [6]. This hasn't been the case for CHWs in LMICs as many of them are on short-term contracts and paid a meagre stipend [7]. Investing in CHWs' professional development has short and long-term benefits. In the short term, CHWs work morale and motivation maybe enhanced, while in the long run their performance and credibility in the healthcare system and community may be boosted [6]. It is therefore crucial for countries like South Africa to prioritise upskilling CHWs with the intention of promoting them.

Since the end of data collection, the South African CHWs have engaged in further industrial action. In 2019, CHWs based in the Gauteng province led a protest against the Provincial Department of Health where they were demanding to be absorbed as permanent employees [22]. In 2021, the NEHAWU took the Department of Health to labour court to declare the 12 months contracts illegal and in contravention of the national labour laws, which state employment cannot be offered on a renewable basis for a period exceeding 3 months [23, 24]. The court arbitrator ruled against the union citing a 2018 agreement signed by government and unions. The agreement refers to government dependence on an external grant to pay CHW current salaries, such that CHWs permanent employment is unsustainable.

In the Mpumalanga province, there has been less activities by the CHWs to challenge the government to improve their conditions of employment.

Studies show the COVID-19 pandemic reinforced the need for stable CHW programmes [27-29]. In many countries, during the height of the pandemic, CHWs undertook case identification, participated in screening of people with COVID-19 symptoms, traced contacts and encouraged vaccine uptake [27-29]. However, poor access to working tools, supportive supervision and decent remuneration limited their effectiveness. A multi-country study conducted in Bangladesh, Pakistan, Sierra Leone, Kenya and Ethiopia showed CHWs were often expected to provide these services without personal protective equipment (PPE), and were unremunerated for the extra tasks they carried out during the pandemic [30]. In Brazil, at the height of COVID-19 infections, CHWs protested when they were expected to provide services while being underpaid, poorly trained and without PPE [31]. The Brazilian CHWs used social media and weekly webinars supported by labour unions to demand safer employment conditions. They took advantage of the vulnerabilities brought by the COVID-19 pandemic and exercised their agency and capacity to take strategic action [31]. This resulted in some municipalities beginning to purchase PPEs for CHWs undertaking household visits, while some invested in telemedicine to limit CHWs' direct contact with patients. As in Brazil, the pandemic in South Africa also highlighted the important role that CHWs play in reaching vulnerable groups and getting them to care [25, 26].

As highlighted by the current study, in many countries CHWs are without union representation to protect their labour rights [32, 33]. However, following the development of nationwide programmes in different countries, the shift from being disease-specific to comprehensive programmes [15], CHWs have begun to demand better employment conditions [19, 20]. In India, accredited social health activists' (ASHAs) and anganwadis'[13] unions have regularly led marches to demand formal employment with benefits [34]. Similar to South Africa, the unions have achieved small gains in terms of increased pay and social security benefits [34]. During the peak of the COVID pandemic, the Gauteng government offered the CHWs employment contracts similar to other permanently employed government staff members such as nurses [25, 26].

[13] These workers care for the health and wellbeing of women, children and other socioeconomically deprived groups.

The study had several strengths and limitations. We spent 3 years collecting data in district A and this allowed us to familiarise ourselves with the history of the programme and conflicts between the CHWs and the Department of Health in the district. In the other districts, data collection was limited to three months. Due to our prolonged stay in District A, familiarity with the CHW programme and labour mobilisation, we used the site as the main comparator to the other sites. Second, the data collection tools were written in English, some participants preferred being interviewed in other local languages (e.g. IsiZulu and Sesotho). To achieve consistency of the translations, as part of pre fieldwork training, data collectors participated in role-plays to practice posing the same question in the different languages. This process allowed the data collectors to be comfortable and consistent in posing the interview questions.

6.1.6. Conclusion and recommendations

Consistent mobilisation as demonstrated by the urban-based teams enabled the CHWs to successfully negotiate salary increments and advance their call for permanent employment. However, in the rural sites, the CHWs were less able to join or establish labour representation due to fear of reprisal from NGOs management. It is important that CHWs are afforded the right to belong to a labour union in order to be able to negotiate for decent employment conditions. In optimising the motivation and performance of CHWs, the government need to prioritise the full integration of CHWs into the healthcare system, where they will be afforded their labour rights and support. This could include a provision of a decent salary with benefits such as leave and career progression opportunities for interested CHWs. It is further recommended that future studies prioritise the exploration of the CHWs conditions of employment post the COVID-19 pandemic. As previously stated, the pandemic highlighted the important role CHWs play in delivering healthcare to marginalised communities. Therefore it is important to assess whether their conditions have changed since the pandemic.

CHAPTER 7: PhD PAPER 3

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7.1. Title: Supportive supervision from a roving nurse mentor in a community health worker programme: a process evaluation in South Africa

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7.1.1. Abstract

Background: Many low and middle- income countries (LMICs) are repositioning community health worker (CHW) programmes to provide a more comprehensive range of promotive and preventive services and referrals to the formal health service. However, insufficient supervision, fragmented programmes, and the low literacy levels of CHWs often result in the under-performance. We evaluate the impact of a nurse mentor working with CHW teams in a semi-rural area of South Africa.

Methods: We evaluated supportive supervision and mentorship of two CHW teams and their supervisors by a roving professional nurse. Longitudinal qualitative data collection including in-depth interviews, focus groups and observations prior to the intervention, during the intervention, and 6 months post-intervention involving CHWs, their supervisors, clients and facility staff and community representatives were used to assess how the effects of the intervention were generated and sustained.

Results: The nurse mentor operated in an environment of resource shortages, conflicts between CHWs and facility staff, and an active CHW labour union. Over 14 months, the mentor was able to (1) support and train CHWs and their supervisors to gain and practice new skills, (2) address their fears of failing and (3) establish operational systems to address inefficiencies in the CHWs' activities, resulting in improved service provision. Towards the end of the intervention the direct employment of the CHWs by the Department of Health and an increase in their stipend added to their motivation and integration into the local primary care clinic team. However, given the communities' focus on accessing government housing, rather than better healthcare, and volatile nature of the communities, the nurse mentor was not able to establish a collaboration with local structures.

Conclusions: A roving nurse mentor overseeing several CHW teams within a district healthcare system is a feasible option, particularly in a context where there is a shortage of qualified supervisors to support CHWs activities. A roving nurse mentor can contribute to the knowledge and skills development of the CHWs and enhance the capacity of junior supervisors. However, the long-term sustainability of the effects of intervention is dependent on CHWs' formal employment by the Department of Health.

Key words: community health workers, process evaluation, intervention, South Africa, health system integration

7.1.2. Background

Low and middle income countries (LMICs) often have a patchwork of community health worker (CHW) programmes, sometimes led by non-government organisations (NGOs), reaching some communities but not others, focused on specific disease (e.g. HIV/AIDS) or population groups (e.g. child health) [22, 139]. The international calls for universal health care have led some countries to attempt to achieve wider population reach with their CHW programmes [140, 141]. Many LMICs are exploring ways to utilise CHW programmes to respond to wider range of conditions, including non-communicable and infectious diseases [140] and increasing CHWs' roles in promotive and preventative care [142]. The importance of the CHWs' role has been given greater prominence and urgency during the COVID-19 pandemic, with CHWs expected to educate the public and to identify possible COVID cases [134, 143, 144]. The shift to more comprehensive programmes, in terms of population coverage and health conditions, requires greater supervision to manage, train, mentor and monitor CHWs and to facilitate links with the healthcare system and community structures [25].

South Africa has a long history of CHW programmes starting in the 1940s [145]. Since democracy, CHW programmes, despite considerable fragmentation, have played an important role in extending healthcare services to needy populations [16].With recent reforms of primary health care services, South Africa is establishing a nationwide CHW programme, covering a more comprehensive range of health conditions than in the past [25, 91, 146]. The CHW programme is known locally as the ward-based outreach team (WBOT) programme [29, 82]). Each WBOT is meant to comprise a team of at least 6 CHWs, a nurse (outreach team supervisor), environmental officer and health promoter. The outreach team supervisor role is to provide field supervision to the CHWs during household visits, ensure they [CHWs] have the resources that they require (e.g. stationary) to fulfil their duties, and help establish team relationship with community structures. Each WBOT, operating within a facility's catchment area, provides promotive and preventive services to households. CHWs, who were previously working for NGOs contracted by the South African Department of Health (DoH) became members of WBOTs. While the DoH required CHWs to have passed their final school examination in order to be transferred to the new programme, this requirement wasn't always implemented. As a result, the majority of the CHWs recruited into the new

programme had low literacy levels. Similar to other contexts, South Africa has a limited number of health professionals available to be the outreach team leaders who oversee the CHWs, and many CHW teams are functioning without adequate supervision and remain poorly integrated into the healthcare systems [25, 147, 148].

CHWs joining these new teams undertake training on identification of the need for antenatal and post-natal care, monitoring immunization and adherence to long-term medication, screening for malnutrition, TB, gender-based violence, making referrals to health and social services, and following up on patients who need to visit the clinic. The training is delivered in two phases, the first with a written examination (level 1), the second with a practical assessment in the field (level 2). Each CHW team, consist of approximately 6 members providing services to multiple households [82]. In Sedibeng District, where this study took place, the CHWs also delivered long term medication each month to elderly or disabled patients.

In this paper we report on a longitudinal qualitative process evaluation, describing the impact of a roving nurse mentor. We describe if and how she built the capacity of the CHW teams and their supervisors, their relationships with both the local health system and community structures, their impact, and whether and how the effect was sustained once the nurse mentor left. We explored the iterative interaction between the context the intervention and the moderating factors that lead to a change. While we will report on the changes in quantitative outcomes elsewhere, it is important to mention here that the intervention led to an increase in the proportion of households who received a visit in the last year from 20% to 30%. Moreover, the CHWs provided care to a greater range of people and performed a greater range of more complex tasks. For further papers on the situation analysis see [25, 149] , and tool development see [146].

7.1.3. Methods

Study design

We used the Medical Research Council process evaluation framework to guide our study design [101, 150, 151]. Initially, we set out the broad parameters of the intervention (see below) which remained constant. We sought to identify and understand the iterative interactions between the intervention, its context, moderating factors and how the intervention changed over time, how these interactions led to impact (or not) and whether this impact was sustained.

To capture change over time, we collected qualitative data in three time periods: 1) prior to the intervention; 2) during the intervention (at three time points); and 3) six months post intervention (Table 2). Data collection prior to the intervention formed part of a larger situational analysis conducted from September 2016 to February 2017 in which we studied six CHW teams with different supervision configurations [25, 146]. The intervention organized in three phases of data collection was implemented from August 2017 to November 2018. Our final data collection period was from May to September 2019.

Intervention design

Our situational analysis demonstrated that CHW teams led by an experienced nurse were well integrated in the healthcare system and received supportive supervision [25]. However, CHW teams led by a junior nurse were poorly integrated into the health system and received insufficient supervision [25]. The latter resulted in relatively poor quality care and low household coverage[149]. We shared these findings with district and provincial stakeholders at an intervention design workshop. Given the national shortage of experienced professional nurses, we agreed our intervention would be an experienced professional nurse (nurse mentor), who would work with two CHW teams which had junior nurses as supervisors, moving between the two teams. If a nurse mentor was, in future, employed by the health services to build the capacity of the CHW teams, intention was the nurse-mentor could then move on to build the capacity of other CHW teams and their supervisors, periodically returning to check on teams that she has already worked with. The nurse mentor was expected to: strengthen the capacity of the CHW team including improving clinical knowledge of the supervisors and the CHWs, their skills in client engagement and providing a role model for supportive supervision; strengthen relationships between the CHW team, their supervisor and clinic staff; and strengthen relationships with community organisations and political structures.

Nurse mentor characteristics and responsibilities

The appointed nurse mentor had a 4-year nursing degree and 15 years' experience in nursing of which 6 years was in supervisory roles in other CHW programmes. She assessed the needs of the CHWs and their supervisors. The mentor coached the CHWs and the supervisors on the DoH CHW curriculum and organized for the CHWs to sit the examination and to be assessed in the field. The nurse mentor rotated between the two facilities, allowing the supervisors to take charge of the CHWs in her absence and demonstrate the capability to

manage the teams on their own. She initiated activities to facilitate collaboration between the CHWs and facility staff and with community structures (e.g., local political leaders and NGOs). Our process evaluation focused on the four common CHWs activities: household registration, medication delivery, patient follow-up, and community engagement (Table 1).

Table 1: CHWs priority activities

Activity	Description
Household registration	Each CHW is expected to register new households to identify individuals or families in need of care. Registration of a household requires the completion of a 9-item questionnaire.
Medication delivery	The CHWs are also responsible for the delivery of medication to elderly patients on a monthly basis. On the 6 months, patients have to return to the clinic for a repeat prescription to be issued.
Patient follow-up	The CHWs are responsible for tracing patients who fail to attend clinic appointments.
Community engagement	The team supervisors are expected to engage with community leaders, local NGOs and services to facilitate collaboration and improve the functioning of the programme.

Study setting

Our stakeholders advised on the selection of our intervention sites. These were WBOT teams located in rural areas of Sedibeng district, led by junior nurses, with each team expected to provide services to a population of about 6 000 with at least 1 000 to 1 500 households [82]. Sedibeng Health District is relatively affluent by South African standards, yet over 20% of the residents fall below the food poverty line [152]. Outside the urban areas, disadvantaged communities with inadequate shelter, food insecurity and high disease burdens have limited access to services such as clinics, transport, water, and electricity. In the two study sites, located approximately 30km from the district town, residents' dwellings consisted mainly of government provided housing (small brick houses) and informal settlements (shacks made of plastic and re-used corrugated iron). The majority of residents in the two sites were unemployed and dependent on government social grants.

Data collection

Our data collection methods were observations, interviews, and focus groups (Table 2). The first author (HM), a doctoral researcher, undertook data collection prior to the intervention and supervised data collection team throughout the study. The research team trained the data collectors in community orientated health care, qualitative data collection and research ethics. Data collection was in English but where a participant struggled to understand, the team clarified using local languages (Sesotho and IsiZulu). There was no reported refusal to

participate in the study. Audio recordings were transcribed verbatim and checked for accuracy by members of the research team.

The research team fed back initial findings to the CHWs and facility staff participants after the first two rounds of data collection at meetings held at each of the CHW team's clinic base. These feedback meetings allowed the participants to comment on the study findings, and the research team to refine the next round our data collection [153]. The research team had no prior personal and professional relationship with the study sites and participants.

Focus groups

We held 4 focus groups with the CHWs, two prior to the intervention and two in the six months post intervention. Each focus group had approximately 10 participants, both men and women, although very few of the CHW were men and all CHWs at the 6 facilities were invited to participate. In the first, we asked about CHW experiences of the CHW programme, their working conditions, and perceptions of its successes and challenges (see additional file 4). We asked CHW to complete a short questionnaire about their education and years of experience. Post intervention, we asked about their experiences since the nurse mentor left, and whether their routines had changed. The focus groups lasted between one and two hours.

Observations

We designed observation templates and refined them through role-plays involving the data collectors (see additional file 3) [154]. At each site, we observed CHW meetings, household visits and supervision of CHWs, both in the community and in the facility. In the facilities, we observed interactions between patients, facility staff members and members of the CHW team. CHWs worked in pairs for household visits. For observation of these visits, we observed the same pair of CHWs for three days in a row, so they became accustomed to the fieldworker being present. The fieldworker asked the household members for permission to observe the CHW.

Interviews

We undertook 168 semi-structured interviews with the CHWs and their supervisors and with a purposive sample of health facility staff members, patients and community representatives who were involved with and/or had knowledge of the CHW programme in the district (see table 2). The interviews lasted 30-60 min each. With CHWs we asked about home visits observed prior to the interview (see additional file 1). With the supervisor and facility staff we asked about their interaction with the CHW team, benefits and challenges of the CHW

programme and the intervention. We asked clients and community representatives about the care provided by the CHWs, experiences of care at the facility and relationships between community structures (e.g. NGOs) and CHW programme. We also interviewed the nurse mentor and reviewed the weekly reports she submitted describing the programme's activities, challenges and achievements.

Table 2: Number and type of respondents in each data collection phase

Data collection method	**Type of participant**	**Prior to intervention (2 sites) Sept 2016**	**During intervention (2 sites) August 2017- November 2018**			**Six months post-intervention (2 sites) May 2019**	**Total**
			Period 1	Period 2	Period 3		
FGD	CHW	2	-	-	-	2	4
Obs days	CHW (with & without supervisor)	40	7	9	7	24	87
	CHW (with Nurse Mentor & Supervisor)	n/a	16	11	6	n/a	33
In-depth interviews	CHW	-	10	11	4	18	43
	Supervisor	2	5	4	2	2	13
	Nurse Mentor	n/a	-	2	2	n/a	4
	Facility staff members	3	15	5	6	10	39
	Clients	28	11	7	2	-	48
	Community representatives	8	-	-	13	-	21
Reports reviewed	Nurse mentor	-	10	18	8	-	36

Data analysis

We drew together all the data for each team and associated facility. We extracted data from the original transcripts into a word document in chronological order, summarizing data and including verbatim quotations. This process increased our familiarity with the data, reduced the considerable volume of the data and allowed assessment of change over time. The first author (HM) did the extraction and made weekly presentations to the research team, who checked the extracted data against the raw dataset, until the research team was confident that no significant data was being omitted. Once the data extraction was complete, following thematic analysis method [108], we developed a coding system that included CHWs priority activities and emerging themes (such as organizational work systems, staff relationships, CHWs unionisation and healthcare system integration) and coded the extracted data using NVIVO 12 software. The coding was completed by the first author, with weekly discussion with the wider research team. Emerging themes were grouped together using the CHWs priority activities. The coded data was synthesized to understand how the study participants responded to the nurse mentor's activities meant to improve their performance in household

registration, medication delivery, patient follow up and building relations with community structures, and contextual influences and what the outcomes were.

7.1.4. Findings

Training and resources

Prior to the intervention, both supervisors had been in post for four months at the start of the study. They had completed 2-year nursing qualification and 2-3 years post-training work experience but had not worked with CHWs before. One of the supervisors (Team 2) originated from outside the province and sometimes appeared uneasy supervising the CHWs, as the majority of the CHWs were local women and older than her. The supervisor in Team 1 was from the district, assertive and managed a relatively younger group of CHWs (Table 3).

Prior to the intervention, the CHWs' length of service ranged between 2 – 4 years. Many of the CHWs had not completed their final school leaving qualification (Table 3). Only a few of the CHWs had completed Level 1 CHW training, and none had completed the Levels 2 or 3 CHW training. Further details on the characteristics of the CHWs are provided elsewhere[149].

Table: 3: CHW team members characteristics

Category	**Team 1**	**Team 2**
Supervisor		
No. of enrolled nurses	1	1
Age (years)	36	31
Mean years as nurse	5	2
Years in programme	0.3	0.3
CHW		
No. of CHWs per team	14	20
Mean age in years (range)	42 (23–58)	33 (23–54)
Mean years (range) as CHW	10 (3–9)	6 (5–17)
No. of CHWs who have finished high school education	25%	33%
No. of CHWs who have passed phase 1 training	2	1
No. of CHWs who have passed Phase 2 training	0	0

During data collection prior to the intervention, the CHW teams were provided with equipment bags (one bag per pair of CHW), containing blood pressure and glucose machines, weight scales, bandages and umbrellas. In one team, the CHWs had not received training on how to use the manual blood pressure machines provided. By the time of the intervention, much of the equipment was faulty. The CHWs shared the remaining working equipment; despite informing the district office, the faulty equipment was not replaced or repaired. The Team 2 CHWs held their work planning meetings in the facility meeting room, however the

room was often used by nurses, and then the CHWs had to move outside the facility. CHW commented: "*When they [nurses] like they don't even tell you that they have a meeting; they just enter the room… you just know that you have to go outside"* (Interview, CHW4, Team 2). Team 1 CHWs, based in a smaller facility, had no room to use, and met their supervisors outside.

Prior to the intervention, according to interviews with CHW team members, CHWs needed to make copies of their various forms that they use during household visits (e.g., household registration and referral forms). However, according to the team supervisors, the photocopy machines were often broken or out of ink. Staff had to contribute their own funds to purchase ink, which many of the CHWs could not afford, and so didn't make copies. The supervisors had to travel to the sub-district office (30kms away) to make copies. (During the intervention, the nurse mentor occasionally provided copies of stationary so the CHWs were able to undertake their work). CHWs had to use their own funds to purchase a notebook and pen to record daily activities; many used loose pieces of papers to record the details of visits. Due to space constraints within the two facilities, the CHWs kept completed client forms at home. This practice had a negative impact on the CHWs' work, as forms were rarely brought back to the clinic and were not used to reporting CHW activities.

Conditions of employment and unionisation

At the beginning of the study, the CHWs were a contracted labour force managed by a private administrative payroll company. They received a stipend of R2 500 (143 USD) per month. The facility staff members expressed dismissive attitudes towards the CHWs. A CHW commented: "*The facility manager tells us that we are not part of the clinic [because they were contracted to the payroll company] so there's nothing she can do for us'* (Interview, CHW8, Team 1). The CHWs felt belittled: "*The peer educators, HIV/AIDS counsellor we all go together to sign the same contract, but they are treated as if they are more educated than us, they call us street maids"* (CHW-FGD, Team 2).

A task team was established by the CHWs to demand improved conditions of employment. The task team consisted of CHWs, lay counsellors and health promoters from the district. Only a few CHWs from our study sites participated in the task team meetings, as they were held in the district town and transport was expensive. A greater number of the CHWs participated in protests, which were often one day 'stay-aways'; one militant CHW

threatened to report CHWs to the task team if they went to work. Clinic staff often asked the supervisors and CHWs to do facility-based work when they should be in the community; the CHWs were told by the task team to stop activities in the facilities, including those activities that were part of the CHW programme (e.g., assisting nurses to retrieve CHW patient files, practicing taking blood pressure measurements in the vital signs room). They were also told not to work when the supervisors were not present, or if it was raining.

Towards the end of the intervention, the CHWs were formally employed by the Provincial Department of Health (PDoH) in June 2018. Their monthly stipend was increased to the minimum wage of R3 500 (200 USD). The increment encouraged the CHWs: "*It has motivated me to work harder than before"* (Interview, CHW, Team 2). Some CHWs used the increment to invest in the education of their children: "*I am now able to save for my child secondary school education. I have been saving R1 000 every month, so when she passes matric I am able to pay for her college fees*" (Interview, CHW5, Team 2).

The following sections focus on the findings from the four focal areas of the nurse mentor intervention – household registration, medication delivery, patient follow-up and community engagement.

Household registration

Prior to intervention

Prior to the intervention, the number of households being registered was low. Moreover, the CHWs often asked less than half of the nine household registration questions, partly because they did not understand the questions as they are written in English, or the purpose of the questions.

During the intervention

The mentor gave training sessions, facilitated role plays where enrolled nurses and CHWs could practice engaging with household members, and accompanied ENs and CHWs on household visits, supporting them as they practiced their new skills. The mentor supported and supervised the two EN supervisors, demonstrating how to provide supportive supervision during household visits with the CHWs. In early training sessions and household visits, one supervisor was reluctant to participate in activities. The nurse mentor commented "*At first [the supervisors] were struggling because they did not know the content themselves especially the supervisor from Team 2. She was frustrated."* (Interview, Nurse mentor)

Several of the CHWs were showing resistance to receiving instruction from the nurse mentor and were obstructive or often absent. However, the CHWs came to appreciate the assistance they received from the mentor: "*At first I was scared of the nurse mentor but now I enjoy learning new things from her"* (Interview, CHW3, Team 2). The mentor took time to unpack complex topics: "*She was giving a lesson about a particular health condition. I could not understand her, so I approached her. She sat me down and went over the lesson until I understood"* (Interview, CHW6, Team 1). This patience relieved some of the CHWs anxieties. However, when the mentor felt the CHWs had not paid attention or applied themselves sufficiently, she would get irritated. "*The nurse mentor sometimes shouts at me in front of patients when I make mistakes. She doesn't keep quiet and let me finish what I am doing and correct me later, she shouts at you right there"* (Interview, CHW8, Team 1). In protest, some withdrew from the training, and reported to the task team that the nurse mentor is forcing them to participate in-service training against their will. This resulted in a tension, with the mentor and supervisors being threatened by task team members when attending district meetings, particularly when they raised issues relating to CHWs poor performance. The mentor adopted a gentler approach, which helped soften the stance of the CHWs; overtime the CHWs came to realise the mentor didn't want to intimidate them, rather to ensure they worked to improve their performance "*the nurse mentor is the type of person who just want to see progress in your work.*" (Interview, CHW2, Team 1).

End of intervention

The majority of the CHW passed both the Level 1 and 2 training as a result of the nurse mentor's coaching; only 1 in Team 1 and 3 in Team 2 failed due to their low level of literacy. These individuals were moved to a home-based care programme. The training, and passing their examinations, boosted the CHWs' morale: "*When I get to a household, I don't feel ashamed anymore, I enter with confidence because I know my work"* (Interview, CHW7, Team 1). Patients expressed their appreciation: "*The patient told the mentor and supervisor that she is happy with the CHWs. Before the intervention, the CHW's visit was brief. The visits now take longer and the [CHWs] monitor her BP and sugar level"* (Interview, Client 3, Team 1). The supervisor, who appeared passive and defensive early on, grew in confidence and began to take initiative: "*She is very active and engaging when supervising the CHWs. She informs them if they have not given a patient appropriate health information during their visits"* (Nurse mentor; interview).

6 months post-intervention

In the post-intervention period, the supervisors continued to accompany the CHWs on household visits: "*She assists us; recently there was a problem with one lady who had not brought her children to the clinic for vaccination. The supervisor went to the household with the CHWs to speak to her."* The woman, subsequently, took the children to the facility (Interview, CHW5, Team 2). The supervisor for Team 2 adopted a sensitive approach when supervising the CHW: "*She prefers to keep quiet while in the households even if you make mistakes. It is only when we meet at the clinic that she will identify your errors and advise you how to fix them"* (Interview, CHW2, Team 2). The CHWs appreciated this approach.

The supervisors continued to provide training to the CHWs every Friday: *"Last week Friday, she trained us on pregnancy screening, STIs, HIV and heart attack"* (FGD, CHW, Team 1). When asked, CHWs prepared informative lessons on a given topic to share with their colleagues.

Chronic medication delivery

Prior to intervention

The medication delivery process was as follows: a CHW collects a patient's clinic card from the patient's home and brings it to the clerk at the facility who retrieve the patient file. The file goes to a professional nurse who confirms the patient's repeat prescription. The pharmacy assistant prepares the medication for delivery. The CHW takes the medication to the patient at their home and measures and records the patient's BP or blood glucose on the card. In the pre-intervention period, some patients were not receiving their medications on their scheduled dates and would come into the clinic to complain, or the CHWs, realizing they had missed a patient's date, would hurriedly request for the medication from the facility staff. Both outcomes led to tension between the CHWs and facility staff: "*Sometimes they will expect you to pack the medication the same day they are expected to deliver..,you have to stop what you are doing and attend to them"* (Interview, Pharmacy Assistant, Team 1).

During intervention

The mentor engaged with all staff involved to understand the challenges with the medication delivery system. She trained the CHWs to record the details of patients (name, address, type of medication, expected delivery date and CHW return date) in a book. She enlisted the support of the clinic staff (nurses, pharmacy assistants and clerks) for the new system she put in place in the facilities. The staff members agreed to their different roles.

Despite the new system, some CHWs still collected the appointment cards late. One clerk insisted that the CHWs queue like an ordinary patient to get a patient file. The mentor negotiated with the manager in Facility 2 for two CHWs to assist in retrieving files to minimize the delay, and for the professional nurses to issue the medication. This helped ease the frustrations of the clerks and pharmacy assistant. In Facility 1, there was insufficient space for CHWs to assist in the filing room, but the facility manager stepped in to resolve conflicts where possible.

In the two facilities, the nurse mentor spent time negotiating with the facility managers for the inclusion of the CHWs in facility meetings, as this was a potential forum to discuss and resolve issues surrounding medication delivery. However, the managers refused, as the CHWs were contracted to an external pay roll company and did not see the CHWs as their responsibility. In Facility 2, the nurse mentor did negotiate for the CHWs to help take the patients BP measurements in the clinic, so they could practice their skills and gain confidence. However, the facility manager appeared distrustful of the CHWs and her attitude allowed her junior staff to dismiss the CHWs efforts, rather than train the CHWs: "*Yuuu that was a disaster. They did not know what they were doing, only few of the CHWs were trying. I had to stop them from coming as they overcrowded the room"* (Interview, Enrolled Nurse Assistant, Facility 2). In Facility 1, the facility manager was keen to have the CHWs in the triage room to help take patient BP measurement, however, the room was too small for this.

End of the intervention

Recording the patients' delivery dates in their books helped the CHWs ensure they delivered the medication on time, and the facility staff noted the improvement: "*They have improved because now they take the dates of all the patients. Every week they take out the files for the whole week and give them to their team leader who then takes them to the pharmacy room. The pharmacy assistant packs the medications for the CHWs for the whole week"* (Interview, Enrolled Nurse Assistant, Team 2). The lack of equipment continued to hinder the CHWs' ability to do their job: "*The blood pressure and glucose machine broke. Now I just deliver [medication] without doing anything to the patient"* (Interview, CHW6, Team 2). Some patients demanded they monitor their vital signs; the CHWs reported being embarrassed that they could not.

Towards the end of the intervention, when the CHWs were formally employed by the DoH, the facility managers became responsible for the CHW teams and the CHWs started to participate in clinic meetings. A nurse commented: "*It makes a huge difference because we get to learn what it is that they are doing out there, the challenges they face. Once everybody is involved in the meetings, it means we can all take ownership of our work"* (Interview, Professional nurse, Team 2). The professional nurses acknowledged the change in CHW's performance and the CHWs felt supported by them: "*We work well with facility staff. Whenever we want patients' files they assist us on time. If I am not feeling well, I am able to speak to the nurses and get medication without having to join the queue like a patient would do"* (Interview, CHW9, Team 2).

6 months post intervention

In the post-intervention period, the CHWs continued to collect patient appointment cards mostly on time, and the supervisor, professional nurses and pharmacy assistants cooperated with the CHW. However, some of the CHWs occasionally forgot to collect the patient appointment cards and were penalized by their supervisors: "*You have to join the queue to get the patient medication…she does not take stories*" (Interview, CHW2, Team 2).

Patient follow- up

Prior to intervention

The CHWs' difficulties in locating and persuading patients to return to the clinic affected their relationship with staff who believed the CHWs did not put sufficient effort into tracing patients. However, some nurses were not mindful about ensuring patient confidentiality, particularly for HIV treatment, and as a result, patients sought care in clinics outside their own community. Knowing nurses would insist that they return to their local clinic, patients often give an incorrect address, hampering the CHWs efforts to locate them. Others, once located, refused to return to clinic: "*I do not see the reason to go to the clinic, nurse A does not treat people well, she walks around publicly displaying our medication to staff members and patients"* (Interview, Client 3, Team 1).

During intervention

The nurse mentor arranged for the clinic clerk to provide a list of names and addresses of all patients who needed to be followed up each week. It was agreed that CHWs should visit each address at least three times on separate days before marking the patient as untraceable and would give feedback on their progress a week later. As a result, it became clear what was

expected of the CHWs, and they could mark a patient as untraceable, rather than continued to be blamed for the non-appearance of the patient. The nurse mentor accompanied CHWs to visit patients who were refusing to return to the clinic: "*Even if she [nurse mentor] is with another CHW, if I encounter a problem, I am able to contact her for assistance*" (Interview, CHW8, Team 1). The household visit by the mentor often reassured the patient and helped resolve any impasse between the patient and clinic.

End of the intervention

The CHWs efforts at tracing patients improved, and the data clerks provided the CHWs with regular support. As the CHWs were acknowledged as contributing members of staff, the relationship with staff improved. One facility manager commented: "*They are very helpful. In our facility we have many patients who have defaulted on their medications. The CHWs help us locate these patients*" (Interview, Facility Manager, Team 1).

6 months post intervention

Post intervention, the facilities reported slight drop in the number of patients returning to care. One facility had fewer antennal care and postnatal care patients and the manager attributed this to CHWs inability to successfully locate cases and provide feedback. However, the supervisors were able to provide support with challenging cases, as the mentor had done: "*There was a teenage boy who was on ART medication and refusing to take the medication. The supervisor accompanied me to the boy's home. She persuaded the patient to go the facility"* (Interview, CHW9, Team 1). The mentor intervention had improved the supervisor's skills at engaging with patients.

Engagement with community structures

Prior to intervention

Prior to the intervention, the CHW programme had had little engagement with community leaders and representatives (e.g., ward councilors). Most community leaders knew little about the programme, and there was no collaboration with local NGOs (for example those providing food) who might have identified households in need of health care.

During intervention

The nurse mentor repeatedly talked to ward councilors about setting up meetings with the community but only managed to hold one meeting. These local political leaders appeared disinterested in supporting the mentor in creating a link between the CHW programme and community; several meetings were agreed upon but then were cancelled or postponed.

Community meetings called by the ward councilors were to discuss the lack of housing and sanitation, rather than health care. Some of these meetings turned violent as the residents wanted the councillors to speed up the process of providing housing and other services of immediate concern. The service provided by the CHWs was not a priority.

Following nurses' complaints that traditional healers give pregnant women traditional herbs to manage their pregnancy, the mentor organized a meeting with traditional healers. A traditional healer participating in the meeting narrated, "*They were complaining that we [traditional healers] give pregnant women 'isihlambezo' (traditional herb) and that the babies are born disabled. It is not the herb that causes the disability but other things such as drinking and smoking during pregnancy* (Interview, Traditional healer 2, Site 1). The traditional healers were not ready to work with the health facility: "*They [nurses] undermine us"* (Interview, Traditional healer 3, Site 1); a long-standing impasse between the health facility and the traditional healers frustrated the mentor's efforts to establish a collaboration.

The nurse mentor encountered challenges with uncooperative NGO representatives: "*We went to a meeting of NGOs, there were only few NGO staff present, the meeting had to be postponed because there was no point in continuing with only the few of us present. Till today we have not received a new date for the meeting* (Observations, CHWs, Site 1).

The CHWs had a positive relationship with individual community members, who often informed CHW about individuals in need of their services. A CHW shared: "*When you are walking in the community, community members will tell you to go and attend a sick person in a particular household"* (Interview, CHW11, Team 2). Individuals often approached CHWs informally to seek health-related information: "*Last month I came across [in the street] two gentlemen of which one told us that his body was itching and could not sleep at night.… We wrote him a referral letter to go to the clinic*" (Interview, CHW3, Team 2).

End of intervention and 6 months post-intervention

The nurse mentor was not able to establish collaborative relationships within the community leaders and structures.

7.1.5. Discussion

In our study, we examined the role of a roving nurse mentor in building the capacity of two CHW teams led by junior nurses in two primary health facilities in a semi-rural area of South Africa. Initially, with many of the CHWs not having finished their schooling, the mentor's

involvement evoked fear in some CHWs, resulting in them being obstructive, or not fully participating in capacity-building activities. The mentor had to strike a balance between pushing the CHWs to try to learn and adopting a gentler approach that didn't alienate them. Over time the nurse mentor was able to get this balance right and the CHWs and their supervisors improved their skills and confidence. Other studies in LMIC settings have similarly found CHWs may not have finished their school education and the importance of providing a supportive environment to overcome CHW fears of failing again, so enabling them to achieve their potential [155, 156].

The nurse mentor negotiated with the staff to establish three new operational systems to assist the CHWs: the book for recording the patients' medication delivery dates; working in the vital signs room to practice taking BP measurements; and the use of a list and three visits only to patients who needed to be traced. These systems led to an improvement in CHW performance, although the CHWs were still hampered by the lack of equipment and limited space and the dismissive attitude of junior facility staff. The CHWs needed a dedicated senior person to work out what systems were required, negotiate with facility staff to establish them, and to navigate problems when they arose. The change to being employed by the DoH meant the facility managers took greater responsibility for the CHW team and were able to build on the improvements established by the nurse mentor and the programme became more integrated into the facility. It is unlikely that facility managers, with their workload, would have been able to bring the CHWs' skills and confidence up to the necessary level without the nurse mentor.

Difficult relationships between CHWs and other healthcare staff have been documented in other studies. In a study of CHWs and professional nurses' relationships in South Africa [157], the CHWs reported finding it uncomfortable working with professional nurses, as the nurses often failed to recognize CHWs as members of the health team. Other studies have found some clinicians tend to undermine and marginalize the CHWs role [65, 157]. Systematic review evidence suggests that health workers' negative attitudes towards CHWs affect their performance [14]. A study in Malawi found clinicians who were reluctant to give drugs to health surveillance assistants hindered the health surveillance assistants' role and performance in the community [158]. Similarly, Payne et al argued the stalemate between clinicians and CHWs is largely due to differences in training (curative and non-curative) [159]. In our study, we found that a senior nurse, who serves as a point of authority within the CHW teams, and champions the role of CHWs, can be a critical resource in establishing

operational systems, and addressing conflicts between CHWs and clinic staff. Similarly, a study in rural north west South Africa, found team leaders were the source of support for CHWs as the facility managers often struggled to provide supervision support due to unmanageable workloads in the facilities [67].

World Health Organization (WHO)recommends and evidence from several countries suggests that community members tend to utilize services if the health programme is embedded in the community structures [58, 62, 63, 160]. For example, in Rwanda village leaders and community security officers had a crucial role in ensuring mothers and pregnant women were aware of the maternal and child services available to them at health facility and community level [161]. In Malawi, volunteers, who belonged to a wide range of community-based committees, supported the Health Surveillance Assistants in completion of their daily tasks and made effort to inform them of problems that required their attention in the community [63]. The communities where we undertook our study had community forums but at the time of the study these focused on the community's pressing concerns of lack of housing rather than healthcare services.

The WHO Global Strategy on Human Resources for Health emphasizes the need to align CHW initiatives and programmes to broader national health workforce policies [122] if CHWs effectiveness is to be realized [62]. CHW labour groupings have focused on securing permanent employment, decent wages and recognition of CHWs as contributing members of healthcare system [95, 162, 163]. Our findings show that paying CHWs and integrating them into the healthcare system was important for improved and sustained CHWs motivation and performance. The WHO guidelines do not adequately acknowledge the chronic shortage of health workers in LMICs to oversee CHW programmes [14, 25, 160]. Our study provides evidence for the success of a CHW supervision configuration that is potentially suitable for contexts with a health worker shortage. A roving, experienced nurse mentor can be responsible for several CHW programmes in a district healthcare system, contribute to the knowledge and skills development of the CHWs, and enhance the capacity of junior supervisors. However, the long-term success of this approach is dependent on fair remuneration and the integration that results from formal employment of CHWs.

This study contributes to understanding how to address the challenges inherent in many CHW programmes of insufficient supervision, poor health systems integration and poor relations with local communities. During our study, the CHW team and facility staff may

have changed their normal routines and behaviours during observations. However, our extensive data collection meant the research team became a familiar presence over the course of the study. The intervention study was undertaken with only two CHW teams so we do not know if the intervention would work if the mentor took on more teams.

7.1.6. Conclusion

In a resource constrained setting like South Africa, where there is a shortage of health workers to oversee the implementation of CHW programmes, a roving nurse mentor working with more than one CHW team can successfully improve CHWs skills and confidence, the supervisory ability of the CHW team leader, and set up appropriate organizational systems, improving the working relationships between the CHW team and health facility staff. However, the long term success of CHW programme is dependent on formal employment and better integration into healthcare systems.

CHAPTER 8: INTEGRATED DISCUSSION

8.1. Introduction

This PhD set out to explore the implementation of community health worker (CHW) programmes, application of the community-orientated primary healthcare (COPC) approach, CHWs mobilisation to achieve formal employment and evaluate an intervention to strengthen the capacity of CHW teams in PHC facilities in South Africa. In this chapter, I present a summary of key findings from the three papers presented in Chapters 5, 6 and 7, followed by synthetisation of the themes to tell an overarching story. The contributions of the study, implications for the global and South African healthcare system and recommendations are also outlined.

8.2. Key findings

8.2.1. Implementation of CHW programmes and application of the COPC approach

In Chapter 5, I reported on the findings of an exploratory study of CHW programmes and application of the COPC approach to strengthen community-based health care. In line with the COPC approach, the implementing teams made attempts to ensure that prior and current programmes were attuned to the needs of the community and that they were responsive. This was evidenced by activities directed at communities to get them to participate in designing and delivering care (e.g., informing political leaders about the programme) and the use of multidisciplinary teams to provide on-going support to CHWs and their supervisors. Clinicians and social services practitioners met with the CHWs to review their work and provide clinical and administrative support. However, socioeconomic challenges such as poverty, unemployment and housing constraints limited the reach and effectiveness of the CHWs. In the rural areas, the CHWs had to navigate these issues before they could provide the needed care. Further, the application of the COPC approach relied on external funding to hire, train and pay the implementing teams and CHWs. Regrettably, when the externally sourced funds got exhausted, the initiatives stalled as the government could not guarantee funding.

8.2.2. CHWs conditions of employment and mobilisation towards formal employment

In Chapter 6 of the thesis, I described the CHWs' precarious employment status in the South African healthcare system. Though the expectations are that CHWs should provide comprehensive care to marginalised populations, I found the CHWs to be lacking essential

working tools such as blood pressure machines, uniforms and access to career developmental opportunities. Their employment was also outsourced to private companies and NGOs, and the CHWs had little or no bargaining power to negotiate for improved conditions of employment. The CHWs were being paid a stipend of R2 500 (US$131) per month through local NGOs and private companies. The said conditions negatively impacted the CHWs' work morale and motivation to provide quality care to their clients. In response, some CHWs formed a task team to challenge the government to offer them resources and permanent employment. There were regular engagements between the task team, CHWs, facility, district and provincial management, and some of the meetings turned violent, resulting in tensions between the parties. Since the task team was not a recognised union and could not participate in the bargaining council, the CHWs joined a leading union, to be able to participate in the bargaining council[14]. At the end of the study, the CHWs through their union and task team had negotiated with the government to increase their monthly earnings from R2 500 (US$131) to R3 500 (US$184).

8.2.3. Contributions of a roving nurse mentor/supportive supervisor in building the capacity of CHWs in PHC facilities

In the context of the challenges confronting CHWs, a grant funded intervention was piloted in two PHC facilities in Sedibeng district. The intervention comprised a roving nurse mentor targeting common activities performed by CHWs in South Africa (e.g., chronic medication delivery, household registration and case follow-up). This was after a situational analysis study found that CHWs were struggling to perform these activities mainly due to the lack of knowledge, skills and poor supervision [25]. At the beginning of the intervention, some CHWs appeared fearful of learning new practices, acquiring knowledge and skills. This was attributed to their previous schooling experience, as a considerable number of them did not complete their secondary school education. The nurse mentor had to find constructive ways to encourage and foster learning amongst the CHWs while not alienating those with learning difficulties.

By the end of the intervention, the mentor had negotiated with facility managers to introduce operational systems to enable the CHWs to undertake their duties. These systems included a book system to record patients' chronic medication delivery dates, and the use of lists and three visits to patients who needed to be monitored post clinic consultation. These operational

[14] Deal with employee collective agreements, solve labour disputes and consider proposals for labour laws amendments. Only registered union participate in bargaining council meetings.

systems helped to improve the services provided by the CHWs, and the relationship with facility staff members and patients in the two PHC facilities.

The process evaluation ran parallel to other quantitative measures of the intervention, which comprised baseline coverage and quality of care surveys, and endline coverage and quality of care surveys. Though this PhD study does not report on the quantitative studies and outcomes, it is worth mentioning that the nurse mentor intervention resulted in an increase in the number of households who received a CHW visit in the previous year from 20% to 30% [149, 164]. The CHWs also performed a greater variety of more complex tasks and provided support to a greater range of people [149]. It was clear that the CHWs needed a supportive supervisor to guide them, and collaborate with facility staff to identify the relevant systems, and help them navigate their daily challenges.

Table 8.1. Key lessons

Key lessons
In the national CHW programmes, CHWs provide comprehensive care covering preventative, promotive and limited rehabilitative and curative roles. However, the programmes remain under-funded, outsourced and poorly linked to healthcare systems and community structures.
The poor funding of the programmes make it difficult for the CHW teams to reach more clients and provide quality services.
The CHWs highlighted the need for recognition in the healthcare system as health workers. For decades, they haven't been formally integrated into health systems or afforded employment protection and benefits. To be recognised, the CHWs established a task team and joined a formal union to represent and negotiate on their behalf for permanent employment with decent salaries.
Though at the conclusion of the study, the task team and union were not successful in securing permanent employment for the CHWs, their consistent mobilisation ensured the government reviewed CHWs' salaries.
The coronavirus disease 2019 (COVID-19) pandemic also highlighted the important role of CHWs in linking vulnerable populations with healthcare systems. In Gauteng province, during the height of the pandemic in 2020, CHWs were offered permanent employment with decent remuneration.
In light of supervisors' shortages, the process evaluation data indicated how a roving nurse mentor can help bridge the gap by managing multiple teams of CHWs in a district health system. In doing so, the mentor plays a key role in enhancing the CHWs and supervisors' knowledge and skills in priority activities, facilitate their integration into the PHC facilities and community structures.

8.3. Cross-cutting themes

8.3.1. Integrating CHWs into the healthcare systems

The World Health Organisation (WHO) explains many CHW programmes were created as add on programmes with poor links to healthcare systems [50]. As a result, CHWs have poor relationships with healthcare systems, as demonstrated by poor relationships with facility-based staff members, poor supervision and insufficient supply of resources. It is widely argued that for CHW programmes to be effective they need to be adequately integrated into the healthcare systems and other systems such as communities [76, 62].

CHWs need clear roles, resources, supervision, continuous training and decent remuneration [92, 165]. Available literature has unfortunately shown this hasn't been the case in many countries; as CHWs continue to operate with minimal support from healthcare systems. Leban et al. [59] review highlighted four challenges limiting the successful integration of CHW programmes into healthcare systems: 1) engagement between the CHWs and facility-based staff members, 2) supply chain management, 3) career advancement and 4) supervision arrangements.

Respectful engagement between CHWs and facility staff provide legitimacy to CHWs, as perceived by the CHWs and community [59, 166]. Where facility staff do not relate well with CHWs or provide support (e.g., attending referred cases and share resources), the community trust and utilisation of CHW services is negatively impacted [167]. The CHW programmes studied as part of the PhD enjoyed mixed relationship with the healthcare systems. In some facilities, the CHWs felt unappreciated and unsupported by facility-based staff members, as the patients they referred to the facilities were not being attended. This compromised the CHWs relationships with the patients and community. In some facilities, the CHWs were also being called with derogatory names by facility staff members. This account is not unique to the South African context. For example, CHWs in Pakistan, Ethiopia and Brazil reported to have no respect for facility staff due to how the staff interacted and talked about them to patients [167].

In terms of resources, a systematic review found that many national CHW programmes in sub-Saharan countries are experiencing regular medicine and other commodities stock outs [168]. The CHWs in South Africa were experiencing similar challenges, as most of them did not have the requisite tools such as blood pressure and glucose machines to measure patients'

vital signs when delivering chronic medications. The stock outs affected the CHWs' performance, as they could not undertake their duties effectively [71].

In many contexts, CHWs are under-skilled and expected to play a key role in providing health support and care to marginalised populations [170]. The study demonstrated how CHWs' knowledge and skills gaps can be addressed through the use of multidisciplinary teams and a roving supervisor. The community health systems theory highlighted the significance of taping into various systems to boost CHWs' performance [75]. The study demonstrated how CHWs' knowledge and skills can be improved through the use of multidisciplinary teams where other professionals such as medical doctors and social services workers participate in the training of CHWs.

Furthermore, insufficient supervision of CHWs was another concern observed in health programmes [57, 168]. The situational analysis undertaken as part of the Batlhokomedi project found that CHWs overseen by young and inexperienced supervisors struggled in the performance of their duties mainly due to insufficient supervision. In their review, Leban et al. argue that age disparity between CHWs and supervisors, nature and quality of supervision have a profound impact on CHWs' experience and overall performance [59]. In this PhD study, the supervisors' age and limited experience had a negative impact on how the CHWs interacted with them. In contrast, the intervention demonstrated how a senior nurse (nurse mentor) with extensive experience in outreach work is able to overcome these barriers by being assertive during in-service training and supervision. In line with Singh [171], supportive supervision resulted in a non-threatening work environment in which the mentor, supervisors and CHWs could learn new skills, and overcome obstacles together. Some scholars argue good supervision can help strengthen CHWs' relationship with other health workers in the health system, leading to improvements in trust and outputs [160, 63]. This PhD study used a district health system and provided some valuable lessons on how a supportive supervisor can build CHWs' knowledge and skills in priority activities, and facilitate their integration into health facilities. Noting the shortage of skilled supervisors to provide quality supervision to CHWs, the government may need to consider this approach to supervision.

8.3.2. Complexities of providing CHW services in communities

In most contexts, healthcare systems are dependent on CHWs to reach vulnerable communities [89]. The CHWs are instrumental in increasing access to healthcare, as they act

as intermediaries between communities and healthcare systems [172]. Their understanding of socio-cultural norms of the communities they work with makes it easy for these communities to trust and accept the services they provide. However, studies highlight that CHWs and their clients are often confronted by other challenges ranging from social to economic issues (e.g., high crime, unemployment and poverty levels) in the communities [57]. A Brazilian study found that CHWs were exposed to territorial violence and environmental challenges as they performed their duties [173]. The participants in the Brazilian study mentioned the violence as a barrier that made it difficult for them to conduct household visits thus limiting the care they were expected to provide to their clients.

In the current study, the CHWs cared for patients in townships, informal settlements and hostels marked by high incidences of unemployment, poverty, substance abuse, violent crimes and poor service delivery [57]. In Sedibeng district, over 20% of the population lived below the food poverty line [152]. The CHWs had to navigate these issues before they could provide services. As reported in Chapter 7, part of the mentor's responsibilities was to reinforce the CHW programme relationships with community structures. Due to the volatility of the communities, the mentor wasn't successful in negotiating for these relationships, as during community meetings the residents were more interested to discuss other issues that were not related to healthcare. The community health systems argue that the successful provision of community-based health care is partly nested on acknowledging the other actors in the community [75]. These actors include government sectors (e.g., housing, social and education etc.) and NGOs [75]. CHWs must actively engage and collaborate with these community systems to overcome challenges and provide comprehensive care [75].

Furthermore, the WHO Commission on Social Determinants of Health, argue that CHWs can play a role in addressing the social, economic and political challenges confronting the communities [174]. Apart from providing health services, CHWs can also serve as agents of social change and community advocates against inequalities in government structures [175]. Though, there are few studies highlighting the contributions of CHWs in the fight against the social determinants of health such as poverty; Nandi and Schneider studied Mitanins' (currently known as the accredited social health activists) roles in addressing food shortages, crime and women abuse in India [174]. The Mitanins held meetings with community members to identify the issues affecting the community and come up with solutions (e.g., encourage abused women to seek professional help).The Mitanins also supported the communities to write memorandums to relevant government structures to address food

shortages and ineffective policing systems in the community. Most of the communities where CHWs were getting deployed were faced with several socioeconomic challenges [174]. It is therefore important for CHWs to take an active, empowering, enabling and supportive role while in the communities.

8.3.3. CHWs precarious status and unionisation

In most settings, the CHW labour force comprises women, who are often expected to work on a voluntary or contract basis with no prospects of permanent employment [15, 92, 177]. The volatility of the job makes it hard for these women to afford basic necessities for themselves and their dependents [178]. Some of these women end up taking on additional income generating activities to sustain themselves and their families [179, 180]. Consequently, they experience the triple burden of care because of their CHW role, the need to integrate the role alongside income generating activities, and being the person responsible for domestic work at home [178].

As mentioned earlier, the CHWs in the study earned R2 500 (US$131) per month. This meagre remuneration demotivated the CHWs, as they felt it did not resonate with their needs as women and the important role they play in getting vulnerable populations to health care. Overwhelming workload, worsening economic conditions and inferior employment status led some of the CHWs to form a united front to demand recognition through formal employment with decent remuneration and other employment benefits [95, 128]. Similarly, in India, unions have mobilised and led marches to demand CHWs' recognition through formal employment [138]. Though their efforts have not resulted in significant gains, they managed to get the government to increase their salaries and provide other social security benefits [138]. In the South African context, CHWs' efforts included protests and court challenges to compel the government to employ them on permanent basis with better salaries [129].

The WHO's recommendations on the optimisation of CHW programmes emphasised the importance of integrating CHWs through decent remuneration packages, and ensuring the availability of appropriate career development pathways [62]. Ballard et al. argue that fair labour laws must be introduced to ensure that CHWs are fairly remunerated and professionalised [181]. The progress made by the CHWs in South Africa and India in pushing for recognition and formal employment is commendable, and it constitutes a move in the right direction.

8.3.4. CHW programmes funding

Investing sufficient resources in CHW programmes can deliver short and long term goals (e.g., strengthening access to healthcare, and developing youth and women through employment) [182]. A growing body of literature shows that governments in low and middle income countries (LMICs) haven't been investing sufficient resources in primary health care (PHC) programmes [14]. Masis et al.'s [182] review has shown that PHC expenditure in 36 African countries has been dwindling at between US$15 – US$60 per capita. The underinvestment in health programmes is partly attributed to poor economic growth, which results in budget cut for priority programmes such as health [183]. In South Africa, though the district health services spending has increased significantly as a proportion of total provincial health budget, from 21% (2008/9) to 28% (2019/20), spending on CHW programmes remains low and unstable [183]. In the current study, the CHWs operated without the necessary resources such as shelter for their meetings, equipment and transport to reach households. The reason for non-supply of these critical resources was insufficient budget and poor planning. This finding was in non-compliance of the United Nations General Assembly resolution, which stated that countries should invest at least 1% of their Gross Domestic Product (GDP) to PHC [182].

Mesis et al. [182] further argue that government support for PHC programmes in LMICs has been relatively unsatisfactory when compared to other programmes. Available data shows that more funds are allocated to hospitals and staff salaries, while funding for PHC and CHW programmes always lag behind. In Uganda, only 35% of the health budget was reserved for primary care, while 51% was spent on hospitals and 14% for other expenditures [41]. To make up for the poor funding of PHC, countries such as Kenya and India are relying heavily on donors to help implement and sustain their CHW programmes. The disadvantage of relying on external funding is that the funds tend to be ring-fenced for specific programmes targeting a particular condition (e.g., HIV/AIDS) and cannot be used to support integrated PHC services [28, 32]. In the current study, the integration of COPC and supportive supervision measures in the national CHW programmes helped to strengthen CHW knowledge, skills and patient care in priority activities. However, the government couldn't guarantee funding when the external funds ran out. This is the situation even when there is evidence that CHWs when adequately resourced, trained and remunerated are able to extend the delivery of comprehensive care and improve patient outcomes

Under-investment in PHC programmes possess a serious challenge in the drive to attain UHC for all [182]. The WHO 2018 guidelines articulate that CHW programmes require dedicated and sufficient funding to set up and run large scale programmes [62]. Attempting to implement such programmes without sufficient and sustainable funding will likely yield negative results. As South Africa prepares to implement the National Health Insurance (NHI), Blecher et al. [184] argue that poor economic growth, decline in tax revenue and increase in foreign borrowing impact spending on health programmes. Other spending pressures such as increasing public sector workers' salaries, funding the struggling national power utility (Eskom) and fee-free higher education will also for the foreseeable future constraint spending on health [184]. Noting these financial constraints, countries such as South Africa could seek support from dedicated institutions such as the Financing Alliance for Health (FAH) [185]. The FAH is a multi-organisational partnership established in 2016 to support governments on cost-effective financing strategies to deliver community-based health care at scale.

8.4. Implication for CHW programmes in LMICs

This PhD study has shown that CHWs provide services to diverse communities. Most of these communities are impoverished and in need of housing, roads and sanitation. The shortage of critical resources such as shelter, transport and day-to-day tools also have a profound impact on the CHWs' services, performance, motivation and turnout.

The lack of service integration as evidenced by the absence of collaborative relationships with facility staff also made it challenging for CHWs to deliver continuous quality care. CHWs need the support of facility staff (e.g. to attend to the cases they refer to the facility and provide timeous feedback) to be effective. In this study, the absence of a collaborative relationships made it difficult for CHWs to provide the needed health support to individuals and communities.

In the context of supervisor shortages, the study provided crucial lessons on how governments can use few experienced nurses to oversee and help in upskilling CHWs and their supervisors, build relations among CHWs, facility-based staff members, and community structures (Chapter 7). However, the success of the senior nurses is dependent on the integration of CHWs into the healthcare structure, as CHWs tend to be more cooperative and productive when fairly resourced and remunerated.

It was also evident that the application of the COPC approach as a measure to strengthen CHW care requires enough funds for personnel recruitment and supervision etc. Without

sufficient funding, implementing teams are forced to cut corners, for example - recruit unsuitable CHWs with limited skills and knowledge.

8.5. Recommendations

This section highlights the overarching recommendations from this PhD thesis, pulling together key cross-cutting recommendations over and above those outlined in Chapters 5, 6 and 7.

Recommendation for the global health system and policy environment

- In line with the WHO recommendations of 2018, CHWs must be properly integrated into the health systems where they can access supervision, fair remuneration, supervision, resources and career advancement opportunities. There should be a requirement for governments to regularly report on interventions put in place to achieve these goals.
- The application of supportive supervision and COPC approaches to health system strengthening must be encouraged, particularly in resource-constrained settings like South Africa where there are limited funds to employ qualified supervisors for the CHW programme. As reported in Chapter 5 and 7, these approaches have the potential to significantly enhance CHWs' knowledge, skills, motivation, quality of care, and coverage with minimal investment.
- In addition, the call for the permanent employment of CHWs must be heightened at this level.

Recommendation for the South African National Department of Health

- For many years, CHWs have been employed on renewable 12-month contracts. There is an urgent need for the National Department of Health to explore ways to prioritise the employment of this cadre of workers on permanent contracts with decent salaries.
- There is also a need to ensure the standardisation of CHW remuneration packages across the country's nine provinces. As reported in Chapters 5 and 6, the Gauteng-based CHW teams were given permanent contracts with better packages during the height of the COVID-19 in 2020. The same benefit was not extended to other CHWs in the other provinces.

- The National Department of Health must work closely with the Provincial and District Departments of Health and Treasury to ensure that important decisions taken to strengthen PHC programmes are implemented across the country.

Recommendation for the South African Provincial Departments of Health and districts

- At the time of this research, the CHW programme and PHC facilities had different budgets for running expenses. In each district, a programme coordinator located at the district or sub-district office was responsible for supplying the CHWs with the resources they needed, while facility staff accessed resources through the facility budget. Districts management needs to push provincial management to introduce one budget for CHWs and facility expenses. CHWs integration into healthcare systems encompasses supervision, resource allocation and remuneration.
- Provincial Departments of Health must put measures in place to ensure district health management have sufficient funding for CHWs to undertake their duties with minimal difficulties.
- Furthermore, there is a need for inter-sectoral collaboration, where government departments, NGOs and civil organisations work together to respond to the needs of impoverished communities. The involvement of these sectors will enable CHWs to focus on their key responsibility, which is to provide health support and care to vulnerable populations.

8.6. Contributions of the body of knowledge

This PhD thesis has contributed in several ways to the body of knowledge on health systems strengthening in LMICs.

Firstly, I undertook a comparative analysis on how the COPC approach can be used to strengthen CHW care in semi-urban and rural settings. The findings provide valuable lessons on how communities and multidisciplinary teams can be integrated into CHWs programmes to help build CHWs' knowledge and skills through in-service training and supervision. Most community-based health programmes are often criticised for excluding communities in the design and implementation phase of interventions [58]. The findings shed light on the contributions of community leaders in marketing CHW services, and helping resolve some of the challenges CHWs experience in their attempts to reach members of the community.

Secondly, the study also contributes to the literature on CHWs challenges, describing how the challenges negatively impacted service provision. The WHO report released in 2018 recommends that countries optimise the performance of CHWs through fair contracting, provision of resources, career progression opportunities to CHWs etc. [62]. The findings provide evidence of the shortcomings of the South Africa programme in fairly deploying, resourcing and remunerating CHWs. The CHWs studied were outsourced from NGOs and private companies.

Thirdly, South Africa is experiencing a growing shortage of skilled nurses to oversee the activities of CHWs in the field, the nurse mentor intervention provided valuable lessons on how a roving nurse can support multiple CHW teams using minimal resources in a district health system. The nurse through regular in-service training, supportive supervision and workshops helped to improve the CHWs' knowledge and skills in priority activities, and supported their integration into clinics where they could access resources and support.

8.7. Strengths and limitations

The study had various strengths and limitations:

Firstly, the Batlhokomedi study received funding for the work in Sedibeng district. As a result, the research team spent nearly 3 years in the district collecting situational data, piloting and evaluating the nurse mentor intervention. In the other districts (Ehlanzeni, Johannesburg and Tshwane), data collection activities did not exceed 3 months due to time and resource constraints.

Secondly, the research tools were written in English, yet during fieldwork, there were some participants who preferred being interviewed in their home languages (e.g., Sesotho). Data collectors were trained through role-plays to translate the English questions to the participants' preferred languages.

Thirdly, apart from individual interviews and FGDs, the study also use observations. At the beginning of each observation, participants put on a show (e.g., they visited many households without taking a break; admin clerks were being over polite to patients visiting the health facility) (the Hawthorn effect) [186]. To minimise the Hawthorn effect, the participants were observed for a period exceeding three days, ordinarily on the second day they reverted to their normal behaviour.

8.8. Areas for further research

This PhD was purely qualitative, exploring the implementation of the South African CHW programme, application of the COPC approach, CHW mobilisation and the evaluation of capacity building intervention in two provinces of South Africa. As part of my research, I identified various areas requiring further exploration.

- CHW mobilisation or unionisation is not a common occurrence in many LMICs. This area requires further exploration, especially in resources constrained settings where most CHWs are without working tools and underpaid. It would be stimulating to find out whether mobilisation results in sustainable gains for the CHWs (e.g., permanent employment with better pay).
- The nurse mentor capacity-building intervention was piloted in one semi-rural district of Sedibeng. Similar interventions using the supportive supervision theory are encouraged in rural settings where there are considerable gaps in CHWs supervision and mentorship.

CHAPTER 9: CONCLUSION

This PhD explored the implementation of CHW programmes, CHWs mobilisation activities for recognition, and evaluated the application of the COPC and supervision approaches to strengthen health delivery.

The implementation of programmes occurred through multi-faceted issues such as high levels of unemployment and poverty. The absence of quality of supervision, critical resources and poor remuneration, made it difficult for the CHWs to be effective in their day-to-day duties. While some of the CHWs were resilient (e.g., shared blood pressure machines), most of them weren't successful in their efforts. The absence of crucial resources compromised CHWs' relationship with facility-based staff and communities. These issues further resulted in tensions between the CHWs and the government, as the CHWs were demanding recognition in the form of permanent employment.

COPC and supportive supervision approaches could serve as the solution to most of the challenges confronting CHW programmes. However, the success of these approaches is largely dependent on the government's willingness to integrate the CHWs into healthcare systems. Without integration, gains achieved through externally funded interventions such as those described in Chapters 5 and 7 will not be for the long-term.

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APPENDICES

Ethics and Institutional Approvals

Appendix 1: PhD Ethical Clearance Certificate

R14/49 Mr Hlologelo Malatji

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M180540

NAME: (Principal Investigator)	Mr Hlologelo Malatji
DEPARTMENT:	Centre for Health Policy Johannesburg district - Chiawelo CHC & Elias Motsoaledi Clinic Sedibeng district - Vischkuil clinic and Usizolwethu Clinic Tshwane district - Mamelodi West & Phedisong 6 Clinics Tshwane district - Stanza Bopape CHC
PROJECT TITLE:	Community orientated primary health care: exploration of the interface between frontline health workers, the services they provide and the support provided by the health system
DATE CONSIDERED:	25/05/2018
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Prof Jane Goudge & Dr Julia De Kadt

Dr CB Penny, Chairperson, HREC (Medical)

APPROVED BY:

DATE OF APPROVAL: 02/10/2018

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary on the Third Floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report**. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in **May** and will therefore be due in the month of **May** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

05/10/2018

Principal Investigator Signature Date

Appendix 2: Batlhokomedi Project Ethical Clearance Certificate

R14/49 Prof Jane Goudge et al

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M160354

NAME: **(Principal Investigator)**	Prof Jane Goudge et al
DEPARTMENT:	Centre for Health Policy Sedibeng Health District University of the Witwatersrand and University of Warwick
PROJECT TITLE:	Implementing Comprehensive, Integrated, Community-Based Health Care for Under-Served, Vulnerable Communities in South Africa: A Practical, Evidence-Informed Model
DATE CONSIDERED:	01/04/2016
DECISION:	Approved Written permission to conduct the study must be submitted prior to study commencement for each study site.
CONDITIONS:	
SUPERVISOR:	
APPROVED BY:	Professor P Cleaton-Jones, Chairperson, HREC (Medical)
DATE OF APPROVAL:	29/08/2016

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary in Room 10004, 10th floor, Senate House/2nd Floor, Phillip Tobias Building, Parktown, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and t/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, l/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report**. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in **March** and will therefore be due in the month of **March** each year.

5 September 2016

Principal investigator Signature

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix 3: Johannesburg District Health Authority Approval Letter

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

JOHANNESBURG HEALTH DISTRICT

Joburg
a world class African city

Health Sciences Research Ethics Committee(Wits RHI)
University of The Witwatersrand
Johannesburg, South Africa
Hlologelo.malatji@wits.ac.za

Enquiries: Dr EM Ohaju
Tel: 011 694 3888 Cell: 076 8831659
Email: Elizabeth.Ohaju@gauteng.gov.za
Hillbrow CHC: Administration Building
Cr Smith Str. & Klein Street
Private Bag X21, Johannesburg
South Africa, 2017

DRC Ref: 2018-07-014

NHRD Ref no: GP 201807 001

Dear: Mr Hlologelo Malatji

Re: Community orientated primary health care: exploration of the interface between frontline health workers, the services they provide and the support provided by the health system

Your application for Research Approval refers
The District Research Committee has reviewed your application. This letter serves as an in-principle approval to access the Districts Health facilities (mentioned below) for the above project subject to following conditions:

- The facility to be visited: **CHIAWELO CHC & ELIAS MOTSOALEDI CLINIC**
- The research can only commence after you submit an ethics clearance certificate from a recognized institution; This facility will be visited from **06/09/2018 to 06/09/2019**
- You will report to the Facility Manager before initiating the study.

Region	Regional Health Manager	Contact No.	Cell phone
DO-A)	Mabel Ngcobo	011 986 0164	082 467 9316
	Ms. Maria Mazibuko	011 674 1200	082 781 9919

- Participants' rights and confidentiality will be maintained all the time.
- No resources (Financial, material and human resources) from the above facilities will be used for the study. Neither the District nor the facility will incur any additional cost for this study. The study will comply with **Publicly Financed Research and Development Act, 2008 (Act 51 of 2008) and its related Regulations.**
- You will submit a copy (electronic and hard copy) of your final report. In addition, you will submit a six-monthly progress report to the District Research Committee.
- Your supervisor and University of the Witwatersrand will ensure that these reports are being submitted timeously to the District Research Committee.
- The District must be acknowledged in all the reports/publications generated from the research and a copy of these reports/publications must be submitted to the District Research Committee.

We reserve our right to withdraw our approval, if you breach any of the conditions mentioned above.

Please feel free to contact us, if you have any further queries. On behalf of the District Research Committee, we would like to thank you for choosing our District to conduct such an important study.

Regards,

Dr EM Ohaju
Chairperson: District Research Comm
Johannesburg Health District

Mrs M. Morewane
Chief Director

Johannesburg Health District

Date: 11/09/2018

Appendix 4: Tshwane District Health Authority Approval Letter

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Enquiries: Dr. Robert Oyedipe
Tel: +27 12 451 9036

E-mail: Robert.Oyedipe@gauteng.gov.za

TSHWANE RESEARCH COMMITTEE: CLEARANCE CERTIFICATE

MEETING: 06/2018
PROJECT NUMBER: 51/2018
NHRD REFERENCE NUMBER: GP 201807 001

TOPIC: Community orientated primary health care: exploration of the interface between frontline health workers, the services they provide and the support given by the health system

Principal investigator: Mr. Hlologelo Malatji

Supervisors: Prof Jane Goudge Dr. Julia De Kadt

Facility:
Stanza Bopape CHC
Mamelodi West Clinic
Tshwane District Health Offices
Phedisong 6 Clinic

Name of the Department: University of the Witwatersrand

NB: THIS OFFICE REQUEST A FULL REPORT ON THE OUTCOME OF THE RESEARCH DONE AND

NOTE THAT RESUBMISSION OF THE PROTOCOL BY RESEARCHER(S) IS REQUIRED IF THERE IS DEPARTURE FROM THE PROTOCOL PROCEDURES

AS APPROVED BY THE COMMITTEE. APPROVED

Appendix 5: Sedibeng District Health Authority Approval Letter

Enq: Mpho Ngubane
016 950 6255
016 950 6210
E-mail: Mpho.Ngubane@gauteng.gov.za

TO : MR. H. MALAJI
WITS UNIVERSITY

FROM : MS. S. HLAHANE
ACTING CHIEF DIRECTOR SEDIBENG DHS

DATE : 27 JULY 2018

SUBJECT : PERMISSION TO CONDUCT RESEARCH - COMMUNITY ORIENTATED PRIMARY HEALTH CARE: EXPLORATION OF THE INTERFACE BETWEEN FRONTLINE HEALTH WORKERS, THE SERVICES THEY PROVIDE AND THE SUPPORT PROVIDED BY HEALTH SYSTEM

Please be informed that permission has been granted for you to carry out the abovementioned research at Sedibeng District Health Offices, Usizolwethu clinic and Vischuil clinic. It is noted that you have already obtained Provincial Ethics Committee as well as the University Of The Witwatersrand Research Ethics Clearance.

Kindly note that a copy of the report on the findings (especially) that concerns Sedibeng District must be submitted to the Acting Chief Director's office at the completion of the study.

This permission is also subject to the conditions stated in the protocol and any change in design and methodology must be communicated to the Acting Chief Director office.

We wish you success in your research endeavours.

Kind Regards

MS. S. HLAHANE
ACTING CHIEF DIRECTOR SEDIBENG DHS
DATE: 30/07/2018

Appendices for Objective 1 and 2

Appendix 6a: Participant Information Sheet for CHWs

Good day,
My name is Hlologelo Malatji, a PhD student at the University of the Witwatersrand, Johannesburg. I am currently conducting a study focusing on the implementation of the Ward-based outreach teams (WBOT)/ Community Health Worker (CHW) Programmes. The study is focused on four districts, namely - Sedibeng, Johannesburg, Ehlanzeni and Tshwane. I know you are a community health worker, so I would like to learn more about your experiences of being a CHW, both the successes and challenges.

Duration of interview
The discussion is expected to last approximately 2 hours.

Voluntary participation
Participation is entirely voluntary. There will be no person who will be inconvenienced if they decide not to take part in the discussions.

Risks
There are no risks associated with participation.

Confidentiality
Please note due to the nature of focus group discussions, participants' confidentiality cannot be guaranteed.

Approval and anticipated benefits of the study
The study has received ethical clearances from the University of the Witwatersrand HREC (medical Ethics Committee) and approvals from relevant provincial research offices. It is anticipated the study findings will help contribute to new ideas and insights, especially on how WBOT programmes are being run and performing in the different districts.

Questions
Should you have any questions pertaining to this study feel free to contact me on hlologelo.malatji@wits.ac.za or 011 717 2252. My supervisors Professors Jane Goudge and Frances Griffiths can be contacted on jane.goudge@gmail.com and F.E.Griffiths@warwick.ac.uk, respectively. If you are concerned about anything to do with the study in general, or wish to make a complaint, you can contact the chair of the ethics committee at the University of the Witwatersrand, who is Professor Clement Penny at telephone number: (011) 717-3820.

Thank you for considering to participate in the study.

Appendix 6b: CHW Focus Group Discussion Guide

Introduction

Thank you again for agreeing to be interviewed. To start the session I am going to ask each of you in turn to tell me how you came to join the team?

I am now going to ask you about your work with WBOT. Please all help to answer the questions.

- Please tell me about how a typical day at work starts, what do you do?
- How do you plan your work at the beginning of each day?
- How do you decide which households you'll visit on a particular day?
- How do you keep track of the households where you need to follow up on a patient?
- Do you do different tasks on different days of the week? What are these?
- What then happens – how do you do your day's work?
- What happens at the end of the day?

Please can you describe for us the data reporting system?

- What information do you record when you are out in the community?
- What do you do with this information, and when?
- How do you prepare your statistics?
- What challenges do you experience with preparing your statistics?

Now, please tell me about your pack.

- What is in it?
- When do you use the contents? What for?
- How are the consumables (e.g. forms, dressings) replenished?
- How is the equipment (e.g. glucometer, bp machine,) maintained in working order?

What other resources are available for you (e.g. airtime, a meeting place, a place to store your files)? Are these sufficient? If not, please explain?

Can you please tell us a bit more about home-based care work?

- Do you do any home based care? When does it happen?
- How much of your time do you spend doing home based care work?

What are the challenges that you face (e.g. stipend, appreciation for work done, statistics compilation, work hours, work related conflicts etc.)?

- What dilemmas do you face in your day to day work?
- Please tell me about times when you have faced conflicting demands?

Job security:

- Do you feel that your job is secure?
- Have you encountered or heard problems about contract renewal with SmartPurse?
- What do you feel about your prospects for career development and promotions?
- Are you worried that you might face job loss or layoff?
- If you were laid off, are you worried that you would have difficulty finding a suitable job?

Please could you tell me a bit about the strike?

- What led to the strike?
- Were the issues finally resolved?

What support do you receive from your colleagues, team leader, the clinic staff, from the community? Is the help sufficient? Please explain?

What achievements in your work are you proud of?

- What do you think has enabled you to achieve this?
- What would enable you to achieve more?

What happens when a team member is struggling or can't visit all of their households, for example because of sickness?

- How does the team work when one member can't do their job?

How do you relate to the community?

- What does the community think of you as a team?
- How does the community express their views?
- Are there other organisations providing health care in the community and what do they do?

<u>For CHWs who were previously working for an NGO</u>

Has your work changed since you moved from the NGO to the WBOT team? If so, how?

Which people in the community were you looking after when you worked for the NGO?

- What kind of tasks did you do when you worked for the NGO?
- Who was supervising you when you worked for the NGO?
- What resources did you have when you worked for the NGO?
- What challenges did you experience when you worked for the NGO?
- How is your work different now that you work in the WBOT team?

<u>Ending the focus group</u>

Thank you. Do you have anything else you wanted to add?

Appendix 7a: Information Sheet for a Facility Manager

Good day,
My name is Hlologelo Malatji, a PhD student at the University of the Witwatersrand, Johannesburg. I am currently conducting a study focusing on the implementation of WBOT programmes. The study is focused on four districts, namely Sedibeng, Johannesburg, Ehlanzeni and Tshwane. I know you are the facility manager responsible for facility X, I am keen to know about your experiences regarding the WBOT programme, in particular its successes and challenges.

Duration of interview
The interview will last approximately 45 minutes.

Voluntary participation
Participation is entirely voluntary. It is up to you to decide to take part in the interview. Also, be informed that you will not be inconvenienced if you decide not to take part in the interview.

Risks
There are no risks associated with participation.

Confidentiality
No one except me and the study supervisors will have access to the study records, including audio recordings. In sharing the findings, no specific name or any other identifying information will be included in the report.

Approval and anticipated benefits of the study
The study has received ethical clearance from the University of the Witwatersrand HREC medical Committee and approvals from relevant provincial authorities. It is anticipated the study findings will help contribute to new ideas and insights, especially on how the challenges faced by CHWs can be addressed.

Questions
Should you have any questions pertaining to this study feel free to contact me on hlologelo.malatji@wits.ac.za or 011 717 2252. My supervisors Professors Jane Goudge and Frances Griffiths can be contacted on jane.goudge@gmail.com and F.E.Griffiths@warwick.ac.uk, respectively. If you are concerned about anything to do with the study in general, or wish to make a complaint, you can contact the chair of the ethics committee at the University of the Witwatersrand, who is Professor Clement Penny at telephone number: (011) 717-3820.

Thank you for considering to participate in the study.

Appendix 7b: Facility Manager Interview Guide

Introduction

Thank you again for agreeing to be interviewed. Are you happy to start?

First, could you please tell me a bit about yourself?

Probes:

- How many years have you worked as a nurse?
- What is your professional title? (e.g. enrolled nurse, professional nurse, other specialized nurse
- How many years have you worked at this facility?
- How many years in the current position?
- Were you born in this district?

Perhaps we could talk now about the ward-based outreach team. Please tell me about how the ward-based outreach team is run?

Probes:

- How are community health workers recruited to the team?
- Are there different types of CHWs?
- What resources are provided to CHWs?
- What happens in a typical day of the team?
- How is the team's work for the day planned?
- What happens on different days in the week?
- How often do CHWs work after hours on weekends, and what do they do then?
- How is work distributed within the team? Is there any division of labour? Do any CHWs have a leadership role within the team?

How does the data reporting system work?

Probes:

- What information do CHWs records while out in the community?
- What is done with this information? When?
- What forms are used?
- What is your role in the data reporting system? What exactly do you do?

How does the referral system work?

Probes:

- Are there language barriers for WBOT?
- Are there safety and security issues when working in the community? If so, what precautions do you take to ensure the safety of the CHWs? What incidents are you aware of happening to the WBOT?

- What incentives are there for the CHWs?

What are your roles and responsibilities for WBOT?

Probes:

- What happens in a typical day for you?
- What happens on different days in the week?
- What happens when you are away?

What engagement happens between the CHW team and the clinic staff?

What support do you receive for your work from colleagues?

- From district management (e.g. financial, equipment, place to work, meet and store)

What do you do if one of the CHWs is not doing their job very well?

Have there been any complaints against WBOT? What was it about? What happened?

How do you engage with the community?

Probes:

- What do the community think of the CHWs?
- How does the community express their views?
- Are training and services of CHWs well matched to local needs?
- Can you tell me about the clinic committee? What sort of things do they engage with you about?

Are there other organisations providing health care in the community? What do they do? and how do you work with these organisations?

Ending the interview

Thank you. Do you have anything else you wanted to add?

Appendix 8a: Information for CHW Outreach Team Leader

Good day,
My name is Hlologelo Malatji, a PhD student at the University of the Witwatersrand, Johannesburg. I am currently conducting a study focusing on the implementation of the WBOT/ CHW programmes. The study is focused on four districts, namely - Sedibeng, Johannesburg, Ehlanzeni and Tshwane. I am aware you are the team leader for WBOT, I would like to know about your experiences regarding the WBOT programme, in particular its successes and challenges.

Duration of interview
The interview will last approximately 45 minutes.

Voluntary participation
Participation is entirely voluntary. It is up to you to decide to take part in the interview or not. Also, be informed that you will not be inconvenienced if you decide not to take part in the interview.

Risks
There are no risks associated with participation.

Confidentiality
No one except me and study supervisor will have access to the study records, including audio recordings. In sharing the findings, no specific name or any other identifying information will be included in the report.

Approval and anticipated benefits of the study
The study has received ethical clearance from the University of the Witwatersrand Ethics Committee and approvals from relevant provincial department of health offices. It is anticipated the study findings will help contribute to new ideas and insights, especially on how the challenges faced by CHWs can be better addressed.

Questions
Should you have any questions pertaining to this study feel free to contact me on hlologelo.malatji@wits.ac.za or 011 717 2252. My supervisors Professors Jane Goudge and Frances Griffiths can be contacted on jane.goudge@gmail.com and F.E.Griffiths@warwick.ac.uk, respectively. If you are concerned about anything to do with the study in general, or wish to make a complaint, you can contact the chair of the ethics committee at the University of the Witwatersrand, who is Professor Clement Penny at telephone number: (011) 717-3820.

Thank you for taking time to consider participating in the study.

Appendix 8b: Interview Guide for Outreach Team Leader

Introduction

Thank you again for agreeing to be interviewed. Are you happy to start?

First, could you please tell me a bit about yourself?

Probes:

- How many years have you worked as a nurse?
- What is your professional title? (e.g. enrolled nurse, professional nurse, other specialized nurse)
- How many years have you worked at this facility?
- How many years in the current position?
- Were you born in this district?

Perhaps we could talk now about the WBOT. Please tell me about how the WBOT is run?

Probes:

- How are community health workers recruited to the team?
- Are there different types of CHWs?
- What resources are provided to CHWs?
- What is a typical day like for the team?
- How is the team's work for the day planned?
- What happens on different days in the week?
- How often do CHWs work after hours on weekends, and what do they do then?
- How is work distributed within the team? Is there any division of labour? Do any CHWs have a leadership role within the team?

How does the data reporting system work?

- What information do CHWs record while out in the community?
- What is done with this information?
- What forms are used?
- What is your role in the data reporting system?

How does the referral system work?

Are there language barriers for WBOT?

Are there safety and security issues when working in the community? If so, what precautions do you take to ensure the safety of the CHWs? What incidents are you aware of happening to the WBOT?

What are your roles and responsibilities for WBOT?

What have you been able to achieve with WBOT?

Probes:

- What are you proud of with respect to the achievements of WBOT?
- What do you think are the key factors in achieving this?
- What would enable you to achieve more?

What type of challenges do WBOT members experience?

Do you engage with the community?

Probes:

- What do the community think of the CHWs?
- Are training and services of CHWs well matched to local needs?
- Can you tell me about the clinic committee? What sort of things do they engage with you about?

Ending the interview

Thank you. Do you have anything else you wanted to add?

Appendix 9a: Information Sheet for a Provincial/ District/ Sub-district Key Informant

Good day,
My name is Hlologelo Malatji, a PhD student at the University of the Witwatersrand, Johannesburg. I am currently conducting a study focusing on the implementation of WBOT/ CHW programmes. The study is focused on four districts, namely: Sedibeng, Johannesburg, Ehlanzeni and Tshwane. I am currently talking to a range of people in the province/district to better understand the history and implementation of community orientated primacy care (COPC) and as well as the challenges faced by those who are responsible for recent programmes such as WBOT.

I am aware that you have been involved in the implementation of COPC and WBOT programmes, I would like to get your insights on how did it go, including successes and challenges.

Duration of interview
The interview will last approximately 45 minutes.

Voluntary participation
Participation is entirely voluntary. It is up to you to decide to take part in the interview. Also, be informed that you will not be inconvenienced if you decide not to take part in the interview.

Risks
There are no risks associated with participation.

Confidentiality
No one except me and study supervisors will have access to the study records, including audio-recordings. In sharing the findings, no specific name or any other identifying information will be included in the report.

Approval and anticipated benefits of the study
The study has received ethical clearance from the University of the Witwatersrand Ethics Committee and relevant provincial department of health research authorities. It is anticipated the study findings will help contribute to new ideas and insights, particularly on the COPC approach is being used to strengthen community-based health care.

Questions
Should you have any questions pertaining to this study feel free to contact me on hlologelo.malatji@wits.ac.za or 011 717 2252. My supervisors Professors Jane Goudge and Frances Griffiths can be contacted on jane.goudge@gmail.com and F.E.Griffiths@warwick.ac.uk, respectively. If you are concerned about anything to do with the study in general, or wish to make a complaint, you can contact the chair of the ethics committee at the University of the Witwatersrand, who is Professor Clement Penny at telephone number: (011) 717-3820.

Appendix 9b: Provincial/District/Sub-district Key Informant

Introduction

Thank you again for agreeing to be interviewed. Are you happy to start?

First, could you please tell me a bit about yourself?

Probe:

- Job title?
- Role and responsibilities?
- Number of years in the post and district?

Please tell me about the history of Community-Orientated Primary Care (COPC) in the Province and district?

Probes:

- What was the idea behind COPC?
- What is the history of COPC in the district?
- Tshwane district: why health posts are being used as the base for CHWs in the district?
- Can you tell me about some of the successes of implementing COPC?
- How about the challenges of implementing COPC?

In your view, what effect has the application of COPC had on the national CHW programme introduced in 2011?

What are the key, innovative features, which others districts/sites might learn from this district?

Thank you for taking part in the interview.

Appendix 10a: Information Sheet for a Community Representative

Good day,
My name is Hlologelo Malatji, a PhD student at the University of the Witwatersrand, Johannesburg. I am currently conducting a study focusing on the implementation of the WBOT/ CHW programmes in different districts. As a community representative, I would like to hear about your experiences and challenges of having CHWs in the community.

Duration of interview
The interview is expected to last approximately 45 minutes.

Risks
There are no risks associated with the study.

Confidentiality
No one except me and study supervisors will have access to the study records, including audio recordings. In sharing the findings, no specific name or any other identifying information will be included in the report.

Approval and anticipated benefits of the study
The study has received ethical clearance from the University of the Witwatersrand HREC (medical) and approval from relevant provincial department of health committees. It is anticipated the study findings will help contribute to new ideas and insights, especially on how the WBOT programmes can be improved to better meet the needs of service users.

Questions
Should you have any questions pertaining to this study feel free to contact me on hlologelo.malatji@wits.ac.za or 011 717 2252. My supervisors Professors Jane Goudge and Frances Griffiths can be contacted on jane.goudge@gmail.com and F.E.Griffiths@warwick.ac.uk, respectively. If you are concerned about anything to do with the study in general, or wish to make a complaint, you can contact the chair of the ethics committee at the University of the Witwatersrand, who is Professor Clement Penny at telephone number: (011) 717-3820.

Thank you for considering to participate in the study.

Appendix 10b: Community Representative Interview Guide

Introduction

Thank you again for agreeing to be interviewed. Are you happy to start with the interview?

Can you please tell me a bit about yourself and current role in the community?

Probes:

- What is your role in the community?
- How long have you been a resident in the community?

Can you update me about recent development in the community?

Probes:

- Current challenges faced by the community (e.g. unemployment, lack of roads, crime etc.)?
- What has the community managed to accomplish, over the past months?

Perhaps now, can you tell me what experiences do you have of WBOT?

Probes:

- Types of services they offer?
- CHWs general conduct?

Perhaps, can we talk about CHWs relationship with the community; has this changed?

Probes:

- Awareness of CHWs existence and activities?
- Specific experiences and challenges relating to CHWs?

In your view, how can CHWs services be strengthened to better respond to the changing needs of the community?

Probes:

- Community participation and engagement
- Inter-sectoral response to issues
- Allocation of resources
- Workloads managements

How about the community relationship with the clinic?

Probes:

- Waiting times in the clinic
- What happens when a WBOT patient goes to the clinic
- Complaint management

- Services feedback management

Thank you for taking part in the interview.

Appendices for Objective 3

Appendix 11a: Information Sheet for a Facility Manager

Good day,
My name is Hlologelo Malatji, a PhD student at the University of the Witwatersrand, Johannesburg. I am currently evaluating the nurse mentor intervention introduced as part of the Batlhokomedi study. I am documenting how the intervention is currently working in the two health facilities.

As a facility manager, I would appreciate to get your insights regarding this intervention.

Study background
The Centre for Health Policy (CHP) located at the University of the Witwatersrand and the University of Warwick are currently conducting the Batlhokomedi study which is focused on the implementation of the WBOT/CHW programme in the Gauteng province. The study has five distinct phases. The first phase was to describe, cost and compare six existing programmes that provide comprehensive care in order to identify factors that facilitate or impede the success of the programme; second phase was to develop evidence-informed CHW intervention based on the findings of phase one. The intervention introduced consists of a nurse mentor. The nurse mentor is supposed to support two CHW teams in Sedibeng district. The third and fourth phase is the implementation and evaluation of the intervention in the two facilities.

Duration of interview
The interview is expected to last approximately 1 hour.

Voluntary participation
Participation is entirely voluntary. There is no person who will be disadvantaged if they decide not to participate.

Risks
There are no risks associated with participation.

Confidentiality
No one except me and Batlhokomedi study team will have access to the study records, including audio recordings. In sharing the findings, no specific names or any other identifying information will be included in the report, instead unique codes (e.g. VIS) will be used to refer to participants and their facilities.

Approval and anticipated benefits of the study
The Batlhokomedi study has been approved by the University of the Witwatersrand, and the Gauteng Department of Health. It is anticipated the study will help contribute to new ideas and insights, especially on how the challenges faced by CHWs and their team leaders can be addressed.

Questions
Should you have any questions pertaining to this study feel free to contact me on hlologelo.malatji@wits.ac.za or 011 717 2252. My supervisors Professors Jane Goudge and Frances Griffiths can be contacted on jane.goudge@gmail.com and F.E.Griffiths@warwick.ac.uk respectively. Should you have questions relating to the bigger project - Batlhokomedi study, you are free to contact the project manager Doctor Olukemi Babalola on olukemi.babalola1@wits.ac.za or 011 717 4283.

If you are concerned about anything to do with the study in general, or wish to make a complaint, you can contact the chair of the ethics committee at the University of the Witwatersrand, who is Professor Clement Penny at telephone number: (011) 717-3820.

Thank you for considering to participate in the study.

Appendix 11b: Facility Manager Interview Guide

Introduction

Thank you again for agreeing to be interviewed. Are you happy to start with the interview?

Can you please tell me a little about yourself?

Probes:

- Can you tell me where you are from?
- What is your current professional title?
- How long have you worked as a nurse?
- How many years have your worked in this clinic?
- How many years in the current position?

Can you tell me what your role is as a facility manager?

Probes:

- Managing staff, oversight of care, pharmacy, reporting to districts and CHWs

What activities do the CHWs do?

Probes:

- Patient tracing?
- Medication delivery?
- Hospital discharges?

What are the successes and challenges for you in having the CHW team as part of the clinic?

Probes:

- Improving defaulter rates?
- Ensuring hospital discharges are follow up on?
- Improving record keeping? e.g. stats reporting
- Doing campaigns in the community
- CHWs general conduct?

How well is the WBOT team functioning at the moment?

Probes:

- What are benefits of having the nurse mentor?
- Observed experiences of CHWs, OTLs and nurse mentor?

Can you tell me about WBOT engagement with the clinic staff?

Probes:

- What sort of things do they normally talk about?
- Any evidence of efficient working relationship between WBOT and the nursing staff?
- What form of support do they give to CHWs?

How does the referral of WBOT patients INTO the clinic work now?

Probes:

- Is this different from before the nurse mentor arrived?
- What changes have they introduced, if any?

As a facility manager, you oversee the activities of the clinic on daily basis. Can you please tell me what form of support do you give to the CHW team?

Probes:

- How often do you offer support?
- Specific experiences and challenges?

Have you received any complaints about the CHWs? If yes, how did you deal with it?

How is the clinic relationship like with community structures at the moment?

Probes:

- Who are the stakeholders?
- Who has been engaged recently? e.g. ward councilor
- What were the events? e.g. community meetings
- Community member's perceptions of CHWs work?
- Are there initiatives to align CHWs training with community needs?

Thank you for your participation.

Appendix 12a: Information Sheet for a CHW Team Leader / Outreach Team Leader

Good day,
My name is Hlologelo Malatji, a PhD student at the University of the Witwatersrand, Johannesburg. I am currently evaluating the nurse mentor intervention introduced as part of the Batlhokomedi study. I am documenting how the intervention is currently working in the two health facilities.

As a WBOT/CHW team leader, working directly with the nurse mentor, I would appreciate to get your insights regarding the support you are currently receiving from the nurse mentor, and how the WBOT/ CHW programme is currently functioning.

Study background
The Centre for Health Policy (CHP) located at the University of the Witwatersrand and the University of Warwick are currently conducting the Batlhokomedi study which is focused on the implementation of the WBOT/CHW programme in the Gauteng province. The study has five distinct phases. The first phase was to describe, cost and compare six existing programmes that provide comprehensive care in order to identify factors that facilitate or impede the success of the programme; second phase was to develop evidence-informed CHW intervention based on the findings of phase one. The intervention introduced consists of a nurse mentor. The nurse mentor is supposed to support two CHW teams in Sedibeng district. The third and fourth phase is the implementation and evaluation of the intervention in the two facilities.

Duration of interview
The interview is expected to last approximately 1 hour.

Voluntary participation
Participation is entirely voluntary. There is no person who will be disadvantaged if they decide not to take part in the interview.

Risks
There are no risks associated with participation.

Confidentiality
No one except me and Batlhokomedi study team will have access to the study records, including audio recordings. In sharing the findings, no specific names or any other identifying information will be included in the report. Instead codes such as A and B will be used to refer to participants.

Approval and anticipated benefits of the study
The Batlhokomedi study has been approved by the University of the Witwatersrand, and the Gauteng Department of Health. It is anticipated the study will help contribute to new ideas and insights, especially on how the challenges faced by CHWs and their team leaders can be addressed through supervision.

Questions

Should you have any questions pertaining to this study feel free to contact me on hlologelo.malatji@wits.ac.za or 011 717 2252. My supervisors Professors Jane Goudge and Prof Frances Griffiths can be contacted on jane.goudge@gmail.com and F.E.Griffiths@warwick.ac.uk, respectively. Should you have questions relating to the bigger project - Batlhokomedi study, you are free to contact the project manager Doctor. Olukemi Babalola on olukemi.babalola1@wits.ac.za or 011 717 4283.

If you are concerned about anything to do with the study in general, or wish to make a complaint, you can contact the chair of the ethics committee at the University of the Witwatersrand, who is Professor Clement Penny at telephone number: (011) 717-3820.

Thank you for considering to participate in the study.

Appendix 12b: Interview Guide for CHW Team Leader / Outreach Team Leader

Introduction
Thank you for agreeing to be interviewed. Are you ready to start with the interview?

I would like to ask you some questions about yourself:

- How many years have you worked as a nurse?
- How many years have you worked at this facility?
- What is your professional title?
- What is your current role?
- How many years at current position?
- What previous work experience do you have as a nurse
- Were you born in this district? / where are you from ?

I would like to know details about the many areas of your work. Please can you tell me how you undertake each area of work? We are interested in how things are now.

- Planning what the CHW do
- Supervision of CHW clinical work
- Training CHWs
- Putting together statistics of CHW activity

What role do you have in relation to?

- Referrals the CHW make: how are you involved with these?
- Contact tracing: how are you involved with this?
- Medication delivery: how are you involved with this?
- Records of CHW activity (e.g. registration forms, referral forms, notebooks): what do you do with these?

How do you undertake?

- Community engagement activities
- Health campaigns
- Working with other organisations in the community
- Building relationships with the other facility staff

What is your role in securing?

- Supplies for the CHW team
- Facilities/resources for CHW including space, transport, airtime
- Safety of CHWs

<u>I would now like to ask you about working with the nurse mentor</u>
Please describe for me the activities you have done with the nurse mentor in the last week

- Please describe tasks where her input / training /support has been helpful?

- Can you describe some tasks/ activities where you wish you could have had more support?

I would now like to ask you about team relationships which are not always easy.

- Having a new leader can be difficult. In your view, how are relationships in the WBOT? Prompts: What is working well; what is not working well?
- Relationships between clinics and WBOT are also not always easy. Having a new member in a clinic / team can be difficult.
- In your view, how are relationships between clinic and WBOT? Prompts: What is working well; what is not working well?

Thank you for taking part in the study.

Appendix 13a: Information Sheet for Community Health Workers

Good day,
My name is Hlologelo Malatji, a PhD student at the University of the Witwatersrand, Johannesburg. I am currently evaluating a nurse mentor capacity-building intervention being implemented in two primary health facilities.

As a CHW, working with the nurse mentor and outreach team leader you are well placed to provide information about the current operation of the WBOT/CHW programme as well as the type of support given to you by the nurse mentor and the outreach team supervisor. I therefore invite you to take part in the interview.

Study background
The Centre for Health Policy (CHP) located at the University of the Witwatersrand and the University of Warwick are currently conducting the Batlhokomedi study which is focused on the implementation of the WBOT/CHW programme in the Gauteng province. The study has five distinct phases. The first phase was to describe, cost and compare six existing programmes that provide comprehensive care in order to identify factors that facilitate or impede the success of the programme; second phase was to develop evidence-informed CHW intervention based on the findings of phase one. The intervention introduced consists of a professional nurse (nurse mentor). The mentor is supposed to support two CHW teams in Sedibeng district. The third and fourth phase is the implementation and evaluation of the intervention in the two facilities.

Duration of interview
The interview is expected to last approximately 45 minutes.

Voluntary participation
Participation is entirely voluntary. There is no person who will be disadvantaged if they decide not to take part in the interviews.

Risks
There are no risks associated with participation.

Confidentiality
No one except me and Batlhokomedi study team will have access to the study records, including audio recordings. In sharing the findings, no specific names or any other identifying information will be included in the report.

Approval and anticipated benefits of the study
The Batlhokomedi study has been approved by the University of the Witwatersrand, and the Gauteng Department of Health. It is anticipated the study will help contribute to new ideas and insights, especially on how the challenges faced by CHWs and their team leaders can be addressed.

Questions

Should you have any questions pertaining to this study feel free to contact me on hlologelo.malatji@wits.ac.za or 011 717 2252. My supervisors Professors Jane Goudge and Frances Griffiths can be contacted on jane.goudge@gmail.com and F.E.Griffiths@warwick.ac.uk, respectively. Should you have questions relating to the bigger project - Batlhokomedi study, you are free to contact the project manager Doctor Olukemi Babalola on olukemi.babalola1@wits.ac.za or 011 717 4283.

If you are concerned about anything to do with the study in general, or wish to make a complaint, you can contact the chair of the ethics committee at the University of the Witwatersrand, who is Professor Clement Penny at telephone number: (011) 717-3820.

Thank you for considering to participate in the study.

Appendix 13b: Community Health Workers Focus Group Discussion Guide

I am now going to ask you about your work with WBOT. Please all help to answer the questions. I would like you to tell me about what you do day to day.

- Please tell me about how a typical day at work starts, what do you do?
- How do you decide which households you'll visit on a particular day? (Do you do this with your colleague(s) who pairs up with you?)
- How do you plan your work at the beginning of each day?
- How do you keep track of the households where you need to follow-up on a patient?

Please can you describe for us the data reporting system here?

- What information do you record when you are out in the community?
- What do you do with this information, and when?

Thank you. Now please tell me about your pack.

- What is in it?
- When do you use the contents? What for?

What other resources are available for you (e.g. airtime, a meeting place, a place to store your files)? Are these sufficient? If not, please explain?

What are the challenges that you face (e.g. stipend, appreciation for work done, statistics compilation, work hours, work related conflicts etc.)?

What support do you receive from your colleagues, team leader, the clinic staff, from the community? Is the help sufficient? Please explain?

What achievements in your work are you proud of?

What happens when a team member is struggling or can't visit all of their households, for example because of sickness?

How do you relate to the community?

Thank you for taking part in the study.

Appendix 14a: Community Health Worker Interview Guide

Thank you for letting me observe your work over the past few days. I just have a few additional questions for you

What challenges do you face in doing your work?

OUTREACH TEAM LEADER (OTL)

Does the OTL understand your work or challenges you face? Do you discuss your work with her? When?

Probe:

- Ask your feedback at the end of day
- Organize daily or weekly debriefing
- During in-service training
- Does she check your notebooks / examine your stats / read patient files

How does the OTL assist you in your every-day work? Please give examples

Probe:

- Assist with home visits (& how often)
- Compile stats (& how often)
- Ensure availability of medication and other supplies,
- Plan with CHWs regarding how they arrange a day/week's schedule,
- Resolve issues or conflicts with clinic staff
- Attend patients with complex issues
- Teach you how to provide better care for patients
- Correct you when she sees you doing something wrong

NURSE MENTOR

Does the nurse mentor understand your work or challenges you face? Do you discuss your work with her? When?

Probe:

- Organize daily or weekly debriefing
- Offer in-service training
- Does she check your notebooks / examine your stats / read patient files

How does the nurse mentor assist you in your every-day work? Please give examples

Probe:

- Assist with home visits (& how often),
- Compile stats (& how often),

- Ensure availability of medication and other supplies,
- Plan with CHWs regarding how they arrange a day/week's schedule,
- Resolve issues or conflicts with clinic staff,
- Attend patients with complex issues
- Teach you how to provide better care for patients
- Correct you when she sees you doing something wrong

Are there any activities for which you would like more support? Please describe

Who attends the patients you refer to the clinic? How well does the referral work?

Probe:

- Make plans when the referral is made
- Report to anyone, such as team leader, nurse mentor or staff nurse in the clinic
- Make the patient file ready beforehand
- Are you required to make follow-up visit? If so, do you do that, and after how long?

How is the relationship between CHW and the facility?

Probe:

- How is the attitude of the clinic staff towards the CHWs in general?
- Do CHWs get a place inside the clinic to meet and do paper work without being chased away?
- Do CHWs help in the facility, if so, what kind of work and how often?
- If CHWs help clinic work, does the request come from the facility manager, any facility staff, or through the OTL?
- In what circumstances do CHWs need collaboration from facility staff? Please describe.
- Does any facility staff supervise CHWs' work? Please give examples.

How is the relationship between CHWs and the community?

Probe:

- Do you do health campaigns? When was the last time you participated in one?
- Do community members ask for CHW's help when you are traveling in the community?
- Do you know the ward councillor?
- Do you know people in the clinic committee?
- Do you receive complaints about WBOTs? What are the complaints about?

Is there anything else you would like to tell me?

Appendix 15a: Information Sheet for a Community Representative / Leader

Good day,
My name is Hlologelo Malatji, a PhD student at the University of the Witwatersrand, Johannesburg. I am currently evaluating the nurse mentor intervention introduced as part of the Batlhokomedi study. I am documenting how the intervention is currently working in the two health facilities.

As a community representative, we would like to hear about your experiences of having the nurse mentor supporting the WBOT/CHW team in the community.

Study background
The Centre for Health Policy (CHP) located at the University of the Witwatersrand and the University of Warwick are currently conducting the Batlhokomedi study which is focused on the implementation of the WBOT/CHW programme in the Gauteng province. The study has five distinct phases. The first phase was to describe, cost and compare six existing programmes that provide comprehensive care in order to identify factors that facilitate or impede the success of the programme; second phase was to develop evidence-informed CHW intervention based on the findings of phase one. The intervention introduced consists of a professional nurse (nurse mentor). The mentor is supposed to support two CHW teams in Sedibeng district. The third and fourth phase is the implementation and evaluation of the intervention in the two facilities.

Duration of interview
The interview is expected to last approximately 1 hour.

Risks
There are no risks associated with the study.

Confidentiality
No one except me and Batlhokomedi study team will have access to the study records, including audio recordings. In sharing the findings, no specific name or any other identifying information will be included in the report. Instead codes such as A and B will be used to refer to participants.

Approval and anticipated benefits of the study
The Batlhokomedi study has been approved by the University of the Witwatersrand, and the Gauteng Department of Health. It is anticipated the study will help contribute to new ideas and insights, especially on how the challenges faced by CHWs and their team leaders can be addressed.

Questions
Should you have any questions pertaining to this study feel free to contact me on hlologelo.malatji@wits.ac.za or 011 717 2252. My supervisors Professors Jane Goudge and

Frances Griffiths can be contacted on jane.goudge@gmail.com and F.E.Griffiths@warwick.ac.uk, respectively. Should you have questions relating to the bigger project - Batlhokomedi study, you are free to contact the project manager Doctor. Olukemi Babalola on olukemi.babalola1@wits.ac.za or 011 717 4283.
If you are concerned about anything to do with the study in general, or wish to make a complaint, you can contact the chair of the ethics committee at the University of the Witwatersrand, who is Professor Clement Penny at telephone number: (011) 717-3820.

Thank you for considering to participate in the study.

Appendix 15b: Community Representative / Leader Interview guide

Introduction

Thank you again for agreeing to be interviewed. Are you happy to start with the interview?

Can you please tell me a bit about yourself and current role in the community?

Probes:

- What is your role in the community?
- How long have you been a resident in the community?

Can you update me about recent development in the community?

Probes:

- Current challenges faced by the community (e.g. unemployment, lack of roads, crime etc.)?
- What has the community managed to accomplish, over the past months?

Perhaps now, can you tell me what experiences do you have of WBOT?

Probes:

- Types of services they offer
- CHWs general conduct
- Specific example of encounter

The team was recently joined by Mpumi, a nurse mentor at the clinic? Have you heard about / met her?

Probes:

- When, why? specific examples

What do you understand her role to be in the community?

Probes:

- Building CHWs profile in the community?
- Strengthening community link with health systems?
- Marketing CHWs services in the community?

Since the nurse mentor has been working with the CHW for few months now. Have you seen any changes in what the WBOT are doing?

Probes:

- Visibility of the CHW
- Campaigns
- Tracing defaulting patients
- Community consultation/ feedback sessions

Perhaps, can we talk about CHWs relationship with the community; has this changed?

Probes:

- Awareness of CHWs existence and activities
- Specific experiences and challenges relating to CHWs

In your view, how can CHWs services be strengthened to better respond to the changing needs of the community?

Probes:

- Community participation and engagement
- Inter-sectoral response to issues
- Allocation of resources
- Workloads management

How about the community relationship with the clinic?

Probes:

- Waiting times in the clinic
- What happens when a WBOT patient goes to the clinic
- Complaint management
- Services feedback management

Ending the interview

Thank you. Do you have anything else to share with the researcher?

Appendix 16a: Information Sheet for a CHW Client

Good day,
My name is Hlologelo Malatji, a PhD student at the University of the Witwatersrand, Johannesburg. I am currently evaluating the nurse mentor intervention introduced as part of the Batlhokomedi study. I am documenting how the intervention is currently working in the two health facilities.

About a week ago, I visited your household, observing the services rendered by CHWs, and during that visit you were referred to the clinic. I am here today just to follow up with you after that visit.

Study background
The Centre for Health Policy (CHP) located at the University of the Witwatersrand and the University of Warwick are currently conducting the Batlhokomedi study which is focused on the implementation of the WBOT/CHW programme in the Gauteng province. The study has five distinct phases. The first phase was to describe, cost and compare six existing programmes that provide comprehensive care in order to identify factors that facilitate or impede the success of the programme; second phase was to develop evidence-informed CHW intervention based on the findings of phase one. The intervention introduced consists of a professional nurse (nurse mentor). The mentor is supposed to support two CHW teams in Sedibeng district. The third and fourth phase is the implementation and evaluation of the intervention in the two facilities.

Duration of interview
The interview is expected to last approximately 1 hour.

Voluntary participation
Participation is entirely voluntary. There is no person who will be disadvantaged if they decide not to take part in the interviews.

Risks
There are no risks associated with participation.

Confidentiality
No one except me and Batlhokomedi study team will have access to the study records, including audio recordings. In sharing the findings, no specific names or any other identifying information will be included in the report.

Approval and anticipated benefits of the study
The Batlhokomedi study has been approved by the University of the Witwatersrand, and the Gauteng Department of Health. It is anticipated the study will help contribute to new ideas and insights, especially on how the challenges faced by CHWs and their team leaders can be addressed.

Questions
Should you have any questions pertaining to this study feel free to contact me on hlologelo.malatji@wits.ac.za or 011 717 2252. My supervisors Professors Jane Goudge and Frances Griffiths can be contacted on jane.goudge@gmail.com and

F.E.Griffiths@warwick.ac.uk, respectively. Should you have questions relating to the bigger project - Batlhokomedi study, you are free to contact the project manager Dr. Olukemi Babalola on olukemi.babalola1@wits.ac.za or 011 717 4283. If you are concerned about anything to do with the study in general, or wish to make a complaint, you can contact the chair of the ethics committee at the University of the Witwatersrand, who is Professor Peter Cleaton-Jones at telephone number: (011) 717-2301.

Thank you for considering to participate in the study.

Appendix 16b: Interview Guide for a CHW Client

Introduction

Thank you again for agreeing to be interviewed. Are you happy to start?

First, could you please tell me a little bit about yourself?

Probes:

- Age
- Gender
- Number of people in household
- Are you working? If yes, what type of work do you do?
- What other sources of income are there in the household?

Thank you. Now, let's talk a little bit about the CHW's visit.

Probes:

- Can you describe how you felt about the visit that day?
- The CHW suggested that you …….? Were you able to …. ?
- Can you describe for me what happened?

Probes if patient went to the clinic

- Did you meet the CHW there? If yes: In what way did the CHW help you?
- Did you have to queue to get your file, for the vital signs and to see the nurse?
- Please tell me about the attitude of the clinic staff towards you at the clinic when you went there?
- Please tell me how you felt about the services that you received?

For householders who have not taken action based on the CHW recommendation:

- Why didn't you do what the CHW suggested?

When I was last here the CHW said she would do something:

Did the CHW do……?

- If not, why not?
- Did the CHW do anything else?
- Has the CHW made any other visits/follow-ups after the visit we've been discussing?
- If yes, please tell me what happened

Could you tell me a bit about your views of the CHW's service more generally?

Probes:

- Is their service useful?
- How could it be improved?

Has their service changed in any way over the last couple of months? If yes, can you describe some examples for me?

Ending the interview

Thank you. Do you have anything else you wanted to add?

Appendix 17a: Information Sheet for CHW Representatives / Task Team Members

Good day,
My name is Hlologelo Malatji, a PhD student at the University of the Witwatersrand, Johannesburg. I am currently conducting a study focusing on the implementation of the WBOT/ CHW programmes. As part of the Batlhokomedi study, I have learnt that the programmes face a number of challenges in the district, for example poor supervision and shortage of working tools. A nurse mentor has been introduced to address some of these challenges, especially supervision. The nurse mentor will support two CHW teams in primary health facilities.

I am aware you are one of the leaders of the task team elected to address some of the challenges faced by CHWs in the district; I would appreciate an opportunity to interview you, regarding the challenges experienced by CHWs in the district?

Study background
The Centre for Health Policy (CHP) located at the University of the Witwatersrand and the University of Warwick are currently conducting the Batlhokomedi study which is focused on the implementation of the WBOT/CHW programme in the Gauteng province. The study has five distinct phases. The first phase was to describe, cost and compare six existing programmes that provide comprehensive care in order to identify factors that facilitate or impede the success of the programme; second phase was to develop evidence-informed CHW intervention based on the findings of phase one. The intervention introduced consists of a professional nurse (nurse mentor). The mentor is supposed to support two CHW teams in Sedibeng district. The third and fourth phase is the implementation and evaluation of the intervention in the two facilities.

Duration of interview
The interview is expected to last approximately 1 hour.

Risks
There are no risks associated with the study.

Confidentiality
No one except me and Batlhokomedi study team will have access to the study records, including audio recordings. In sharing the findings, no specific name or any other identifying information will be included in the report.

Approval and anticipated benefits of the study
The Batlhokomedi study has been approved by the University of the Witwatersrand, and the Gauteng Department of Health. It is anticipated the study will help contribute to new ideas and insights, especially on how the challenges faced by CHWs, team leaders and service recipient can be addressed.

Questions
Should you have any questions pertaining to this study feel free to contact me on hlologelo.malatji@wits.ac.za or 011 717 2252. My supervisors Professors Jane Goudge and

Frances Griffiths can be contacted on jane.goudge@gmail.com and F.E.Griffiths@warwick.ac.uk, respectively. Should you have questions relating to the bigger project - Batlhokomedi study, you are free to contact the project manager Doctor Olukemi Babalola on olukemi.babalola1@wits.ac.za or 011 717 4283. If you are concerned about anything to do with the study in general, or wish to make a complaint, you can contact the chair of the ethics committee at the University of the Witwatersrand, who is Professor Clement Penny at telephone number: (011) 717-3820.

Thank you for considering participating in the study.

Appendix 17b: CHW Representative / Task Team Members

Introduction

Thank you for agreeing to be interviewed. Are you happy to start with the interview?

Can you please tell me a little about yourself and current role in the district?

Probes:

- Which province/district were you born?
- How long have you lived in this district?
- What is your current occupation (e.g. CHW, health promoter)?
- How many years have you worked in your current occupation?

Can you update me about recent development in the district/sub-district?

Probes:

- Challenges faced by the district?
- What has the district managed to accomplish recently?

I am aware that you are a member of the task team introduced to address the challenges confronting the CHWs in the district. Can we please talk about this?

Probes:

- What grievances led to the establishment of the task team?
- Who is part of the task team?
- Issues being attended by the task team?

What issues have you managed to address as a task team so far?

I understand your role as a member of task team may require you to be confrontational sometimes; perhaps can you tell me more about your relationship with the district and others?

Probes:

- How is your relationship with WBOT district managers, facility managers, OTLs?

What is your relationship like with CHWs in the district and province?

Probes:

- What issues do you normally talk about when you meet? And why?
- How do CHWs report their grievances to the task team?
- Do you hold regular meeting with the CHWs?
- Any issue(s) currently on the table to be addressed?

Lastly, can you please share with me any achievements of the task team that you are proud of?

End of interview

We have reached the end of the interview. Thank you for taking part in the interview.

Appendix 18a: Consent for Interview Participation

I _____ hereby give consent for participation in the study. The purpose of the study was properly explained to me and I was informed of the following:

- Participation is entirely voluntary.
- There would not be any monetary reward for participation.
- I have the right not to answer questions that I am not comfortable in answering.

Participant's signature: _____ Date: _____

Researcher's signature: _____ Date: _____

Appendix 18b: Consent For Audio-recording of Interview

I _____ hereby give consent for audio-recording of the interview. The purpose of the study was properly explained to me, the researcher also emphasised that:

- The information I will share will be kept confidential.
- No one other than the researcher and study supervisors will have access to the collected data.
- Identifying information such as names will be replaced with unique codes such as A and B.

Participant's signature: _____ Date: _____

Researcher's signature: _____ Date: _____

Appendix 19: Turnitin Report

PhD thesis, Hlologelo Malatji-2.docx

ORIGINALITY REPORT

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