CHAPTER 3. Research design

This Chapter presents the research questions, approach and methodology and issues regarding the trustworthiness of the research conducted. The Chapter ends with an overview of the proceeding Chapters.

3.1 Research questions

The role of community health workers (CHWs) in health systems and the importance of investigating how their performance can be improved have become evident. Therefore, the main research question of this thesis is:

How is performance of community health workers shaped in low- and middle-income countries?

By answering this question, it is hoped that a contribution can be made to the realization of better informed, more effective and sustainable CHW programmes and ultimately an improved health status of poor and rural communities in low- and middle-income countries (LMICs). Based on the research findings, recommendations for improvement of CHW performance are developed for two audiences. First, the research provides input into the development of quality improvement interventions in two cycles of implementation research (conducted from 2015-2017) by national research organizations in Ethiopia, Kenya, Malawi and Mozambique, in cooperation with the governments, development partners and other stakeholders involved in running CHW programmes in these countries. Second, the research aims to contribute to global and national government efforts (of countries other than the four previously mentioned) with regard to improving CHW performance and optimizing CHW programmes in general. Based on the main research question, five study questions have been formulated:

1. Which factors related to CHW programme- or intervention design influence the performance of CHWs?
2. Which contextual factors, including the broader and health system context, influence the performance of CHWs?
3. How do these factors interplay with each other?
4. How are relationships between CHWs, their communities and actors in the health sector shaped and how do they influence CHW performance in selected countries?
5. What are the similarities and differences regarding factors that influence relationships of CHWs with communities and actors in the health sector in selected countries?
3.2 Research approach and methodology

The research conducted to address the study questions falls under the broad category of health policy and systems research. The research was defined by the topic and questions it considered, rather than a particular disciplinary approach or research paradigm. The complexity of the research topic demanded multi- and inter-disciplinary inquiry: the research team consisted of public health, social science, anthropology and clinical-oriented researchers. This thesis aimed to develop a theory about the factors and underlying mechanisms that influence CHW performance, and to formulate suggestions about how they are linked together. The theory presented in this thesis formed the basis of the development of quality improvement interventions of CHW programmes in selected countries.

The research was conducted using a qualitative methodology. This allowed for answering questions on “how” and “why” CHW performance is influenced, thereby providing in-depth information to feed into the development of specific pathways that could lead to improved CHW performance in certain contexts. Several studies have pointed to the need for more qualitative or mixed research methodologies to better understand the underlying and contextual issues that effect upon the performance of CHWs and thus the successful implementation and scale-up of CHW programmes (Kane et al. 2010; Lewin et al. 2010). The research was divided in two parts, entailing a theoretical and an empirical component.

Part 1. The theoretical component: a qualitative research synthesis

Study questions 1-3 were answered through a systematic review of the literature, in the form of a qualitative research synthesis that included qualitative, quantitative and mixed methods studies. A qualitative synthesis is defined as:

“any methodology whereby study findings are systematically interpreted through a series of expert judgements to represent the meaning of the collected work. In a qualitative synthesis, the findings of qualitative studies — and sometimes mixed-methods and quantitative research — are pooled” (Gilson 2014: p. iii1)

This methodology was chosen because it enabled the research team to unravel which factors were important in which contexts, why, and how they influenced CHW performance. The synthesis served to develop a framework on pathways to improved CHW performance. This framework may be used by researchers, policy makers and programme managers in their efforts to improve the performance of CHWs in different contexts.

The synthesis used a framework approach: an initial framework (Figure 2.2) was created after reading selected literature and then modified based on issues reported in the studies
Chapter 3

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The synthesis used a framework approach: an initial framework (Figure 2.2) was created after reading selected literature and then modified based on issues reported in the studies included in the synthesis (Dixon-Woods 2011). Six databases were searched for relevant literature on CHWs and studies were included or excluded using pre-set criteria. A total of 143 studies met the inclusion criteria. A data extraction form was developed based on the initial framework, and filled in after reading the full text of each included study. Each study was read by two researchers, and additions and adjustments on filled data extraction forms were made by the second reader. Themes and categories were identified by assessing all data extraction forms. Narratives were written according to main and sub-themes.

Chapters 4 and 5 provide a detailed description of the methodology used for the qualitative research synthesis. Chapter 4 presents the intervention design factors that influence CHW performance, as derived from 140 studies reporting on one or more of these factors. Chapter 5 presents evidence on contextual factors that influence CHW performance, derived from a total of 94 studies that included one or more contextual factors.

Part 2. The empirical component: case studies

Study questions 4 and 5 were answered using a case study methodology. Case studies are suitable for conducting in-depth analyses of social phenomena (Yin 2013). As CHW programmes are shaped by human values and relationships, the case study was a suitable methodology to answer the study questions.

Two single case studies and one qualitative comparative multiple case study were conducted. Selection of the cases (countries) was based on CHW programme features in the respective countries (see the section Selection of cases and research sites). The case studies were based on the analytical framework developed from the qualitative research synthesis, and as such, the framework was applied and “tested”. The case studies consisted of a desk study and a qualitative study. The desk studies entailed document review: peer-reviewed articles, government documents and programme evaluation reports on national CHW programme(s) were included. The qualitative studies entailed semi-structured interviews (SSIs) and focus group discussions (FGDs) with CHWs, communities, supervisors and managers as well as validation meetings with these stakeholders.
The single case studies

To address study question 4, two single case studies were conducted in Ethiopia and Malawi. The methodology for the qualitative component of the Ethiopia and Malawi case studies is presented below and fully described in Chapter 6 and 7 respectively.

In Ethiopia, the case study was based on a qualitative study conducted in six districts in Sidama zone of the South Nation Nationalities and Peoples Region. The study included 14 FGDs with CHWs, women and men from the community and 44 SSIs with CHWs, key informants working in programme management, health service delivery and supervision of CHWs, mothers and traditional birth attendants (TBAs). Purposefully sampled respondents were asked about facilitators and barriers regarding CHWs’ relationships with their communities and actors in the health sector and CHW performance in general, after having given informed oral or written consent. Interviews and FGDs were recorded, transcribed, translated, coded and thematically analysed. The study was approved by the Royal Tropical Institute Ethical Review Committee in Amsterdam and the South Nation Nationalities and Peoples Region Health Bureau Research and Technology Transfer Core Process of South Ethiopia.

In Malawi, the case study was based on a qualitative study conducted in two districts: Mchinji and Salima. A total of 16 FGDs and 44 SSIs were conducted. Study respondents were purposefully sampled and included women with under-five children, volunteers, TBAs and traditional leaders (members from the communities), district managers, health centre in charges, and representatives of non-governmental organizations (NGOs) and CHWs. The study in Malawi also focused on facilitators and barriers regarding CHWs’ relationships with their communities and actors in the health sector and CHW performance in general. Topic guides were similar to those used in the Ethiopia study, but adjusted to the Malawi context. Participants gave informed oral or written consent. Interviews and FGDs were recorded, transcribed and translated, coded and thematically analysed. The study was approved by the Royal Tropical Institute Ethical Review Committee in the Netherlands and the National Health Sciences Research Committee in Malawi.

The qualitative comparative multiple case study

A qualitative comparative multiple case study addressed study question 5. This study was conducted to further explore the mechanisms through which CHW programme or intervention elements led to improved relationships between CHWs, communities and actors in the health sector, and ultimately CHW performance, and in which contexts those mechanisms took place. The study included the Ethiopia and Malawi single case studies, and added data from case studies conducted in Kenya and Mozambique. The comparative
analysis was conducted with a realist “lens”. Realist evaluations, part of a wider family of theory-driven approaches to evaluation, are used to assess research evidence on complex social interventions, which provides an explanatory analysis of “how” and “why” they work (or do not work) in particular contexts. Realist evaluations consider causality to be generative and actors and society to have potential mechanisms of causation by their very nature. They consider human action to be embedded within a wider range of social processes, and thus causal mechanisms to reside in social relations and context as much as in individuals (Marchal et al. 2012). They test programme theories and effects of interventions by identifying through which underlying mechanisms (M) a causal outcome (O) was triggered and in which context (C) this took place. Therefore, analysis through a realist lens was appropriate to be able to develop context-specific recommendations to improve performance of CHWs and optimize the benefits of their unique position between communities and the health sector (Pawson et al. 2004; Rycroft-Malone et al. 2012).

It is important to note that the studies in Ethiopia and Malawi were conducted by the PhD candidate together with the country research teams¹. The studies in Kenya and Mozambique were primarily conducted by the country teams, and the PhD candidate conducted in-depth analysis of the collected data to answer study question 5 on similarities and differences regarding factors that influence relationships of CHWs with communities and actors in the health sector in the four countries. The methodology of the multiple case study is fully described in Chapter 8.

Figure 3.1 presents an overview of the methodology used in this thesis.

Figure 3.1 Overview of the methodology

1 These teams consisted of researchers from the national research organizations and researchers from the Royal Tropical Institute (KIT) and the Liverpool School of Tropical Medicine (LSTM).
Selection of cases and research sites

This thesis is part of REACHOUT – linking communities and health systems, an ambitious 5-year international research consortium funded by the European Commission, which started in February 2013. REACHOUT helps to understand and develop the role of close-to-community (CTC) providers working on improving the health status of communities in Africa and Asia. The aim of REACHOUT is to maximize the equity, effectiveness and efficiency of CTC services in rural areas and urban slums in six countries: Bangladesh, Ethiopia, Indonesia, Kenya, Malawi and Mozambique. REACHOUT has four specific objectives (LSTM 2012):

1. To build capacity to conduct and use health systems research to improve CTC services
2. To identify how community context, health policy and interactions with the rest of the health system influence the equity, effectiveness and efficiency of CTC services
3. To develop and assess interventions with the potential to make improvements to CTC services
4. To inform evidence-based and context-appropriate policy making for CTC services

The thesis contributes to REACHOUT objectives 2 and 4.

The theoretical component of this thesis focuses on CHW performance around the globe. With regard to the empirical component, research was bound to take place in one or more of the six REACHOUT countries. Ethiopia and Malawi were chosen for field work conducted by the PhD candidate, to be able to develop two in-depth case studies on the CHW programmes in these countries (Box 3.1).

Box 3.1 CHW programmes in Ethiopia and Malawi

In Ethiopia, the Health Extension Programme was launched in 2004. A cadre of female health extension workers (HEWs) has been trained and salaried by the government. They have a broad job description and are delivering primary health care services under 16 health packages (Admassie, Abebaw, and Woldemichael 2009). The research focused on the performance of HEWs regarding the delivery of maternal health services.

In Malawi, health surveillance assistants (HSAs) conduct various promotive, preventive and curative tasks. They are government employees, but are also involved in different NGO-led programmes. The critical shortage of health workers has resulted in increasing demand for HSAs (Bemelmans et al. 2010; Hermann et al. 2009; Kok and Muula 2013). The research focused on HSAs’ roles in maternal and child health.
Ethiopia and Malawi were chosen because of a good mix of similarities and differences in their CHW programmes. Within REACHOUT, the two Asian countries do not primarily focus on CHWs, but on other types of CTC providers (informal providers in Bangladesh and village midwives in Indonesia). Therefore, the CHW programmes of these countries could not be analysed in-depth. The research in all four African countries focuses on national CHWs programmes. Unlike in Mozambique and Kenya, CHWs in Ethiopia and Malawi are government workers with a fixed salary. In both Ethiopia and Malawi, CHWs have an extensive package with tasks that they are supposed to conduct. This leads to the same kinds of constraints, for example regarding workload. There are differences between the CHW programmes of both countries. For example, HEWs in Ethiopia undergo a one-year initial training, while HSAs in Malawi receive 12-weeks of initial training. Supervision structures and the link between CHWs and the community are also organized in different ways. The above reasons made the two countries suitable for two in-depth cases studies, and the whole of four countries suitable for a qualitative comparative multiple case study.

Within the four study countries, the research was conducted in rural districts, with the exception of Kenya, where one rural and one urban district were included. Access to health care is more problematic in rural than in urban areas, because urban areas generally have more health workers of all types. One could argue that the role of CHWs is more necessary in rural communities. Whether this is the case or not, it is clear that in many countries, CHW programmes are more established and running for a longer time in rural areas than in urban areas (MCHIP 2014). To be able to obtain a comprehensive overview of factors influencing the performance of CHWs, the research was conducted in rural districts with well-established and functioning CHW programmes. Recently, governments in several countries have increased efforts to improve CHW programmes and increase access to health services for people living in urban areas, especially in urban slums (MCHIP 2014; Sibamo and Berheto 2015). These urban CHW programmes require a different focus as well as different intervention designs. That was the reason for the Kenya team to include an urban slum (Nairobi) as one of the research sites.

3.3 Trustworthiness of the research

For qualitative studies to be trustworthy, Lincoln and Guba (1985) suggested that the research should be credible (rather than internally valid), consistent (rather than reliable) and transferable (rather than externally valid).

Credibility

Credibility deals with ensuring the right inference of data by researchers. With regard to the qualitative research synthesis, like with meta-syntheses of qualitative research, little
has been written about how rigour should be applied in the analytical technique (Walsh and Downe 2005). Jensen and Allen (1996) link credibility of meta-syntheses to faithfulness in handling the data so that it remains true to its source (Jensen and Allen 1996). Another process that could be followed is turning back to the researchers of included studies to confirm if data presented in the synthesis are accurate (Thorne et al. 2002). While the last process was not undertaken, efforts were made to handle the data in such a way that it remained true to its source. Data extraction forms were filled in using quotes and original texts of the included articles.

Triangulation is another technique to increase credibility. It entails the use of multiple studies (which a research synthesis does by definition), multiple data sources and independent review by experts (which was done as well). With regard to the case studies, triangulation was conducted by using multiple data sources and researchers. In the qualitative studies, different methods were used (SSIs and FGDs) with different types of relevant respondents. Findings of the studies were validated in stakeholder meetings, thereby minimizing mistakes and misunderstandings by researchers. Multiple researchers were involved in the design of the study, data collection and analysis. Continuous reflection with colleagues was undertaken to reduce researcher bias. Data collectors were trained and familiar with working in the respective communities. In-depth probing was conducted to yield rich data. It is also worthwhile to note that the researchers had a long engagement in the CHW programmes. The PhD candidate coordinated human resource management strategies to improve CHW performance in Mwanza, Malawi for three years (Kok and Muula 2013), which contributed to understanding the realities faced by this cadre.

**Consistency**

Consistency can be established through extensive documentation. With regard to the qualitative research synthesis, an extensive research protocol was followed, and every step undertaken in the process has been documented. Within the qualitative studies in the four countries, data were collected according to a field protocol. Primary data were extensively documented through verbatim transcripts of SSIs and FGDs. Saturation of data was sought: SSIs and FGDs were conducted until no new issues emerged. Field notes were made during data collection and discussed among the data collectors on a daily basis. These discussions were noted down as well. The consistency between the country studies was established by using generic data collection tools as a basis for each country to adapt to its specific context.
Transferability

Transferability is the process of theorizing how findings from qualitative studies are applicable in other cases or settings. It implies that the interpretations made are widely recognized to have value beyond the particular examples considered. Such trustworthiness is, in essence, negotiated between researchers and research users on the basis of transparent information on study design and the processes of data collection, analysis, and interpretation (Gilson 2011). With regard to the qualitative research synthesis, it is the judgements entailed in the interpretive analysis that provide new ideas and insights (Gilson 2014). Where possible, it was attempted to move beyond the findings of the individual studies included.

We employed various ways of enabling transferability with regard to the case studies. The transferability to other settings, or inferential generalization, was facilitated by the in-depth inquiry and provision of “thick descriptions” of the researched context and phenomena (Ritchie and Lewis 2003). The diversity of cases that were analysed using the same conceptual framework offered opportunities for theoretical generalization of the research findings. Besides comparing the case studies with each other, the qualitative comparative multiple case study used a theory-driven approach: an initial theory on CHWs’ relationships and performance was developed from evidence from the literature and refined based on the findings of the case studies. Negative case analysis was conducted, which means that data were identified that contradicted initial assumptions (Gilson et al. 2011). During data analysis, the realist lens ensured that context was taken into consideration to be able to identify what works, for whom and in which setting. A continuous process of conceptualizing and re-conceptualizing took place in which all members of the research group (involved in the multiple case study) participated.

In addition to the above, there is a role for the reader as well. Lincoln and Guba (1985) argue for transferability in which readers use rich descriptions provided in case studies to reason and theorize (through vicarious learning) how findings are applicable to other similar cases or settings. Geertz (1994) suggests that through analytical (or theoretical) generalization readers can use thick descriptions from specific case studies to test or change theoretical ideas.

3.4 Outline of the thesis

Chapters 4 and 5 present the outcomes of the qualitative research synthesis, from the systematic review of the literature. Chapter 4 zooms in on factors related to CHW programme or intervention design that influence the performance of CHWs and Chapter 5 looks at contextual factors, including the broader and health system context, that influence the performance of CHWs. Chapter 6 contains a case study on how relationships
between HEWs, their communities and health sector actors are shaped and how they influence HEW performance in Ethiopia. The same type of case study is presented in Chapter 7 for Malawi. Chapter 8 covers the qualitative comparative multiple case study, focusing on the similarities and differences regarding factors that influence relationships of CHWs with communities and health sector actors in Ethiopia, Kenya, Malawi and Mozambique. In Chapter 9, the findings from the preceding Chapters are discussed, conclusions are drawn and recommendations for policy, practice and further research are made. As most Chapters have been written as individual articles, there is some overlap between the introductory sections of some of the Chapters.
PART 2 – Factors shaping performance of Community Health Workers

Abstract
Community health workers (CHWs) are increasingly recognized as an integral component of the health workforce needed to achieve public health goals in low- and middle-income countries (LMICs). Many factors influence CHW performance. A systematic review was conducted to identify intervention design related factors influencing performance of CHWs.

We systematically searched six databases for quantitative and qualitative studies that included CHWs working in promotional, preventive or curative primary health services in LMICs. One hundred and forty studies met the inclusion criteria, were quality assessed and double read to extract data relevant to the design of CHW programmes. A preliminary framework containing factors influencing CHW performance and characteristics of CHW performance (such as motivation and competencies) guided the literature search and review.

A mix of financial and non-financial incentives, predictable for the CHWs, was found to be an effective strategy to enhance performance, especially of those CHWs with multiple tasks. Performance-based financial incentives sometimes resulted in neglect of unpaid tasks. Intervention designs which involved frequent supervision and continuous training led to better CHW performance in certain settings. Supervision and training were often mentioned as facilitating factors, but few studies tested which approach worked best or how these were best implemented. Embedment of CHWs in community and health systems was found to diminish workload and increase CHW credibility. Clearly defined CHW roles and introduction of clear processes for communication among different levels of the health system could strengthen CHW performance.

When designing community-based health programmes, factors that increased CHW performance in comparable settings should be taken into account. Additional intervention research to develop a better evidence base for the most effective training and supervision mechanisms and qualitative research to inform policymakers in development of CHW interventions are needed.