PERFORMANCE OF
COMMUNITY HEALTH
WORKERS

Optimizing the benefits of their unique position between communities and the health sector

Maryse Catelijne Kok

Performance of Community Health Workers

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VRIJE UNIVERSITEIT

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ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad Doctor aan
de Vrije Universiteit Amsterdam,
op gezag van de rector magnificus
prof.dr. V. Subramaniam,
in het openbaar te verdedigen
ten overstaan van de promotiecommissie
van de Faculteit der Aard- en Levenswetenschappen
op maandag 23 november 2015 om 11.45 uur
in het auditorium van de universiteit,
De Boelelaan 1105

door

Maryse Catelijne Kok

geboren te Schagen

promotor: prof. dr. J.E.W. Broerse
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"We are like the messengers between the health workers and the people in the community, connecting them regarding the problems they face concerning health."

(Health surveillance assistant, Malawi)

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Kok, M. C., M. Dieleman, M. Taegtmeyer, J. E. W. Broerse, S. S. Kane, H. Ormel, M. M. Tijm, and K. A. M. de Koning. 2014. "Which intervention design factors influence performance of community health workers in low- and middle-income countries? A systematic review." *Health Policy and Planning:* 1-21 doi:10.1093/heapol/czu126.

Kok, M. C., S. S. Kane, O. Tulloch, H. Ormel, S. Theobald, M. Dieleman, M. Taegtmeyer, J. E. W. Broerse, and K. A. M. de Koning. 2015. "How does context influence performance of community health workers in low-and middle-income countries? Evidence from the literature." *Health Research Policy and Systems:* 13(1): 13.

Kok, M. C., A. Z. Kea, D. G. Datiko, J. E. W. Broerse, M. Dieleman, M. Taegtmeyer, and O. Tulloch. "A qualitative assessment of health extension workers' relationships with the community and health sector in Ethiopia: opportunities for enhancing maternal health performance." *Human Resources for Health:* 13:80.

Kok, M. C., I. Namakhoma, L. Nyirenda, K. Chikaphupha, J. E. W. Broerse, M. Dieleman, M. Taegtmeyer, and S. Theobald. "Health surveillance assistants as intermediates between the community and health sector in Malawi: Exploring how relationships influence performance." Under review at *BMC Health Service Research*.

Kok, M. C., H. Ormel, J. E. W. Broerse, S. S. Kane, I. Namakhoma, L. Otiso, M. Sidat, A. Z. Kea, M. Taegtmeyer, S. Theobald, and M. Dieleman. "Optimizing the benefits of community health workers' unique position in between communities and the health sector: a comparative analysis on factors shaping relationships in four countries." Under review at *Global Public Health*.

PART 1 – Setting the Stage

CHAPTER 1. Introduction

Many countries are striving to achieve health for all. The concept of universal health coverage – ensuring that everyone in need is able to receive good quality health services without undue financial hardship – has been growing across the globe (WHO 2010). However, in many parts of the world, equitable access to health care services is still not achieved (Barros et al. 2012; Neal et al. 2015). Health systems, in particular those in low- and middle-income countries (LMICs), are struggling to serve poor and vulnerable communities that bear the brunt of the burden of disease. Globally, child mortality has dropped nearly 50% since the 1990s (Wang et al. 2014). Maternal mortality dropped 1.3% per year since 1990 (Kassebaum et al. 2014). Despite this progress, 17,000 children are still dying every day from preventable causes, stillbirth rates have not measurably changed, and numerous women are dying (289,000 in 2013) or suffering from acute or chronic illnesses as a result of childbirth (Requejo and Bhutta 2015).

Many LMICs will not have achieved the millennium development goals on the reduction of maternal mortality and preventable deaths of newborns and under five children by the end of 2015. New targets have been set in the recently developed sustainable development goals, which also contain a broader target on universal health coverage. The target reads:

> *"To achieve universal health coverage, including financial risk protection, access to quality essential health care services, and access to safe, effective, quality, and affordable essential medicines and vaccines for all."* (UN 2014: target 3.8)

Improving equitable access to quality health care services needs global and national investments in close-to-client primary health care (Rao and Pilot 2014; WHO 2008). Basic but essential health care services need to be available close to individuals, families and communities, close to where people live and work, and should constitute the first element of a continuous health care process (Rao and Pilot 2014).

Community health workers (CHWs) are an instrumental group of health workers who provide these health care services at the community level (Bhutta et al. 2010). Evidence shows that CHWs can be effective in improving population health in LMICs (Gilmore and McAuliffe 2013; Perry, Zulliger, and Rogers 2014). CHWs are extensively involved in the provision of promotive, preventive and some basic curative health care services, often substituting for professional health workers as a result of task shifting in a context of constrained human resources for health (Chopra et al. 2008). Thereby, CHWs extend services to hard-to-reach groups and areas, delivering health interventions right in their communities, which tends to be more equitable than services delivered at health facilities (Barros et al. 2012).

Over the past years, many LMICs have made efforts to strengthen their CHW programmes as one of the elements contributing to achieving universal health coverage (Tulenko et al. 2013). CHWs work at the complex interface of communities and the health sector, have increasing tasks and responsibilities, limited training and face numerous resource constraints. Policy makers and programme managers who aim to optimize and scale-up CHW programmes are in search of strategies that could support the performance of CHWs (Glenton et al. 2013).

The **aim of this thesis** is to gain insight into how performance of CHWs in LMICs can be improved, in order to contribute to the realization of better informed, more effective and sustainable CHW programmes and ultimately improved health status of poor and rural communities.

CHAPTER 2. Health systems and community health workers: insights from theory and history

This Chapter discusses some of the theoretical concepts and the historical background on which this thesis is based, with regard to health systems, community health workers (CHWs) and their performance.

2.1 The health system and its workforce

It will be difficult to achieve universal health coverage without greater and more effective investment in health systems. In order to promote a common understanding of what a health system is and guide global agencies, national governments and other organizations in their efforts to strengthen health systems, the World Health Organization (WHO) issued a "Framework for Action". In this framework, a health system is defined to include *"all organizations, people and actions whose primary intent is to promote, restore and maintain health"*. For health systems to be strengthened, six essential health system functions, the so-called building blocks, need attention in an integrated manner. The six building blocks entail: service delivery, human resources, information, medicines and technologies, financing and governance (WHO (2007), Figure 2.1). The building blocks can be seen as sub-systems of the health system and within every sub-system there is an array of other systems. There are multiple relationships and interactions among the sub-systems, and interventions that aim to improve health need to be implemented in this dynamic architecture.
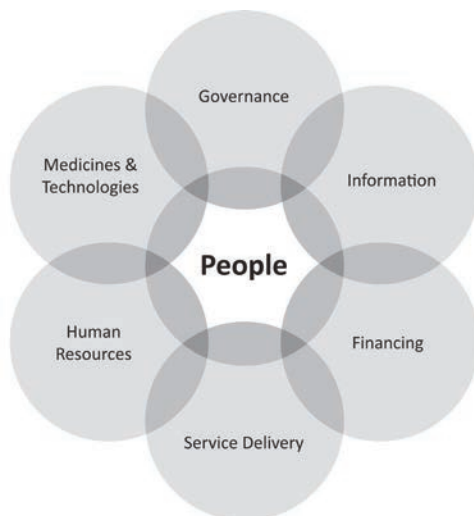

Figure 2.1 The health systems framework (De Savigny and Adam 2009, p. 32)

There is a central place for people in the health systems framework. People are driving the system, but are at the same time beneficiaries of it (De Savigny and Adam 2009). The centrality of people in the health systems framework reflects that the health system is driven by human interaction: from political decision making to the relationships among actors involved in delivering and receiving promotive, preventive and curative health care (Hernandez 2014).

Human resources, being one of the health systems building blocks, are critical to functioning health services and attaining the newly set sustainable development goals (Tangcharoensathien, Mills, and Palu 2015). An adequate health workforce is needed to reach more people with an extended health benefit package of good quality (Campbell et al. 2013). There is a massive shortage of health workers in both Africa and Asia. New projections based on the WHO Global Health Observatory show that 10.3 million additional health workers are needed to ensure universal health coverage; this includes 2.8 and 7.1 million health workers in Africa and Asia, respectively (ILO 2014). For these gaps to be met, governments should commit to produce and retain health workers in their country. In addition to increasing the number of available health workers, their skill mix, distribution, quality and performance are also of utmost importance (Cometto and Witter 2013). Matching population health needs with a supply of competent and motivated health workers that are both "fit for purpose" and "fit to practise" in a country's context is therefore the foundation for accelerating the attainment of universal health coverage (Campbell et al. 2013).

The above figures on the shortage of health workers focus on physicians, nurses and midwives. Despite the importance of these skilled health workers, it is clear that the majority of low- and middle-income countries (LMICs) will not be able to close the gaps. It has been estimated that some low-income countries would have to allocate 50% of their gross domestic product to health to be able to reach the optimal amount of skilled health workers. Therefore, in many LMICs, mid-level providers (such as clinical officers and medical assistants) and CHWs are deployed to improve the availability and accessibility of (primary) health care services (Cometto and Witter 2013).

2.2 Community health workers

There are many types of CHWs, depending on country and setting. All have in common that they are health workers performing functions related to healthcare delivery; they have received limited training focused on activities they need to carry out in the context of the intervention(s) they implement; and they have received no formal professional or paraprofessional certificate or tertiary education degree (Lewin et al. 2010). In some countries, they are salaried workers and official part of the health sector, while in other countries they are volunteers at village level. They can have specified tasks and work for a

particular programme (for example a malaria or tuberculosis programme), but many CHWs have broad job descriptions with different tasks to perform and large workloads. CHWs' tasks mainly focus on health promotion and prevention, although sometimes they also conduct simple curative tasks. CHWs form the first contact with the health sector for people at community level (Lehmann and Sanders 2007). With adequate performance of CHWs, it can be assumed that there would be less health-related problems at village level and a decreased workload in health facilities, as a result of preventive measures and timely referrals.

The history of community health worker programmes

In the 1960s, the inability of the modern western medical model of trained physicians, nurses and midwives to serve the needs of rural and poor populations in low-income countries was becoming readily apparent. In 1978, the WHO and the United Nations Children's Fund (UNICEF) organized the first international conference on primary health care at Alma-Ata, Kazakhstan. This conference resulted in the "Declaration of Alma-Ata", which called for the achievement of "Health for All" by the year 2000 through primary health care. The principles of primary health care which were adopted, and which are still applicable to date, are: social justice, equity, community participation, disease prevention, multi-sectoral collaboration, decentralization of services to the periphery as close as possible to the people, use of appropriate technology, and the provision of services by a team of workers, including community-based workers (WHO 1978).

In the 1970s and 1980s, many countries invested in CHWs, who received basic training and were often volunteers. Government CHW programmes at national scale emerged in Indonesia, India, Nepal, Tanzania, Zimbabwe, Malawi, Mozambique, Nicaragua and Honduras as well as in other Latin American countries. During the same time, smaller CHW programmes led by non-governmental organizations (NGOs) were initiated in many LMICs. In Brazil, Bangladesh and Nepal, large and successful NGO-led CHW programmes were established. However, from the 1980s onwards, in many countries programmes involving CHWs went into decline, due in part to political instability, economic policies and difficulties in financing. CHWs were often given inadequate support (training, remuneration, incentives, continuous education, supervision and supplies) and were sometimes seen as lacking legitimacy. In their effort to reach out to underserved communities, CHWs often dropped out due to lack of motivation. As a result of these influences, many governments reduced or discontinued their national CHW programmes in the late 1980s and early 1990s (Perry and Zulliger 2012; Standing and Chowdhury 2008). During these decades, vertical programmes, focusing on selected health interventions aiming to tackle the main disease problems in LMICs, gained prominence (Cueto 2004).

Renewed interest in community health workers

Due to the continuing shortage of skilled human resources, health systems are once again turning to strengthening CHW programmes. This renewed interest has been prompted by a number of other factors, including the increased simplification of diagnostic procedures, the growing HIV epidemic, the resurgence of other infectious diseases and the failure of health systems to provide adequate care for people with chronic diseases (Hadley and Maher 2000; Maher et al. 1999). The growing emphasis on decentralization and partnerships with community-based organizations also contributed to the renewed interest in CHWs. As stated above, CHWs conduct a variety of tasks, of which some were formerly the responsibility of other, higher level health workers. Task shifting – sometimes referred to as "task sharing" or "optimizing" – is a process of delegation in which tasks are moved, where appropriate, from more to less specialized health workers. Delegation of tasks is often extended to CHWs (Chopra et al. 2008; Samb et al. 2007).

Various countries have begun to again invest in large CHW programmes. For example, the lady health worker programme in Pakistan, which was launched in 1992, has gradually scaled up to serve 70% of the rural population. In 2004, Ethiopia began its Health Extension Programme, deploying and training health extension workers (Bhutta et al. 2010; Perry and Zulliger 2012; Standing and Chowdhury 2008). More recently in 2010, Zambia started a CHW programme with community health assistants (Zulu et al. 2013). Initiatives like the One Million CHW Campaign, a partnership of United Nations agencies, civil society, the private sector and academia launched in 2013 and supporting African governments in increasing the number and quality of CHWs, show that the trend of expanding CHW programmes is expected to continue.

The potential of community health workers

A Cochrane review assessed the contribution of CHWs towards health of communities from around the globe (Lewin et al. 2010). The review assessed the effectiveness of various CHW programmes and interventions. It concluded that there is evidence that CHW programmes, compared with usual care:

- increase immunization uptake in children;
- increase the number of women initiating breast feeding and who breastfeed their child at all;
- reduce neonatal mortality; and
- improve pulmonary tuberculosis cure rates, but have little or no effect on tuberculosis preventive treatment completion.

This review found less strong evidence regarding the effect of CHWs on reducing maternal morbidity and mortality (Lewin 2010). However, another Cochrane review conducted in

2010 shows that community-based care packages, delivered by a range of community-based workers, can reduce maternal morbidity, neonatal mortality, stillbirths and perinatal mortality (Lassi, Haider, and Bhutta 2010). With regard to CHWs' tasks related to other health issues, such as family planning, evidence is insufficient to draw conclusions about the effectiveness of CHWs. This is mainly due to a lack of high quality randomized controlled trials on the involvement of CHWs in these areas (Lewin et al. 2010).

From a systems perspective, the position and role of CHWs offer other advantages than merely conducting health-related (sometimes shifted) tasks. CHWs offer services closer to the community: this reduces opportunity costs that poor communities would have when using health facilities. CHWs often offer services to their own community. This embedment can offer possibilities to improve access of marginalized communities to health services, as CHWs are familiar with and respond to the existing socio-cultural norms (Bhutta et al. 2010). CHWs have been referred to as cultural brokers or mediators, providing a link between communities and health and social services (Maes and Kalofonos 2013). They are able to empower communities to exercise their rights (Pérez and Martinez 2008). In addition, the opportunity to interact with clients at household and community level gives them a better understanding about the broader context of people's lives (Standing and Chowdhury 2008). This insight can be helpful for the development of prevention programmes and optimization of treatment regimens, which are led by public health and medical professionals who often miss this insight as a result of being facility-based.

2.3 Performance of community health workers

As with other types of health workers, the availability of CHWs alone is insufficient to improve quality of care and have an impact on the health status of communities. It is important to avoid mistakes made in the past and to identify what is needed to make health services provided by CHWs function well. CHW programmes are often hampered by poor motivation, high workloads and varying quality, resulting in staff attrition and sub-optimal effectiveness (Glenton et al. 2013; Perry et al. 2014). There is a need to better understand the context and conditions in which CHWs work, in order to support them in improving their performance and realising their potential (Glenton et al. 2013; Lewin et al. 2010).

According to the WHO definition in the "World health report 2006", a well-performing health workforce is a workforce that:

> *"works in ways that are responsive, fair and efficient to achieve the best health outcomes possible, given the available resources and circumstances"* (WHO 2006: p. 67)

This definition of performance also applies to CHWs, as they are or can be seen as part of the health workforce, depending upon the level of integration of CHWs in the health system. A description of the specific concept of CHW performance is not available from the international literature. However, previous work has shed some light on the different elements of performance of CHWs. CHW performance can be measured at two levels (Figure 2.2). At the level of the individual CHW, there are cognitive, affective and behavioural changes in the CHW him- or herself, such as self-esteem, motivation, attitudes, competencies, guideline adherence, job satisfaction, and capacity to facilitate community agency (Bhutta et al. 2010; Chen et al. 2004; ERT2 2012; ERT3 2012). At the level of the end-user (the community), we can measure CHW-attributable outcomes in communities' behaviour, such as increased use of health services and adoption of health-promoting practices. The ultimate measurement of CHW performance would be CHW-attributable change in population health (impact level), such as a reduction in mortality or morbidity related to certain health conditions (ERT2 2012).

Figure 2.2 Conceptual framework on CHW performance

Factors influencing performance of community health workers

The ability of CHWs to deliver effective health services depends on many different factors (Figure 2.2). These factors can be categorized as programme-related or intervention design factors and contextual factors.

Intervention design factors

The features of the programme or intervention design in which CHWs function can have direct influence on CHW performance. Many studies focus on these factors, which are easier to influence than contextual factors: if programme implementers know how certain features of an intervention affect performance, interventions can be shaped and adjusted to yield optimal CHW performance.

Many intervention design factors are related to human resource management. The basic *training* that is offered to CHWs and the possibility of continuing education influence the performance of CHWs and the effectiveness of their services. In addition, availability of a *supervision* system and how supervision is conducted as well as how CHWs are incentivized can influence performance (Bhattacharyya et al. 2001; Bhutta et al. 2010; Crigler et al. 2011; Glenton et al. 2013; Jaskiewicz and Tulenko 2012; Lehmann and Sanders 2007; Naimoli et al. 2014; Palazuelos et al. 2013; Prasad and Muraleedharan 2007). *Incentive packages* depend on whether CHWs are volunteers or more integrated cadres in the health sector, and should take into account the workload of the CHW (Bhattacharyya et al. 2001). Some scholars discuss that CHWs who volunteer are unlikely to continue to serve without salaries — particularly if the expectations related to their tasks are broadened (Akintola 2010b; Peltzer et al. 2010). However, other scholars argue that intrinsic factors, such as commitment, sense of achievement and altruism, combined with well-functioning *support* and *recognition* from the health system, are critical to becoming and remaining a voluntary, non-remunerated CHW (Kasteng et al. 2015; Maes and Kalofonos 2013).

Vertical, disease-specific programmes that use CHWs for service delivery tend to give limited consideration to *multiple workloads* and have resulted in CHWs facing competing priorities (Ye-Ebiyo et al. 2007). In many countries, the *job description* of CHWs (either officially or unofficially) has become broader over time as a result of task shifting; the increased workload has not always been accompanied with the necessary compensation, training and support mechanisms (Jaskiewicz and Tulenko 2012). Task shifting can even lead to role conflicts and competition between different groups of health workers (De Brouwere et al. 2009; Kok, Herschderfer, and de Koning 2012; Yakam and Gruénais 2009). On the other hand, CHWs taking on new tasks may become more motivated because of increased salaries and public recognition (De Brouwere et al. 2009).

CHWs act as intermediates between communities and the health sector. Their relationships with the health sector are established by their contacts with professional health workers, through support and supervision. Their relationships with communities can be shaped by the involvement of community members in selection and support. These *links between CHWs and actors in the communities and health sector* can influence performance as well. For example, when CHWs are not chosen by communities but rather by local elites or the political establishment, CHWs can lose their sense of relatedness and accountability to communities, diminishing their motivation to perform (Kane et al. 2010). Village health committees, women groups, peer support groups and others often assist CHWs in the performance of their promotional and preventive tasks. Communities can also provide CHWs with incentives, in the form of recognition of the value of CHWs' work or the provision of in-kind incentives, such as special privileges (ERT1 2012). Thus, the link between CHWs and their communities has an influence on their motivation and performance.

Contextual factors

CHWs do not work in a vacuum; they work in a broad cultural, social, gendered, political, economic, legal and communication context (Palazuelos et al. 2013). The influence of this broader context on CHW performance will vary, depending on *locality* (whether CHWs are based in rural or urban areas) and according to *personal features*, such as their age, gender, professional and familial experience. Broad contextual factors are related to the *community context* in which a CHW works. For example, the communities' health-seeking behaviour and perceived legitimacy of the CHW can be influenced by gender norms and values, cultural practices and beliefs (Bhutta et al. 2010; ERT1 2012).

Besides these broad contextual factors, factors associated with the *health system*, such as the availability of human resources for health (HRH) policies, the health system's financial model and infrastructure can also have an influence on the performance of CHWs. Bhutta et al. (2010) conclude that CHW programmes should be coherently inserted in the wider health system, and CHWs should be explicitly included within the HRH strategic planning at country and local level. On the same issue, Hermann et al. (2009) list political support and a regulatory framework as factors for the success of CHW programmes. Health system factors also address issues of more direct influence on CHWs' working conditions. A systematic review on the role of CHWs in malaria treatment found that a well-functioning referral system and a reliable and consistent supply chain for getting essential medicines and equipment to the community level were instrumental for CHW performance (Smith Paintain et al. 2012). The Evidence Review Team 2 of the United States Government Evidence Summit on CHWs also identified several health system factors influencing CHW performance, such as support from the local and national governments and adequate

resources to ensure CHWs are properly equipped, supplied and supported (ERT2 2012). Glenton et al. (2013) also stress the importance of flexible and appropriate working conditions and adequate supplies.

The complexity of community health worker performance

The performance of CHWs remains a point of global attention. The above described studies have identified various factors that may influence CHW performance, but present a far from complete overview. Improving performance of health workers in low-resource settings is a complex dilemma, due to the intersection of multiple factors that influence health workers' ability and willingness to carry out their role (Franco, Bennett, and Kanfer 2002; Rowe et al. 2005). The factors that could influence CHW performance have never been assessed in their totality, and detailed information on "how" these factors play out on CHW performance is lacking (Frymus et al. 2013). The renewed interest and variety in CHW programmes around the globe, combined with the complexity and intersection of factors that influence CHW and programme performance, call for the development of a framework on this topic. The conceptual framework (Figure 2.2) presents an initial overview of the main categories of factors that could influence CHW performance, developed after a first scanning of the literature. The framework will be refined in this thesis, and specific pathways will be presented that shed more light on how performance is shaped in certain contexts.

The complexity of CHW performance lies not only in the multitude of influencing factors, but also in the fact that CHW performance, at the individual level, is the sum of different elements, such as self-esteem, motivation, attitudes, competencies, guideline adherence, job satisfaction, and capacity to facilitate community agency. Knowledge and quality of practice could be influenced by interventions introducing training, guidelines, protocols and technologies, which have shown to improve health outcomes in other settings (Hernandez 2014). Motivation could be improved by interventions that introduce different kinds of incentives, including performance-based incentives (Rahman and Tasneem 2008). While these "technical solutions" may improve CHW performance, they are often not enough. They need to be combined with "people-focused solutions" that enable CHW performance related to self-esteem and self-efficiency. These include processes that promote problem-solving capacity, socialization of values and priorities that engage CHWs' commitment, encourage their participation and respond to their needs (Hernandez 2014). These social processes are related to how CHWs, communities and actors in the health sector interact with and relate to each other. They can be captured in the approach to supervision (supportive and problem solving-focused versus technical and record-based), and the nature of training (participative and including "soft skills", like communication, versus skill-oriented).

In this thesis, performance is understood as a transactional social process between health workers, in this case CHWs, and their environment (Franco et al. 2002). Therefore, a part of this thesis presents an in-depth analysis of how relationships between CHWs and other actors in the health system are shaped, to better understand how CHW performance can be improved in certain contexts. Recent studies have not analysed CHW performance by explicitly taking into account that performance is a complex social process. There is a need for studies with this perspective, as CHWs have a unique intermediary position between communities and the rest of the health system and are as such in the middle of social processes between community members and actors in the health sector.

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

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 teams[1]. 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

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[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 refection 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

CHAPTER 4. Which intervention design factors influence performance of community health workers in low- and middle-income countries? A systematic review

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.

4.1 Background

Countries across the globe are striving to achieve universal health coverage. There is a massive shortage of 4.25 million health workers in Africa and Asia, while the distribution of existing health workers within countries is inequitable (WHO 2006). In response to the human resources for health crisis, many countries have made renewed investments in community health worker (CHW) programmes to extend the reach of inadequate health systems to hard-to-reach and underserved populations, and to expand coverage of key interventions.

A CHW has been defined as *"any health worker carrying out functions related to health care delivery; trained in some way in the context of the intervention, and having no formal professional or paraprofessional certificate or degree in tertiary education"* (Lewin et al. 2010: p. 7). In addition, it is argued that CHWs *"should be members of the communities where they work, should be selected by the communities, should be answerable to the communities for their activities, should be supported by the health system but not necessarily a part of its organization and have shorter training than professional workers"* (Lehmann and Sanders 2007: p. 1). There are many different types of CHWs and different names are used, like lay health workers (LHWs), a synonym for CHWs in this article, and traditional birth attendants (TBAs), who are focusing particularly on maternal health tasks. CHWs may operate in the public or private sectors, respond to single or multiple diseases and health issues and show differences in their levels of knowledge and training, their practice settings and remuneration and their relationship with regulatory systems (Bloom and Standing 2001). CHWs are part of the broader group of close-to-community providers, who are health workers forming the first point of contact at community level, having up to three years para-professional training, so this group includes auxiliary staff.

Evidence shows that CHW programmes can effectively deliver key maternal and child health interventions in primary and community health care, including interventions to increase childhood immunization and breastfeeding rates (Lewin et al. 2010). As governments are increasingly strengthening their health systems through the use of CHWs (Earth_Institute 2012; GHWA 2012), there is a need to better understand the factors that may influence CHW performance. Policymakers and implementers need to know "why" CHWs are effective or not and "which" specific factors contribute to that. Existing studies show that CHW services could be enhanced by measures regarding recruitment, workload and retention policies (Campbell and Scott 2011; Jaskiewicz and Tulenko 2012; Prasad and Muraleedharan 2007). CHWs' motivation could be enhanced by policies on incentives, career perspectives and supervision. In addition, basic training and continuing education have been reported to have an influence on CHW performance (Bhutta et al. 2010; ERT2 2012; Glenton et al. 2013; Hermann et al. 2009; Lehmann and Sanders 2007; Palazuelos et al. 2013). Community support can also enhance CHW performance (ERT1 2012).

We conducted a systematic review on intervention design factors influencing performance of CHWs, to contribute to the evidence base needed by policymakers in the development of CHW programmes.

4.2 Methodology

This review, conducted in 2013, was undertaken using a framework approach (Dixon-Woods 2011). Based on reading of selected international literature (Bhutta et al. 2010; Chen et al. 2004; ERT1 2012; ERT2 2012; ERT3 2012; Haines et al. 2007; Kane et al. 2010; Palazuelos et al. 2013), factors that could potentially influence CHW performance and their (inter)relationships were identified; this resulted in a preliminary conceptual framework (Figure 4.1). This initial framework was used as the basis for data extraction and for the categorization of findings, and divides factors influencing CHW performance into three main categories:

1. Broad contextual factors, including those related to community and political contexts
2. Health system factors
3. Intervention design factors

In this review we limit ourselves to presenting factors related to intervention design. Broad contextual factors and health system factors influencing CHW performance will be presented in a separate article (Chapter 5).

Criteria for considering studies for this review

We included quantitative and qualitative studies that concerned CHWs working in promotional, preventive or curative primary health care in low- and middle-income countries (LMICs). The studies should have described a factor related to intervention design. The review covered studies including: CHWs, their clients and their families/carers, CHW supervisors, the wider community, policymakers, programme managers, other (professional) health workers and any others directly involved in or affected by CHW service provision. We differentiated CHW performance outcome measures at three levels (Figure 4.1): CHW level, mediating processes and end-user level. The CHW level outcomes indicate mechanisms and characteristics of performance at the CHW level, such as self-esteem, motivation, attitudes, competencies, adherence to standards and procedures, job satisfaction and capacity to facilitate community agency. Among these mechanisms and characteristics of performance, motivation and job satisfaction are especially interrelated. Motivating factors determine the level of motivation and satisfaction.

CHW Performance

Health System Factors
- Human resources for health
- Service delivery
- Financing model
- Information
- Governance arrangements
- Supplies and logistics

Intervention Design Factors
- Intervention characteristics
- Human resource management
- Quality assurance
- Community links
- Health sector links
- Resources and logistics

CHW level
- Improved self-esteem
- Improved motivation
- Improved attitudes
- Improved competencies
  - Communication
  - Diagnosis
  - Treatment
  - Referral
  - Advocacy
- Improved adherence with standards and procedures
- Improved job satisfaction
- Improved capacity to facilitate community agency

Mediating Processes
- Improved access
- Improved quality
- Improved responsiveness
- Improved productivity
- Improved community capacity to claim rights

End-user level
- Increased and equitable utilization of services
- Improved health seeking behaviour
- Adoption of practices that promote health
- Community empowerment

Impact level
- Equitable reduction in
  - Morbidity
  - Mortality
  - Reduction in incidence
  - HIV
  - Unwanted pregnancy
  - Others
- Improved well-being

BROAD CONTEXTUAL FACTORS
- **Community context**
- **Political context**
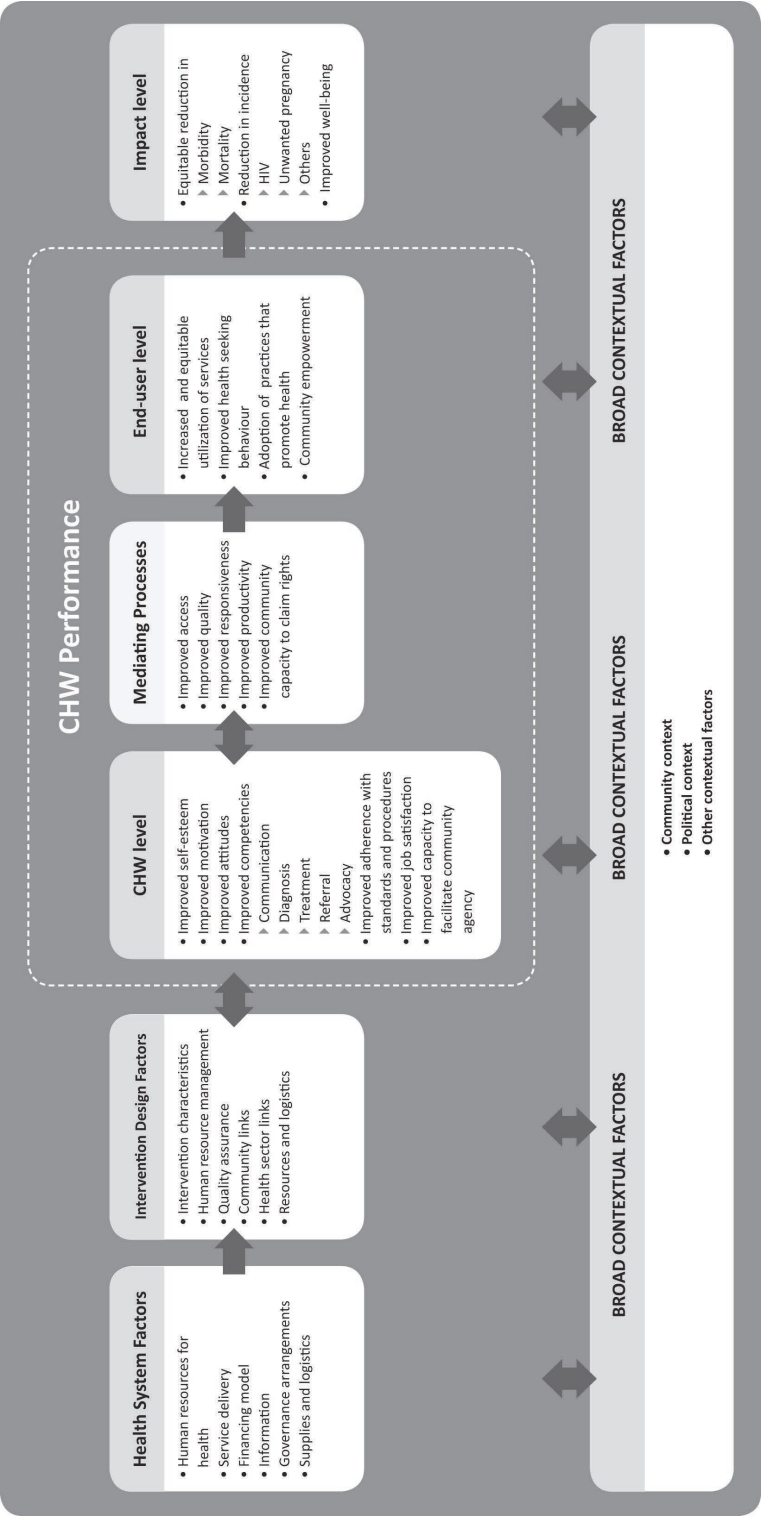- **Other contextual factors**

Figure 4.1 Preliminary conceptual framework on factors influencing CHW performance

Greater job satisfaction is often associated with higher levels of motivation, but it is not a prerequisite for motivation. Motivation is a critical component of performance (Franco et al. 2002). Performance outcome at the CHW level was taken as the focus of the review. In our preliminary framework, CHW level outcomes contribute to end-user outcomes such as utilization of services, health-seeking behaviour, adoption of practices that promote health and community empowerment. Mediating processes, such as access, quality, responsiveness, productivity and community capacity to claim rights, all contribute to end-user outcomes. The three outcome levels that constitute CHW performance are intermediary outcomes and ultimately contribute to reduction of morbidity, mortality, incidence of disease or other conditions and to improved health status and well-being (Figure 4.1).

Search methods for identification of studies

We searched EMBASE, PubMed, Cochrane, CINAHL, POPLINE and NHS-EED for eligible studies. The search strategy focused on broad contextual, health system and intervention design factors influencing performance of close-to-community providers. This study was part of a research programme investigating performance of close-to-community providers of which CHWs constitute an important part. For the purpose of this article, we focus on CHWs, as the largest amount of evidence on intervention design factors influencing performance was related to CHWs. We used existing search strategies on LHWs (Lewin et al. 2010) and adapted these to include the broader focus of our study (Annex 1). We included English language studies from 2007 to July 2013. Reviews and cost-effectiveness studies were not included, but used for hand searching of reference lists. To avoid duplication, we did not include studies that had been previously included in the review of Glenton et al. (2013)[2] and included results of this review in the discussion.

Selection of studies

Two reviewers independently assessed titles and abstracts of identified documents to evaluate potential eligibility. An overview of inclusion criteria is provided in Box 4.1. In case of diverging opinions, inclusion was discussed until consensus was reached. Persisting disagreements were resolved by seeking a third reviewer's opinion. Full-text papers were assessed by two reviewers out of a team of four.

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[2] The Glenton review took place just before we started the review and was not yet published. The team shared the studies they included so that these could be taken out of our review.

Box 4.1 Overview of inclusion criteria

Quantitative and qualitative studies on CHWs

Studies describing factors related to intervention design

Studies conducted in LMICs

English language studies

Studies published 2007-July 2013

Data extraction and management

A data extraction form was developed from the preliminary conceptual framework. This was piloted through joint assessment of several studies and adjustments were made to clarify categories and sub-categories of the intervention design factors assumed to influence CHW performance (see Figure 4.1, second box from left). The data extraction form also contained a description of the intervention and study and the outcome measures.

Assessment of quality

Quality of included literature was assessed independently by two reviewers, using an adapted version of the Critical Appraisal Skills Programme (CASP) method (CASP 2015).

Data synthesis

Identification of themes was done by assessment of all data extraction forms. Descriptive analysis of the contents of all included papers was conducted per category (thematic coding). New (sub)categories deriving from the literature were added to the framework where needed.

4.3 Results

Search results and study types

We identified 7,302 titles from 2007 to July 2013, of which 660 were selected for abstract reading. From these, a total of 348 full-text papers were read. Another set of 109 full-text papers derived from hand searching of reviews was read (see Figure 4.2).

Figure 4.2 Flow chart search results

In total, 150 papers were included in the broader literature review and for the purpose of the review we present in this article, 140 papers were included, as we excluded seven papers reporting on auxiliary staff and three papers only reporting on broad contextual factors or health system factors. A list of included studies and their basic characteristics can be found in Annex 2. A total of 45 studies were of qualitative nature, 45 studies used mixed methods research and there were 50 quantitative studies. One hundred six studies were intervention evaluations while 34 studies did not report on an intervention.

Study respondents

Ninety-seven studies included perspectives of people involved in the CHW programme. In 83 studies, the CHWs themselves were asked for their perspectives, client perspectives were covered in 50 studies and perspectives of others (like policymakers and health workers other than CHWs) were presented in 47 studies. The studies that did not include perspectives focused either on CHWs as the object of the study or on the effects (at the impact level) of a particular intervention (partly) delivered by CHWs. The majority of these were quantitative studies.

Setting

Eighty-three studies were conducted in Africa and 55 in Asia, one was from Oceania and two included Latin America (of which one was part of a multi-country study). The studies and interventions took place in rural (majority) and urban settings. The programmes were run by either non-governmental organization (NGOs) or governments or a collaboration of both. In 100 studies the CHWs delivered services to people in their homes and/or in the community. In 40 studies, CHWs delivered services in health facilities; in most of these (n=28), facility-based services were combined with home or community-based services. CHWs solely working at the facility level were most often lay counsellors in the field of HIV.

CHW names

Many different names of CHWs were found. For an overview of the ones used in this article, see Table 4.1.

Health focus and CHW tasks

Seventy-six studies reported on CHWs with various promotional and preventive tasks in primary health care. These included studies on CHWs having a role in the identification of health conditions and referral to health facilities, for example in the case of pregnancy. Fifty-one studies reported CHWs having a mix of promotional, preventive and curative tasks. For example, CHWs were involved in diagnosis and treatment of diseases, mainly in children below five years, at the community level. Ten studies reported on CHWs with solely curative tasks and three studies did not specify the nature of CHWs' tasks. Fifty-five studies focused on maternal, neonatal or child health or a combination of these. If there was a focus on a single disease or issue, most of the times this was HIV (n=26) , malaria (n=9), promotion of family planning (n=7) or tuberculosis (n=3). Eight studies focused on other specific diseases or conditions. Twenty-nine studies reported on CHWs having tasks regarding multiple diseases or health issues. A number of studies included trained TBAs assisting deliveries at the household level.

Table 4.1 Names used for CHWs

Name	Description of tasks	Country
Accredited Social Health Activists (ASHAs)	Multiple tasks	India
Adherence Support Workers (ASWs)	Supporting antiretroviral treatment (ART) adherence	Zambia
Behvarz	Multiple tasks	Iran
Care Facilitators (CFs)	HIV home-based care	Zimbabwe
Community Antiretroviral therapy and Tuberculosis Treatment Supporters (CATTS)	HIV and tuberculosis (TB) treatment support	Uganda
Community Based Distributors (CBDs)	Providing injectable contraceptives in the community Distribution of contraceptives	Madagascar Guinea, India
Community Based Surveillance Volunteers (CBSVs)	Multiple tasks	Ghana
Community Drug Distributors (CDDs)	Distribution of ivermectin for Onchocerciasis control	Ethiopia
Community Facilitators (CFs)	Multiple tasks	Indonesia
Community Health Volunteers (CHVs)	Working in child health or reproductive health and family planning	Madagascar
Community Health Workers (CHWs)	Multiple tasks	Various countries
Community home-based care workers	HIV related prevention and care	South Africa
Community Medicine Distributors (CMDs)	Malaria treatment	Uganda
Community Reproductive Health Workers (CRHWs)	Promotion and distribution of family planning (methods)	Uganda
Community Volunteer Workers (CVWs)	Palliative home-based AIDS/ cancer care	Uganda
Health Extension Workers (HEWs)	Multiple tasks	Ethiopia
Health Surveillance Assistants (HSAs)	Multiple tasks	Malawi
Lady health workers	Multiple tasks	Pakistan
Lay counsellors	HIV counselling	Various countries
Lay Health Workers (LHWs)	TB related tasks	South Africa
Lay Health Workers (LHWs) (as synonym of CHWs)	Multiple tasks	Various countries
Manzaneras	Multiple tasks	Bolivia
Maternal Health Workers (MHWs)	Promotion, prevention and curative tasks regarding maternal health	Myanmar
Peer educators	Reproductive health (promotion)	Tanzania
Shasthya Shebikas	Multiple tasks	Bangladesh
Traditional Birth Attendants (TBAs)	Maternal and neonatal health related tasks, sometimes including delivery	Various countries

Outcomes of CHW interventions

The majority (n=99) of the included studies reported outcomes at the level of the CHW. Fifty-six studies reported changes in performance through measuring competencies and knowledge levels. For example, in Nepal, a significantly higher self-efficacy and knowledge level of peer educators on HIV and AIDS was measured after training (Posner et al. 2009). Assessments of quality scores per community-based distributor (CBD) providing injectable contraceptives in Madagascar demonstrated that CBDs retained information taught during training (Hoke et al. 2008). Among children treated by CHWs in Kenya, 80% of all

guideline-recommended procedures were performed correctly (Rowe et al. 2007a; Rowe et al. 2007b). Some studies measured job satisfaction or retention (which is related to performance at the CHW programme level, Willis-Shattuck et al. (2008)) as outcome measures at the CHW level. For example, CHWs in an urban setting in China who experienced a heavy workload had a low job satisfaction (Ge et al. 2011).

Forty-one studies reported on changes in performance as a result of self-reported variations in motivation or self-esteem. For example, community-based surveillance volunteers (CBSVs) in Ghana explained that respect of the community had enhanced their motivation; they felt pride in their role as a volunteer (Dil et al. 2012). Improvement in self-esteem as a result of increased respect from the community was reported by community volunteer workers (CVWs) providing palliative home-based care in Uganda (Jack et al. 2012).

Intervention design factors

The literature reported on various factors related to the design of the CHW interventions having an effect on CHW performance. We divided these into factors related to: nature of tasks and time spent on delivery, human resource management, quality assurance, community links, health sector links and resources and logistics.

Nature of tasks and time spent on delivery

Several factors influencing CHW performance were related to the nature of CHW tasks and the time spent on delivery. Only seven studies reported on this, as presented in Table 4.2.

Table 4.2 Factors related to nature of tasks and time spent on delivery

Factor	Detail on influence or association	Studies
Nature of tasks and roles	Extended tasks (curative, injections) increased CHW's self-reported motivation	Burn (2008); Callaghan-Koru et al. (2012); Hoke et al. (2008); Sadler et al. (2011)
	Higher number of perceived responsibilities increased CHW performance	Smith et al. (2013)
	Flexibility in tasks: may lessen impact at end user or impact level but may contribute to CHW retention	Brenner et al. (2011)
Service delivery time	Longer service delivery time associated with higher CHW performance	Furth and Crigler (2012)
Time spend on job	More time spend on job per week associated with higher CHW performance	Smith et al. (2013)

Four studies reported that CHWs felt more recognized by the community, enhancing their motivation, when they provided curative tasks or administered injections. For example, health surveillance assistants (HSAs) in Malawi providing curative treatment to children below five years, strongly indicated that this added role changed how they viewed their own position in the health system. With the new role, the community recognized them as "village doctors", and they viewed themselves as more equal to clinicians. They reported helping the community and increased appreciation of the community as a result of their new curative role as motivating factors. However, a demotivating factor for some was the fact that they were not able to treat complicated cases (Callaghan-Koru et al. 2012). Smith et al. (2013) found that community health volunteers (CHVs) in Madagascar performed slightly better if they perceived that they had more responsibilities when compared to CHVs perceiving to have fewer responsibilities (Smith et al. 2013). Flexibility in tasks was discussed as a factor that could contribute to CHW retention in Uganda, although it could also lead to neglect of certain health issues within the programme (Brenner et al. 2011).

One study found a significant correlation between the time spent on each client and performance of CHWs in Zambia. The moderate to low performing CHWs corresponded to very short client contact times (Furth and Crigler 2012). Another study found a correlation between the time spent on the job and performance of CHWs working in reproductive health in Madagascar: a higher number of hours worked as a CHW per week was associated with better performance scores in relation to competencies, measured as tasks correctly undertaken for child illnesses and family planning (Smith et al. 2013).

In summary, having more curative tasks was found to increase CHW motivation and longer service delivery time and time spent on the job were associated with higher CHW performance.

Human resource management

The literature identified many factors related to human resource management that could influence CHW performance. We categorized them into eight broad categories: CHW characteristics, workload, clarity on CHW tasks and roles, selection and recruitment process, incentives, supervision, performance appraisal and training related factors.

CHW characteristics

Performance of CHWs can be influenced by the characteristics of the CHWs that were recruited and implementing the intervention. Therefore, we considered them as potential intervention design factors (although in many studies, they were not predefined as intervention design factors). Relevant characteristics identified in the literature were: gender, education level, years of experience, personal experience with the health

condition, community of origin, age, household duties, marital status, social class and wealth (Table 4.3).

Gender of the CHWs was discussed in four studies. A study on CHWs in Kenya found that male CHWs were 1.6 times more likely to keep better records than female CHWs, while females were 58% more likely to counsel and 71% more likely to be able to convince their clients to adopt evidence-based maternal care practices than men (Crispin et al. 2012). A study on community antiretroviral therapy and tuberculosis treatment supporters (CATTS) in Uganda, using a regression model to identify characteristic of CATTS that influenced loss to follow-up, found that male CATTS lost more patients for follow-up than female CATTS (Alamo et al. 2012). Kebriaei and Moteghedi (2009) measured job satisfaction of *behvarz* (CHWs) in Iran by conducting a cross-sectional survey and found there was no difference between males and females in job satisfaction (one of the direct determinants of CHW performance, see Figure 4.1).

The education level of CHWs as a possible influencing factor on CHW performance was researched in five studies. For example, higher levels of education of CHWs in Kenya were associated with good record-keeping, appropriate use of job aids and appropriately counselling clients, although lower literacy CHWs were still able to satisfy and convince their clients to adopt evidence-based maternal care practices (Crispin et al. 2012). CHVs working in reproductive health in Madagascar were performing better in correctly executing their tasks in diagnosis and treatment of childhood illnesses, reproductive health and family planning when they had more years of education (Smith et al. 2013). More years of education may lead to better performance but may also lead to a higher drop-out rate. *Shasthya Shebikas* in Bangladesh who dropped out of the programme were more often higher educated (Alam, Tasneem, and Oliveras 2012b). In Iran, no difference in job satisfaction based on education level of *behvarz* was found (Kebriaei and Moteghedi 2009).

More years of experience as a CHW was associated with appropriate use of job aids, client satisfaction and client enablement in Kenya (Crispin et al. 2012). However, CATTS in Uganda who had served > 6 years lost more patients than CATTS who had served < 6 years (Alamo et al. 2012). In Iran, no difference in job satisfaction based on years of service of *behvarz* was found (Kebriaei and Moteghedi 2009).

Table 4.3 Factors related to CHW characteristics

Factor	Detail on influence or association	Studies
Gender	Performance regarding specific types of tasks could differ between male and female CHWs No difference in job satisfaction between male - female	Alamo et al. (2012); Crispin et al. (2012); Kebriaei and Moteghedi (2009)
Education	More years of education CHWs associated with higher performance Drop-outs more often higher educated No difference in job satisfaction based on education level	Alam et al. (2012b); Crispin et al. (2012); Kebriaei and Moteghedi (2009); Rowe et al. (2007a); Smith et al. (2013)
Experience (years)	Mixed picture regarding experience and CHW performance No difference in job satisfaction based on experience	Alamo et al. (2012); Crispin et al. (2012); Kebriaei and Moteghedi (2009)
Experience (with the health condition)	Experience regarding health condition could improve CHW performance	Jack et al. (2012); Kim et al. (2012b); Torpey et al. (2008)
Residence/ community of origin	CHWs from community of origin could have more trust of clients, enhancing performance CHWs not from community of origin might be preferred in case of HIV related programmes	Puett et al. (2013); Simwaka et al. (2012); Smith, Kelly, and Randhawa (2007) Alamo et al. (2012)
Age	Mixed picture regarding age and CHW performance No difference in job satisfaction based on age	Alam, Tasneem, and Oliveras (2012a); Counihan et al. (2012); Crispin et al. (2012); Kebriaei and Moteghedi (2009); Olang'o, Nyamongo, and Aagaard-Hansen (2010)
Household duties	Less household duties resulted in more active CHWs and less drop-outs	Alam et al. (2012b); Olang'o et al. (2010)
Marital status	Mixed picture regarding marital status and CHW performance No difference in job satisfaction based on marital status	Alam et al. (2012b); Kebriaei and Moteghedi (2009); Simba and Kakoko (2009)
Social class	Mixed picture regarding social class and CHW performance	Abbott and Luke (2011); Srivastava et al. (2009)
Wealth	CHWs depending on CHW income more active and poorer CHW less likely to drop out	Ahmed (2008); Alam et al. (2012a, 2012b)

Three studies reported on the influence of the experience of the CHW with the health condition of their clients. For example, CVWs delivering AIDS or cancer related palliative care in Uganda reported that having personal experience with these diseases increased compassion for the patients (Jack et al. 2012). A mixed methods study on adherence support workers (ASWs) in Zambia who were living with HIV reported that ASWs had stronger bonding with clients and hence increased client adherence (Torpey et al. 2008).

The community of origin of the CHW is another factor that could be associated with CHW performance. CHWs that came from the community that they are serving were reported to be more trusted by that community, which could influence their performance (Puett et al. 2013; Simwaka et al. 2012; Smith et al. 2007). However, in Uganda some community members preferred CATTS that lived further away and did not visit their home because of the stigma related to HIV (Alamo et al. 2012).

The age of CHWs was studied in five papers. The age-group of 30-40 years appeared to be the most appropriate for selection of Kenyan CHWs to obtain optimum results. Younger and much older CHWs had sub-optimal performance (Crispin et al. 2012). CHWs older than 50 performed less well in working with rapid diagnostic tests for malaria in Zambia (Counihan et al. 2012). However, Alam et al. (2012a) reported that older *Shasthya Shebikas* in Bangladesh were more likely to be active than younger colleagues. Kebriaei and Moteghedi (2009) found no difference in job satisfaction based on age of *behvarz*.

CHWs in Kenya reported fewer drop-outs among CHWs above the age of 40, possibly because older people had fewer household duties (Olang'o et al. 2010). Alam et al. (2012b) confirmed this assumption: *Shasthya Shebikas* in Bangladesh who did not face problems due to household responsibilities were more than twice as likely to stay on.

Peer educators in reproductive health in Tanzania were reported to have a higher chance of dropping out if they were married women. This was explained to be due to girls getting married and following their husbands to live somewhere else or not being allowed by their husbands to continue their work as peer supporters (Simba and Kakoko 2009). In contrast to this, Alam et al. (2012b) found that single *Shasthya Shebikas* in Bangladesh had a higher drop-out rate than married peers. In Iran, no difference in job satisfaction was found between married and unmarried *behvarz* (Kebriaei and Moteghedi 2009).

In India, female CBDs from upper social classes (castes) established an easy relationship with middle and higher cast women but had real problems making services accessible for women with a significantly lower social status (Abbott and Luke 2011). However, Srivastava et al. (2009) reported that accredited social health activists (ASHAs) stated that they were called by all castes and religious groups.

The wealth of CHWs could also influence performance. *Shasthya Shebikas* in Bangladesh who reported to be dependent on the income they earned through their work as CHW were more active than colleagues with other jobs (Ahmed 2008; Alam et al. 2012b). Moreover, richer *Shasthya Shebikas* more often dropped out of the programme (Alam et al. 2012a, 2012b).

In summary, CHWs with a higher education level, CHWs having experience with the health condition they focus on, CHWs having fewer household duties and CHWs who are depending on the income gained from the CHW work were found to perform better than

others. Gender, residence, age, marital status and social class of the CHW had mixed effects on CHW performance.

Workload

In 14 studies, a high workload was reported by CHWs, and this could result in lower motivation and ultimately lower performance (Alamo et al. 2012; Burn 2008; Callaghan-Koru et al. 2012; Ge et al. 2011; Gusdal et al. 2011; Javanparast et al. 2011; Kalyango et al. 2012; Kebriaei and Moteghedi 2009; Kok and Muula 2013; Lewis 2010; Medhanyie et al. 2012b; Perez et al. 2009; Puchalski Ritchie et al. 2012; Rahman et al. 2010). The CHW-population ratio is a factor that can influence performance of CHWs. Several studies indicated that a small population to cover is preferable above a large population to cover regarding CHW performance (Azad et al. 2010; Burn 2008; Darmstadt et al. 2010; Edward et al. 2007; Kalyango et al. 2012; Sadler et al. 2011; Suri, Gan, and Carpenter 2007). A high number of patients to be supported by CATTS in Uganda was significantly associated with increased loss to follow-up (Alamo et al. 2012).

Clarity on CHW tasks and roles

Few studies reported that the lack of clarity on roles amongst CHWs themselves or in the community affected CHW performance. A study on ASHAs in India found that ASHAs' perceptions about job responsibilities were more limited than their formal job descriptions. The majority of them were not aware about their role in changing behaviour regarding infant feeding, family planning, child marriage, girl education, hand washing and sanitation. Possibly this was related to the fact that for these particular tasks, ASHAs were not paid (Srivastava et al. 2009). CBSVs in Ghana reported community related challenges of their work, because of a lack of community understanding of the duties of a CBSV (Dil et al. 2012). In Bolivia, a lack of community understanding of the role of *manzaneras* was reported to cause mistrust, because district health authorities and local leaders failed to advertise *manzaneras* roles in the community (Bartos et al. 2009).

CHWs gained more respect in general if they were able to prescribe drugs, but sometimes this could lead to community expectations that could not be met (Table 4.7). For example, in Malawi, HSAs working in community case management of childhood illnesses were asked by community members to also treat adults, which was not included in the programme (Callaghan-Koru et al. 2012). Kalyango et al. (2012) also refer to a lack of community appreciation for age restrictions, which had a negative impact on performance of CHWs in Uganda. Client demands were also a challenge in Zambia, where clients still asked for anti-malarial treatment in spite of a negative test result (Chanda et al. 2011). CHWs in Kenya working in home-based care on HIV reported that expectations of people

living with HIV about CHWs delivering them goods or money were reasons for CHW drop-out (Olang'o et al. 2010). CHWs in South Africa reported similar expectations of the community as a demotivating factor (Suri et al. 2007).

In summary, we found that a lack of clarity on CHW tasks and roles, especially from the side of the community, lowered motivation and performance of CHWs.

Selection and recruitment process

Sixty-two studies clearly indicated who selected and recruited CHWs, although often the exact process and criteria were not explained. In a total of 36 studies, communities were involved in CHW selection. Nine studies referred to the positive influence of community selection on CHW's motivation or performance (Table 4.7). For example, CBSVs in Ghana reported that being selected by the community influenced their sense of duty as well as the pride they felt for their role and motivation (Dil et al. 2012). However, CHWs in Kenya, who reported to be selected by the community, did not show any difference in guideline adherence when compared to CHWs who reported no community involvement in selection (Rowe et al. 2007a). Selection was not always conducted as prescribed. ASHAs in India, who were supposed to be selected by the community, were often selected by auxiliary nurse midwives without community consultation, leading to ASHAs being seen as accountable to the health sector and not to the community (Scott and Shanker 2010; Srivastava et al. 2009). The same was reported for community drug distributors (CDDs) in Ethiopia (Yirga et al. 2010).

Incentives

Eighty-one studies presented information on incentives given to CHWs. Factors influencing CHW performance related to incentives are presented in Table 4.4. There were a range of different incentives, sometimes combined in packages including: financial incentives, such as fixed salaries for those CHWs that were employees of the government or an NGO, regular and irregular allowances, performance based financial incentives, income from selling services (fees) and income from selling commodities, and non-financial incentives, such as material incentives (goods, rewards), access to training, supervision and supplies, preferential treatment and community trust and respect. (Dis)satisfaction related to incentives could lead to lower or higher motivation and influence CHW performance. In 25 studies, CHWs reported that they were dissatisfied with the incentives they received, whether financial or non-financial. Sixteen studies reported CHWs' satisfaction with incentives.

Table 4.4 Factors related to incentives

Factor	Detail on influence or association	Studies
Financial incentives	Financial incentives increased motivation	Bartos et al. (2009); Callaghan-Koru et al. (2012); Lewis (2010); Rahman and Tasneem (2008); Srivastava et al. (2009)
	CHWs getting financial incentives performed better than CHWs receiving in-kind incentives	Furth and Crigler (2012)
	CHW perceiving they get financial incentives performed better on guideline adherence	Rowe et al. (2007a)
	CHWs selling commodities for income faced competition: CHWs less active but no influence on retention	Alam et al. (2012a, 2012b); Rahman and Tasneem (2008); Winch et al. (2008)
	Performance-based incentives led to decreased performance regarding certain tasks	Scott and Shanker (2010); Srivastava et al. (2009)
	Unmet promises regarding financial incentives led to demotivation	Dil et al. (2012); Maes and Kalofonos (2013); Yirga et al. (2010)
Non – financial incentives	Community trust, respect and recognition: enhanced motivation/ self-esteem/ retention/ self-assessed performance/ adherence to guidelines	Ahmed (2008); Alam et al. (2012a, 2012b); Amare (2011); Burn (2008); Callaghan-Koru et al. (2012); Chibanda et al. (2011); Das, Jambulingam, and Sadanandane (2008); Dawson et al. (2008); Dil et al. (2012); Furth and Crigler (2012); Hill et al. (2008); Jack et al. (2012); Javanparast et al. (2011); Kalyango et al. (2012); Kim et al. (2012b); Lewis (2010); Maes and Kalofonos (2013); McPherson et al. (2010); Mutalemwa et al. (2009); Nyanzi, Manneh, and Walraven (2007); Osawa, Kodama, and Kundishora (2010); Rahman and Tasneem (2008); Razee et al. (2012); Rowe et al. (2007a); Sahay and Mehendale (2011); Saleem et al. (2007); Saravanan et al. (2011); Scott and Shanker (2010); Smith et al. (2013); Srivastava et al. (2009); Takasugi and Lee (2012); Teela et al. (2009); Yirga et al. (2010)
	Lack of community trust: led to lower CHW motivation/performance	Bartos et al. (2009); Dick et al. (2007); Moetlo, Pengpid, and Peltzer (2011); Nyanzi et al. (2007); Schneider, Hlophe, and van Rensburg (2008)
	Willingness to help reported as motivating factor/ increasing self-esteem	Behdjat et al. (2009); Burn (2008); Callaghan-Koru et al. (2012); Dil et al. (2012); Elmardi et al. (2009); Furth and Crigler (2012); Gusdal et al. (2011); Jack et al. (2012); Javanparast et al. (2011); Mukherjee and Eustache (2007); Nyanzi et al. (2007); Rahman and Tasneem (2008); Rahman et al. (2010); Root and van Wyngaard (2011); Rowe et al. (2007a); Sanjana et al. (2009); Schneider et al. (2008); Simba and Kakoko (2009); Simwaka et al. (2012); Smith et al. (2013); Srivastava et al. (2009); Takasugi and Lee (2012)
	Personal development/ knowledge gain reported as incentive	Alam et al. (2012b); Bartos et al. (2009); Burn (2008); Callaghan-Koru et al. (2012); Dick et al. (2007); Dil et al. (2012); Lewis (2010); Peltzer et al. (2010); Rahman et al. (2010); Root and van Wyngaard (2011); Schneider et al. (2008); Simba and Kakoko (2009); Takasugi and Lee (2012)
	Preferential treatment reported as incentive	Alamo et al. (2012); Rahman and Tasneem (2008); Takasugi and Lee (2012)
	Hope for future employment reported as incentive	Bartos et al. (2009); Rahman et al. (2010); Schneider et al. (2008); Simba and Kakoko (2009)
	Having a government job reported as incentive	Srivastava et al. (2009)
Career advancement	No career advancement reported as disincentive	Burn (2008); Furth and Crigler (2012); Kebriaei and Moteghedi (2009); Kok and Muula (2013); Rahman et al. (2010)

Remuneration was often reported as an important (de)motivator. However, other incentives remained important. For example, an evaluation of a CHW programme in Kenya revealed that 65% of the interviewed CHWs acknowledged that reimbursements motivated them to continue serving while others said that material incentives contributed to motivate them (38.5%) or would improve their motivation (76%). In some studies, CHWs reported to prefer financial above non-financial incentives (Bartos et al. 2009; Rahman and Tasneem 2008). ASHAs in India reported financial incentives (82%), being in a government job (67%), contributing to charity (44%) and improved self-esteem (37%) as motivating factors. The majority of ASHAs were satisfied and 44% reported to be willing to continue without incentives (Srivastava et al. 2009). HSAs in Malawi were demotivated because they had to spend their own money to run village clinics (Callaghan-Koru et al. 2012).

Furth and Crigler (2012) researched the correlation between incentives and performance (task completion) in Zambia. The data from this study indicated that CHWs who were paid a monetary incentive performed better than volunteer CHWs who received only gifts in kind. However, the data also showed that greater monetary incentives did not necessarily correlate with better performance, especially when compared with other factors that influence performance. The authors reported that little consideration was given to incentives relative to workload or time commitment. CHWs in child health in Kenya were performing better in their consultations with children and had a higher adherence to guidelines when they thought that they received four to five benefits (including making money) than those that thought they received fewer than four benefits (Rowe et al. 2007a).

Shasthya Shebikas in Bangladesh earn some income with providing certain health services and selling of commodities. Those who reported competition with others (pharmacies, village doctors, TBAs) were reported to be less likely to be active (Alam et al. 2012a) but competition was not an important predictor of retention (Alam et al. 2012b). CHWs in Mali who obtained income by selling drugs had to compete with informal vendors that sold drugs in smaller, cheaper quantities (Winch et al. 2008).

Two studies reported on a negative side of performance-based payments of ASHAs in India. ASHAs could earn money for bringing people to the clinic and helping with biomedical interventions. They could not earn money for encouraging village health meetings nor discussing health issues on social change more generally, although this was part of their role. This resulted in an over-focus on paid tasks (Scott and Shanker 2010; Srivastava et al. 2009).

In three studies, CHWs reported to be demotivated because of unmet promises regarding allowances or stipends (Dil et al. 2012; Maes and Kalofonos 2013; Yirga et al. 2010).

In 34 studies, CHWs reported that trust and respect from the community was an important non-financial incentive enhancing their motivation. We present these incentives, as they are potentially related to intervention design. Social rewards included more greetings, more honour and more participation in decision making. This social prestige might be a stronger factor in rural settings, because of the existence of more stable communities with stronger social fabric, compared to more unstable urban slum communities (Alam et al. 2012a). In some cases, social rewards were culturally determined. An example is that the greatest social reward many TBAs in Gambia appreciated was the recognition given at the naming ceremony when they participated in shaving the baby's head and carrying it to the elders for prayers (Nyanzi et al. 2007). An example of how respect by the community could enhance CHW's status was reported in a study by Jack et al. (2012, p. 757) on CVWs involved in palliative care in Uganda, where one of the volunteers said: *"I was selected to be vice chairperson in the village"*. Alam et al. (2012b) reported that social prestige and community approval were correlated with CHW retention. CHWs who reported to enjoy more social prestige were more than three times as likely to remain. A cross-sectional study on care facilitators (CFs) working in HIV home-based care in Zimbabwe found that the more the communities accepted, appreciated and supported the CFs in their activities, the more CFs were motivated to perform (Osawa et al. 2010). Rowe et al. (2007) found that CHWs working in child health in Kenya showed better guideline adherence when they reported to receive respect from the community. In Ethiopia, perceived good performance of CDDs by the population was associated with increased compliance. The authors discussed that insufficient knowledge of CDDs might hamper the acceptability of the CDD in the community (Yirga et al. 2010).

There were some examples in the literature of community mistrust. For example, *manzaneras* in Bolivia were reported to occasionally being afraid to conduct home visits, because community members unfairly spread rumours of *manzaneras* eating the food instead of providing it to the little children (Bartos et al. 2009). LHWs working on farms in South Africa were sometimes criticized by the community because they had a better relationship with the farmer (the employer) and nurses than community members, because of their job (Dick et al. 2007).

In several studies, CHWs reported their willingness to help and care for other people as an incentive that enhanced their motivation. For example, CBSVs in Ghana reported that altruism towards the community was a vital factor to take on and remain in the role as CBSV. Moreover, seeing the health and education of the community improve also emerged as a motivator (Dil et al. 2012). In Zambia, CHVs overwhelmingly felt happy to be able to help their communities (92% of CHVs working in child health and 95% of CHVs working in reproductive health; Smith et al. (2013)). In Uganda, CVWs in palliative care reported that the reason for becoming a volunteer stemmed from traditional values of wanting to help other people (Jack et al. 2012).

In various studies, CHWs reported that personal development or knowledge gain served as an incentive. Perceived access to skills and knowledge of *Shasthya Shebikas* was important for retention in rural areas of Bangladesh, but was not a driving factor among urban *Shasthya Shebikas* (Alam et al. 2012b). CHWs in South Africa reported that although being CHW was not held in high esteem, one motivator was the development of a professional identity, especially for those working as counsellors, and they desired to advance in that role (Schneider et al. 2008).

Some studies referred to preferential treatment as an incentive for CHWs. For example, Alamo et al. (2012) reported that the non-financial benefits, like free care and treatment and school fees support that CATTS in Uganda received, contributed to the high retention of CATTS (Alamo et al. 2012). *Shasthya Shebikas* in Bangladesh reported that they would prefer to get a salary, but they also expected other incentives, like preferential access to loans (Rahman and Tasneem 2008).

In four studies, CHWs reported that their CHW job would result in future other employment and this was a motivating factor. For example, ASHAs in India reported that the second most important motivating factor after gaining money (82%) was having a government job (67%; Srivastava et al. (2009)).

In a few studies, CHWs reported to be demotivated because of a lack of career advancement. For example in Zambia, opportunities for advancement were strongly correlated with higher levels of engagement (defined as satisfaction plus motivation) of CHWs, but there was no correlation found between engagement and CHW performance (Furth and Crigler 2012). CHWs in Bangladesh reported no promotion opportunities as being a reason for leaving the project, although it was reported that CHWs had the opportunity to become a supervisor based on exemplary performance (Rahman et al. 2010).

In summary, many studies reported that both financial and non-financial incentives, including career advancement, increased motivation and performance of CHWs.

Supervision

In a total of 80 studies it was stated that a supervision structure was available, but most of them were lacking information on its precise structure and its implementation. The review identified a few aspects of supervision being related to CHW performance: whether the CHW programme set-up involved any form of supervision and the frequency and location of supervision (Table 4.5).

Community reproductive health workers (CRHWs) in Uganda found supervision increased credibility and recognition, it made them feel part of the team (Martinez et al. 2008). The ways in which supervision was motivating or demotivating CHWs was sometimes

associated with the skills and attitude of supervisors. Community home-based care workers in South Africa reported problems with supervisors, such as lack of management skills (40%) and "selfishness" (38%) (Moetlo et al. 2011). CBSWs in Ghana felt demotivated by the supervision they received: *"They* [current supervisors] *seem to forget that the work is a voluntary one and as such we should be treated well and encouraged."* The CBSWs identified the need for good quality supervision to increase retention: *"Even if there is no money in it you would feel that you are being supervised and that would motivate you to do the work well."* (Hill et al. 2008).

Table 4.5 Factors related to supervision

Factor	Detail on influence or association	Studies
Availability of supervision	Lack of supervision decreased motivation	Callaghan-Koru et al. (2013); Callaghan-Koru et al. (2012); Gusdal et al. (2011); Hill et al. (2008); Javanparast et al. (2011); Kok and Muula (2013); Moetlo et al. (2011); Nsabagasani et al. (2007); Perez et al. (2009); Suri et al. (2007)
	Supervision increased motivation	Amare (2011); Lewis (2010); Martinez et al. (2008); Puett et al. (2013); Simwaka et al. (2012)
Frequency of supervision	Frequency of supervision was not correlated with guideline adherence in one study, in another study it increased CHW performance	Rowe et al. (2007a); Smith et al. (2013)
Location of supervision	Facility based supervision hindered CHW's work	Chanda et al. (2011)

The studies showed a variety in frequency of supervision. There were two studies that researched the effect of frequency of supervision on CHW performance. One study showed that a lower frequency of supervision resulted in lower performance of CHWs in Madagascar (Smith et al. 2013) while another study in Kenya found no effect of frequency of supervision on CHW guideline adherence (Rowe et al. 2007a).

Only one study referred to the location of supervision. In rural Zambia, supervision in the health centre was not appreciated by CHWs as they felt they missed out on providing care to their own village (Chanda et al. 2011).

In summary, many studies reported supervision to be important to increase CHW performance, although details of the supervision structure and its implementation contributing to success were scarce. CHWs who perceived their supervision as insufficient often reported to be demotivated.

Performance appraisal

Fifteen studies reported on performance appraisal systems. Some of them reported certification after skills assessments (Hoke et al. 2008; Javanparast et al. 2012; Root and van Wyngaard 2011; Sanjana et al. 2009; Shankar et al. 2009). Only one study researched how appraisal influenced CHW performance; Furth and Crigler (2012) found that organizations with stronger performance appraisal systems were more likely to have more engaged CHWs. However, there was no correlation between engagement and performance.

Training related factors

A total of 113 studies reported that the CHWs had received initial training. Forty-seven studies reported on the availability of refresher trainings. However, only 18 studies investigated the association between training and CHW performance (Table 4.6). CHWs reported that training increased motivation and some studies linked training to CHW knowledge and performance. An 8-day training course for TBAs in Pakistan found that TBAs in the intervention arm showed better performance than untrained TBAs (Miller et al. 2012). Saravanan et al. (2011) found that despite training of TBAs, lifesaving practices for mothers and babies were not followed in India. *Behvarz* in Iran reported that the pre-service training had a positive impact on their capacity to provide health care services and to build their confidence and skills in communicating with rural people. The friendly environment of the training centres, the nature of the trainer-trainee relationships and the highly qualified trainers were particularly noted as having a positive impact on the learning process and motivation. Other *behvarz* complained about quality and timing of the training, the infrequency of courses, inadequate qualified trainers who were unfamiliar with the *behvarz* working environment, the lack of practical sessions and lack of adaptation of training materials to the local context (Javanparast et al. 2012).

Table 4.6 Factors related to training

Factor	Detail on influence or association	Studies
Training in general	Training enhancing CHW motivation	Alamo et al. (2012); Dil et al. (2012); Javanparast et al. (2012); Simwaka et al. (2012)
	Training generally resulting in expanded CHW knowledge/ performance	Gill et al. (2011); Hamer et al. (2012); Hien le et al. (2008); Javanparast et al. (2012); Miller et al. (2012); Puett et al. (2013); Saravanan et al. (2011)
	Training linked to allowances and favouritism leading to demotivation	Kok and Muula (2013); Olang'o et al. (2010)
Continuous training	Continuous training increasing job satisfaction/ motivation	Ge et al. (2011); Lewis (2010)
	Continuous training increasing CHW performance	Smith et al. (2013)
	Frequency refresher training no effect on guideline adherence	Rowe et al. (2007a)
Development of training materials	CHW participation in development training materials increased sense of ownership	Omer et al. (2008)

Training was sometimes seen as an income-generating activity by CHWs. CHWs in Malawi and Kenya reported favouritism in selecting CHWs for trainings as a demotivating factor (Kok and Muula 2013; Olang'o et al. 2010). In Zambia, trained TBAs were less likely than non-trained TBAs to attend a delivery without payment (40 vs 49%) and more likely to be paid in cash (55 vs 43%). Mothers were more likely to choose an intervention TBA above a control TBA and higher compensations were paid to intervention TBAs (Gill et al. 2011).

Several studies reported on a possible positive influence of continuous training on CHW job satisfaction and motivation (Ge et al. 2011; Lewis 2010). Smith et al. (2013) found a clear correlation between receiving refresher training and performance (the ability to assess, classify, treat, or refer appropriately as required by guidelines) of CHVs in Madagascar (Smith et al. 2013). No association between the frequency of refresher trainings and CHWs' guideline adherence was found in Kenya (Rowe et al. 2007a).

One study reported that the participatory way of developing training materials was crucial for the success of the CHW intervention (health promotion by lady health workers in Pakistan; Omer et al. (2008)).

In summary, training was found to positively influence CHW motivation, job satisfaction and performance.

Quality assurance

The literature identified factors related to quality assurance that could influence CHW performance. We have categorized them as protocols and guidelines and monitoring and evaluation.

Protocols and guidelines

Four studies reported on the use of protocols and guidelines and how their use could affect CHW performance (Dambisya and Matinhure 2012; Javanparast et al. 2012; Kalyango et al. 2012; Rowe et al. 2007a). For example, standard operating procedures and institutional and programmatic guidelines were reported by various stakeholders within the health system as facilitating factors for task shifting towards CHWs working in HIV in Uganda (Dambisya and Matinhure 2012).

Monitoring and evaluation

In 49 of the included studies, a monitoring and evaluation system was reported to be in place. Six studies reported on community monitoring, mainly by village health committees (VHCs). Two studies made a reference to CHW performance (Table 4.7). The engagement

of pregnant women in the assessment of community facilitators in Indonesia provided social accountability and empowered the women to expect good quality services from the CHWs. Moreover, the authors assumed that the awareness that the community facilitators would be evaluated by the pregnant women they served provided an additional incentive to actively engage the target population and created good relationships (Shankar et al. 2009). Community medicine distributors (CMDs) in Uganda reported that community support in the form of feedback and rewards had a greater influence on their performance than that from the health system (Kalyango et al. 2012).

Community links

The role of communities in selection and community expectations, described under Human resource management, and the role of communities in monitoring, described under Quality assurance, were found to influence CHW performance. In addition, community support can have a bearing on CHW performance. All factors related to community links are summarized in Table 4.7.

There are different ways in which communities can support the work of CHWs. Community members, including village doctors, referred cases of severe acute malnutrition to CHWs in Bangladesh (Sadler et al. 2011). In Ethiopia, community support for voluntary CHWs was strengthened by mobilizing various local institutions to serve as "community anchors". Community anchors were raising community recognition for and acceptance of voluntary CHWs, supporting their goals and activities, and sustaining their motivation levels. The local institutions that the project had mobilized as community anchors included churches, mosques, *idirs* (burial associations) and women's associations (Amare 2011). In another study from Ethiopia, community members participated in the construction of health posts (where HEWs are working; Teklehaimanot et al. (2007)). In Mozambique, a community-based vital registration and health information system project for routine surveillance of births, deaths and childhood illnesses was instituted using a network of 2300 volunteers. Community structures played a role in supporting volunteers (Edward et al. 2007). In Guinea, involvement of religious leaders in VHCs was crucial for acceptance of the work by CBDs. The VHCs acted as the health services' local liaison, informing villagers of clinic dates, seeking those lost to follow-up and encouraging men and women to attend health education activities (Diakite, Keita, and Mwebesa 2009).

Table 4.7 Factors related to community links

Factor	Detail on influence or association	Studies
Community support	Community support: leading to increased CHW motivation/ performance	Amare (2011); Bhutta et al. (2008); Callaghan-Koru et al. (2012); Edward et al. (2007); Elmardi et al. (2009); Hoy et al. (2008); Razee et al. (2012); Sadler et al. (2011); Teklehaimanot et al. (2007); Torpey et al. (2008)
	Community support: negative effect on performance	Puchalski Ritchie et al. (2012)
	Lack of community support: leading to drop-out	Simba and Kakoko (2009)
Community selection	Community selection improved motivation/ self-esteem	Brenner et al. (2011); Chanda et al. (2011); Dil et al. (2012); Elmardi et al. (2009); Gill et al. (2012); Nyanzi et al. (2007); Scott and Shanker (2010); Srivastava et al. (2009); Yirga et al. (2010)
Community monitoring	Community monitoring increased performance	Kalyango et al. (2012); Shankar et al. (2009)
Community expectations	Conflicting community expectations as demotivating factor for CHWs	Callaghan-Koru et al. (2012); Chanda et al. (2011); Kalyango et al. (2012); Mukanga et al. (2010); Olang'o et al. (2010); Smith et al. (2013); Suri et al. (2007)

Puchalski Ritchi et al. (2012) reported that HSAs in Malawi were supported by guardians (who were relatives or friends). The task of guardians was to directly observe the patients taking their tuberculosis medication on a daily basis. Good guardians were acknowledged to improve patient adherence if they functioned as planned. However, some guardians were ineffective because they lived too far away from the patients and only acted when the client was sick or because of conflicting advice in case of multiple guardians. Peer educators in reproductive health in Tanzania had stopped because of lack of support from village leaders (Simba and Kakoko 2009).

In summary, community support and its involvement in CHW selection and monitoring generally resulted in higher CHW motivation and performance.

Health sector links

CHW's links or "embedment" in the health sector is an often-stated factor in the literature, which could influence CHW performance. We found evidence on relationships of CHWs with other health staff (which could in turn influence CHW's access to equipment, supplies and functional referral) and communication and coordination between them (Table 4.8).

Attitudes of other health staff had a major effect on how the CHWs felt and performed. In Malawi, clinicians were reluctant to give drugs to HSAs which hindered their performance,

because of lack of drugs at the health centre or the fact that they were not aware of the programme (of HSAs administering drugs; Callaghan-Koru et al. (2013); Callaghan-Koru et al. (2012)). In Bolivia, some *manzaneras* had conflicts with medical personnel and this led to feelings of inadequacy and inferiority. Some claimed that doctors did not value their work and would request more of them than they were able to provide (Bartos et al. 2009). CBSVs in Kenya were proud of their job and said they gained respect and recognition from the community, elders and district health staff, leading to motivation (Dil et al. 2012). CFs in Zimbabwe felt motivated by organizational characteristics like managerial support, but their performance was not influenced by organizational characteristics (Osawa et al. 2010).

Table 4.8 Factors related to health sector links

Factor	Detail on influence or association	Studies
Embedment in health sector	Lack of recognition of "upper level" decreases CHW motivation	Bartos et al. (2009); Callaghan-Koru et al. (2013); Callaghan-Koru et al. (2012); Javanparast et al. (2011); Kok and Muula (2013); Nsabagasani et al. (2007); Schneider et al. (2008); Takasugi and Lee (2012)
	Recognition of the "upper level" increases CHW motivation	Dil et al. (2012); Osawa et al. (2010); Wang et al. (2011)
Communication	Coordination/ communication increased quality of care (as reported by health workers/ CHWs)	Chang et al. (2011); Teela et al. (2009)
Coordination	Teamwork enhanced accountability, solving problems, improved coverage	Simon et al. (2009)

Improved communication between CHWs and clinical staff by an mHealth intervention in Uganda (Chang et al. 2011) and improved coordination between maternal health workers and other tiers of the system in Myanmar (Teela et al. 2009) were reported by CHWs as improving quality of care. A study on different types of CHWs in Mozambique discussed that the formation of community health teams (CHTs), in which different types of CHWs were working together, enhanced accountability towards the health sector as well as the community. Each member had to report to the team leader and the rest of the team on activities and results. CHT members discussed difficult cases together and worked with community leaders to find solutions for problems encountered. Areas previously not reached were now reached, because of improved coordination (Simon et al. 2009).

In summary, we found that recognition of formal health staff increased CHW motivation and good communication and coordination structures increased CHW performance.

Resources and logistics

For resources and logistics, we found some evidence on job aids, transport and supplies influencing CHW performance.

Several studies reported on the use of job aids by CHWs, these were mostly simple tools used to support in (treatment) decision making (Gill et al. 2012; Hamer et al. 2012; Javanparast et al. 2012; Lemay et al. 2012; Rowe et al. 2007a; Sadler et al. 2011). CHWs in Malawi using short message service (SMS) to ask medical questions, drug adverse effects and dosage amounts reported that their participation in the SMS network resulted in recognition and improved status among their clients and communities (Lemay et al. 2012). Simplicity of a treatment algorithm and clarity of a treatment chart provided clear guidance to CHWs working in child health in Zambia (Hamer et al. 2012). Simplicity of treatment algorithms was also mentioned as a contributor to success of CHWs interventions by Gill et al. (2012) and Sadler et al. (2011). However, in Iran, some younger and higher educated *behvarz* reported that centrally produced step-by-step guidelines were too didactic and constrained participatory learning. *"There are too many step-by-step guidelines and instructions that we have to follow, we are not given a chance to search, to think and to analyse things."* (Javanparast et al. 2012). Rowe et al. (2007a) researched the effect of the use of job aids by CHWs working in child health in Kenya and found that the use of a treatment card (reminding the CHW how to prescribe drugs) was associated with better overall guideline adherence, but the use of a flipchart job aid during consultations was not associated with better guideline adherence.

Lack of transport for CHWs or clients was often discussed or reported by CHWs as a factor limiting their work performance. Lack of bicycles and having to pay for transport were often mentioned (Arem et al. 2011; Gusdal et al. 2011; Kalyango et al. 2012; Kok and Muula 2013; Moetlo et al. 2011; Pongvongsa et al. 2011; Simba and Kakoko 2009; Takasugi and Lee 2012).

Several studies reported that CHWs were less motivated because of lack of supplies, such as drugs and education materials (Callaghan-Koru et al. 2013; Callaghan-Koru et al. 2012; Dil et al. 2012; Kalyango et al. 2012; Kok and Muula 2013; Moetlo et al. 2011; Perez et al. 2009; Simba and Kakoko 2009; Suri et al. 2007; Takasugi and Lee 2012). In some cases, lack of supplies resulted in not being able to conduct the job (Furth and Crigler 2012; Kalyango et al. 2012). However, Osawa et al. (2010) found no correlation between supplies and motivational outcome of CFs in Zimbabwe and in Kenya, no correlation was found between adequacy of medicine supplies in the village and guideline adherence of CHWs (Rowe et al. 2007a).

In summary, job aids were often reported to facilitate CHW performance, while transport constraints and lack of supplies were often reported to hinder CHW performance.

4.4 Discussion

Based on the evidence found in this review, we created a more detailed conceptual framework (see Figure 4.3, second box from left). Besides intervention design factors, broad contextual factors and health system factors also influence CHW performance and are often either unchangeable by an intervention or preconditions for the functioning of interventions (see Chapter 5).

Our findings indicate that variations in the design of CHW programmes have a significant influence on CHW performance. The most prominent factors related to higher CHW performance were inclusion of curative tasks in CHWs' job description; longer service delivery times; certain characteristics of CHWs such as higher education level, experience with health conditions to be dealt with, fewer household duties and lower wealth; financial and non-financial incentives; availability of supervision; training; community support, selection and monitoring; and recognition by and coordination and communication with other health staff. (Perceived) absence or poor quality of these factors could lead to lower CHW performance. Other factors that were often reported as barriers to CHW performance were high workload, lack of clarity on CHW roles and lack of resources and logistics. These intervention design factors form a complex web, influence each other and are highly context dependent.

CHW characteristics like gender, age, marital status, social status, past experience and selection of CHWs from within the community they serve may have an influence on CHW performance, although our review shows a mixed picture on the influence of these factors. Previous studies found that CHW retention rates are higher in programmes which selected CHWs based on past performance (Malarcher et al. 2011) and CHWs who are trusted members of the community better reflect the linguistic and cultural diversity of the population served (Bhutta et al. 2010; Campbell and Scott 2011; Glenton et al. 2013). These characteristics should be taken into account when developing selection criteria for CHW programmes and they are task and context specific. For example, one study on CHWs working in HIV care found clients to prefer CHWs from outside the community, because of stigma.

While we found community involvement in selection to be a motivating factor in some contexts, there was also a need to balance selection by the community with input from administrators, leaders or health workers (Campbell and Scott 2011) to guarantee CHWs have both the necessary skills and represent different groups (Atkinson et al. 2011). Selection with involvement of the health sector and the community could also improve linkages of CHWs with both sides.
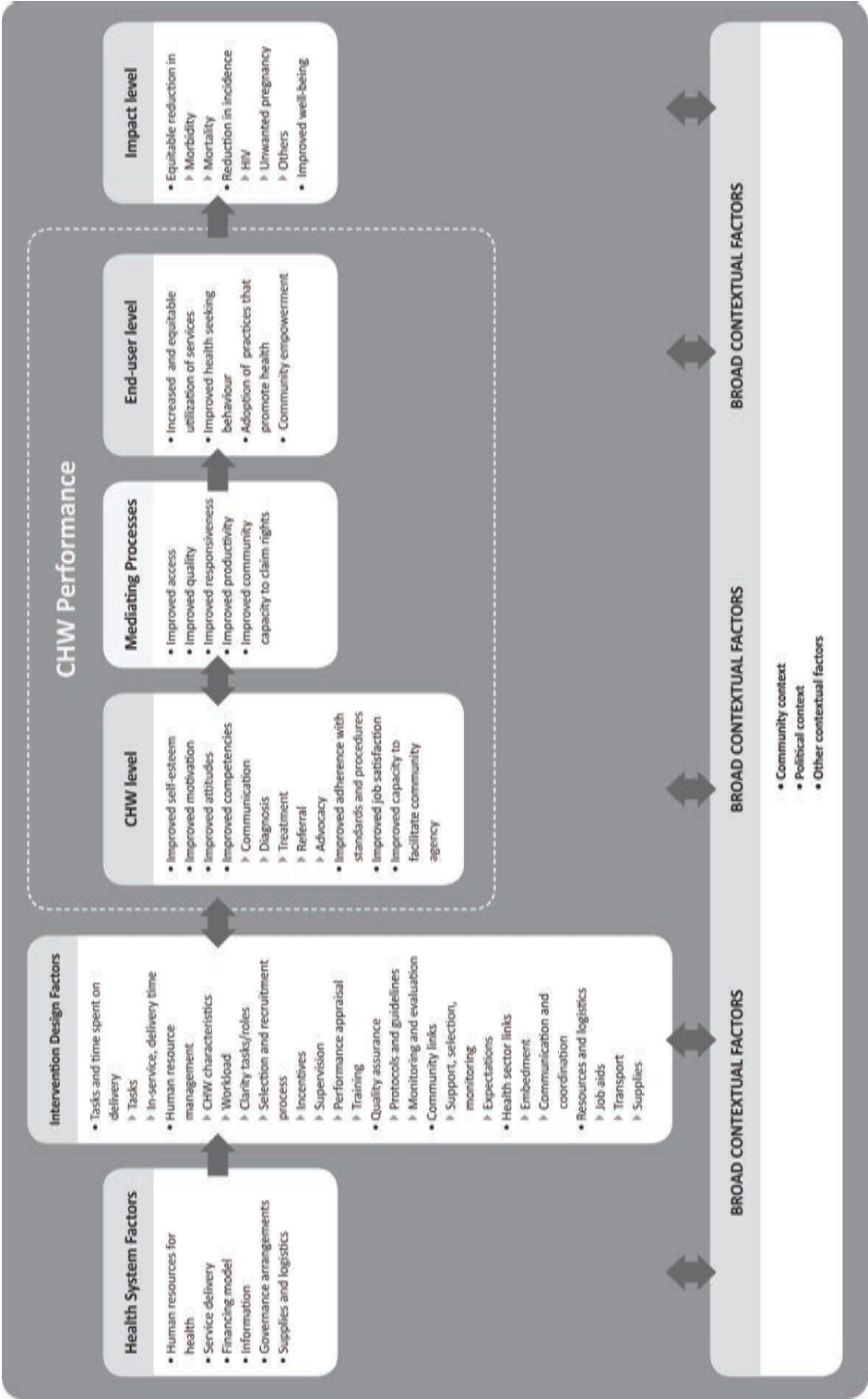
Figure 4.3 Adapted conceptual framework based on review findings

Multiple layers of inner and external factors contribute to individual motivation of CHWs. Clarity of roles (Nkonki, Cliff, and Sanders 2011), balance of curative and promotive tasks (Standing and Chowdhury 2008), recognition, workload and the ability to meet community expectations all contribute (Glenton et al. 2013; Hermann et al. 2009; Nkonki et al. 2011). Community trust and recognition was an often reported motivating factor for CHWs. Factors in the intervention design, like facilitation of support of traditional leaders or regular community meetings, could enhance community trust and respect towards CHWs and thereby CHW motivation.

While financial incentives increased performance of CHWs when compared with CHWs not receiving financial incentives, these should be predictable (Glenton et al. 2013). Non-financial incentives were also found to be important (Bhattacharyya et al. 2001; Bhutta et al. 2010; Lehmann and Sanders 2007; Prasad and Muraleedharan 2007) and mixing different types of incentives could be an effective strategy. The One Million CHW Campaign emphasizes that the optimal design of CHW programmes should involve full-time paid CHWs combined with a volunteer part-time community health workforce (Earth_Institute 2012). Our findings and those of others (Campbell and Scott 2011; Hermann et al. 2009; Willis-Shattuck et al. 2008; Wringe et al. 2010) support remuneration of CHWs, especially when they have multiple tasks or tasks that require a long service delivery time or time spent on the job per week and when remuneration is clearly linked to workload. This needs to be designed in a way that is sustainable and avoids conflicts between cadres (Mukherjee and Eustache 2007).

Our review points towards a positive effect of regular supervision from the health system on CHW performance, with problem-solving supervision being the most desired. In contrast, a Cochrane review concluded that it is uncertain whether supervision (of health workers in LMICs) is effective in the long term (Bosch-Capblanch, Liaqat, and Garner 2011). We found very little description of the exact mechanisms of supervision that contributed to success, such as type of supervisor, frequency of supervision and support to supervisors. In some studies, supervision was done in the context of the pilot intervention or research project conducted by a combination of research and NGO staff. In others, this was unclear. Some studies reported on the number of CHWs supervised per supervisor, but none measured the effects of different supervisor to CHW ratios on performance. Studies mentioning the use of mobile phones in supervision (Arem et al. 2011; Cornman et al. 2011; Jack et al. 2012) did not report a clear influence on CHW performance. Our review revealed that supervision has a number of indirect effects on motivation, retention, skills development and community recognition, supporting data from elsewhere that inadequate supervision may result in lack of legitimacy of CHWs in the eyes of the community (Atkinson et al. 2011).

Our review showed a positive effect of regular continuous education on CHW performance, but again, aspects of training that contributed to success were often not

identified. Only one study reported that a friendly environment in training centres, a good trainer-trainee relationship and high quality trainers contributed to higher motivation of trainees. Many studies reported on trainings offering classroom theory sessions combined with practical exercises and more participatory sessions, but no study researched the influence of different training approaches on CHW performance. No evidence was found on effects of the length of training on CHW performance. Atkinson et al. (2011) discussed that CHWs who receive only short training may lack legitimacy from the community. Glenton et al. (2013) found that training should include counselling and communication skills. In addition to this, training on confidentiality is important to overcome community concerns about stigmatization. These additions to training would more closely reflect the expected but often unwritten tasks of CHWs than the often medical oriented training that is currently offered. Finally, we found no evidence on the linking of training to supervision or follow-up refresher trainings, strategies that are often used when creating a community of practice that may strengthen learning and support.

The literature clearly revealed the importance of embedment of CHWs in both their community and the health sector. Community selection, monitoring and support were contributing to CHW motivation. While the importance of community involvement has been identified by other studies (Campbell and Scott 2011; ERT1 2012; Glenton et al. 2013), the exact mechanisms of how this can improve performance of CHWs has not been explored in-depth in the literature (Green 2011); our review confirmed this. Links with the health sector were reported as important by CHWs, as recognition of and communication and coordination with other health professionals and supervision from the health system increased credibility. Other reviews have stressed this point as well (Byrne and Morgan 2011; Glenton et al. 2013; Rosato et al. 2008).

The unique position of CHWs in-between the community and the health sector can result in a delicate balancing act, as CHWs are accountable to both. This could sometimes lead to a burden to the CHW. Clarity on the roles of CHWs, supervisors linked to the health sector and committees at village level supporting the CHW and introducing clear processes for communication between these three parties in the intervention design could reduce this burden.

Many studies included in this review used motivation as an outcome measure, which could ultimately influence CHW performance, as presented in our conceptual framework. However, higher motivation and greater job satisfaction do not necessarily result in higher performance. For example, we found that performance-based incentives could be satisfactory for CHWs, but could lead to ignoring certain tasks which were not paid. Some studies investigated the influence of certain intervention design factors on other outcome measures, such as CHW competencies and adherence to guidelines. These outcome measures are important characteristics of CHW performance besides the often researched motivation, and should therefore be more often included in future research.

The recent trend of expanding CHW programmes in LMICs confirms the need for more research on factors having the potential to improve CHW performance. Beside the lack of evidence on mechanisms and specific aspects that could improve CHW performance related to supervision and training, we did also not find evidence on the influence of other factors associated with improving CHW performance (derived from initial reading of selected international literature), such as the use of guidelines and protocols, performance appraisal, specific aspects of monitoring and evaluation systems related to the health system, experience sharing visits, career advancement and the functionality of referral systems. Significant challenges remain for policymakers in using evidence to design programmes. Teasing out the exact impact of altering one factor over another may not be possible and no data exist on the impact of intervention bundles or the cost implications in most contexts.

Our review adds value to the current literature, as it included both qualitative and quantitative studies and was able to explore perceptions as well as measurements of characteristics of CHW performance. A limitation of our review is that factors influencing performance were often stated (to be important), but were rarely described in detail. Effectiveness trials are seldom linked with qualitative studies. The same is true for some less rigorous quantitative studies which were included in this review. Qualitative studies should be run alongside quantitative studies to generate insight into why an intervention was successful or not (Bhattacharyya, Estey, and Zwarenstein 2011; Glenton et al. 2013). The literature clearly shows the diversity of CHWs in LMICs. However, many studies do not clarify specific characteristics of CHWs, which hinders our understanding on how to increase CHW performance. A general vocabulary related to different types of CHWs could assist in making more nuanced recommendations. Furthermore, we might have missed relevant studies because of the delimiters of our search strategy.

4.5 Conclusions

CHWs increasingly are made a formal part of health systems in LMICs, with expanding tasks. Although their contribution towards achieving health goals has been shown in various programmes, there is little evidence on which specific factors have contributed to success. This systematic review found many factors related to intervention design that could influence CHW performance. These factors should be taken into account by policymakers during the development and adjusting of CHW programmes, taking the specific context of the situation in which programmes are implemented into account.

CHAPTER 5. How does context influence performance of community health workers in low- and middle-income countries? Evidence from the literature

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 intersect to influence CHW performance. A systematic review with a narrative analysis was conducted to identify contextual factors influencing performance of CHWs.

We searched six databases for quantitative, qualitative and mixed methods studies that included CHWs working in promotional, preventive or curative primary health care services in LMICs. We differentiated CHW performance outcome measures at two levels: CHW level and end-user level. Ninety-four studies met the inclusion criteria and were double read to extract data relevant to the context of CHW programmes. Thematic coding was conducted and evidence on five main categories of contextual factors influencing CHW performance was synthesized.

Few studies had the influence of contextual factors on CHW performance as their primary research focus. Contextual factors related to community (most prominently), economy, environment and health system policy and practice were found to influence CHW performance. Socio-cultural factors (including gender norms and values and disease related stigma), safety and security, and education and knowledge level of the target group were community factors that influenced CHW performance. Existence of a CHW policy, human resources policy, legislation related to CHWs and political commitment were found to be influencing factors within the health system policy context. Health system practice factors included health service functionality, human resources provisions, level of decision making, costs of health services and the governance and coordination structure. All contextual factors can interact to shape CHW performance and affect the performance of CHW interventions or programmes.

Research on CHW programmes often does not capture or explicitly discuss the context in which CHW interventions take place. This synthesis situates and discusses the influence of context on CHW and programme performance. Future health policy and systems research should better address the complexity of contextual influences on programmes. This insight can help policy makers and programme managers to develop CHW interventions that adequately address and respond to context to optimise performance.

5.1 Background

Community Health Workers (CHWs) are involved in the delivery of health services to the community and constitute the first point of contact on health related issues in many low- and middle-income countries (LMICs). There are a wide variety of CHWs, with different names, working voluntary or paid, with multiple or single and community-based or (partly) facility-based tasks (Bhutta et al. 2010; Standing and Chowdhury 2008).

CHWs have been defined as follows: *"Any health workers carrying out functions related to health care delivery; trained in some way in the context of the intervention, and having no formal professional or paraprofessional certificate or degree in tertiary education"* (Lewin et al. 2010: p. 7). In addition, it is argued that CHWs *"should be members of the communities where they work, should be selected by the communities, should be answerable to the communities for their activities, should be supported by the health system but not necessarily a part of its organisation and have shorter training than professional workers"* (Lehmann and Sanders 2007: p. 1).

Shortages in human resources for health and evidence that CHWs can significantly contribute to the health of the population by effectively delivering key interventions in primary and community health care have led to a renewed interest in CHW programmes in LMICs (Bhutta et al. 2010; Gilmore and McAuliffe 2013; Haines et al. 2007; Lewin et al. 2010). It is important to better understand the factors influencing performance of CHWs, since these are related to the success or failure of CHW programmes. Evidence on factors influencing CHW performance can help to improve CHW programme design and management.

Factors influencing CHW performance can be divided into intervention design factors that can be directly shaped and adjusted (such as supervision, incentives, training and monitoring and evaluation mechanisms) and factors that represent the context in which a CHW intervention is taking place, which are less easily adjustable (Haines et al. 2007). Research seldom focuses on the implications of context for CHW or programme performance (Frymus et al. 2013). Understanding the socio-cultural, economic and political context in which CHW interventions operate is an important precondition for the design of successful interventions (Haines et al. 2007; Hantrais 1999; Palazuelos et al. 2013; Standing and Chowdhury 2008). The health system in which CHW interventions take place often presents preconditions or limitations to the functionality of CHW programmes (Bhutta et al. 2010; ERT2 2012; Haines et al. 2007; Hermann et al. 2009; Palazuelos et al. 2013).

We conducted a systematic review with a narrative analysis on contextual factors influencing performance of CHWs, to contribute to the evidence base on how these influence CHW or CHW programme performance. We make recommendations on the

inclusion of context as an important element in CHW programme design and future research.

5.2 Methodology

The literature review was part of a larger review that focused on both intervention design factors and contextual factors influencing the performance of close-to-community providers (presenting a wider range of health workers than CHWs, including auxiliary staff). For the purpose of this article, we focus on CHWs, as most of the evidence on contextual factors influencing performance was related to CHWs. We included quantitative, qualitative and mixed methods studies about CHWs working in promotional, preventive or curative primary health care in LMICs. The studies should have described at least one factor related to the context in which CHWs work. The review covered studies including CHWs, their clients and their families/carers, CHW supervisors, the wider community, policy makers, programme managers, other (professional) health workers, and any others directly involved in or affected by CHW service provision. We differentiated CHW performance outcome measures at two levels: CHW level (this included self-esteem, motivation, attitudes, competencies, guideline adherence, job satisfaction and capacity to facilitate community agency as characteristics of performance) and end-user level (this included utilization of services, health-seeking behaviour, adoption of practices promoting health and community empowerment as characteristics of performance) (ERT2 2012; Kane et al. 2010). CHW level outcomes contribute to end-user level outcomes and both outcome levels constitute CHW performance, ultimately contributing to changes in the health of the population (impact) (Kok et al. 2014; Naimoli et al. 2014).

We searched EMBASE, PubMed, Cochrane, CINAHL, POPLINE, and NHS-EED for eligible studies. The search strategy was adapted from Lewin et al. (2010) and is published elsewhere (Kok et al. 2014). We searched reference lists of all relevant papers and reviews identified. We included English language studies from 2007 to July 2013, as the number of hits was large. We used a framework approach (Dixon-Woods 2011) and our preliminary conceptual framework (Kok et al. 2014) included predefined categories of contextual factors influencing CHW performance. These categories were: community context, policy context, health system factors and other contextual factors and were based on reading of selected international literature (Bhutta et al. 2010; Chen et al. 2004; ERT1 2012; ERT2 2012; ERT3 2012; Haines et al. 2007; Kane et al. 2010; Kok et al. 2014; Palazuelos et al. 2013). A related review on intervention design factors influencing CHW performance is published elsewhere (Kok et al. 2014), see Chapter 4.

Two reviewers independently assessed the titles and abstracts of the identified records to evaluate their potential eligibility. In the case of different opinions, inclusion was
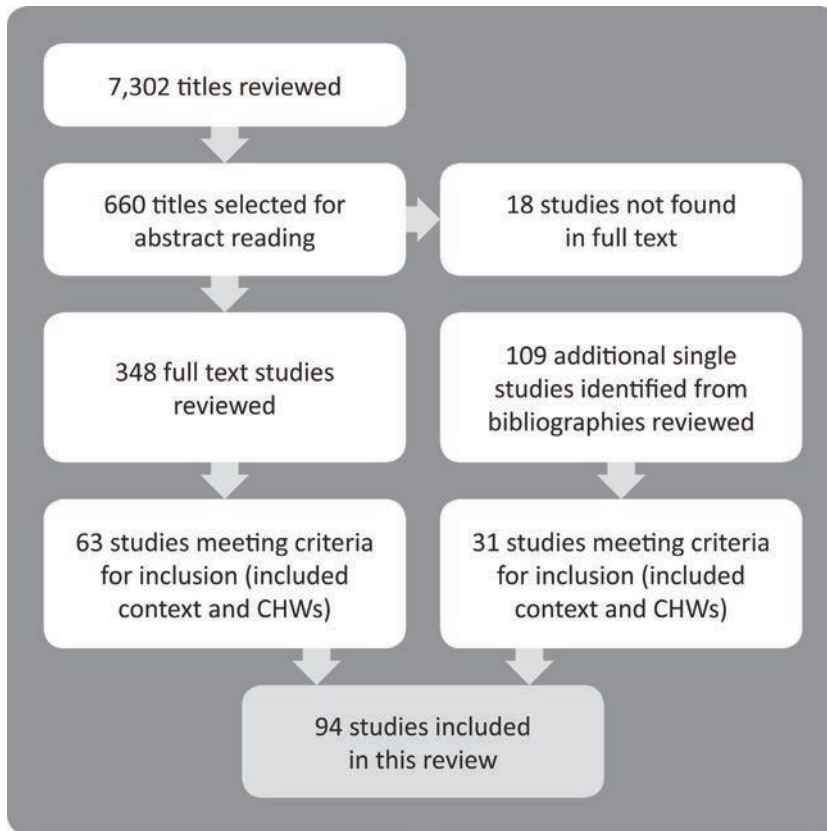
discussed between the two reviewers until consensus was reached. The full-text papers were double assessed by a team of four reviewers.

We used a standardized data extraction form containing the description of the intervention, study, outcome measures and the predefined contextual factors. The quality of included literature was assessed independently by two reviewers, with an adapted version of the Critical Appraisal Skills Programme method (CASP 2015). The quality assessment was conducted for all included studies, but the level of quality was not taken into account during data analysis as the methodologies of included studies varied. Two reviewers analysed the content of included papers using thematic coding and the main categories of contextual factors influencing CHW performance from the preliminary conceptual framework were adjusted according to the findings (Dixon-Woods 2011).

5.3 Results

Results of the search

The flow chart in Figure 5.1 presents the search results. The list of 94 included papers and their basic characteristics can be found in Annex 2. A total of 42 studies were qualitative, 28 studies used mixed methods and 24 studies were quantitative. Fifty of the studies were conducted in Africa and 41 in Asia. One study was from Oceania and two included Latin America. Most of the studies and interventions took place in rural settings. The programmes were run by either non-governmental organizations (NGOs) or governments or a collaboration of these. In 66 of the studies, the CHWs delivered services to people in their homes and/or in the community (as opposed to facility-based CHW services). CHWs in the included studies had diverse promotional, preventive and curative tasks. Seventy-two studies reported outcomes at the level of the CHW and 35 studies at the level of the end-user. Few studies had the influence of contextual factors on CHW performance as primary research focus. However, many discussed these factors and we categorized them as factors related to the community, economic context, environment, health system policy and health system practice.

Figure 5.2 Flow chart search results

Community context

Community contextual factors that were found in the literature related to socio-cultural factors (including social and cultural norms, values, practices and beliefs, gender roles and norms and disease related stigma); safety and security and education and knowledge level of the target group (Table 5.1).

Table 5.1 Summary of studies addressing contextual factors and their influence on CHW performance

Category	Sub-category	Sub-category	Detail on influence or association	Studies
Community context	Socio-cultural factors	Social and cultural norms, values, practices and beliefs	Influencing health-seeking behaviour and therefore directly influencing utilization of CHW services or the ability of CHWs to reach the client	Ajayi et al. (2008); Azad et al. (2010); Baqui et al. (2009a); Bhutta et al. (2011); Darmstadt et al. (2010); McPherson et al. (2010); Medhanyie et al. (2012b); Nyanzi et al. (2007); Posner et al. (2009); Saravanan et al. (2011); Scott and Shanker (2010); Shankar et al. (2009); Uzochukwu et al. (2008)
			Positively or negatively influencing acceptance of the CHW or the CHW intervention	Martinez et al. (2008); Nasreen et al. (2011); Prata et al. (2012a); Prata et al. (2012b); Sanghvi et al. (2010)
			Not corresponding with CHW's advice and therefore hindering CHW performance	Campbell et al. (2008); Gill et al. (2012); Hill et al. (2008); Mannan et al. (2008); Mukanga et al. (2010); Nelson et al. (2012); Perez et al. (2009); Posner et al. (2009); Razee et al. (2012); Saleem et al. (2007); Saravanan et al. (2011); Saravanan et al. (2012)
			Social class of CHW could influence relationship between CHW and client	Abbott and Luke (2011); Srivastava et al. (2009)
			Influencing level of initiative of the CHW	Jack et al. (2012); Martinez et al. (2008)
		Gender roles and norms	Influencing women's access to and uptake of CHW services	Burn (2008); Hill et al. (2008); Kim et al. (2012a); Martinez et al. (2008); Posner et al. (2009); Prata et al. (2012a); Puett et al. (2013); Root and van Wyngaard (2011); Sadler et al. (2011)
			Preference regarding sex of the CHW influencing acceptance of the CHW	Viswanathan et al. (2012) Diakite et al. (2009); Hill et al. (2008); Nyanzi et al. (2007)
			Influencing possibilities for interactions of female CHW with male clients and therefore hampering CHW performance	Abbott and Luke (2011); Behdjat et al. (2009); Campbell et al. (2008)
			Influencing mobility of female CHW and therefore hampering CHW performance	Alam et al. (2012b); Rahman et al. (2010)
			Influencing choice of becoming or retaining as a CHW (for example, women seen as caring, men should be paid, women discouraged to become CHW by husband)	Ahmed (2008); Azad et al. (2010); Burn (2008); Campbell et al. (2008); Daniels, Clarke, and Ringsberg (2012); Maes and Kalofonos (2013); Olang'o et al. (2010); Osawa et al. (2010); Rahman and Tasneem (2008); Simba and Kakoko (2009)

			Description	References
	Disease related stigma		Influencing information provision to the CHW and health-seeking behaviour and therefore hampering CHW performance	Alamo et al. (2012); Campbell et al. (2008); Dawad and Jobson (2011); Gusdal et al. (2011); Martinez et al. (2008); Root and van Wyngaard (2011); Wools-Kaloustian et al. (2009)
	Safety and security		Feeling of unsafety could lower CHW motivation and conflict could hamper the functionality of programmes	Callaghan-Koru et al. (2012); Razee et al. (2012); Teela et al. (2009)
	Education and knowledge level target group		Low education and knowledge levels of clients could hinder CHW performance	Diakite et al. (2009); Kok and Muula (2013); Martinez et al. (2008); Takasugi and Lee (2012)
Economic context			Economic hardship could influence willingness to become CHW, health-seeking behaviour and could lead to stress of CHWs	Maes and Kalofonos (2013); Mukherjee and Eustache (2007); Nsabagasani et al. (2007); Osawa et al. (2010); Sadler et al. (2011); Schneider et al. (2008); Takasugi and Lee (2012)
Environment	Geography and distance		Difficult geography and large distances to cover could hamper CHW performance	Ajayi et al. (2008); Callaghan-Koru et al. (2012); Campbell et al. (2008); Darmstadt et al. (2010); McPherson et al. (2010); Mukanga et al. (2012); Razee et al. (2012); Sadler et al. (2012); Satti et al. (2012b); Teklehaimanot et al. (2007); Ye-Ebiyo et al. (2007)
	Climate		Flooding could hamper mobility and thus performance of CHWs	Azad et al. (2010); Elmardi et al. (2009); Shah et al. (2010); Simon et al. (2009)
Health system policy	CHW and human resources policy	CHW policy	Existence of CHW policy could influence CHW performance	Agrawal et al. (2012); Alamo et al. (2012); Amare (2011); Bartos et al. (2009); Behdjat et al. (2009); Bhutta et al. (2008); Burn (2008); Callaghan-Koru et al. (2013); Callaghan-Koru et al. (2012); Daniels et al. (2012); Furth and Crigler (2012); Gusdal et al. (2011); Javanparast et al. (2012); Medhanyie et al. (2012b); Omer et al. (2008); Schneider et al. (2008); Smith et al. (2007); Sranacharoenpong and Hanning (2011); Teklehaimanot et al. (2007); Viswanathan et al. (2012); Winch et al. (2008)
		Human resources policy	Human resources policies, relating to incentives, and career perspectives, influence CHW performance	Alam et al. (2012b); Alamo et al. (2012); Dambisya and Matinhure (2012); Daniels et al. (2012); Ge et al. (2011); Maes and Kalofonos (2013); Schneider et al. (2008); Teklehaimanot et al. (2007)
	Legislation related to CHWs		Regulatory frameworks about procedures CHWs are authorized to perform could influence their scope of work and could influence their acceptability	Ajayi et al. (2008); Callaghan-Koru et al. (2012); Dambisya and Matinhure (2012); Daniels et al. (2012); Dawson et al. (2008); Hill et al. (2008); Hoke et al. (2008); Huber, Saeedi, and Samadi (2010); Kalyango et al. (2012); Mukanga et al. (2012); Nsabagasani et al. (2007); Prata et al. (2012a); Prata et al. (2012b); Puett et al. (2013); Sanjana et al. (2009); Soofi et al. (2012)
	Political commitment		Political commitment towards CHW programmes could influence performance of CHWs	Behdjat et al. (2009); Callaghan-Koru et al. (2012); Das et al. (2008); Omer et al. (2008); Ye-Ebiyo et al. (2007)

Health system practice	Health service functionality	Embedment of CHW services with functional, well-supplied health services could enhance CHW performance	Dambisya and Matinhure (2012); Gusdal et al. (2011); Satti et al. (2012b)
		Functioning, bidirectional referral and feedback systems enhance CHW performance	Chanda et al. (2011); Smith et al. (2013); Wools-Kaloustian et al. (2009)
	Human resources provisions and their match with CHWs' expectations	Expectations regarding career progression and incentives that are not corresponding with possibilities within health system could hinder CHW performance	Javanparast et al. (2011); Maes and Kalofonos (2013); Mutalemwa et al. (2009); Peltzer et al. (2010); Srivastava et al. (2009); Warren, Norr, and Keeney (2013)
		Well defined roles of CHWs and other workers could increase CHW performance	Dambisya and Matinhure (2012); Peltzer et al. (2010); Teklehaimanot et al. (2007)
		Inadequate support of other staff or supervision could hinder CHW performance	Bartos et al. (2009); Behdjat et al. (2009); Nsabagasani et al. (2007); Sadler et al. (2011); Simwaka et al. (2012); Suri et al. (2007); Takasugi and Lee (2012)
		Outcome-based payment of CHWs could hinder their performance	Scott and Shanker (2010); Srivastava et al. (2009)
	Level of decision making	Decentralization could have an effect on performance of CHWs	Hoy et al. (2008)
	Costs of health services	User fees and income based on drug selling by CHWs could hinder their performance	Callaghan-Koru et al. (2013); Rahman and Tasneem (2008); Winch et al. (2008)
	Governance/ coordination structure	Hierarchical structures and too many vertical programmes could hinder CHW performance	Scott and Shanker (2010); Ye-Ebiyo et al. (2007)

Socio-cultural factors

Social and cultural norms, values, practices and beliefs

We identified social and cultural norms, values, practices and beliefs as important community contextual factors that affect CHW performance; these were particularly reported in studies related to maternal health programmes. For instance, women's preference for giving birth at home was reported to be a deeply embedded cultural belief in Ethiopia, resulting in women choosing to deliver with a traditional birth attendant at home instead of with a health extension worker at a health post (Medhanyie et al. 2012b). Similarly, lady health workers in Pakistan had difficulties in following-up newborns because of women delivering in their parents' house and residing with them for 40 days after childbirth (Bhutta et al. 2011). Likewise, seclusion of mother and baby after delivery was reported to hamper CHW performance in Bangladesh (Azad et al. 2010; Darmstadt et al. 2010). In many societies, the husband and mother-in-law are the primary decision makers (McPherson et al. 2010). In India, grandmothers and mothers-in-law had a big influence on the health-seeking behaviour of pregnant women, often resulting in home births (Saravanan et al. 2011; Scott and Shanker 2010). Two different studies on maternal health in Afghanistan and Bangladesh showed that involving the husbands (Nasreen et al. 2011; Sanghvi et al. 2010), mothers-in-law (Nasreen et al. 2011; Sanghvi et al. 2010), sisters-in-law and mothers (Sanghvi et al. 2010) in health education activities reinforced the messages of CHWs and enhanced coverage and acceptability of misoprostol.

Cultural practices, such as preference for herbal treatment, also influenced compliance with CHW guidance (Razee et al. 2012). However, such practices did not always originate from a preference for traditional treatments but from modern treatments being unavailable (Das et al. 2008).

Social hierarchies can also form a barrier to CHW performance. From India, Abbott and Luke (2011) reported that female community-based distributors (CBDs) faced challenges in influencing behaviour of women with a lower social status. While in another setting in India, accredited social health activists (ASHAs) were in demand by all castes and religious groups (Srivastava et al. 2009). Prata et al. (2012a) reported that the social structures in Nigeria were extremely hierarchical and local leaders had strong influence on the "acceptability" of CHWs. This, however, did not necessarily translate into constraints for the CHWs, there was still adequate community participation and CHWs were still able to do their tasks (education about and distribution of misoprostol).

In Uganda, too, cultural and religious beliefs amongst the target groups made it difficult to approach them and this negatively influenced the level of initiative taken by community reproductive health workers (Martinez et al. 2008). CHWs' initiative can also be positively influenced by social and cultural values. Community volunteer workers in palliative care in

Uganda reported that the cultural desirability of and value attached to the act of helping each other underpinned their caring role for sick community members (Jack et al. 2012).

Gender roles and norms

Gender roles and norms, which intersect with social and cultural norms, influenced women's access to and uptake of CHW services and thereby CHW programme performance. For example, in Swaziland, limitations on women's agency and decision making formed a barrier in access to HIV prevention and care interventions by CHWs (Root and van Wyngaard 2011). A CHW intervention in Malawi on prevention of mother-to-child transmission of HIV found that women without any partner involvement were most likely to complete treatment. Those women with involved but undisclosed partners were least likely to complete treatment (Kim et al. 2012a).

The sex of the CHW has been shown to influence uptake of services in different contexts. In Afghanistan, Viswanathan et al. (2012) reported a preference for female CHWs for the delivery of reproductive health services compared to male CHWs, because the norm was that women should not interact with men outside the family. Hill et al. (2008) suggested that having only male community based surveillance volunteers (CBSVs) working in maternal and neonatal health in Ghana might have limited the scope of the intervention, as families may not want the CBSVs to physically help putting babies in the skin to skin position or help with breastfeeding attachment. A family planning programme in Guinea recruited a female and male CBD per village. Only the female CBD, according to social custom, was allowed to approach women about family planning. However, male CBDs were able to engage with men and persuade them that family planning was also a men's concern (Diakite et al. 2009). In India, female CBDs working in promotion and distribution of contraceptives were limited in their interaction with men, which hampered their performance. This was a result of the norms of *purdah*, which strictly regulates interaction between men and women (Abbott and Luke 2011). The same was found for women health volunteers in Iran (Behdjat et al. 2009). Being female could influence mobility of CHWs: two studies from Bangladesh reported that *Shasthya Shebika*s (CHWs) were seen as being "not decent" if they went out in the night (Alam et al. 2012b; Rahman et al. 2010), particularly in rural areas (Alam et al. 2012b).

Gender norms and roles affect expectations for income generation of men and women and can influence people to become or remain a CHW. In patriarchal settings, men are expected to be the family breadwinners. A study in Kenya, for example, showed that for this reason, it became difficult for male CHWs to provide voluntary services as it strained their ability to fulfil their financial responsibilities. As a result, they were forced to drop out to search for alternative sources of income. This cultural norm was not the only reason for the higher drop out of male CHWs as compared to female CHWs; it was also indicated

that men lacked certain characteristics like instinct for tender care and tolerance that a sick person requires, whereas female CHWs believed "it is their natural duty" to care. Although remuneration was not as strong a condition for women as for men to become a CHW, lack of remuneration and sometimes lack of spousal support (women were perceived to "waste time" if they engaged in community work) were reasons to drop out for female CHWs (Olang'o et al. 2010). Results of a survey conducted with 764 female *Shasthya Shebikas* in Bangladesh showed that 5.9% faced problems in obtaining permission from their husbands for participation in this mainly voluntary job (Rahman and Tasneem 2008).

Disease related stigma

Several studies reported disease related stigma influencing the performance of CHWs. In a project involving peer counsellors to support clients to adhere to anti-retroviral therapy (ART) in Ethiopia and Uganda, peer counsellors' performance was limited by some clients not disclosing contact details through fear of having their HIV status known (Gusdal et al. 2011). Stigma also played a role in Uganda, where CHWs found it difficult to approach clients about family planning (Martinez et al. 2008), and in Kenya, where trained HIV infected peers delivering HIV care at household level defined themselves as health counsellors to avoid the AIDS label and promote confidentiality (Wools-Kaloustian et al. 2009).

Safety and security

In addition to constraints for female CHWs as mentioned above, safety and security issues may also affect their performance. A study in Papua New Guinea, describing the social factors that influence motivation of rural health workers, addressed work safety issues as a factor influencing CHW performance. A perceived lack of personal safety was found to affect motivation to work at particular locations and, in some cases resulted in people resigning. Especially (young) female health workers felt unsafe and scared, because of substance abuse among young men, violent assaults, verbal abuse and accusations (Razee et al. 2012). Callaghan-Koru et al. (2012) reported that health surveillance assistants (HSAs) running village clinics in Malawi were sometimes afraid of contracting infections and the possibility of stealing of drugs by community members. Teela et al. (2009) reported that security concerns (because of an active conflict) could substantially impinge on the service provision of maternal health workers in Myanmar. The authors reported that the flexible nature of the multi-tiered provider network was able to partially overcome security constraints and maintain coverage of some services.

Education and knowledge level of the target group

Low levels of education and health knowledge in the population were reported to pose a challenge for CHWs in Kenya, who perceived some people in their communities to be "ignorant" and "uncooperative" (Takasugi and Lee 2012). Community reproductive health workers in Uganda reported that misconceptions about contraception were the major factors hindering their work (Martinez et al. 2008). However, this could be interpreted as an attitude of the CHW rather than a contextual factor, which will be further elaborated in the Discussion section.

Economic context

The economic context and its influence on the performance of CHWs were highlighted in a number of studies; they related mainly to livelihoods and willingness to volunteer, and requested compensation for services rendered (Table 5.1). A lack of financial or material compensation for services rendered could lead to an inability of CHWs to provide for their family and is particularly exacerbated in areas of pervasive poverty (Maes and Kalofonos 2013). The willingness to become a CHW could be influenced by the wish to earn an income or the hope of being compensated eventually, especially in situations where there is high unemployment or fewer opportunities (Mukherjee and Eustache 2007; Nsabagasani et al. 2007; Osawa et al. 2010; Schneider et al. 2008). For example, a study on CBDs in Uganda reported that due to high levels of unemployment, people volunteered hoping that they would be remunerated eventually (Nsabagasani et al. 2007). Poverty of the community could also influence the work of CHWs. Maes and Kalofonos (2013) reported that a food crisis not only affected CHWs, but also led to lack of food among clients causing distress to CHWs (because they saw their clients suffering). Poverty could also prevent people from seeking health services in general, because of the expense incurred for accessing the services (Sadler et al. 2011).

Environment

Several studies reported that topographical challenges and the need to cover large distances hampered CHW performance. Mukanga et al. (2012) in a study on CHWs working in child health in Uganda, found that households residing one to three kilometres from a health facility were 72% more likely to utilize CHW services compared to households residing within one kilometre of a health facility. Households residing between one and three kilometres from a CHW were 81% less likely to utilize CHW services compared to those households residing within one kilometre of a CHW. Thus, proximity of CHWs and health facilities to their clients could affect utilization of CHW services. Four studies referred to difficulties of CHWs in reaching communities because of flooding,

which hampered their performance (Azad et al. 2010; Elmardi et al. 2009; Shah et al. 2010; Simon et al. 2009) (Table 5.1).

Health system policy

The literature revealed four key contextual factors relating to health system policy having a bearing on CHW performance: the existence of a CHW policy, a human resources policy, legislation related to CHWs and political commitment (Table 5.1).

Existence of CHW and human resources policies

Authors mentioned the importance of having a national CHW policy in studies from several countries: Pakistan (Bhutta et al. 2008; Burn 2008; Omer et al. 2008; Smith et al. 2007), Afghanistan (Sanghvi et al. 2010; Viswanathan et al. 2012), Malawi (Callaghan-Koru et al. 2013; Callaghan-Koru et al. 2012), India (Agrawal et al. 2012), Ethiopia (Amare 2011; Medhanyie et al. 2012b; Teklehaimanot et al. 2007), Iran (Behdjat et al. 2009) and South Africa (Schneider et al. 2008). In Thailand and Bolivia, there was no clear policy for community health care workers and *manzaneras* respectively (Bartos et al. 2009; Sranacharoenpong and Hanning 2011). This lack of policy led to inadequate support for CHWs (credits and payments for trainings) (Sranacharoenpong and Hanning 2011) and to CHWs not being recognized by health authorities, which limited their ability to operate in the community (Bartos et al. 2009). In South Africa, although a national CHW policy framework was adopted, most CHWs are not employed by the government and challenges regarding support to and management of CHWs still exist (Schneider et al. 2008). Furth and Crigler (2012) reported that in Zambia, the government recognizes CHWs, but the health system is still not equipped to supervise, support and incentivize the full range of CHWs operating in the country.

General human resources policies define the space in which programmes and interventions can operate regarding incentives, working conditions, training and career perspectives. Therefore, human resources policies can have an effect on CHW performance. The literature review found that in many contexts, the rights of CHWs were not formally covered. There was a lack of basic entitlements such as leave and complaint mechanisms for CHWs (Schneider et al. 2008). Policies addressing remuneration and incentives were lacking in some contexts (Maes and Kalofonos 2013). In Uganda, the lack of a regulatory framework resulted in fragmentation of salaries among different types of CHWs and lack of career opportunities, resulting in demotivation (Alamo et al. 2012; Gusdal et al. 2011). In Ethiopia (Maes and Kalofonos 2013; Teklehaimanot et al. 2007) and Mozambique (Maes and Kalofonos 2013), a clear professional development programme was reported to be absent.

Existence of legislation related to CHWs

The medical profession is regulated and restricted in all countries; legislative and professional regulatory frameworks inform which professional can perform which task. Few studies however reported on regulatory frameworks regarding the health related procedures CHWs are authorized to perform. Callaghan-Koru et al. (2012) presented an example of disagreement at national level in Malawi about CHW services, when in 2009, the Medical Council considered the community case management programme to be illegal because they had objections to HSAs performing clinical services. The work of CHWs in Bangladesh was facilitated by the fact that they were permitted to prescribe medication (Puett et al. 2013). In Zambia, the policy on HIV counselling and testing services changed so that lay counsellors could test clients (Sanjana et al. 2009), and Nepal was reported to change the policy in order to make it possible for CHWs to prescribe antibiotics (Dawson et al. 2008). Nigeria became the first country in the world to approve national guidelines for the prevention and treatment of postpartum haemorrhage allowing community-based distribution of misoprostol (Prata et al. 2012a). Thus, regulatory frameworks guide the scope of the activities that CHWs are allowed to perform.

Political commitment

On occasion general political decisions can influence CHW performance. In India, the influence of local politics in selecting local people to manage community-based drug distribution centres caused deterioration of the centres and negatively influenced the ability of CHWs to conduct their job (Das et al. 2008). Regarding a CHW programme in Iran, leadership and continuous support of the formal health system were central to the success of the intervention (Behdjat et al. 2009).

Health system practice

There were several factors affecting CHW or programme performance related to the health system practice: health service functionality (including supplies), human resources provisions, the level of decision making, the costs of health services and the governance and coordination structure (Table 5.1).

Health service functionality

Many studies stated that the presence of well-functioning health services is essential for CHWs to perform well, including logistics support, equipment and supplies. For example, peer counsellors in Ethiopia had sincere concern for their fellow patients, which resulted in frustration when they observed sick patients not being initiated on ART due to lack of

drugs, and how tired and hungry patients waited for long hours to be counselled by a provider (Gusdal et al. 2011). Drawing on research in Uganda and Lesotho, Dambisya and Matinhure (2012) and Satti et al. (2012b) highlighted the importance of embedding CHW service delivery within a continuum of services. A functioning and bidirectional referral and feedback loop was also mentioned to enhance CHW performance (Chanda et al. 2011; Smith et al. 2013; Wools-Kaloustian et al. 2009).

Human resources provisions and their match with CHWs' expectations

Studies showed that CHW motivation could be influenced by the health system's ability to accommodate CHWs' expectations – particularly around formalization of their status, prospects of career development and incentives. The literature revealed that CHWs find monetary and material incentives important. The perspective of working towards a permanent job is for many an important incentive as well, while in some settings CHWs have become a formal cadre (Javanparast et al. 2011; Srivastava et al. 2009; Warren et al. 2013). Peltzer et al. (2010) reported that voluntary lay counsellors in South Africa are unlikely to continue to serve without salaries – particularly if the range of tasks expected from them is broadened. Un-kept promises regarding future incentives may dissatisfy CHWs (although not necessarily lead to attrition) (Maes and Kalofonos 2013), and parallel programmes offering incentives when their own does not, may discourage them (Mutalemwa et al. 2009).

Studies showed that for CHWs to be effective, they should have clear operating procedures and guidelines, including clearly defined and demarcated roles and relationships with other cadres and actors (Dambisya and Matinhure 2012; Peltzer et al. 2010; Teklehaimanot et al. 2007). The absence of support from professional health staff, e.g. due to high professional staff turnover (Simwaka et al. 2012), lack of trust by professional staff (Bartos et al. 2009; Sadler et al. 2011), overall lack of such support (Takasugi and Lee 2012), a general lack of professional staff (Behdjat et al. 2009) and workload of other staff (Nsabagasani et al. 2007) can affect motivation and performance of CHWs. Lack of support from or supervision by the health sector can also result in lack of credibility of CHWs (Bartos et al. 2009). Scott and Shanker (2010) reported the negative side of outcome-based payment of ASHAs in India. ASHAs earn money for bringing people to the clinic and helping with biomedical interventions. They cannot earn money for encouraging village health meetings nor discussing health issues on social change more generally, while this is part of their role. This resulted in underperformance on these particular tasks (Scott and Shanker 2010; Srivastava et al. 2009).

Level of decision making

The level at which decision making occurs and the implementation capacity at those levels could have an influence on CHW performance. In Laos, responsibility for public programmes was shifted from the central level to provincial and district levels. Although this shift did, in principle, recognize the value of community engagement and locally designed interventions, low capacity at these levels meant that programmes were often poorly managed, non-consultative and not evidence-based, and that activities were regularly carried out in an *ad hoc* fashion. There was also a major dependency on donor funding and expatriate expertise. These problems as a result of a shift in responsibility could affect performance of CHWs (Hoy et al. 2008).

Costs of health services

The costs of health services could also have an effect on CHW performance. In Malawi, a study reported that HSAs in a catchment area managed by a faith-based association were unable to collect drugs from their nearest facility as they were not free of charge like in government catchment areas. Therefore, their performance regarding community case management of childhood illness was constrained (Callaghan-Koru et al. 2013). CHWs in Mali, who obtained income by selling drugs, had to compete with informal vendors that sold drugs in smaller, cheaper quantities (Winch et al. 2008). *Shasthya Shebikas* in Bangladesh also faced competition regarding selling medicines (Rahman and Tasneem 2008). As a result, community use of CHW services was low in these settings.

Governance and coordination structure

Few studies discussed the governance and coordination structure influencing CHW performance. A hierarchical structure of the health system hindered meaningful communication across levels of status, seniority and income in India. This rigidity and top-down power and information flow had negative effects on the ASHA programme, as insights from the community level were not used to improve services at all levels (Scott and Shanker 2010). In Ethiopia, lack of coordination between vertical programmes and between various NGOs was reported to result in overlap among different (*ad hoc*) trainings, reducing the time health extension workers could spend in their communities (Ye-Ebiyo et al. 2007).

5.4 Discussion

Our findings indicate that contextual factors influence CHW performance at the CHW level (e.g. motivation or competencies), the end-user level (e.g. influencing health-seeking behaviour), or by influencing broader CHW programme performance (Figure 5.2). These factors relate to community (most prominently), economy, environment, and health system policy and practice and form a complex interactive web. They represent characteristics of settings in which a CHW programme operates and sometimes serve as preconditions for the performance of CHWs or CHW programmes. Factors that were found to be preconditions, such as the presence of well-functioning health services including logistics and supplies, were affecting CHWs' ability to conduct their job. They were also related to CHW and end-user outcome levels, selected as outcome measures and comprising CHW performance in this review. For example, the absence of well-functioning health services influenced levels of motivation and job satisfaction (at the CHW outcome level) and utilization of services at the end-user outcome level. Policy makers and implementers of CHW interventions have to anticipate on and make use of the context particular to their setting to reach optimal performance.
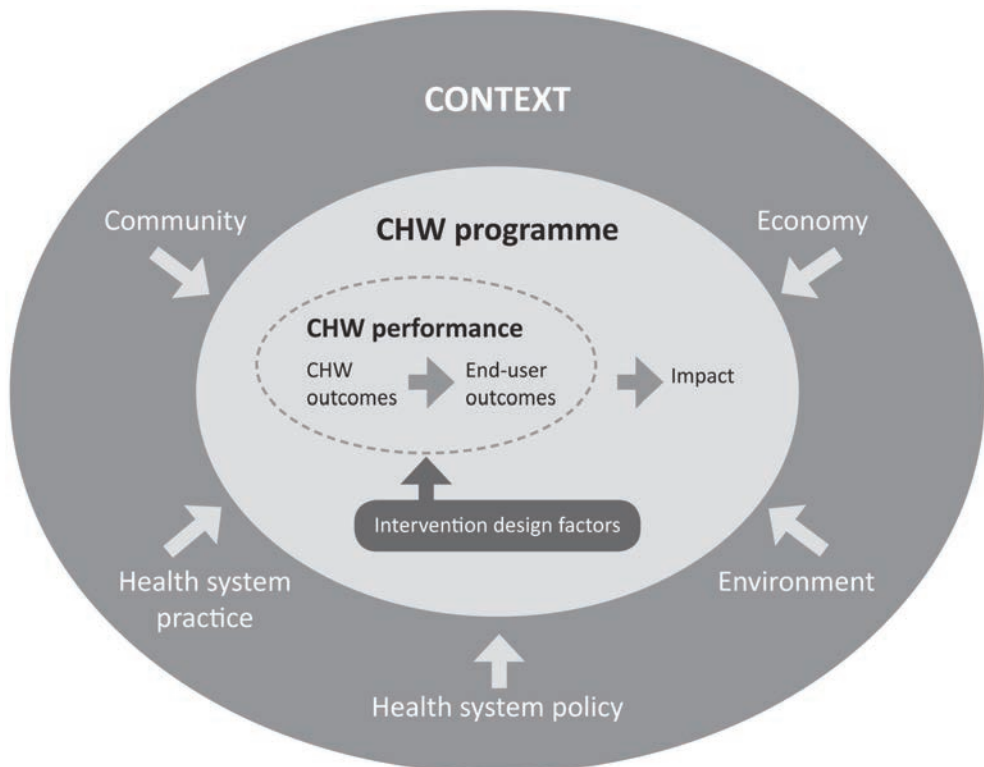

Figure 5.2 Contextual factors influencing CHW performance and programme functionality

Socio-cultural factors can influence access to and uptake of (CHW) health services. As CHWs are part of the context in which clients are living, it is often assumed that they are better able to understand constraints as a result of socio-cultural factors, compared with other health workers (Bhutta et al. 2010; Haines et al. 2007). Findings from our review are similar to those of a systematic review of community participation in malaria control (Atkinson et al. 2011); this review showed that in certain cases, CHWs were able to shift health-seeking behaviour towards increased utilization of services, but in others they were not. Contextual analyses are needed to understand how CHWs could be better used to stimulate health care seeking and reduce stigma or modify socio-cultural norms and beliefs amongst different groups. At the same time, reflection on norms and values and addressing power relations are rarely the focus of CHW interventions, which could explain why it is difficult for CHWs to address these issues. Poor adherence to the CHW's advice or poor health-seeking behaviour could be exacerbated by low education levels of the target group (Glenton et al. 2013). Lack of skills of the CHW to use effective health education strategies and community dialogue interventions may lead to a lack of compliance with their advice, frustration and blaming the client to be "ignorant". Understanding of community practices and beliefs could assist policy makers in shaping CHW programmes, for example, providing training and supervision to equip CHWs with the right facilitation skills to initiate reflection on practices and beliefs that, from a public health perspective, hinder people from changing behaviour or accessing services.

Our review identified the influence of social hierarchies on CHW acceptance and performance. Palazuelos et al. (2013) emphasized the importance of structures and dynamics of societal interaction; the way power is shared within a society and the trust people have in those with power as factors influencing performance of CHW programmes. Recently, a South African study reported unintended CHW programme outcomes as a result of multi-layered practices of power (Lehmann and Gilson 2013). In communities where government or local leaders have a big influence, it could be advisable to involve them in the CHW programme, although in some contexts this could perpetuate existing social inequities and power imbalances. Thus, there is a delicate balance between working with and influencing context.

Social and cultural norms should be taken into consideration when selecting CHWs to address community preferences regarding sex and social status. Some communities prefer female CHWs yet they may be less able to perform because of societal and gendered restrictions in mobility or communication with male clients. Gender roles and relations shape processes and experiences within the community and within the health sector and CHWs have a critical interface role between both sides. Mumtaz et al. (2003 and 2013) reported that lady health workers in Pakistan were introduced because they were assumed to be better able to respond to gender-based constraints on women's access to health services, but they themselves faced problems because they operated in the same

gender systems that necessitated their appointment. This led to low job satisfaction and significant negative implications for the quality of services provided. Gender norms could also influence decisions on becoming or retaining a CHW. This could be a consideration when designing voluntary CHW programmes, especially in patriarchal, poor societies where men are not easily involved in voluntary work. Involvement of husbands was found to enhance coverage of CHW services in maternal health (Nasreen et al. 2011; Sanghvi et al. 2010). Although many studies point to the beneficial effect of male involvement in programmes for the prevention of mother-to-child transmission of HIV (Morfaw et al. 2013), a study from Malawi showed low adherence to HIV treatment of women with husbands that did not know the HIV status of their wives (Kim et al. 2012a). This highlights the importance of understanding how gender roles and relations influence health-seeking behaviour and responding appropriately. CHWs thus need to be supported to be able to assess and react to this context in promoting health-seeking behaviour.

Stigma is a culturally specific construct that could influence CHW performance. When stigma is profound, certain CHW programmes should be adjusted to improve performance, for example by integration of HIV services into other health services to avoid patients being identified (Church and Mayhew 2009).

Existence of CHW related policies was found to be important. However, recognition and integration of CHWs in the health system seem to be more important for CHW performance than the existence of a CHW policy *per se* (Furth and Crigler 2012; Schneider et al. 2008). The importance of inserting CHW programmes in the wider health system and the human resources strategic planning has also been identified by others (Bhutta et al. 2010; ERT2 2012; Hermann et al. 2009). Formally employed CHWs are more likely than voluntary CHWs to be covered by policies and frameworks regulating their rights, this promotes sustainability of programmes.

Regulatory frameworks regarding the procedures CHWs are allowed to perform will become more important when CHWs become involved in providing curative services (Standing and Chowdhury 2008). These regulatory frameworks should protect CHWs in case of adverse outcomes.

The functionality of the health system as a whole has an influence on CHW performance. From our literature review, it is clear that necessary arrangements regarding incentives, supervision, referral, supplies and training are often inadequate and that CHWs' expectations regarding these issues do not correspond with reality (Bhutta et al. 2010; ERT2 2012; Glenton et al. 2013; Hermann et al. 2009; Jaskiewicz and Tulenko 2012; Palazuelos et al. 2013; Tulenko et al. 2013). Performance- or output-based incentives could lead to competition or neglect of unpaid tasks, hampering CHW performance (Scott and Shanker 2010; Srivastava et al. 2009). Hierarchical structures and vertical programmes within the health system hamper communication among CHWs, other health staff and

management, and among NGOs that employ CHWs, negatively affecting CHW performance. Certain characteristics of vertical programmes, such as clear objectives and work schedules and frequent supervision, are assumed to facilitate performance (Oliveira-Cruz, Kurowski, and Mills 2003). However, the existence of multiple vertical programmes could also lead to confusion at the community level as a result of unclear division of roles and responsibilities of different types of CHWs involved in these programmes and to dissatisfaction at the CHW level, because of differences in policies regarding incentives and career advancement. Thus, multiple vertical programmes could negatively influence CHW performance.

A limitation of this literature review is that we may have omitted studies, because only English language studies from 2007 to 2013 were included. We did not identify many studies reporting on power structures, the history of community organizations or structures, the role of professional associations, political commitment and accountability structures. The categorization of factors as presented in this paper is based on a health systems perspective and is not static. Broader factors such as non-health related governance structures, policy and justice issues and societal perspectives on volunteerism were not found in the selected literature, but might be factors that could influence CHW or programme performance. The quality of included studies was not used to "weigh" the synthesis towards the findings of included studies, because of the wide range of types of studies included. Another limitation of this review is that in many of the included studies, the context and specific characteristics of CHWs were poorly described. Often, studies lacked "thick descriptions" (Ceertz 1973), making it difficult for the reader to assess the relevance and depth of detail of context as well as similarities and differences across and between various contexts. Therefore, it is difficult to generalize the findings from one study to other settings (inferential generalization) and to draw theoretical propositions, principles or statements from the findings of a study for more general application (theoretical or analytical generalization) (Gilson et al. 2011; Ritchie and Lewis 2003). Despite this, we have been able to identify some socio-cultural related factors that influence performance of CHWs across different settings, supporting a discussion of theoretical generalizability.

The importance of describing context has been endorsed before in CHW related research (Frymus et al. 2013; Glenton et al. 2013; Kane et al. 2010; Lewin et al. 2010). Health systems are part of their social, political and economic settings, responding to health needs that are generated by the same contextual factors. Context influences the daily practice of the health system through the experiences, mind-sets and values that shape the behaviour of actors within it and therefore, despite similar elements and patterns, they can respond differently to the same new idea, policy or intervention. In order to bring positive change to health systems, health policy and systems research that fully accounts for context is required (Sheikh, George, and Gilson 2014a). With regard to

research on CHW performance, CHWs' interface role makes it important to understand context from within communities and the health sector, which are again shaped by policy and other factors. Therefore, qualitative and theory-driven approaches in research and evaluation of CHW programmes are recommended. Research which includes adequate descriptions and analysis of context is needed to provide evidence on the influence of contextual factors on CHW performance as the current evidence is not sufficient to assist policy makers to develop CHW programmes and interventions that anticipate or make use of context.

5.5 Conclusions

This systematic synthesis of evidence shows that contextual factors related to community (most prominently), economy, environment, and health system policy and practice can influence CHW performance. Contextual factors can interact with each other to shape CHW performance and affect the performance of CHW interventions or programmes. While the current body of research often does not capture and explain the context in which CHW interventions take place, this synthesis, given its wide scope, provides understanding of the influence of context on CHW and programme performance. Future health policy and systems research should better address the complexity and the influence of context to support policy makers and programme managers to improve CHW interventions.

CHAPTER 6. A qualitative assessment of health extension workers' relationships with the community and health sector in Ethiopia: Opportunities for enhancing maternal health performance

Abstract

Health extension workers (HEWs) in Ethiopia have a unique position, connecting communities to the health sector. This intermediary position requires strong interpersonal relationships with actors in both the community and health sector, in order to enhance HEW performance. This study aimed to understand how relationships between HEWs, the community and health sector were shaped, in order to inform policy on optimizing HEW performance in providing maternal health services.

We conducted a qualitative study in six districts in Sidama zone, which included focus group discussions (FGDs) with HEWs, women and men from the community and semi-structured interviews with HEWs, key informants working in programme management, health service delivery and supervision of HEWs, mothers and traditional birth attendants. Respondents were asked about facilitators and barriers regarding HEWs' relationships with the community and health sector. Interviews and FGDs were recorded, transcribed, translated, coded and thematically analysed.

HEWs were selected by their communities, which enhanced trust and engagement between them. Relationships were facilitated by programme design elements related to support, referral, supervision, training, monitoring and accountability. Trust, communication and dialogue and expectations influenced strength of relationships. From the community side, the health development army supported HEWs in liaising with community members. From the health sector side, top-down supervision and inadequate training possibilities hampered relationships and demotivated HEWs. Health professionals, administrators, HEWs and communities occasionally met to monitor HEW and programme performance. Expectations from the community and health sector regarding HEWs' tasks sometimes differed, negatively affecting motivation and satisfaction of HEWs.

HEWs' relationships with the community and health sector can be constrained as a result of inadequate support systems, lack of trust, communication and dialogue and differing expectations. Clearly defined roles at all levels and standardized support, monitoring and accountability, referral, supervision and training, which are executed regularly with clear communication lines, could improve dialogue and trust between HEWs and actors from the community and health sector. This is important to increase HEW performance and maximize the value of HEWs' unique position.

6.1 Background

In 2004, the Government of Ethiopia introduced the Health Extension Programme (HEP), a free primary health care package with four components: disease prevention and control; family health; hygiene and environmental sanitation; and health education and communication. A female cadre of salaried community health workers (CHWs) called health extension workers (HEWs) was introduced nationally. HEWs are secondary school graduates and receive a one-year training in basic health service delivery[3]. They are selected from the communities that they serve and are supposed to work at health post level for 25% of their time and in the community for the remaining 75% (Admassie et al. 2009; Dynes et al. 2013; Medhanyie et al. 2012b; Teklehaimanot and Teklehaimanot 2013). Over 38,000 HEWs are employed in Ethiopia, contributing to a significant increase in health service coverage in recent years (Teklehaimanot and Teklehaimanot 2013).
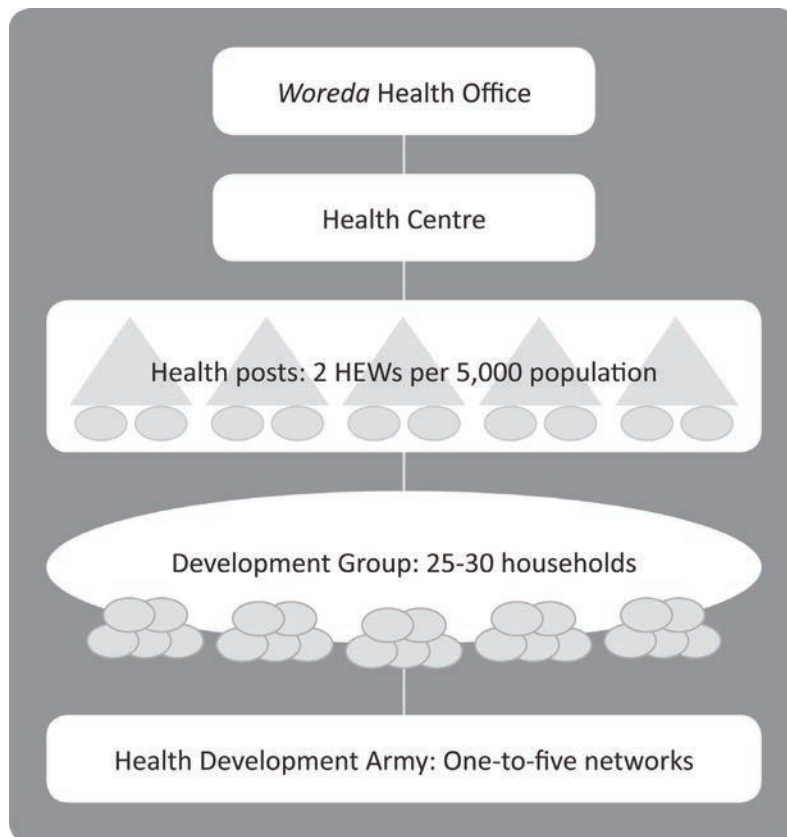
A clearly defined hierarchy links the health sector and HEWs to the community. The *woreda* (district) health office has general oversight of the health system. One health centre is, on average, linked to five health posts and together they form the primary health care unit. A health post serves a population of about 5,000 and is staffed by two HEWs who are technically and administratively accountable to health centres (Teklehaimanot and Teklehaimanot 2013). Health professionals from the health centres supervise HEWs, and the HEWs refer clients in need of higher level health care to health centres or hospitals. HEWs are accountable to the administration of the *kebele* (lowest administrative unit), who in turn are responsible for giving support to the HEWs (Bilal et al. 2011).

HEWs are linked to the community through a network of community volunteers, who are members of the health development army (HDA). The HDA was introduced in 2012, officially replacing other community-based workers such as health promoters and traditional birth attendants (TBAs). It is based on gradual training of model families by HEWs. Model families become leaders of a group of five families known as the "one-to-five network", who in turn form a "development group" of 25 to 30 households within a village. "Graduation" to a model family occurs after training in all components of the HEP and proven implementation at the household level. All members of the HDA are supposed to support HEWs in the implementation of the HEP (Bilal et al. 2011; Teklehaimanot and Teklehaimanot 2013). An overview of HEWs' intermediary position between community and health sector is presented in Figure 6.1.

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[3] Our study is based on the following definition of CHWs: *"health workers performing functions related to healthcare delivery; who have received a limited training focused on activities they need to carry out in the context of the intervention(s) they implement; and have received no formal professional or paraprofessional certificate or tertiary education degree"* (Lewin et al. 2010: p. 7). Therefore, HEWs are seen as CHWs. However, compared to CHWs in other countries, HEWs may be seen as a semi-professional or auxiliary cadre.

A number of the HEWs' tasks are related to maternal health. These include provision of antenatal care, clean and safe deliveries[4], postnatal care, family planning, immunization and nutritional advice. HEWs have contributed substantially to the improvement in women's utilization of family planning, antenatal care and HIV testing (Medhanyie et al. 2012b). However, their contribution to advocating for skilled delivery and conducting postnatal check-up seems much lower (Medhanyie et al. 2012b), and their knowledge and performance in maternal health related tasks is poor (Medhanyie et al. 2012a). Ethiopia's maternal mortality ratio remains high: 676 deaths per 100,000 live births and only 10% of women deliver with a skilled birth attendant (CSA 2012). HEWs only conduct 1.6% of all assisted deliveries in the country (CSA 2014). There have been calls for improved performance of HEWs on maternal health related tasks (Dynes et al. 2013; Medhanyie et al. 2012a; Medhanyie et al. 2012b; Teklehaimanot and Teklehaimanot 2013).

Figure 6.1 Overview of HEWs' intermediary position between community and health sector

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[4] Clean and safe deliveries are conducted by the HEW at health post level. They cannot be referred as skilled deliveries, which are conducted by skilled attendants in health facilities (health centres and hospitals).

Evidence from CHW programmes worldwide has identified several factors, related to programme design, that can influence CHW performance. These include CHW task definition, human resource management (including training, supervision and incentives for CHWs), quality assurance processes, resources and logistics and CHWs' links with the community and health sector (Kok et al. 2014; Naimoli et al. 2014). Health systems are social institutions in which different actors are linked with each other in chains of relationships (Gilson 2003). Strong interpersonal relationships between CHWs and clients (henceforth referred to as the community) on one side and CHWs and health professionals and supervisors (henceforth referred to as the health sector) on the other side are needed to ensure good CHW performance (Amare 2011; ERT1 2012; ERT2 2012; ERT3 2012; Glenton et al. 2013)[5]. It has been found that CHWs' relationships with the community are strong when CHWs have been selected from and by their community and CHWs' relationships with the health sector are strong when there is respect for the roles of CHWs from health professionals (Kok et al. 2014; Naimoli et al. 2014). The importance of CHWs' relationships for performance is accentuated by the nature of their work (CHWs as facilitators of community agency) and their intermediary position between the community and the rest of the health system. However, in-depth evidence is lacking on which factors hinder or facilitate relationships. We conducted qualitative research in southern Ethiopia to identify facilitators of and barriers to interpersonal relationships between HEWs and actors in the community and health sector and, where possible, their impact on HEW performance in maternal health.

6.2 Methodology

A qualitative study, using 14 focus group discussions (FGDs) and 44 semi-structured interviews, was conducted in 2013 in Sidama zone of the South Nation Nationalities and Peoples Region of Ethiopia. We used qualitative methods in order to obtain in-depth insight into how relationships between HEWs and the community and health sector were shaped and, where possible, what made them facilitate or hinder HEW performance. The participants included HEWs, TBAs, health professionals and community members (Table 6.1). Participants were drawn from six *woredas* selected for a larger study, on the basis of diversity in maternal health performance and distance from the zonal capital. Study respondents were purposefully sampled to represent different ages and job experience and were identified with help of health centre and *woreda* health office staff.

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[5] The community, HEWs and health sector together form the health system.

Table 6.1 Overview of focus group discussions and interviews

Method	Participants	No. per district	No. of districts	Total No. of respondents (Total number of FGDs)
Focus Group Discussions (FGDs)	HEWs	1	6	57 (6)
	Women in community	1	6	55 (6)
	Men in community	0 or 1	2	19 (2)
Total				**131 (14)**
Semi-structured interviews	HEWs	2	6	12
	Mothers	2	6	12
	Traditional Birth Attendants (TBAs)	1	6	6
	Kebele administrators	0 or 1	3	3
	Health centre heads or delivery case team leaders	1	6	6
	HEP coordinators	0 or 1	3	3
	Regional HEP coordinator	NA	NA	1
	Zonal HEP coordinator	NA	NA	1
Total				**44**

Data were collected by four local health systems researchers, who received a one week training in qualitative data collection for the purpose of the study. Semi-structured topic guides were developed in English, translated into Amharic and Sidamigna language and back-translated for consistency. The topic guides were piloted in an area that was not included in the study and adaptations to questions were made. The FGDs and interviews included questions on demographic information; expected and performed tasks; career; experiences relating to maternal health; training; supervision; monitoring and evaluation and referral. The questions focused on barriers and facilitators with regard to these issues, including effects on HEW performance. Regarding relationships with the community and health sector, respondents were asked about all different actors which whom they interacted and whether relationships were strong or weak, why and how they facilitated or hindered their work. Information about performance of HEWs was self-reported and defined at two levels: HEW level (this included self-esteem, motivation, attitudes, competencies, guideline adherence, job satisfaction and capacity to facilitate community agency as characteristics of performance) and end-user level (this included utilization of services, health-seeking behaviour, adoption of practices promoting health and community empowerment as characteristics of performance) (Kok et al. 2014). Study participants gave informed oral or written consent. Daily debriefing sessions with all data collectors were held to discuss key findings, identify saturation of themes and refine lines of inquiry. All interviews and FGDs were digitally recorded, transcribed and translated into English. A sample of transcripts was randomly checked against the recordings by one researcher.

The transcripts were independently read in pairs by four researchers to identify key themes and develop a coding framework. This process used open coding with regard to factors influencing relationships (Charmaz 2014), combined with a pre-defined framework on factors that could influence performance (Kok et al. 2014). Transcripts were coded using NVivo (v.10) software, emerging themes were discussed and the coding refined. The coded transcripts were further analysed and summarized in narratives for each theme and sub-theme. Study findings were presented, discussed and validated with the regional and *woreda* health offices in a stakeholder meeting.

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.

6.3 Results

Interpersonal relationships between HEWs and actors in the community and health sector were influenced by several factors. First, programme design elements influencing HEWs' relationships with the community are presented, followed by those influencing HEWs' relationships with the health sector. Cross-cutting factors categorized as trust, communication and dialogue, and expectations (as summarized in Table 6.2), are presented throughout. These cross-cutting factors emerged as important influencers of relationships, within all identified programme design elements. Quotations are used to illustrate main themes.

Table 6.2 Programme design and cross-cutting factors influencing HEWs' relationships with the community and health sector

Programme design elements facilitating relationships	Cross-cutting factors influencing relationships		
	Trust	Communication and dialogue	Expectations
HEWs' relationships with the community			
Nature of HEWs' position and role	HEWs being selected from the community that they will serve generally enhanced community trust in HEWs, partly facilitated by good attitudes and high self-esteem of HEWs as a result serving their own community If HEWs served a community which they were not originating from, community trust in them could be hampered	HEWs residing in their community of service facilitated ongoing communication and dialogue with community members	

Programme design elements facilitating relationships	Cross-cutting factors influencing relationships		
	Trust	**Communication and dialogue**	**Expectations**
Support for HEW activities from the community	Some HEWs were supported by TBAs, as both community and HEWs trusted the competencies of TBAs in child birth and related tasks above those of HEWs	Support from *kebele* administration, religious leaders and HDA leaders facilitated communication and dialogue between HEWs and community members, assisting HEWs in community mobilization, health education, identification of clients and referral; if this support was not present, communication and dialogue with community was hampered In some areas, support from TBAs to HEWs was ceased, because of lack of communication between HEWs and TBAs if TBAs were still conducting deliveries, which is not allowed by government	Community expectations regarding TBA involvement were not always in line with the policy and this created dilemmas, which could hamper HEWs' relationships with community and TBAs
Community monitoring and accountability structures		Quarterly facility or public forums, political gatherings, *kebele* cabinets, pregnant women's forums and community-based review meetings were structures that facilitated communication and dialogue between HEWs and the community, including feedback on performance	
HEWs' relationships with the health sector			
Referral	Improper handling of referral cases hampered trust from HEWs and community in the health sector	Lack of referral forms and feedback after referral hindered communication between HEWs and the health sector	Community expectations with regard to payment of transport and higher level care did sometimes not match with the reality, hampering trusting relationships between HEWs (who made the referral) and community
Supervision		Supervision with a fault-fining approach and without feedback, party as a result of lack of resources and training of supervisors, hindered communication between HEWs and supervisors/ management	
Training			HEWs' expectations regarding trainings and career advancement were not met, hampering relationships between HEWs and health sector
Monitoring and accountability structures		Irregular held monitoring and evaluation meetings hampered communication between HEWs and the health sector	
Support from other health professionals		Regular support from health professionals at health centre level enhanced HEWs' competencies and made them feel part of a team	Sometimes, expectations from the management level about tasks of HEWs interfered with HEWs' work

HEWs' relationships with the community

HEWs' relationships with the community were facilitated by the following: the nature of HEWs' position and role in the community, support from the community (including support regarding referral), and community-driven monitoring and accountability mechanisms.

The nature of HEWs' position and role

Many respondents reported that the attributes shared by HEWs in the community assured a "natural link" between them and the community. Good relationships were reported to result from HEWs being selected from the community they are supposed to serve and continuing to reside in that community. Community members reported that HEWs being female was important to them, as they prefer to discuss maternal health issues amongst women. HEWs' position as community members themselves appeared to safeguard trust in and respect for the HEW from the community side and a good attitude towards the community and enhanced self-esteem from the HEW side.

> *"First I trust God and then the HEW. She calls an ambulance when she finds a problem. We tell the HEW our problems. They are always with us."* (Mother, interview)

> *"...they* [the clients] *are our mothers as well, and we are serving our own community. Their children are our children, and the community is my community."* (HEW, interview)

In one *woreda*, a male respondent reported that when the selection system is not followed and HEWs do not come from the *kebele* they need to serve, their relationships with the community are constrained as a result of lack of trust from the community side, leading to poor performance.

Support for HEW activities from the community

Support from kebele and other leaders

Support from the community was demonstrated in various ways. Some HEWs reported that *kebele* administrators supported them in conducting home visits and maternal health education sessions. *Kebeles* are expected to facilitate pregnant women's forums during which HEWs talk with all pregnant women in the *kebele.* HEWs and HEP administrators reported that these group discussions facilitated women supporting each other and assisted HEWs in conveying their antenatal health messages.

> *"We have the pregnant women's forum with tea and coffee to discuss maternal health with them. This is not considered by other health offices, but we have taken the time in the forums to increase their participation and to discuss maternal health so that we help them and support them financially…"* (HEW, FGD)

Other HEWs reported a lack of support from the *kebele* level, partly as a result of lack of *per diems* for activities related to health as compared to agriculture or education. This lack of support resulted in constrained communication and dialogue between HEWs and the community and lower motivation and job satisfaction, because of lower community attendance to health activities and meetings.

> *"...the kebele administration helped us after much negotiation and begging. Otherwise they wouldn't support us on their own initiative..."* (HEW, interview)

Some HEWs reported that besides *kebele* administrators, they involved religious leaders and elders to support their work regarding maternal health advocacy and communication with the community.

Support from the health development army

It was widely recognized that HDA leaders had been supporting HEWs in identification and referral of pregnant women, conducting postnatal care follow-up, mobilization of communities for immunization campaigns and health education in the community.

> *"We teach the women in our community. We, the leaders of the one-to-five network, give our advice to convince pregnant mothers. When their labour starts we call to the HEW to inform and conduct the delivery."* (Woman, FGD)

Most HEWs were positive about the role and functionality of the HDA, as it helped them with referral and advocacy tasks or had an impact on the community's understanding of maternal health. Despite positive contributions by the HDA, the structure was inactive in some areas and some respondents reported that the voluntary nature of HDA work could constrain their potential.

Support from traditional birth attendants

The HEP currently promotes skilled delivery in health facilities, but HEWs are nevertheless supposed to be trained in conducting "safe and clean" deliveries in health posts. However, most health posts were found not to have provided delivery services in recent years, because of lack of skills, experience or confidence of HEWs, lack of materials and equipment, the traditional habit of home delivery with a TBA or by-passing of the health

post by seeking delivery services at the higher level right away. One HEW raised the issue of expectations of community members exceeding her capability, which led to demotivation.

> *"They* [the community] *would like to give birth at the health post, but we tell them that training is done turn by turn and it will take some time to start the service at the health post … We are not giving the services which we are supposed to give."* (HEW, interview)

There is a national policy prohibiting TBAs to assist delivery, rather, they should focus on referral of women for skilled delivery. TBAs were however still found to conduct deliveries. The community, and sometimes also the HEW, trusted and preferred the TBAs conducting deliveries. This was related to good communication and dialogue (teamwork) between HEWs and TBAs, but also lack of self-confidence, skills and competencies of HEWs in conducting deliveries, which until recently they were expected to perform as part of the HEP.

> *"...we call the TBAs to assist labour due to the skill gap and* [low] *confidence we have. ...TBAs have stopped attending deliveries now, but because of a lack of skills we attend the deliveries with their help. We fear attending deliveries. ...We call them and they help us."* (HEW, interview)

> *"People say 'the known devil is better than the unknown God', and the people believe in them* [TBAs]*. We also communicate with the TBA, because the TBA is more popular than me in the kebeles, so I use her to contact women."* (HEW, FGD)

Some TBAs reported difficult relationships with the HEWs as a result of TBAs conducting deliveries against the policy. They were excluded from activities managed by HEWs and were not invited for meetings. In other communities, the TBAs' role was indeed restricted to referral. The tension between what communities and HEWs often preferred (TBA involvement) and what policy directed (TBAs restricted to referral role) created dilemmas for HEWs and weakened their potential as intermediaries between communities and the rest of the health system.

Community driven monitoring and accountability mechanisms

The study identified several structures facilitating community monitoring and accountability. The performance of health centres was evaluated by the community during facility or public forums, held on a quarterly basis. At the health post level, HEWs were monitored by the *kebele* administration and sometimes by the leaders of the HDA. Many HEWs mentioned that they collected reports from the leaders of the HDA and incorporated them as part of their activities. Most HEWs stated that they had been conducting regular meetings with the HDA leaders, exchanging feedback on their work

and receiving reports of activities performed by the HDA. This assisted HEWs to adjust maternal health education to the needs of the community.

> *"We meet every month with the leaders of the one-to-five network. We discuss our work, what is going on in the community; they also bring their report and discuss it."* (HEW, interview)

Other meetings used for discussing performance were s*hengo* (political gatherings), the pregnant women's forums and *kebele* cabinets. Some HEWs reported that they evaluate the quality of the service they provide in the community during joint meetings with the *woreda* health office, *kebele* administration and community representatives. In this way, the monitoring and accountability structure is both related to the community and the health sector and there is enhanced communication and dialogue between all levels.

> *"Sometimes the community with the kebele administration gather and evaluate our performance… The kebele officials and the community give a witness about their satisfaction."* (HEW, interview)

HEWs' relationships with the health sector

HEWs' relationships with the health sector were influenced by the following: referral, supervision, training, monitoring and accountability systems and support from other health professionals.

Referral

There is an established referral system between HEWs, health centres and hospitals and all HEWs reported that they refer maternal cases when the situation is beyond their capacity. Referral was constrained by miscommunication between the health sector, HEWs and communities. Some HEWs used referral forms, however most reported absence of referral forms at their health post. As a result, a HEP coordinator at zonal level indicated that the referral record-keeping system was poor. Feedback from the referred facility to the HEW was variable. Some HEWs reported improper handling of referral cases in the health centre.

> *"The basic thing we have to consider is a woman should not die giving birth. Sometimes even death can happen in a health centre. I knew a woman died …, because the health centre didn't refer her to the hospital as early as possible."* (HEW, FGD)

Lack of transport or requests for payments regarding transport for clients, requests for payments at health centre level (which should be free) and fees for clients at hospital level

were reported. These constraints in the referral system further hindered HEWs' relationships with the health sector, and, because of this, their trusting relationship with the community. In some cases, HEWs got the blame of constraints that community members faced at health centre or hospital level, as they were the ones referring the clients there.

Supervision

Supervision from the side of the health sector was mostly reported to be in place, although not always regularly implemented, sometimes caused by transportation problems. Some HEWs were satisfied, however many complained about a fault-finding attitude of supervisors, an overemphasis on checking of records and registers and a lack of supportive and problem-solving approaches. Quotes from HEWs clearly show that adequate supportive supervision could increase their motivation and credibility.

> *"If the woreda supervisors come and see our work, we will be happy. We need encouragement from the woreda officials. We will be encouraged by the appreciation for our good work, but our morale will be affected if our good work is ignored."* (HEW, interview)

> *"What makes us not work hard is, when the woreda health office comes for supervision, they leave our strong parts and take very minor things and discourage us due to those things."* (HEW, FGD)

The responsibility for direct supervision of HEWs recently changed from the *woreda* health office to the health centre, with a group of health professionals, each assigned to supervise and support one of the five health posts in the catchment area, forming the command post. They are expected to provide feedback to the *woreda* level. The majority of HEWs who participated in the interviews and FGDs stated that this recently introduced system was not yet functioning well. A lack of communication skills and knowledge related to the HEP among the HEWs' supervisors was one of the weak points mentioned by some participants in the study, that would limit scope of supervisors to build capacity of HEWs.

> *"Health professionals know the science very well but are not familiar with the health extension packages… The nurses who are more clinically competent are expected to give support to HEWs who know the packages very well: this is not logical."* (*Woreda* HEP coordinator, interview)

It was also mentioned that the health professionals who supported the HEWs were sometimes disrespectful or unfriendly to HEWs, leading to constrained communication, mistrust and demotivation. The majority of the HEWs interviewed mentioned that they did not receive written feedback after the supervision, which was confirmed by a

respondent from one of the health centres. Few HEWs reported to receive feedback based on command post evaluation formats.

Training

Many HEWs reported disappointment with the limited possibilities for trainings. Refresher trainings on maternal health were reported to lack practical elements on delivery. Official trainings for upgrading were also a source of disappointment for many HEWs. The selection process was not clear, the entrance exams considered too difficult and promotion after attending the training was not guaranteed.

> *"Even if we get education opportunity and make improvements in our level, there is no difference to me. Because the HEW who upgrades her status will again be assigned in the* [same] *kebele, no transfer is given to her, just as if she had not joined the school."* (HEW, FGD)

On-the-job training from the health centre was supposed to take place once a week, but often HEWs reported that this was not happening.

Monitoring and accountability towards the health sector

The coordinator of the HEP at the regional level reported that performance of HEWs was assessed during supervision and regular meetings.

> *"We meet and contact HEWs directly when we provide supportive supervision at health post level, when we provide refresher trainings. During these times we conduct discussions on health work performance and build their capacity..."* (Regional HEP coordinator, interview)

However, from the perspective of HEWs, these supervision meetings were not always held or conducted in a supportive way. HEWs' work is based on monthly plans. Reports, containing information from the health management information system and data collection from various programmes were supposed to be sent from health post to health centre and from there, towards the *woreda* health office. HEWs were supposed to have weekly meetings with the command post, monthly meetings with the health centre, and quarterly meetings with the *woreda* health office to discuss these reports, but HEWs and health centre staff reported that meetings were irregular.

Support from other health professionals and managers

HEWs had regular contact with health professionals at health centre level, which was important to enhance their competencies and made them feel part of a team. Many HEWs and health centre respondents reported good relationships between HEWs and health professionals, who supported HEWs on special occasions or regarding specific services.

> *"They help us very well during the vaccination mobilization period."* (HEW, FGD)

> *"To link health posts with health centres, starting from last year, all staff from health centres provide support to health posts once or twice per week, to identify gaps and to deliver services together with HEWs, especially during antenatal care services to run HIV tests since HEWs cannot do this…"* (*Woreda* HEP coordinator, interview)

Some HEWs reported competing programmes and expectations from the "upper level", intervening with their planned activities.

> *"We may plan to accomplish certain activities, but from the woreda health office we will be told to do other things... When we plan to teach mothers or want to have community conversations, the woreda health office may tell us to do other activities like vaccination campaigns."* (HEW, FGD)

Not only were HEWs expected to conduct health related tasks beyond those scheduled according to their work plan, some respondents also reported HEWs' involvement in other sectors and politics, requested by administrators. This disturbed their regular work, led to high workload and in certain cases to mistrust from the community towards the HEW.

> *"Sometimes we are involved in the activities coming from women affairs and the education sector. We are also involved in political matters. We are quarrelling many times with people about these things. If we are not involved in these activities, they cut our salary."* (HEW, interview)

6.4 Discussion

HEWs have a unique intermediary position between the community and health sector, which gives them the ability to act as brokers and facilitators of dialogue and trust (Bhutta et al. 2010; Haines et al. 2007). To be able to perform optimally, HEWs require strong interpersonal relationships with actors in the community and health sector. Programme design elements related to support and accountability either facilitated or hindered relationships between HEWs and the community or health sector. Trust, communication and dialogue and expectations (of actors in the community, health sector and HEWs themselves) were cross-cutting factors influencing relationships. The quality of relationships was, in some cases, reported to influence HEW performance at the individual

level, in particular motivation. An overview of factors influencing relationships between HEWs and the community and health sector, and thus influencing HEW performance, is presented in Figure 6.2.

Figure 6.2 Factors influencing relationships between HEWs and the community and health sector and the influence on HEW performance

Tensions of HEWs' intermediary position

The natural position and role of HEWs in their *kebele* safeguards trust, credibility and respect towards the HEW and their engagement with that community, which can enhance HEW performance (ERT1 2012; Glenton et al. 2013; Hermann et al. 2009; Kilpatrick et al. 2009). However, HEWs are selected by the health sector and must meet the standards of the sector. There are sometimes differing expectations from the community and health sector regarding roles and tasks of HEWs; for example regarding HEWs' role in childbirth or involvement in political matters, leading to tension (when HEWs feel they cannot meet expectations (Birhanu et al. 2013)), high workload and demotivation. Clearly demarcated roles and tasks of HEWs which are communicated with all levels using job descriptions, government directives and explanations in joint meetings where community and health sector representatives are present, could prevent this. This should be taken into account in current debates, in which HEWs are increasingly expected to advocate referral to skilled deliveries in health centres or hospitals rather than assisting "clean and safe" deliveries (conducting deliveries themselves) in the community.

HEWs' position as intermediaries enables support from both the community and health sector towards the HEW, which could enhance HEW performance (Kok et al. 2014). Community support generally relied on voluntary systems, while the formal community structure (the *kebele* administration) seemed to lack leadership when it comes to supporting health services. Reinforcement of the support from *kebele* administration towards the HEP is recommended to increase HEWs' credibility, ability to initiate communication and dialogue with communities and motivation. Support from TBAs was reported as well, although this sometimes presented problems for HEWs, because relationships between HEWs and TBAs did not always correspond with TBA's new roles as directed by the government. Relationships between HEWs and TBAs were directed to be focused on referral, and the collaboration between HEWs and TBAs in conducting deliveries can thus be seen as an unintended effect of their relationship. Thus, HEWs were not always working in line with the health system's standards as a result of tensions emerging from their intermediary position. HEWs sometimes felt they should support well respected TBAs who were still conducting deliveries, thereby accommodating views of the community to maintain trust and keep good relationships with the community.

HEWs' linkage with the health sector through referral was identified, but was not always strong, because of communication problems and sometimes a lack of trust of communities and HEWs regarding the costs and quality of higher level services. Improvements regarding handling of referred cases, payments and feedback could improve performance. The HEW supervision system had recently changed which led to unclear roles and insufficiently trained supervisors. Supervision meetings with top-down communication or a fault-finding nature can hinder trust of health workers in the health sector and hamper their performance (Kok and Muula 2013; Mishra 2014) and their relationships with the community (Gilson, Palmer, and Schneider 2005). HEW supervisors are predominantly engaged in clinical activities, making training on supportive approaches to supervision, preventive and community health necessary to capacitate them in supervision of HEWs. Furthermore, supervision time should be officially allocated, as health centre staff can be overloaded with other work. Possibilities for peer-based approaches in addition to the current supervision system could be considered, as CHW peer support groups were found to improve performance in Rwanda (Langston et al. 2014). Refresher training could establish relationships with other health workers or enhance trust from other health workers because of upgraded knowledge of HEWs. However, HEWs were generally dissatisfied with their opportunities for receiving trainings. Clear selection processes for training attendees (Kok and Muula 2013; Olang'o et al. 2010) and clear prospects of possibilities for upgrading after training are needed to keep HEWs motivated and prevent attrition (Glenton et al. 2013; Tulenko et al. 2013). Visible supervision and training of HEWs by the health sector is important to enhance credibility of and trust in HEWs, as found in other settings (Alcock et al. 2009; Ashwell and Barclay 2009; Daniels et al. 2010; Hinojosa 2004).

Relationships between HEWs, community and health sector enhancing performance

Community support to HEWs in Ethiopia has been demonstrated by voluntary CHWs[6], churches, mosques and community associations (Amare 2011; Teklehaimanot et al. 2007). The new HDA structure presents an opportunity for further strengthening HEWs' relationships with the community side, in that it provides actual support towards HEWs' tasks, monitoring of HEWs' performance and accountability. Dysfunctional or inactive community structures have been reported to negatively influence CHWs' embedment in and communication with the community and CHW performance in other settings (Kok and Muula 2013). Other studies have shown effectiveness of community monitoring in promoting performance of professional health workers (Björkman and Svensson 2009) and CHWs (Kalyango et al. 2012; Shankar et al. 2009). However, more research is needed on the exact mechanisms of how this can improve performance of CHWs (Green 2011). HEWs felt that relationships with religious leaders and elders were important to enhance their performance. This facilitating relationship has also been observed in other studies (Amare 2011; Diakite et al. 2009; Paxman et al. 2005). HEWs and HDA leaders are all female, this was found to be positively valued by the community, because of the cultural suitability of handling reproductive health issues by women. This has been found in other settings as well (Crispin et al. 2012; Kok et al. 2015a; Mumtaz et al. 2013). However, more research would be needed to establish if the gender of HEWs could negatively influence their relationships with traditional leaders, husbands of pregnant women and other male community members, and so hinder HEW performance in maternal health.

The command post as monitoring and accountability system at the side of the health sector seemed to be functional in some areas and needs further scale-up. Evaluation meetings with community and health sector representatives were held in some areas. This could be a vehicle for improved communication and accountability towards both sides and needs further expansion and investigation.

Health systems as social institutions

Health systems are social institutions with chains of relationships between different actors. Optimal performance depends on the strength and nature of relationships between all actors (Gilson 2003). We explored the relationships between health professionals and HEW supervisors, HEWs and their communities. The influence of relationships on HEW performance was reciprocal: HEW performance could also influence trust, communication and dialogue and expectations (Figure 6.2). For example, HEWs' lack of competence in childbirth could negatively affect trust of the community in the HEW and thereby hamper relationships between the community and HEWs. When we see health

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[6] Voluntary CHWs were present in the past, officially they are replaced by the HDA.

systems as social institutions, the ways of bringing about change in health systems go beyond altering written rules and distributing resources, and extend to effectively managing relationships between different actors (Sheikh, Ranson, and Gilson 2014b). HEWs' relationships with the health sector could be strengthened by human resource management practices and approaches that focus on building trust and improving dialogue within the workplace, such as problem-solving supervision and culturally appropriate communication (Gilson 2003; Gilson et al. 2005; Mishra 2014). Improved relationships between HEWs and health sector could positively influence their relationships with the community through improved trust and motivation, which could further positively influence HEW performance. In addition, programme designs that facilitate community support and monitoring and accountability could further improve trust, communication and dialogue between HEWs and community and manage expectations at all levels, which in turn could enhance HEW performance.

Study limitations

This study is limited by several factors. Firstly, the study was part of a broader research project that included all factors that could influence HEW performance. Issues related to HEWs' relationships with the community and health sector were derived from this broader research and thus some in-depth questions probing on those relationships were not asked. However, we think that the data presented in this article are representative for the six districts included in the study, as interpersonal relationships emerged as one of the most important influencers of HEW performance in the data set. Secondly, as in any qualitative study, one must contend with social desirability bias. We tried to avoid this by in-depth probing and conducting the interviews and FGDs in neutral environments. Thirdly, the outcomes of this study cannot easily be generalized to other settings. However, by including respondents from different settings, descriptions of the context and by triangulation via different types of respondents and data collection processes, the findings do present useful insights for other settings. Lastly, the study focused on relationships between HEWs and the community and health sector. Relationships among HEWs and between HEWs and other community-based workers were not fully assessed, although they could influence HEW performance, as presented in other studies from Ethiopia (Dynes et al. 2014a; Dynes et al. 2014b; Sibley et al. 2014). Furthermore, relationships are also influenced by more personal characteristics of HEWs.

6.5 Conclusions

This study provides in-depth information on which factors hinder or facilitate relationships between HEWs, the community and health sector, which can inform other CHW programmes aiming for enhanced CHW performance. We found several programme design elements that could facilitate interpersonal relationships of HEWs with actors from the community and health sector, especially related to support of and accountability to both sides. Within those programme design elements, trust, communication and dialogue and expectations were influencing strength of relationships. Clearly defined roles and responsibilities at all levels and standardized support, monitoring and accountability, referral, supervision and training could improve communication, dialogue and trust between HEWs and actors from the community and health sector. This is important to maximize the value of HEWs' unique intermediary position and ultimately improve HEW performance, not only in maternal health, but regarding their roles and tasks in all components of the HEP.

CHAPTER 7. Health surveillance assistants as intermediates between the community and health sector in Malawi: Exploring how relationships influence performance

Abstract

There is increasing global interest in how best to support the role of community health workers (CHWs) in building bridges between communities and the health sector. CHWs' intermediary position means that interpersonal relationships are an important factor shaping CHW performance. This study aimed to obtain in-depth insight into facilitators of and barriers to interpersonal relationships between health surveillance assistants (HSAs) and actors in the community and health sector in hard-to-reach settings in two districts in Malawi, in order to inform policy and practice on optimizing HSA performance.

The study followed a qualitative design. 44 semi-structured interviews and 16 focus group discussions were conducted with HSAs, different community members and managers in two districts. Data were recorded, transcribed, translated, coded and thematically analysed.

HSAs had relatively strong interpersonal relationships with traditional leaders and volunteers, who were generally supportive of their work. From the health sector side, HSAs linked to health professionals and managers, but found them less supportive. Accountability structures at the community level were not well-established and those within the health sector were executed irregularly. Mistrust from the community, volunteers or HSAs regarding incentives and expectations that could not be met by "higher levels" undermined support structures and led to demotivation and hampered performance. Supervision and training were sometimes a source of mistrust and demotivation for HSAs, because of the perceived disinterest of supervisors, uncoordinated supervision and favouritism in selection of training participants. Rural HSAs were seen as more disadvantaged than HSAs in urban areas.

HSAs' intermediary position necessitates strong interpersonal relationships and trust between them and all actors in the community and health sector. There is a need to improve support and accountability structures that facilitate communication and dialogue, increase trust and manage expectations and thereby improve interpersonal relationships between HSAs and actors in the community and health sector. This would maximize the value of HSAs' unique intermediary position and support them to deliver equitable health services. This is particularly important in rural areas, where HSAs often form the only point of contact with health services, yet report limited support from the health system.

7.1 Background

In many countries, community health workers (CHWs) are a key component of strategies to achieve universal health coverage, through extension of primary health services to underserved communities at low costs in contexts of chronic financial and human resource shortages (Tulenko et al. 2013).

In Malawi, a large number of different types of CHWs link communities with the health sector (Nyirenda et al. 2014). The largest group is the government paid cadre of health surveillance assistants (HSAs), comprising 30% of the health workforce (Smith et al. 2014) and totalling 9,443[7]. HSAs are recruited by the government, must have secondary school level education and receive 12 weeks training (Nsona et al. 2012; Nyirenda et al. 2014). Once employed, they are supposed to reside in their catchment area, working mainly in health promotion and prevention for a population of about 1,000 (Gilroy et al. 2012). From 2008, HSAs' curative tasks have been expanded. HSAs working in hard-to-reach areas[8] conduct integrated community case management (iCCM) of childhood illnesses (Callaghan-Koru et al. 2013; Fullerton, Schneider, and Auruku 2011; Nsona et al. 2012). HSAs are supervised by senior HSAs or (assistant) environmental health officers (Callaghan-Koru et al. 2013). They are attached to a hospital or health centre, but are supposed to spend most of their time in the community. HSAs are supported by village health committees (VHCs), consisting of 10 unpaid village representatives elected by the community, and other volunteers, such as members from HIV support groups and traditional birth attendants (Kok and Muula 2013; Nyirenda et al. 2014).

Evidence from various countries shows that CHWs can effectively deliver key health interventions (Lewin et al. 2010). Although large scale studies on effectiveness of HSAs in Malawi are missing, evidence on HSAs' positive effect on immunization rates (Kadzandira, Chilowa, and Unicef 2001) and access to anti-retroviral treatment for HIV (Bemelmans et al. 2010) is available. Given the ongoing human resources shortage in Malawi (McCoy, McPake, and Mwapasa 2008; Palmer 2006), HSAs will remain an essential cadre in driving forward efforts to achieve universal health coverage and it is important to better understand which factors influence their performance.

Earlier studies identified several constraints to HSAs' motivation and job satisfaction, which were negatively influencing performance. Factors related to the health system, such as lack of supplies and infrastructure (Callaghan-Koru et al. 2013; Callaghan-Koru et al. 2012; Gilroy et al. 2012; Kadzandira et al. 2001; Kok and Muula 2013; Martiniuk et al. 2014; Nsona et al. 2012), unclear or too many roles and responsibilities (Callaghan-Koru et

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[7] Personal communication, deputy director of preventive health services responsible for primary health care in the Ministry of Health, member of Country Advisory Group REACHOUT.
[8] Defined as areas more than 8 km from a health facility or difficult to access because of geographical terrain or natural barriers.

al. 2012; Kok and Muula 2013; Martiniuk et al. 2014; Smith et al. 2014) and inadequate human resource management related to training, supervision, incentives and career development (Callaghan-Koru et al. 2013; Callaghan-Koru et al. 2012; Kadzandira et al. 2001; Kok and Muula 2013; Martiniuk et al. 2014; Nsona et al. 2012; Smith et al. 2014) have all been identified. Factors related to the community were (less often) identified: inadequate support from community volunteers (Kok and Muula 2013) and unrealistic expectations from the community regarding HSAs' roles could hamper HSAs' motivation and job satisfaction (Callaghan-Koru et al. 2012).

CHWs have a unique intermediary position in between their clients and the broader community (further referred to as the community) and health professionals at the facility level, including their supervisors (further referred to as the health sector). Therefore, CHWs are often seen as the most strategically placed cadre to increase equitable access to health care (Bhutta et al. 2010; Glenton et al. 2013). However, this intermediary position may have disadvantages for CHWs, for example when community's and health sector's expectations regarding the role of CHWs differ, leading to high workload or demotivation (Kok et al. 2014). There has been growing interest in how CHWs' intermediary position shapes performance (Maes 2014; Nandi and Schneider 2014) as their position necessitates good interpersonal relationships with community members as well as practitioners within the health sector. Relationships within the community enable HSAs to optimally engage with different community actors, promoting healthy behaviour (ERT1 2012; Glenton et al. 2013; Hermann et al. 2009; Kilpatrick et al. 2009). Links to and being part of the health sector enable HSAs to optimally serve their communities by providing referral, supervision and supplies, and enhancing their credibility (Alcock et al. 2009; Ashwell and Barclay 2009; Daniels et al. 2010; Hinojosa 2004). Health systems comprise a complex web of relationships whose overall functioning is influenced by the institutions, particularly trust, that govern human behaviour (Gilson 2003). We define trust as *"the optimistic acceptance of a vulnerable situation in which the trustor believes the trustee will care for the trustor's interest"* (Hall et al. 2001). Trust could be built by personal behaviours and organizational practices that provide space for engagement and open dialogue (Gilson 2006). Factors that have been found to influence trust of health workers are perceived organizational support, communication, procedural justice and feedback from upper levels (Albrecht and Travaglione 2003; Nyhan 2000). Thus, understanding the factors that influence trust and HSAs' interpersonal relationships with different actors in the community and health sector is important in order to analyse and improve HSA performance.

In Malawi, earlier research revealed constraints regarding HSAs' interpersonal relationships with actors in the health sector related to inadequate supervision and communication, leading to demotivation (Kadzandira et al. 2001; Kok and Muula 2013; Puchalski Ritchie et al. 2012) and mistrust because of problems in drug supply (Callaghan-Koru et al. 2013) and inadequate support mechanisms for HSAs conducting iCCM in hard-

to-reach areas (Callaghan-Koru et al. 2012). Improved communication between HSAs and the health sector via mobile phones was reported to increase self-confidence of HSAs and community trust (Campbell et al. 2014).

Thus far, an in-depth assessment of factors influencing interpersonal relationships and the implications for HSA performance in hard-to-reach areas is lacking. This qualitative study aims to obtain in-depth insight into facilitators of and barriers to interpersonal relationships between HSAs and actors in the community and health sector in hard-to-reach settings in two districts in Malawi, in order to inform policy and practice on optimizing HSA performance.

7.2 Methodology

Focus group discussions (FGDs) and semi-structured in-depth interviews were conducted from July till September 2013 in Mchinji and Salima districts of Malawi. Both districts are situated in the central region and have urban and rural areas. The sample of participants was drawn from two traditional authorities[9] in Mchinji and three in Salima, all defined as hard-to-reach (Nyirenda et al. 2014). Study respondents were purposefully sampled to represent respondents from the side of the community (women with under-five children, volunteers, traditional birth attendants and traditional leaders), health sector (district managers, health centre in charges and representatives of non-governmental organizations (NGOs)) and HSAs themselves, including senior HSAs, and to ensure diversity in gender, age and job experience. Respondents were identified with the help of district level staff. A total of 16 FGDs and 44 interviews were conducted (Table 7.1).

Data were collected by a trained research team familiar with conducting qualitative research in rural Malawian contexts. Semi-structured topic guides were developed in English, translated into Chichewa and back-translated for consistency. Topic guides were piloted in an area not included in the study and minor adaptations to questions and probes were made. FGDs and interviews included questions on demographic information; tasks; career; relationships with the community and health sector; training; supervision; monitoring and evaluation and referral. The questions focused on factors related to the design of the HSA programme that influenced HSA performance. The performance of HSAs was defined at two levels: HSA level (this included self-esteem, motivation, attitudes, competencies, guideline adherence, job satisfaction and capacity to facilitate community agency as characteristics of performance) and end-user level (this included utilization of services, health-seeking behaviour, adoption of practices promoting health and community empowerment as characteristics of performance) (Kok et al. 2014). Daily

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[9] Each district is divided into traditional authorities, led by traditional leaders. Under these, there are group village headmen and village headmen.

debriefing sessions with data collectors were held to discuss key findings, refine lines of inquiry and summarize field notes and observations. FGDs and interviews were digitally recorded, transcribed and translated into English. A sample of transcripts was randomly checked against recordings.

Table 7.1 Overview of focus group discussions and interviews

Method	Participants	No. in Mchinji	No. in Salima	Total No. of respondents (Total no. of FGDs)
Focus Group Discussions	HSAs	1	2	19 (3)
	Women with under five children	4	3	70 (7)
	Volunteers	4	2	48 (6)
Total		**9**	**7**	**137 (16)**
Semi-structured in-depth interviews	HSAs	4	1	5
	Senior HSAs	1	2	3
	Mothers	0	1	1
	Traditional birth attendants	3	3	6
	District level managers and health staff	7	6	13
	Health centre in charges	0	2	2
	NGO representatives	3	6	9
	Traditional leaders	1	2	3
	Volunteers	2	0	2
Total		**21**	**23**	**44**

Initially ten transcripts were read in pairs to identify key themes. Proposed key themes were discussed and agreed upon within a team of four researchers and a coding framework was developed. For the purpose of this article, we only focused on factors that influenced personal relationships and related this, where possible, to the characteristics of HSA performance as presented above, with a focus HSA related characteristics such as motivation and satisfaction (within the context of the broader framework on all possible factors influencing HSA performance (Kok et al. 2014)). The analytical process included inductive thematic analysis and open coding (Ritchie and Spencer 2002). Transcripts were coded using Nvivo (v.10) software and emerging themes were discussed and coding refined. The coded transcripts were further analysed and summarized in narratives for each theme. Themes were categorized into factors influencing HSAs' relationships with communities, factors influencing HSAs' relationships with the health sector and cross-cutting factors influencing relationships. Study findings were discussed and validated with the two district health offices through feedback meetings.

The study was approved by the Royal Tropical Institute Ethical Review Committee in the Netherlands and the National Health Sciences Research Committee in Malawi.

7.3 Results

Interpersonal relationships between HSAs, the community and health sector were found to be influenced by several factors. First, programme design elements influencing HSAs' relationships with the community are presented, followed by those influencing HSAs' relationships with the health sector. Cross-cutting factors, categorized as trust, communication and dialogue, and expectations (as summarized in Table 7.2), are presented throughout. Where possible, the link between relationships and HSA performance was made. Illustrative quotes are used to depict the main themes.

Table 7.2 Programme design and cross-cutting factors influencing HSAs' relationships with the community and health sector

Programme design elements facilitating relationships	Cross-cutting factors influencing relationships		
	Trust	Communication and dialogue	Expectations
HSAs' relationships with the community			
Nature of HSAs' position and role	Honesty, familiarity, good attitudes, reliability, respect and time spent in the community enhanced community trust, and if not present, hampered community trust in HSAs	When HSAs were either from or resided in the communities, this supported opportunities for ongoing communication and dialogue Increasing amount of facility-based tasks or prioritization of agricultural work undermined communication and dialogue between HSAs and communities	
Support from the community	Support from traditional leaders enhanced HSAs' credibility, which enhanced community trust in HSAs Mistrust from volunteers towards HSAs about financial incentives hampered community trust in HSAs	Support from traditional leaders facilitated communication and dialogue between HSAs and community members, for example during community meetings	Volunteer support helped HSAs in managing community expectations, improving HSAs' relationships with the community Expectations of volunteers that could not be met, regarding financial and other incentives, training and supplies, hampered HSAs' relationships with the community and health sector
Community monitoring and accountability structures	Within some programmes, e.g. ICCM, a formal system was in place to support and monitor drug distribution though the VHC, in others this was absent or mediated by traditional leaders. This study revealed no further information on underlying factors influencing HSAs' relationships with the community.		

Programme design elements facilitating relationships	Cross-cutting factors influencing relationships		
	Trust	Communication and dialogue	Expectations
HSAs' relationships with the health sector			
Support from other health workers, managers and NGOs	Disrespect from other health workers led to HSA and community mistrust towards the health sector Support from other health workers enhanced credibility and community trust towards HSAs Perceived lack of management support and favouritism regarding supplies led to mistrust from HSAs towards management	Disrespect from other health workers hindered communication between other health workers and HSAs	HSAs' expectations with respect to supplies, bicycles, and housing issues were not met (particularly in rural areas)
Training	Perceived favouritism regarding training led to mistrust from HSAs towards management		HSAs' training expectations were not met – particularly in rural and hard-to-reach areas
Supervision	Lack of care and insight of supervisors into HSAs' situation led to mistrust of HSAs towards supervisors	Supervision with a negative approach and without feedback hindered communication between HSAs and supervisors/ management	
Referral		Lack of feedback after referral hindered communication between HSAs and the health sector	
Monitoring and accountability structures	Monitoring and accountability structures from the side of the health sector were programme specific and irregularly conducted because of resource constraints. The study revealed no further information on underlying factors influencing HSAs' relationships with the health sector.		

HSAs' relationships with the community

Many HSAs acknowledged the importance of having good interpersonal relationships with the community. HSAs reported that time spent in the community, good attitudes and reliability of HSAs positively influenced community's confidence and trust in them.

> *"When there is a good relationship between you and the community, things go well. A good relationship will make service provision better, people respond to you and adhere to whatever you tell them, that's the vital key. Health service providers must show examples by how they live... You must show respect, be compassionate, and friendly… They* [HSAs] *should be honest, they should be able to stick to and fulfil their promises; otherwise, people tend to lose their confidence in you… and that is bad for service delivery…"* (Interview, male HSA, Mchinji)

HSAs and managers reported that the nature of HSAs' position and role in the community assured a "natural link" between HSAs and the community, which facilitated good relationships. HSAs' relationships with the community were furthermore facilitated by support systems from the community and to a lesser extent by community monitoring and accountability structures. Within those systems and structures, trust, communication and dialogue, and expectations were cross-cutting factors influencing relationships (Table 7.2).

The nature of HSAs' position and role

Although many HSAs were not staying in their catchment area (as a result of recruitment of HSAs not based on residence in the area of service or lack of appropriate housing), being known and coming from the catchment area was found to be important for enhancing confidentiality, trust and fostering relationships with the community. For example:

> *"Whenever a person who is a stranger to the community is conducting a meeting, there is negative feedback; since they are not familiar with the person and what he is explaining… They* [the community] *will disregard whatever the new person says and will lose trust in him. But I believe if they choose the person from the same community the people will have trust in him, believing they* [the HSAs] *will be confidential in service provision and are free with each other because of the longstanding relationship there is."* (Interview, male HSA, Mchinji)

However, some respondents reported that not all HSAs had a strong bond with their community. This was due to the increasing amount of facility-based tasks or, according to community members, neglect of HSAs' tasks caused by spending most time on agriculture or business.

Support from the community

Support from traditional leaders

Traditional leaders supported HSAs by conducting community-based meetings and disseminating health education messages. This facilitated HSAs' relationships with the community through enhanced credibility, positively influencing community trust. Traditional leaders reported to sanction people for non-healthy behaviour, but it was not clear whether this facilitated or hindered HSA performance.

> *"As a group village headman, I call for a village development committee meeting, where all village headmen in my community are called to participate. During this meeting, I tell them to sensitize people in their villages on safe motherhood... And those women who deliver on their way to the hospital they are to pay a goat as a punishment for not going to the hospital in time."* (Interview, male traditional leader, Mchinji)

Not all HSAs received support from traditional leaders. Some HSAs reported a lack of support as a result of a lack of incentives for traditional leaders, which constrained HSAs' relationships with the community and hindered their performance relating to community mobilization.

Support from volunteers

Community-based volunteers, who were members of a wide range of committees (such as VHCs or growth monitoring committees), and often attached to vertical NGO-led programmes, supported HSAs in conducting their daily tasks and reporting on problems that needed HSAs' attention. Establishing good relationships with traditional leaders and volunteers was reported as a precondition for success of programmes. This emerged as an important theme in the analysis, as clearly articulated by one HSA:

> *"They* [programme managers] *should first go through the community leaders of the area they want to implement their project in, who will in turn inform their subjects of the proposed project; then they* [the community leaders] *will identify the volunteers in the community, as the community will have complete trust in the volunteers they have chosen, and when the programme is finally introduced you coordinate with the volunteers and you become their supervisors, and it becomes very easy to relate with the community. If you decide to do it alone, you will face a lot of challenges…"* (Interview, male HSA, Mchinji)

Volunteers also supported HSAs in dealing with expectations of the community that could not be met. This was mainly related to iCCM, where volunteers assisted HSAs by explaining to the community that adults are not covered by village clinics and the reasons behind drug stock-outs. Many respondents acknowledged the importance of support from volunteers in facilitating trusting relationships between HSAs and community. However, several factors were reported to hinder volunteer support. A lack of incentives for volunteers, including training, was reported to result in attrition and thereby hindering HSAs' performance. Various respondents pointed to mistrust between volunteers and HSAs when it comes to financial incentives.

> *"The benefit which was supposed to go to the volunteers is shared between the HSA and the person who has been engaged to do the work, like giving vaccines to the children; he or she will share it between them, since they had been engaged like a part-time worker, instead of giving all those things to the volunteers."* (FGD, volunteers, Mchinji)

Most volunteers expected some financial remuneration. According to some HSAs and managers, this situation was created by various vertical programmes with non-harmonized allowance policies, resulting in confusion on what to expect when volunteering for a certain programme. Expectations of volunteers regarding financial incentives were reported to weaken trusting relationships between HSAs and community.

> "*For our job to be successful, we need to work hand-in-hand with volunteers and yet they do not give them allowances when we take them to outreach to help us and this makes them lose trust in us."* (FGD, HSAs, Mchinji)

To optimally benefit from volunteers' support, the same persons were chosen as volunteers for different organizations by the HSA or following advice from the HSA.

> *"… So nowadays there are a lot of activities which need volunteers... Organization X, Organization Y, Ministry of Health will need theirs. The volunteers are the same people but we just change names* [titles of volunteers] *… Because if you change the volunteers then the whole village will end up being volunteers… We choose a volunteer who is very active at the community level. So when Organization X comes you choose the same person, for Organization Y you choose the same person. Because you know that this person does not let you down..."* (FGD, HSAs, Salima)

Support from the wider community

Generally, community members valued the work of the HSAs. Some managers gave examples of communities assisting in building houses for HSAs, as a result of good interpersonal relationships between the HSA and the community. Some HSAs reported that they failed to serve the community because of lack of supplies and in order to cope with community expectations that could not be met, they preferred to stay outside their catchment areas.

> *"… When a child is sick they run to you expecting medicine and if you don't help then it becomes a problem... As a result we just choose not to live there; we travel. But if they can train us in all things then we can be reliable and the work can be easier."* (FGD, HSAs, Salima)

Community monitoring and accountability structures

As indicated above, various voluntary committees had a role in supporting HSAs, but monitoring and accountability was not widely reported as a task of these committees. For the iCCM programme, a system was in place, illustrated by the following quote:

> *".. To get bulks of drugs, the HSA does not come alone, as he or she is supposed to come with one person from the village committee. These people are chosen by the villagers... The drug box has two keys, one is kept by a member of the community and the other stays with the HSA him or herself..."* (Interview, female district manager, Mchinij)

On other issues, more informal ways, for example via chiefs, were used to get feedback on health services offered by HSAs. Respondents made no reference to possible influence of monitoring and accountability systems on relationships and HSA performance.

HSAs' relationships with the health sector

Some HSAs and community members stressed the importance of the intermediary position of the HSA. Other HSAs preferred to see their position as officially attached to the health sector, and found volunteers, instead of themselves, to be positioned in between community and health sector.

> *"We are like the messenger between health workers and people in the area connecting them on the problems they face concerning health."* (Interview, male HSA, Mchinji)

> *"… The volunteers are like a bridge between villagers and us people who work for the government. Actually to us people who work for the government, we don't belong there in the villages, we are like visitors, so every problem we encounter whilst we are right there in the village, it is the volunteer who is going to help us."* (FGD, HSAs, Mchinji)

HSAs' relationships with the health sector were mainly facilitated through support from other health workers and management or NGOs; and through training, supervision, the referral system and monitoring and accountability structures. Within those programme design elements, communication, dialogue and trust were cross-cutting factors influencing relationships (Table 7.2).

Support from the health sector

Support from other health workers

Community members viewed support of other health workers towards HSAs as important for quality assurance purposes. HSAs reported that other health workers both facilitated and hindered their performance. HSAs gave examples of health workers who supported them in conducting outreach clinics. Some HSAs reported that clients were not being treated properly or endured long waiting times to be assisted in health centres, which could possibly lead to mistrust and demotivation of HSAs when they had to refer. Some HSAs reported that disrespect from other health workers led to lack of trust from HSAs towards other health workers, but also from the community towards HSAs, which led to demotivation of HSAs.

> *"We are not respected as health workers compared to our friends who also do the same work, like nurses. They* [nurses] *think because our work is based in the villages we are not important... This does not encourage us and communication between us and them* [nurses] *does not work well because they underrate us..."* (FGD, HSAs, Mchinji)

Support from management or non-governmental organizations

HSAs in hard-to-reach areas complained about being disfavoured by the management when it comes to supplies, bicycles, getting selected for training and housing issues as compared to HSAs living in urban areas.

> *"We HSAs in the hard-to-reach areas are also not considered for trainings; whenever there are trainings, they only take the HSAs at the district; in that case they are better oriented than we who are in the fields."* (Interview, male HSA, Mchinji)

Support of NGOs was more positively evaluated by HSAs, although in the case where HSAs felt bypassed by NGOs, they reported that they could sabotage the NGO's programmes.

Training

Continuous training could facilitate HSAs' relationships with other health workers or enhance respect from other health workers because of upgraded knowledge of HSAs. However, on the job training was often not conducted. Specific training courses, often provided by NGOs, were available, but were sometimes a source of demotivation or dissatisfaction for HSAs, as a result of perceived favouritism in selection of training

participants or trainings considered to be too short to capture everything. As a result, HSAs reported that some colleagues deliberately underperformed.

> *"… When you know something like family planning methods without trainings, HSAs tend not to work because they did not go to the trainings and did not get the allowances their friends got at the trainings. So, one may not be willing to work because they did not get that money."* (FGD, HSAs, Salima)

Supervision

Although most HSAs reported that there was supervision, it was often irregularly implemented. Supervision was often reported to be negative and lack feedback, leading to poor relationships and demotivation and dissatisfaction of HSAs.

> *"If you have done well, they should tell you that you have done well and if you did not do well they should also tell you that you did not do well. That is motivating, and they should not just be telling you on areas which you have not done well, that is not good."* (FGD, HSAs, Mchinji)

Lack of supervision was reported to promote absenteeism and decrease motivation. HSAs' wish to be supervised and their plea for supervisors to better understand the circumstances in which they operated was an emerging theme. Some HSAs were mistrusting their supervisors, feeling disconnected because of the different worlds supervisors and HSAs came from, lived in, and had to cope with.

> *"… Some bosses were born and raised up in town and when the terrain is bad they just send representatives. They would only come when people from headquarters are visiting so that they would smoothen things up before the visitors come... So sometimes we wonder how people who travel by car would complain about the distance. If they are complaining, what about us who have to cycle to get vaccines? Sometimes we feel we are not being treated as Malawians."* (Interview, female HSA, Mchinji)

Referral

Generally, there was a referral system in place: some areas had paper referral forms. Feedback to the HSA post referral was not common practice, hindering communication between HSAs and the health sector.

> *"When a person has been referred and has received the treatment and is discharged, they don't write on the discharge sheet the medication they gave them for our records, so it becomes very difficult to do the follow-ups, we would like if they do this as at the moment there is breakdown in communication."* (Interview, male HSA, Mchinji)
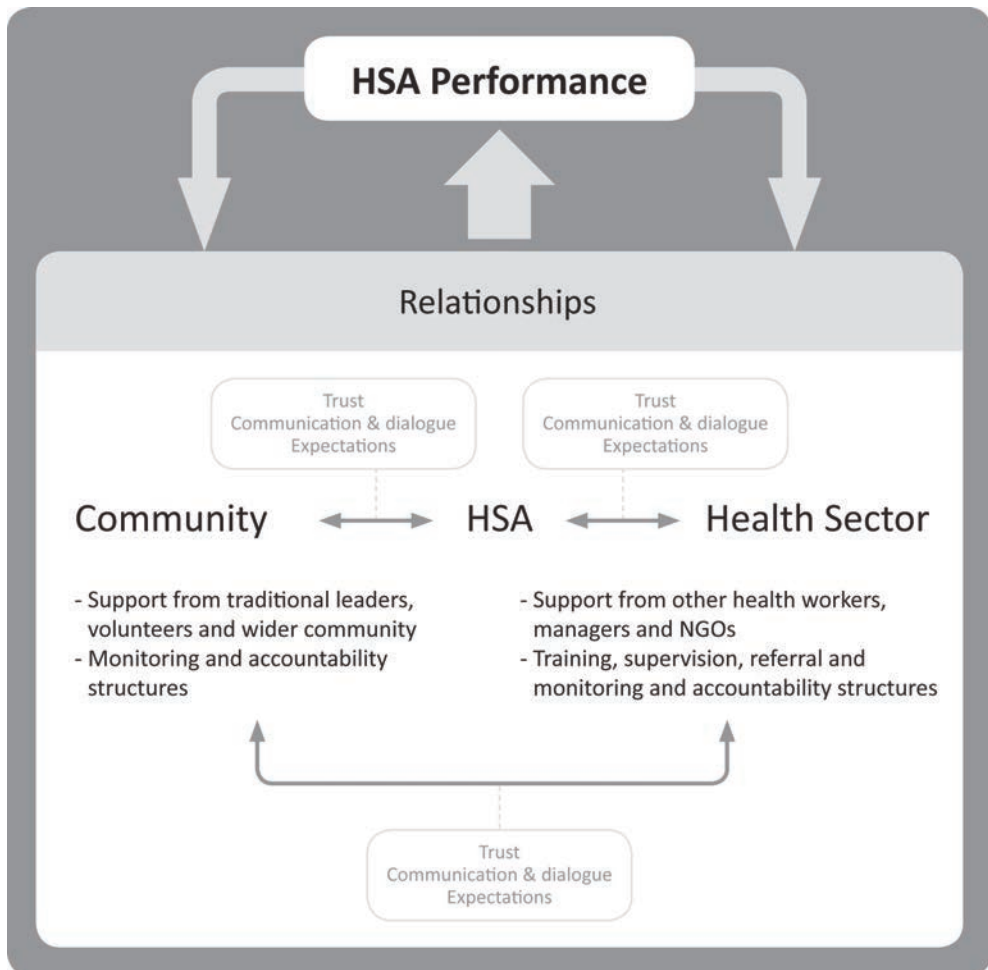
Monitoring and accountability

With regard to monitoring and evaluation, the reporting system was clearly described by various respondents. Reporting was conducted separately for different programmes, leading to some workload, although this was not referred to as a hindering factor for relationships or HSA performance. Review meetings were conducted, but frequency depended upon availability of budget.

> *"When we have funds available, we have quarterly meetings where we invite the traditional authorities for the whole district, two HSAs from every health facility and discuss what has happened in the communities in the last quarter, and then people discuss the successes, the challenges and the way forward."* (Interview, female district manager, Mchinji)

7.4 Discussion

Our study highlights the range of different actors and programme design elements shaping HSAs' relationships with both the community and health sector which in turn influence HSA performance. As shown in Table 7.2 and Figure 7.1, trust, communication and dialogue, and expectations (of managers, supervisors, HSAs, volunteers and communities) are key cross-cutting factors influencing relationships and shaping performance. From the community side, traditional leaders and volunteers could play a major supporting role for HSAs, with differences across contexts depending on the strength of relationships and availability of support structures (including incentives). From the health sector side, support from other health workers, managers and NGOs and training, supervision, the referral system and to a lesser extent monitoring and accountability structures were identified as important programme design elements facilitating relationships. However, many of these systems and structures seemed to be undermined by a lack of trust, unmet or unrealistic expectations and poor communication and dialogue, leading to poor interpersonal relationships, having a negative influence on HSA performance. The perceived performance of HSAs also influences the levels of trust of the community or health sector. Trust in HSAs is also inextricably linked with the trust that the community has in the general health sector, this has not been covered by our study (Figure 7.1).

Figure 7.1 Overview of relationships and their underlying factors, affecting HSA performance

Trust

Trust is an important factor affecting interpersonal relationships. From the community side, trust can be enhanced by shared values between community and health workers and health workers' attitudes and competencies (Gilson 2003). Our study found that contributors of mistrust, such as HSAs not being embedded in their communities, undermined shared values and supportive relationships. The distribution of (financial) incentives led to mistrust[10]: from volunteers towards HSAs and from HSAs towards their

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[10] Lack of trust can be described as distrust or mistrust. Distrust can be defined as a healthy skepticism, while mistrust comprises a more unhealthy cynicism driven by actual or suspected misdeeds (Abelson, J., F. A. Miller, and M. Giacomini. 2009. "What does it mean to trust a health system?: A qualitative study of Canadian health care values." *Health Policy* 91(1): 63-70.).

supervisors and district level staff. Actors within the health system thought that others misused allowances meant for them. This stems from the situation that allowances for travel and training are widespread and seen as income-supplement for health staff in Malawi (Søreide, Tostensen, and Skage 2012). Programmes working with volunteers with no or limited livelihoods bring financial burden to volunteers and their households; supporting the argument for financial incentives for volunteers (Simwaka et al. 2012).

Supervision and training could facilitate trusting relationships between HSAs and the health sector, but were a source of mistrust from the side of the HSA, which could even lead to sabotage. In these extreme cases, HSA and the broader programme performance could seriously suffer. Our study did not include HSAs' perspectives on trainings they attended. It would be interesting to learn which training contents (such as communication skills, views on professionalism) and approaches could enhance HSAs' relationships with the community and health sector. Recognition from supervisors and managers of HSAs' difficult work in hard-to-reach areas was an important motivator for HSAs and brought credibility (Glenton et al. 2013). HSAs working in hard-to-reach areas seemed to feel disfavoured when compared to their urban counterparts regarding training and other incentives. It would be of interest to investigate if these reported differences in support and recognition of rural versus urban-based HSAs are indeed present. Possibly, there is a negative equity scenario, assuming that rural HSAs are less well supported and have a more demanding job, being expected to reach the most hard-to-reach areas. Thus, they may face particular challenges in realizing the strengths of their intermediary position, and need additional support.

Every trusting relationship sets up a potential power relation between those involved, which may cause conflicts, or even exploitation or corruption and may initiate a vicious cycle of mistrust (Gilson 2003). HSAs' intermediary position means that they are at risk of being linked to cycles of mistrust, which was confirmed by our study.

Communication and dialogue

Trust is intertwined with communication and dialogue. Within relationships, trust develops from social interactions and ongoing communication and dialogue. A study on CHWs in India reported that open communication with supervisors was a critical element of building trusting relationships and enhancing motivation (Mishra 2014). Our study found that communication and dialogue, sometimes facilitated by traditional leaders, supported relationships between HSAs and the community. However, poor communication and dialogue between HSAs and their supervisors hindered relationships of HSAs with the "upper level". Our study revealed limited high-trust management practices, which include participation, problem-solving, feedback and open communication (Gilson 2003). This led to low workplace trust (Gilson et al. 2005), in this

case HSAs' trust in the health sector (the employer and supervisor), which hampered motivation and performance.

Expectations

The new curative tasks that HSAs conducted in the field of iCCM sometimes resulted in community expectations that could not be met by the HSA. This led to demotivation and dissatisfaction, and in certain cases reluctance to stay in the community, which in turn hinders HSAs' embedment in the community and their ability to reach out to groups with limited access to health care (Kok and Muula 2013). More research is needed to assess if community expectations are more profound in hard-to-reach areas, and if so, what strategies could be adopted to facilitate trusting relationships in these frequently neglected areas.

Other factors affecting interpersonal relationships

HSAs operated within a complex network of vertical programmes, which came with different (or sometimes similar) supervisors and volunteers. This led to multiple reporting mechanisms and lack of clarity regarding roles, also reported in other settings (Kok et al. 2015a). Accountability structures at the community level were not well-established and those from the health sector side were executed irregularly and lacked coordination. Poor accountability structures on their own can hinder HSAs' relationships with both the community and health sector, something that we were not able to confirm in our study and needs further research. The expansion of facility-based tasks as a result of task shifting hindered HSAs' relationships with their communities (Kok and Muula 2013). Although most HSAs recognized their intermediary position, some reported that they saw volunteers as the intermediaries, while they were government workers who are not necessarily supposed to stay in the village. Such viewpoints could hinder relationships with the community, resulting in further mistrust and disconnection (Zulu et al. 2014). Strategies to support relationships between CHWs and the community need to be taken into account in the current era, where CHWs are introduced as an official cadre in many African health systems (Earth_Institute 2012; GHWA 2010).

Study limitations

This study is limited by several factors. The initial purpose was broad: encompassing all factors that could influence HSA performance. Issues related to relationships were derived from this broader research and thus it is possible that some in-depth questions haven't been asked. As in all qualitative studies there is a possibility of social desirability bias. We

tried to avoid this; the experienced research team carried out in-depth probing and conducted the interviews and FGDs in neutral environments. The outcomes of this study cannot easily be generalized to other, for example, urban settings. Our study focused on interpersonal relationships between HSAs, the community and health sector and trust came out as an important underlying factor. However, trust is also influenced by interpersonal relationships among HSAs, personalities and the historical, cultural and socio-political context of the health system (Gilson et al. 2005), factors that we did not research.

7.5 Conclusions

Our findings highlight the critical importance of social relationships and behaviours for health systems, a view supported by other scholars (Gilson 2003). HSAs' intermediary position means that they have multiple relationships to manage and build with implications for their performance. We identified several programme design elements and processes that could facilitate HSA's interpersonal relationships with actors in the community and health sector. However, support systems were not functioning optimally, due in part to mistrust between different actors within the health system. Trust has to be actively produced and negotiated. Transparency about the roles and responsibilities of HSAs, selection of HSAs and volunteers for trainings, allowances attached to various programmes and more supportive supervision and functional accountability structures are needed to improve communication and dialogue, increase trust and manage expectations between all levels. In this way, the value of HSAs' unique intermediary position can be maximized and equitable access to health services in hard-to-reach areas and beyond realized.

CHAPTER 8. Optimizing the benefits of community health workers' unique position between communities and the health sector: A comparative analysis of factors shaping relationships in four countries

Abstract

Community health workers (CHWs) have a unique position between communities and the health sector. The strength of CHWs' relationships with both sides influences their motivation and performance. This qualitative comparative study aimed at understanding similarities and differences in how relationships between CHWs, communities and the health sector were shaped in different Sub-Sahara African settings.

The study demonstrates a complex interplay of influences on trust and CHWs' relationships with their communities and actors in the health sector. Mechanisms influencing relationships were feelings of (dis)connectedness, (un)familiarity and serving the same goals, and perceptions of received support, respect, competence, honesty, fairness and recognition. Sometimes, constrained relationships between CHWs and the health sector resulted in weaker relationships between CHWs and communities. The broader context (such as the socio-economic situation) and programme context (related to for example task shifting, volunteering and supervision) in which these mechanisms took place were identified.

Policy makers and programme managers should take into account the broader context and could adjust CHW programmes so that they trigger mechanisms that generate trusting relationships between CHWs, communities and other actors in the health system. This is needed to enable CHWs to perform well and respond to the opportunities offered by their unique intermediary position.

8.1 Background

Community Health Workers (CHWs) form an important point of interconnection between communities and the rest of the health system. CHWs are defined as health workers carrying out functions related to health care delivery; trained in some way in the context of the intervention, and having no formal professional or paraprofessional certificate or degree in tertiary education (Lewin et al. 2010). There are many different types of CHWs. They may address single or multiple health issues and have differences in their levels of knowledge and training, remuneration and practice settings (Bloom and Standing 2001). CHWs are often believed to increase equitable access to health care in low- and middle-income countries with constrained human resources for health (Bhutta et al. 2010; Glenton et al. 2013). They act as intermediaries between communities and the health sector, and are sometimes referred to as cultural brokers, as they understand the socio-cultural norms of the communities they work in and are thus well accepted by these communities (Maes and Kalofonos 2013). The unique intermediary position of CHWs is therefore central to health system performance in these settings.
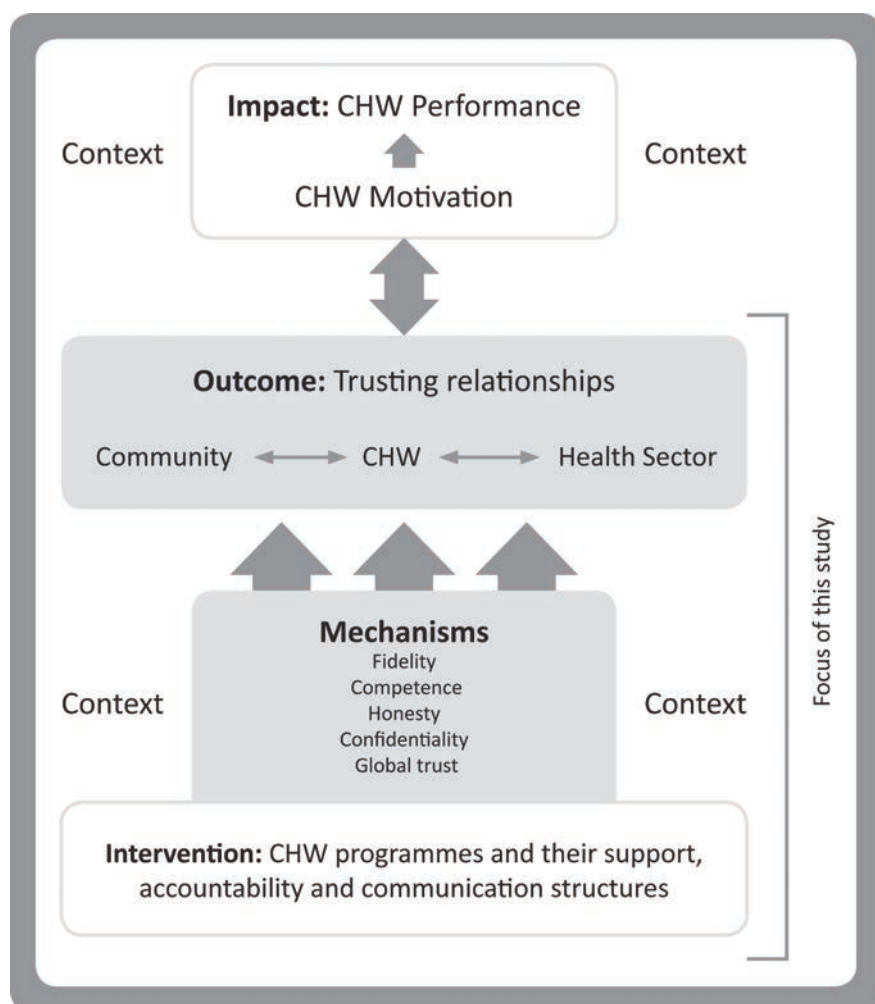
Many studies have demonstrated the effectiveness of CHWs in delivering key health interventions (Lewin et al. 2010) and the performance of CHWs remains an area of global focus. At the individual level, performance is influenced by factors like resource availability, competence and motivation. Contextual factors, such as socio-cultural and gender norms and health policies, combined with intervention related factors, such as training and supervision, can have a direct influence on motivation and performance (Kok et al. 2014; Kok et al. 2015a; Naimoli et al. 2014). Motivation and performance are complex social processes linked to feelings of self-fulfilment, achievement and recognition, that are for a large part generated through interactions between health workers, communities served and the rest of the health system (Franco et al. 2002). Health workers' capacity and motivation to deliver quality care depends on their knowledge and skills, as well as their values and goals, which are continuously developed and adapted in relation to people in their environment (Rowe et al. 2005). The recognition that health workers are social actors points to the importance of intervention designs that stimulate and support trusting relationships, defined as respectful, fair and cooperative interactions between individuals (Gilson 2003; Okello and Gilson 2015).

There has been a growing interest in trusting relationships and their positive influence on health worker motivation and performance (Calnan and Rowe 2007; Gidman, Ward, and McGregor 2012; Gilson et al. 2005; McCabe and Sambrook 2014). Many studies focus on workplace trust: trust of the health worker in colleagues, supervisors, managers and the employing organization as a whole (Albrecht and Travaglione 2003; Gilson et al. 2005; McCabe and Sambrook 2014; Topp and Chipukuma 2015). Drawing on Hall et al. (2001) we define trust as *"the optimistic acceptance of a vulnerable situation in which the trustor believes the trustee will care for the trustor's interest"* (Hall et al. 2001). Trust can be built

by personal behaviours and organizational practices that provide space for engagement and open dialogue (Gilson 2006). Factors that have been found to influence workplace trust in public sector organizations are organizational support and decision making practices, communication, feedback mechanisms, competence, performance appraisal and reward systems and job security (Albrecht and Travaglione 2003; Nyhan 2000). Hall et al. (2001) present fidelity, competence, honesty, confidentiality and "global trust" (component of trust that is irreducible or not subject to dissection) as dimensions of trust. A recent literature review found four aspects that build and break trust in health sector encounters: sensitive use of discretionary power, perceived empathy, quality of medical care and workplace collegiality (Østergaard 2015). Okello and Gilson, in a recent systematic review that included studies with CHWs, concluded that workplace relationships and trust influence intrinsic motivation of health workers and thereby health worker performance (Okello and Gilson 2015).

CHWs' intermediary position requires them to have trusting relationships with both their communities and actors in the health sector (ERT1 2012; ERT2 2012; Mishra 2014). Elements of CHW programme design such as support, accountability and communication structures can influence relationships. When those structures do not function optimally, CHWs can face significant challenges in building trusting relationships with community members and actors in the health sector, leading to demotivation (Kok et al. 2015b; Kok et al. 2015c) and tensions as a result of trying to accommodate conflicting interests and expectations (Give et al. 2015; Kok et al. 2015b; Kok et al. 2015c; Maes and Kalofonos 2013). Similarly, when contextual issues such as gender norms are ignored, relationships may be undermined as well (Viswanathan et al. 2012).

Despite this evidence on factors influencing relationships, exact mechanisms that result in trusting relationships remain understudied. This study aims to fill this gap by applying a realist "lens". Trusting relationships are taken as the "outcome", which are the result of a "mechanism" taking place in a certain "context". Figure 8.1 shows the initial theory and assumptions underpinning these links which were refined during the study. We present a qualitative comparative study, aimed at understanding similarities and differences in how relationships between CHWs, communities and the health sector were shaped in different settings. Apart from contributing to the body of knowledge on factors influencing CHW performance, this analysis contributes to global and national efforts with regard to optimizing CHW programmes and achieving universal health coverage.

Figure 8.1 Initial theory on trusting relationships and CHW motivation and performance, including the focus of this study

8.2 The four country contexts

This study draws on research on CHW programmes in Ethiopia, Kenya, Malawi and Mozambique (Mireku et al. 2014; Nyirenda et al. 2014; Sidat et al. 2014; Zerihun et al. 2014). We purposefully included four Sub-Saharan African countries with well-established CHW programmes, but with variations in the typology of CHWs and extent of their integration into the health system (Table 8.1). As context is critical in shaping CHWs' relationships with both communities and the health sector, we present an overview featuring the CHW programme of each country.

Table 8.1 Overview of CHW programmes in Ethiopia, Kenya, Malawi and Mozambique

Programme features	Ethiopia	Kenya	Malawi	Mozambique
Programme start	2004	2006	1992	1978, revitalized since 2010
Number of CHWs	38,000	18,038	9,443	3,041
Name of CHW	HEW	CHW	HSA	APE
Focus	General health, focus on maternal, neonatal and child health Promotive, preventive, basic curative	Disease prevention and control, family health services and hygiene and environmental sanitation Promotive, preventive	Community, family, environmental health, prevention and control of communicable diseases Promotive, preventive, curative	Child health, diagnose and treatment of malaria, diarrhoea, chest infections Promotive, preventive, curative
Catchment population per CHW	2,500	100	1,000	5,000
Gender CHW	Female (exception: male in pastoralist areas)	Female and male	Female and male	Female and male (71% male)
Selection criteria	Secondary school Living in area of service	Respected Literate Role model Willingness to volunteer	Primary school, now changing to secondary school	> 18 years Respected Literate (basic literacy and numeracy test)
Selected by	District health office, *kebele* administrator and sometimes community committee	Community	Central government	Community with support of district health directorate
Supervised by	Health centre staff and district health office	CHEWs	Senior HSAs and (assistant) environmental health officers	Health facility staff and district health directorate
Linked to community structure	HDA	CHCs	VHCs	CHCs
Initial training	1 year	10 days	12 weeks	4 months
Salary	Yes	No, but sometimes (performance-based) monetary incentives related to a programme or community level income generating activities	Yes	Yes, described as subsidy and currently depending upon donor support

Ethiopia

Ethiopia has a three tier decentralized health system with health posts at *kebele* level (the smallest administrative unit), health centres and primary hospitals at district level. In 2004, the government introduced the Health Extension Programme (HEP), a free primary health care package with four components: disease prevention and control; family health; hygiene and environmental sanitation; and health education and communication. A female cadre of salaried CHWs called health extension workers (HEWs) was introduced. HEWs are selected from the communities that they serve, are secondary school graduates and receive a one-year training in basic health service delivery. They are supposed to work for 25% of their time at health post level and 75% in the community (Admassie et al. 2009; Dynes et al. 2013; Medhanyie et al. 2012b; Teklehaimanot and Teklehaimanot 2013). As more than 80% of the Ethiopian population lives in rural areas, HEWs provide the first point of care for many people. However, geographical access to health posts is not easy everywhere and basic infrastructure and equipment in health posts is often lacking (CNHDE 2011). The HEP aims to improve access and quality of primary health care through the transfer of health knowledge and skills to households, via HEWs and community volunteers, called the health development army (HDA). "Graduation" of model families occurs after training in all components of the HEP and proven implementation at the household level (Bilal et al. 2011; Teklehaimanot and Teklehaimanot 2013). However, due to travel time between households and competing demands for family members' time for farming activities, the model family training is taking longer than anticipated (Banteyerga 2011). Some communities criticize the HEP for lacking curative services (Birhanu et al. 2013). Uptake of services delivered by HEWs is constrained by cultural beliefs and practices and low literacy (Medhanyie et al. 2012b). All HEWs are female, and it is believed that this makes services well accepted (Birhanu et al. 2013).

Kenya

Kenya's health system is devolved, with primary health services falling within the county's responsibility (KPMG 2013). In 2006, a Community Health Strategy (CHS) was launched and implementation took place with varying degrees of success in government-run primary health services as well as through vertical programmes run by non-governmental organizations (NGOs). Under the CHS, there are two government employed facility-based community health extension workers (CHEWs) supervising 50 voluntary CHWs for every community unit of about 5,000 people. CHWs carry out promotive, preventive and some curative tasks in disease prevention and control, family health and hygiene and environmental sanitation. In addition, there are ten community health committee (CHC) members per unit. CHWs are selected by the community and receive a training of several weeks (MoH 2007; RoK 2006). Kenya is currently in the process of revising its CHS. There

will be more CHEWs who will carry out promotive, preventive and curative tasks, supported by fewer CHWs who will act as mobilisers, ensuring the linkage between community and CHEWs (DCHS 2013). CHEWs, certificate holders in public health and community nursing, are supposed to train CHWs. CHWs report to and are supervised by CHEWs and the CHC, who are both linked to health facility committees (HFCs). The CHS faces challenges of limited supplies and stock-outs (MOPHS 2010). CHWs are male and female, male CHWs have been reported to drop-out more as a result of the voluntary nature of the job and the societal norm of men being more responsible for family income (Olang'o et al. 2010). In urban areas, CHWs (both female and male) are sometimes constrained in client follow-up because of migration and security issues (Mireku et al. 2014).

Malawi

Malawi has a partly decentralized health system. There is a government paid cadre of health surveillance assistants (HSAs), comprising 30% of the health workforce (Smith et al. 2014). HSAs are recruited by the central government, must have secondary school level education and receive 12 weeks training (Nsona et al. 2012; Nyirenda et al. 2014). Once employed, they are supposed to reside in their catchment area, working mainly in health promotion and prevention for a population of about 1,000 (Gilroy et al. 2012). From 2008, HSAs' curative tasks have been expanded. HSAs working in hard-to-reach areas conduct integrated community case management (iCCM) of childhood illnesses (Callaghan-Koru et al. 2013; Fullerton et al. 2011; Nsona et al. 2012). HSAs are supervised by senior HSAs or environmental health officers (Callaghan-Koru et al. 2013). They are attached to a hospital or health centre, but supposed to spend most of their time in the community. HSAs are supported by village health committees (VHCs), consisting of ten unpaid village representatives elected by the community, and other volunteers, such as members from HIV support groups (Kok and Muula 2013; Nyirenda et al. 2014). Major constraints to the HSA programme have been identified as lack of coordination and inadequate resources for supplies (Nyirenda et al. 2014). One study highlighted that community members, including traditional leaders, expected hand-outs and allowances whenever they were called on to participate in activities carried out by HSAs, which hindered programme performance (Nyirenda and Flikke 2013). HSAs are male and female. Although general acceptance of HSAs is high in communities (Kok and Muula 2013), socio-cultural challenges sometimes interfere with HSAs' work. For instance, a woman revealing that she is pregnant — for purposes of follow-up by HSAs — is considered a taboo in some communities (Munthali and Mvula 2009). However, no research has been conducted to find out whether this taboo was hindering the work of male HSAs more than that of female HSAs.
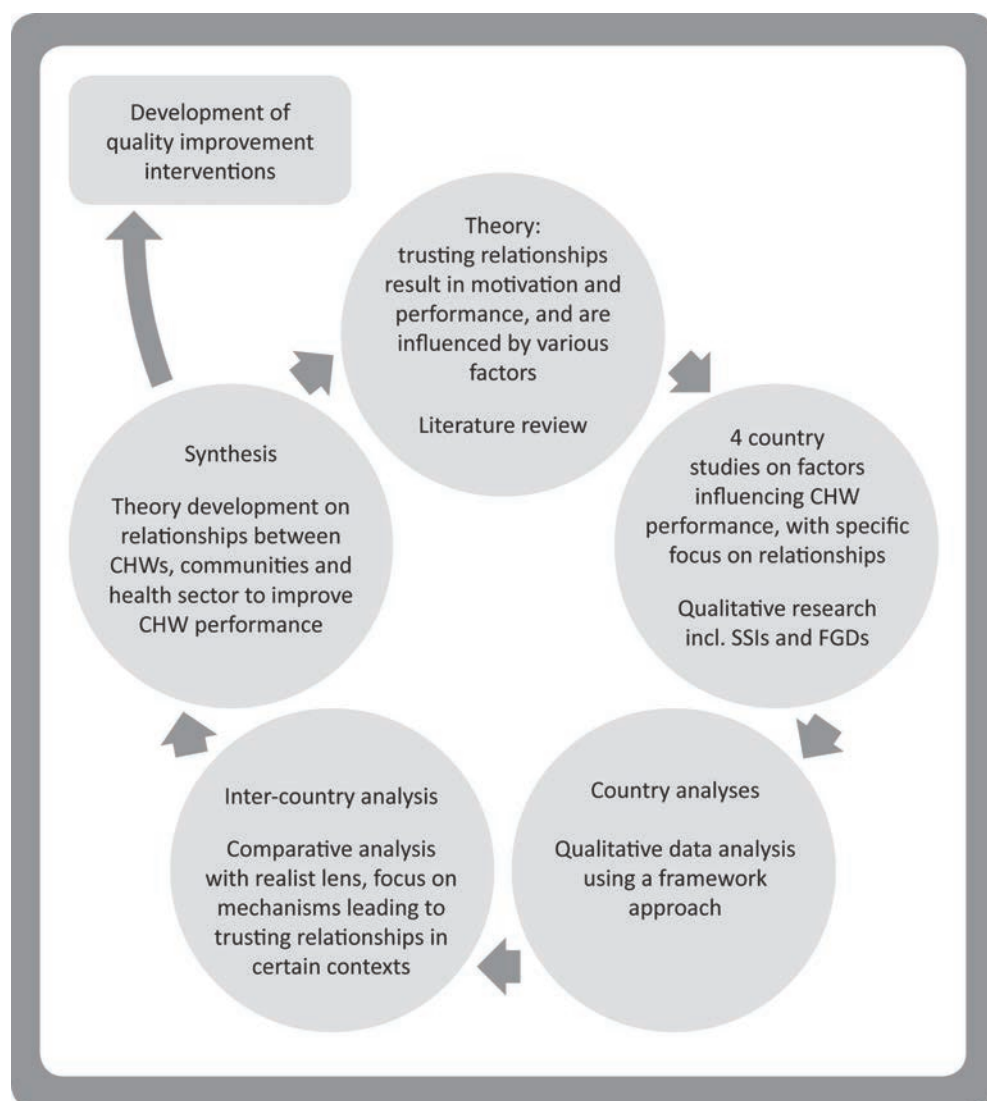
Mozambique

Mozambique gained independence in 1975 and adopted a health system that emphasized primary health care through state-managed health care facilities (Pfeiffer 2003). Within this system, the agentes polivalentes elementare (APE) National Programme was established in 1978. Volunteers selected by communities were trained as APEs and deployed in their communities of origin. However, the civil war (1976-1992) severely hampered the APE programme (Garenne, Coninx, and Dupuy 1997). The APE programme also faced challenges regarding supervision and support, which resulted in the interruption of programme implementation in the mid-1990s (Succato et al. 1994). During this period, different CHWs appeared with diverse designations and training curricula, mainly implemented by NGOs. This resulted in a rapid increase of CHWs with wide variations in their scope of work on "vertical programmes", and this led to duplications of activities and conflicting interventions (MoH 2010c). In response, the Ministry of Health signed codes of conduct with donor agencies and NGOs (MoH 2000, 2005). From 2010, coordinated efforts were put in place to revitalize the APE programme. APEs are trained for four months and 80% of their time should be spend on promotion and 20% on curative tasks (MoH 2010a). They serve a population between 500 and 2,000 (MoH 2010c). They are given a subsidy defined by the government, but payment is dependent on donor funding. APEs are supervised by staff from health facilities and the District Health Directorate. APEs are required to perform regular home visits to community members, instead of being stationary in health posts and are forbidden to charge fees for services (MoH 2010b). Although the policy holds priority for communities to select female volunteers, the majority of APEs is male. Large distances and irregularities in supervision represent important barriers for APEs to perform adequately (Ndima et al. 2015).

8.3 Methodology

This study aimed to get an indication of "what works, in which conditions, for whom" (Pawson 2006), as input into the development of quality improvement interventions within the CHW programmes of four countries. In addition, the study aimed to specify the initial theory (Figure 8.1). A realist lens was chosen, as realist approaches test theories on complex interventions and stress the importance of interactions and context. The success of an intervention depends on the individuals, interpersonal relationships, institutions and infrastructures through which and in which the intervention is delivered (Marchal et al. 2012). When applying a realist approach, a picture is built up on how various combinations of contexts influence the outcomes of an intervention. The "how" is represented by identified mechanisms, which are the recourses that interventions offer to enable their subjects to make them work, more specifically the process of how relevant actors interpret and act upon the intervention stratagem (Pawson and Tilley 1997). Where

possible, outcomes (in this case relationships), their underlying generative mechanisms (M) and the context (C) in which these mechanisms led to the outcomes (O), named CMO configurations, were identified (Pawson et al. 2004). Figure 8.2 contains an overview of the research and methodology deployed: from defining an initial theory, to four country case studies, to the inter-country analysis, to refining the theory and inputting into the development of quality improvement interventions.

Figure 8.2 Overview of the research and used methodology

Country studies

We used a conceptual framework on factors influencing performance of CHWs as the basis for our wider enquiry (Kok et al. 2014; Kok et al. 2015a). All country studies used this framework to develop topic guides for focus group discussions (FGDs) and semi-structured interviews (SSIs) with purposefully sampled CHWs, their supervisors and managers and various community members (Table 8.2). All studies focused on perspectives of participants on factors influencing CHW performance, and specifically factors influencing relationships between CHWs and actors in communities and the health sector. Participants also gave their perspectives on the strength of those relationships.

Table 8.2 Overview of FGDs and SSIs conducted per country

	Ethiopia	Kenya	Malawi	Mozambique
CHWs				
FGDs	HEWs - 6	CHWs - 6	HSAs - 3	
SSIs	HEWs - 12		HSAs - 8	APEs - 18
CHW supervisors, managers				
SSIs	*Kebele* administrators - 3 Health centre in charges - 3 Delivery case team leaders - 3 HEP coordinators - 3 Regional HEP coordinator - 1 Zonal HEP coordinator - 1	CHEWs - 16 Sub-county health management team members - 3 Facility in-charges - 4 National level policy makers - 4	District level staff - 13 Health centre in charges - 2 NGO staff - 9	Health facility supervisors - 3 District supervisors - 2
Community members				
FGDs	Women - 6 Men - 2	Community members - 4	Women - 7 Volunteers - 6	Mothers - 8
SSIs	Mothers - 12 TBAs - 6	Community members - 10	Mothers - 1 TBAs - 6 Traditional leaders - 3 Volunteers - 2	Community leaders - 6

Country specific topic guides were translated into the local languages and back-translated for consistency. They were all piloted and adjustments were made as needed. Data collection was conducted by trained research teams with experience in data collection within the local context. Data was collected in a number of districts per country (six in Ethiopia, two in Kenya, Malawi and Mozambique). Daily debriefing sessions with data collectors were held to discuss key findings, refine lines of enquiry and summarize observations. FGDs and interviews were digitally recorded, transcribed and, where needed, translated into English or Portuguese (Mozambique). A sample of transcripts was randomly checked against recordings. Transcripts were independently read in pairs by a

group of researchers to identify key themes and develop a coding framework. The coding framework was based on our initial common framework on CHW performance and new themes were added where needed, following the country data (Dixon-Woods 2011). Transcripts were coded using Nvivo (v.10) software. The coded transcripts were further analysed and summarized in narratives for each theme. Study findings were validated with policy makers and programme implementers in all counties.

Inter-country analysis

We conducted a qualitative comparative analysis of the four country case studies (Yin 2013). We developed a robust process to conduct this analysis, building on common methods and protocol. During the analysis process in the respective countries, we had joint meetings with researchers from the four countries and researchers from the United Kingdom and Netherlands involved in designing the research. We also had joint meetings where researchers from all four countries were represented. This brought in different perspectives to the analysis within and between countries. Exchange visits to see implementation of CHW programmes in Ethiopia and Mozambique enabled researchers from all four contexts to discuss issues of similarity and difference and their implications. Country matrices containing detailed information on all factors related to relationships between CHWs, communities and the health sector were developed. This process included inductive thematic analysis and open coding (Ritchie and Spencer 2002). Main themes were identified and narratives were written on the identified CMO configurations.

Ethical approval

The generic study protocol was approved by the Royal Tropical Institute Ethical Review Committee in the Netherlands. Country specific research protocols were approved by the South Nation Nationalities and Peoples Region Health Bureau Research and Technology Transfer Core Process of South Ethiopia in Ethiopia; the Kenya Medical Research Institute Ethics and Review Committee in Kenya; the National Health Sciences Research Committee in Malawi; and the Institutional Review Joint-Board of the Faculty of Medicine of the University Eduardo Mondlane and Maputo Central Hospital in Mozambique.

8.4 Results

Various CMO configurations were identified. First, we focus on mechanisms and contexts that influenced (either positively or negatively) CHWs' relationships with their communities. Then mechanisms and contexts that influenced CHWs' relationships with actors in the health sector are presented.

Relationships between CHWs and communities

CHWs' relationships with their communities were shaped by a variety of factors related to broader and programme context. Specific contexts and related mechanisms that resulted in strong or weak relationships between CHWs and their communities were identified. These CMO configurations were categorized according to main themes within the programme context that emerged in the four countries: the way in which CHWs were recruited and selected; the extent to which the community was supportive of the programme; the tasks that CHWs were performing or supposed to perform; and resources (Table 8.3).

Recruitment and selection

In Ethiopia, Kenya and Mozambique, respondents reported that the way in which CHWs were recruited and selected eased establishment of trusting relationships between CHWs and communities. In these countries, the policy assured that CHWs served in their areas of origin. In Kenya and Mozambique, CHWs were selected with involvement of health sector representatives *and* community members.

> *"They* [the community] *are satisfied with the quality of the CHWs, because when we were recruiting the CHWs we did it in a baraza[11]. And we had all the community members in the baraza, and they are the ones who chose the people to work with them."* (Kenya, interview, CHEW)

From the perspective of the community, attributes such as humility, respect, responsibility, love for neighbours, dedication, and listening to the community emerged as central criteria for eligibility in Kenya and Mozambique. These important attributes were felt to be satisfied, because the CHWs served in their community of origin and were selected by that community.

> *"I think an APE should be a humble person, should not be a proud person, because when he is proud he doesn't know how to respect the community and will not listen to the community... When the flu goes up while it is night, I must go to see the sick people, that is why I have a flashlight so as not to say 'until tomorrow because I've left now'... Someone who is proud can say 'I do not work at night.'"* (Mozambique, interview, APE)

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[11] Community meeting organized by the local administrative officer: chief or sub-chief.

Table 8.3 Factors influencing CHWs' relationships with their communities

Broader context *"In a context where..."*	Programme context *"and…,"*	Mechanism	Outcome *",leading to…"*
Recruitment and selection			
Community participation is promoted by the government	CHWs are recruited from their area of origin and/or selected with involvement of the community, and thus share the same socio-cultural attributes as their clients	Communities and CHWs feel connected to and familiar with each other and communities feel that the CHWs serve in their interest	+
Men and women have clearly separated gender roles and responsibilities in (reproductive) health care	Female CHWs are recruited	Women in the community and CHWs feel free to discuss reproductive health issues with each other	+
HIV is stigmatized	CHW are recruited from their area of origin, live in their area of service and provide HIV services	Communities fear lack of confidentiality of CHWs	-
Community support			
There is a history and value of volunteerism	Volunteering is an official element of the CHW programme	CHWs and volunteers feel connected and that they serve the same goals through their teamwork	+
There is a history and value of traditional leadership	Traditional leaders are involved in the CHW programme	Communities have more respect for and credibility towards CHWs	+
People live in poverty	Incentives for volunteers are paid irregularly and differ between programmes	Volunteers are jealous and see CHWs as dishonest	-
CHW tasks			
Human resources for health are constrained	Curative tasks have been shifted to CHWs and supplies to conduct the expanded tasks are available	Communities have enhanced respect for and recognition of CHWs and CHWs have increased feelings of self-fulfilment	+
	Curative tasks have been shifted to CHWs and supplies to conduct the expanded tasks are lacking and/or roles and responsibilities of CHWs are unclear to communities	CHWs feel stressed because of being unable to fulfil communities' expectations and communities feel disappointed and/or confused	-
Multiple vertical development programmes exist next to each other	Various types of CHWs with different tasks work in the same communities	Communities feel disappointed and/or confused	-
Health managers lead from a political perspective	CHW supervisors are involved in local politics, expecting CHWs to play a role in politics as well	Communities see CHWs as dishonest and not serving in their interest	-
Resources			
Resources are constrained	CHWs lack supplies to conduct their tasks	Communities feel disappointed and/or doubt about CHWs' competence and/or see CHWs as dishonest	-

+ means trusting relationships between CHWs and their communities; - means weak relationships between CHWs and their communities.

Respondents reported that as a result, communities and CHWs felt connected with each other, and that communities thought that the CHWs serve in their interest, which enhanced trust from the community towards the CHW. Thus, the following CMO configuration was developed (row 1 of Table 8.3):

> "In a context where community participation is promoted by the government and CHWs are recruited from their area of origin and/or selected with involvement of the community, and thus share the same socio-cultural attributes as their clients, communities and CHWs feel connected to and familiar with each other and communities feel that the CHWs serve in their interest, leading to trusting relationships between CHWs and their communities".

In Ethiopia, community members reported that HEWs being female was important to them, as they prefer to discuss reproductive health issues amongst women. In this case, the government's recruitment policy reflected gender norms in society. In Kenya, CHWs were more often female than male. Managers and CHEWs reported that this was because of the voluntary nature of the job. One CHEW stated that male CHWs sometimes had problems communicating about reproductive health issues with young females in the community. Despite this, a manager advocated to involve more male CHWs, in order to involve more men in community health.

CHWs felt they had a privileged social intermediary position in their communities, particularly in Mozambique and Ethiopia. This constituted an important factor in fostering trusting relationships with their communities, as CHWs felt connected and answerable to them. APEs in Mozambique acknowledged existence of community habits and customs that may be hazardous to health, but did not consider them a hindrance to their work, because they shared the same social and cultural context and found ways to address them taking into account this context. However, the embedment of CHWs in their communities sometimes raised concerns for community members about how they will be treated and judged and whether their confidentiality would be maintained. This was reported by some community members regarding the role of CHWs in HIV programmes in Kenya and Mozambique.

In Malawi, unlike the other three contexts, HSAs were not selected by the community and in many cases did not live and work in their area of origin. However, it was found that HSAs who did not come from the area of service, but who lived there or spent the majority of their time in the community, were more respected and had better relationships with the community compared to HSAs who lived elsewhere and spent a lot of time in facilities.

Community support

Community support to CHWs varied in extent and form in all countries. Support came from community members (of which some were volunteers), traditional leaders, traditional birth attendants (TBAs), schools, women groups or churches and mostly involved assisting CHWs in conducting promotional and preventive tasks. This support was sometimes reported to foster trusting relationships, as teamwork triggered a sense of collaboration and working on the same goals. Community structures that facilitated support were health development armies (HDAs) in Ethiopia, CHCs in Kenya and Mozambique and VHCs in Malawi. Although these structures are all part of the national policies, at the time of conducting this research, only the HDAs in Ethiopia were strengthened as an explicit choice of the government to enhance community participation and facilitate the work of HEWs.

> *"We used to go home-to-home, but it was difficult for us to cover the whole community. We didn't have enough time to counsel a family and get them convinced. After the introduction of one-to-five networking* [part of the HDA]*, this problem got solved."* (Ethiopia, interview, HEW)

In Malawi, VHCs were not always active and if they were, support was more *ad hoc*, for example, members became active when campaigns were conducted. Various respondents pointed to mistrust between volunteers and HSAs when it comes to (financial) incentives and lack of incentives resulted in volunteer attrition.

> *"… After they* [the volunteers] *were trained and started implementing their activities there are no refresher trainings … as a result most groups died a natural death. If maybe there were twenty people you find that only five people are working and the rest dropped out because there is nothing to motivate them."* (Malawi, interview, senior HSA)

Volunteers were sometimes jealous of other volunteers and HSAs because they thought they received more incentives. Some volunteers thought HSAs were dishonest, keeping incentives for themselves instead of distributing them to volunteers.

Despite mistrust between HSAs and volunteers in some areas, other HSAs reported that volunteers helped them with tempering expectations of the communities, for example in the case of drug stock-outs. In Mozambique, this went further: some communities reported giving their APE money for transportation to the health facility to pick up drugs, knowing the APE could not fund the transport, because of delays in the receipt of subsidies. Thus, the community filled a gap in the health system. This can be seen as a result of the trusting relationships between APEs and their communities.

> *"...We saw that as there is a delay in their salary of three months, this subsidy comes when they no longer have anything. Sometimes the population takes effort to fetch the medicine; the transport needs money. She is also a peasant. It is the people who saw the suffering. She didn't say anything or complain."*
> (Mozambique, interview, community leader)

In all countries and from various types of respondents, the involvement of traditional leaders was said to foster CHWs' relationships with the community, through enhanced community respect and credibility towards CHWs.

Community engagement in monitoring CHWs was reported in Ethiopia, Kenya and Mozambique, and to a more limited extent in Malawi. In all countries, community accountability structures in the form of health facility committees (HFCs) were available, but a specific community structure aligned with the CHW programme was only found in Kenya in the form of the CHC.

> *"...The CHC also has to report to the CHEW on our progress, and when we have the baraza the community is asked if indeed we visit them."* (Kenya, FGD, CHWs)

However, in most areas included in the Kenyan study, community involvement in monitoring and feedback was not strong. CHC meetings were reported to be held infrequently and were dependent on donor support. In some areas, CHCs were no longer functional or never received training and were thus not aware of their role and not empowered to provide feedback. The role of the CHC in monitoring CHW performance was reported to be stronger in rural than urban areas.

In Mozambique, it was also not clear whether the community felt empowered to give APEs feedback. APEs reported that they did not receive complaints from the community; they just got requests to provide more services. This led them to assume that the quality of the care they provided was considered good.

Our analysis process across the four country contexts was not able to relate weak community accountability structures to constrained relationships between CHWs and communities.

CHW tasks

The expansion of CHWs' curative tasks increased community respect for and recognition of CHWs and led to higher levels of self-fulfilment of CHWs, which fostered relationship between CHWs and their communities. Relationships were sometimes constrained by expectations from the side of the community that could not be met by the CHWs. In all countries, especially in Mozambique, communities expected more curative services from CHWs than that they were able or allowed to deliver. This led CHWs to feel stressed and in

certain cases in Malawi, in CHWs' reluctance to stay in the community, due to criticism or inability to fulfil community expectations.

In Kenya and Malawi, different tasks that CHWs conducted for vertical programmes sometimes led to confusion at community level and expectations of communities that could not be met by CHWs, leading to constrained relationships. In Ethiopia, some HEWs reported that competing programmes and expectations from the senior cadres led to changes in their planned activities, leading to mistrust from communities.

> *"… The communication between the kebele administrator and this health centre is weak, because they are using HEWs for other purposes, they use them for agriculture, for political purpose. If we would work together with the kebele administrator we could identify the gap that the HEW has and help her improve..."* (Ethiopia, interview, health centre head)

Resources

CHWs in all four countries had to deal with insufficient supplies and logistics. This led to difficulties in daily performance of tasks, but also in community relationships. In Kenya, CHEWs reported that a sense of mistrust was created by the belief held by some community members that the CHWs were withholding what should rightfully belong to the community. The community had been informed about what the CHWs would provide, but since the CHWs had not been provided with kits, they were unable to fulfil all the roles the community expected.

> *"We had a baraza before the community strategy, and we told them all those things that the CHWs will be doing for them, but due to lack of equipment and finance, they see the CHWs not doing all that they should be doing. So they keep asking: 'When will you start treating us?' That tells you that they expect more from the CHWs."* (Kenya, interview, CHEW)

In Ethiopia, HEWs who lacked supplies or equipment to conduct reproductive health tasks were sometimes seen as incompetent by people in the community.

Relationships between CHWs and the health sector

CHWs' relationships with actors in the health sector were shaped by a variety of factors, again related to the broader and programme context. CMO configurations were categorized according to main themes within the programme context that emerged: whether CHWs were backed by professional support; the nature and functionality of CHW supervision; the way incentives, including training, were organized and played out; and issues related to health facilities (Table 8.4).

Table 8.4 Factors influencing CHWs' relationships with the health sector

Broader context *"In a context where…"*	Programme context *"and…,"*	Mechanism	Outcome *",leading to…"*
Professional support			
Human resources for health are constrained	Tasks have been shifted to CHWs and programmes have clear professional support structures for CHWs	CHWs and health professional feel connected and that they serve the same goals through their teamwork	+
	Tasks have been shifted to CHWs, but the roles and responsibilities of CHWs are unclear to health professionals and/or clear professional support structures for CHWs are lacking	CHWs feel disrespected by health professionals and health professionals doubt about CHWs' competence	-
Supervision			
Resources are constrained	Supervision is conducted irregularly with an emphasis on records and/or supervisors lack training and/or supervisors have competing priorities due to high workloads	CHWs feel not supported by their supervisors	-
Resources are not constrained	Supervision is conducted through accompanied households visits	CHWs feel supported by their supervisors	+
There are large socio-economic differences between groups in the population	The socio-economic distance between CHWs and supervisors is large, as they come from different backgrounds	CHWs feel disconnected from and not familiar with their supervisors	-
There is a socio-cultural norm of respect towards elderly	Younger supervisors supervise older CHWs	CHWs disrespect their supervisors	-
Incentives, including training			
Multiple vertical development programmes exist next to each other and people live in poverty	Various types of CHWs with different tasks and differences in incentives work in the same communities and/or there is donor dependency regarding incentives and/or training attendance is related to financial incentives, but criteria for selection of training attendance are unclear	CHWs feel treated unfair and see the upper level as dishonest	-
CHWs' connection with health facilities			
Resources are constrained	Referral systems lack effective reporting procedures and feedback loops	There is hindered communication between CHWs and health workers at health facilities	-
	Facility health services and related transport systems are not of optimal quality or available	CHWs have no confidence in the referral services	-

+ means trusting relationships between CHWs and actors in the health sector; - means weak relationships between CHWs and actors in the health sector.

Professional support

CHW programmes in all four countries had formalized support systems, including supervision and training (see below). In Ethiopia, Kenya and Mozambique, CHWs received practical support from health professionals, which was important to enhance their competencies and made them feel part of a team working on the same goals, which fostered relationships. The same was reported in Malawi, although some HSAs reported disrespect and accusations of incompetence from other health workers as a result of the lack of clarity regarding CHW roles. This led to lack of trust of HSAs towards the "upper level", demotivation and less recognition of CHWs by communities. In this case, weak relationships between CHWs and actors in the health sector led to weak relationships between CHWs and their communities, because unsupported CHWs were less recognized by the community. The "knock-on effects" of relationships between CHWs and actors in the health sector on relationships between CHWs and their communities are presented in Table 8.5.

Supervision

In all countries, supervision was found to be irregular, fault-finding in nature, with an overemphasis on checking of records and a lack of supportive and problem-solving approaches and feedback. On the whole, CHWs felt unsupported by the upper level, which constrained relationships.

> "*If you have done well, they should tell you that you have done well and if you did not do well they should also tell you that you did not do well. That is motivating, and not that they should just be telling you about areas which you have not done well, that is not good.*" (Malawi, FGD, HSAs)

Only in Kenya, CHEWs reported to conduct supervision through monthly meetings and joining CHWs while carrying out household visits, which did include problem solving.

> "*I go visit the households with them. Sometimes I just call a CHW, and I tell them I just want to visit, then we go visit those people in those households, to see if they are satisfied with the services the CHWs are providing, to see if they are satisfied with the way they are treated at the facility level. That is how I supervise them.*" (Kenya, interview, CHEW)

One CHEW described using supervision as a time to act as an arbitrator between the community and the CHW if there is a poor relationship between them.

CHWs in Ethiopia and Kenya indicated that supervision contributed to their credibility: they thought that the community liked to see them being supervised. In Malawi and Mozambique, this was confirmed by community members saying that visible support from

supervisors towards CHWs and good relationships between them were important for quality assurance (Table 8.5). In Ethiopia, HEW supervisors lacked knowledge on the HEP and therefore had problems in building capacity of HEWs. In Kenya, supervisors were reported to have high workloads and insufficient training and knowledge on guidelines. The double role as facility-based staff and supervisor of CHWs at community level was hindering relationship building between supervisors and CHWs in Kenya and Mozambique.

> *"…CHEWs find a lot of challenges because they are now torn into two. They attend to the community and to the facility as well."* (Kenya, interview, CHEW)

In Kenya, relationships between CHWs and supervisors were sometimes problematic: in some cases, older CHWs were reported to refuse to listen to feedback from younger CHEWs. HSAs in Malawi wished to be supervised more frequently and pledged for supervisors to better understand the circumstances in which they operated. Some HSAs were mistrusting their supervisors, feeling disconnected because of the different worlds supervisors and HSAs came from, lived in, and had to cope with.

In all countries, data reporting systems were available and CHWs reported to upper levels through the use of standardized data collection tools. However, regular performance appraisals based on checklists to measure performance was not conducted. The reporting system seemed more geared towards upward accountability (to senior management) than downward accountability (back to the CHWs and communities).

> *"The boss comes back, reviews the book and begins to write, but I do not know what he is writing, and then he doesn't tell me anything."* (Mozambique, interview, APE)

Kenya was the only country were in some areas, data came back to the CHWs and community, during dialogue days. However, generally the systems lacked a proper feedback loop from central to more distal levels and to CHWs, leading to demotivation of CHWs.

Incentives and training

Remuneration of CHWs differed across countries, with government salaries for CHWs in Ethiopia and Malawi and more irregular stipends or subsidies for CHWs in Kenya and Mozambique.

In Mozambique, APEs expressed their discontentment regarding the substantially delayed arrival of promised subsidies and other incentives. The issue of subsidy payment backlog was also mentioned by health managers as a difficulty which can lead to APEs providing a low quality of service or dropping out, and hindering relationships between supervisors

and APEs. Sometimes, supervisors were not comfortable asking CHWs about performance, knowing that APEs are receiving delayed subsidies and as a result are demotivated.

> *"We have had trouble — I and the APEs — regarding the allowances that take too long for them... I stimulate them to continue a little longer, but the subsidy does not enter at the scheduled date… I must go to them and say that the subsidies for August fall in mid-September. But then no subsidy came out, and when it came, it was for two months, while you have six months of debt. It would be great if we could overcome this difficulty, not only for them but also for me as a supervisor."* (Mozambique, interview, manager)

Refresher training could establish working relationships between CHWs and other health workers and enhance respect from other health workers towards CHWs because of upgraded knowledge. However, in Ethiopia, official trainings for upgrading were a source of disappointment for many HEWs. The selection process was not clear, the entrance exams considered too difficult and promotion after attending the training was not guaranteed. Within the refresher trainings, health facility staff was not willing to let HEWs practice on conducting deliveries. In Malawi and Kenya, there was no refresher training for CHWs, although NGOs invited CHWs for specific trainings related to vertical programmes. In Malawi, NGO-led trainings generally were a source of mistrust, demotivation and dissatisfaction, because of perceived favouritism in selection of training participants, leading to jealously between HSAs and feelings of unfairness, as trainings were related to extra financial incentives. In some cases, this led to deliberate underperformance, where HSAs refused to conduct certain tasks when they had not been invited to trainings related to those tasks.

> *"It's not like the other HSA doesn't have the right information on the job, but because his colleague HSA went for training and signed for it* [got paid]*; it is very hard for the other person who did not sign for it to work willingly."* (Malawi, FGD, HSAs)

In general, financial incentives were a source of mistrust between volunteers, HSAs and their supervisors and managers at the district level.

CHWs' connection with health facilities

Referral systems lacking effective reporting procedures, including feedback systems, resulted in hindered communication between CHWs and health facility staff in all four countries. In Kenya though, some CHWs reported to receive feedback after referral, which motivated them in their work.

In Ethiopia, Kenya and Malawi, unreliable quality and costs at health centre or hospital level sometimes resulted in a lack of trust and constrained relationships between CHWs

and other health workers and between clients and CHWs. As CHWs have a position in between health facilities and communities, they were sometimes held responsible by community members for problems related to the facility level. Again, relationships of CHWs with the upper level had a direct influence on CHWs' relationships with communities (Table 8.5). In Kenya and Mozambique, clients expected transport or a preferential treatment when referred by a CHW, which was not always fulfilled. When it was fulfilled, this led to satisfaction of the clients and motivation of CHWs.

Table 8.5 The influence of workplace trust on relationships between CHWs and communities

Broader context *"In a context where..."*	Programme context *"and…,"*	Mechanism 1 (CHWs – actors in health sector)	Mechanism 2 (CHWs – communities) *"and…,"*	Outcome *"leading to…"*
Human resources for health are constrained	Tasks have been shifted to CHWs, but the roles and responsibilities of CHWs are unclear to health professionals and/or clear professional support structures for CHWs are lacking	CHWs feel disrespected by health professionals and health professionals doubt about CHWs' competence	CHWs receive lower recognition by the community and feel less valued	-
Resources are not constrained	Regular and visible supervision is conducted through accompanied households visits	CHWs feel supported by their supervisors	Communities have more respect for and credibility towards CHWs	+
Resources are constrained	Facility health services and related transport systems are not of optimal quality or available	CHWs have no confidence in the referral services	Communities have no confidence in the referral services and in CHWs as they link communities towards these referral services	-

+ means trusting relationships between CHWs and actors in the health sector, and thereby trusting relationships between CHWs and communities; - means weak relationships between CHWs and actors in the health sector, and thereby weak relationships between CHWs and communities.

8.5 Discussion

This study reaffirms the importance of trusting relationships for CHWs, positioned as intermediaries between communities and the health sector, as a determinant of performance. The findings demonstrate the complex interplay of influences on CHWs' relationships with their communities and actors in the health sector. Certain programme elements could trigger a change in the behaviour and experiences of any of the actors involved (CHW, community or health sector), resulting in either constrained or trusting relationships.

Figure 8.3 shows a summary of the contextual factors and mechanisms influencing relationships between CHWs, communities and the health sector. Our analysis reveals that the circumstances seem more conducive to producing enablers of trusting relationships

between CHWs and communities, and relatively more barriers to relationships between CHWs and the health sector. In addition, in certain cases the strength of relationships between CHWs and their supervisors or managers had a knock-on effect on the strength of CHWs' relationships with their communities. The influence of workplace trust[12] on relationships between health workers and their clients has been identified before (Gilson 2006; Gilson et al. 2005). In our study, it was mostly a negative influence. Despite the fact that CHWs have a unique intermediary position, the converse (the impact of CHWs' relationships with their communities on relationships with actors in the health sector) was not borne out in our study. This may represent an imbalance in power and accountability: compared to that of the health sector, the voice of communities is limited, with implications for ownership and responsiveness of CHW programmes. When we see health systems as social institutions, the ways of bringing about change in health systems go beyond altering the "hardware" – finance, medical products, information systems, levels and types of human resources, forms of services delivery and governance – to recognize that systems encompass people at both the supply and demand side. The "software" – the ideas and interests, values and norms, relationships and power – is also part of the health system and critical for its performance (Sheikh et al. 2014a; Sheikh et al. 2011). Our study confirms this. For example, in Kenya and Mozambique, mobile communication between CHWs and their supervisors was hindered by lack of airtime, but CHWs did not stress this as a profound factor hindering relationships. Other factors, related to feeling supported and valued through supervision and training and receiving recognition from the community were discussed much more, indicating the importance of shared values, trust, appreciation and respect. For a health system to be truly people-centred, relationships of health sector actors with communities should be strong. CHWs play a large role in linking both sides and have the potential to improve health systems.

The study provides insight into how programmes could be furnished to trigger mechanisms that could lead to improved relationships and in turn improved CHW motivation and performance in certain settings. The CMO configurations presented in Table 8.3-8.5 can be used for this purpose by policy makers and programme managers. For example, in all countries, the set-up of the supervision system could be adjusted, with improved support and problem-solving approaches (Hill et al. 2014), to contribute to improved relationships between CHWs and supervisors, with positive implications for community relationships too. The same was found in a recent study involving auxiliary nurses in Guatemala, in which the nature of relationships that supported auxiliary nurses' performance were related to attention to psycho-social well-being, understanding of needs and responsive assistance in problem resolution between nurses and managers

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[12] In Kenya and Mozambique, where CHWs are volunteers, the term "workplace trust' might be not suitable, however, official supervision and support systems are in place.

★ Means that these mechanisms also have an effect on the relationships between CHWs and their communities. Mechanisms presented bold had a positive effect on relationships.
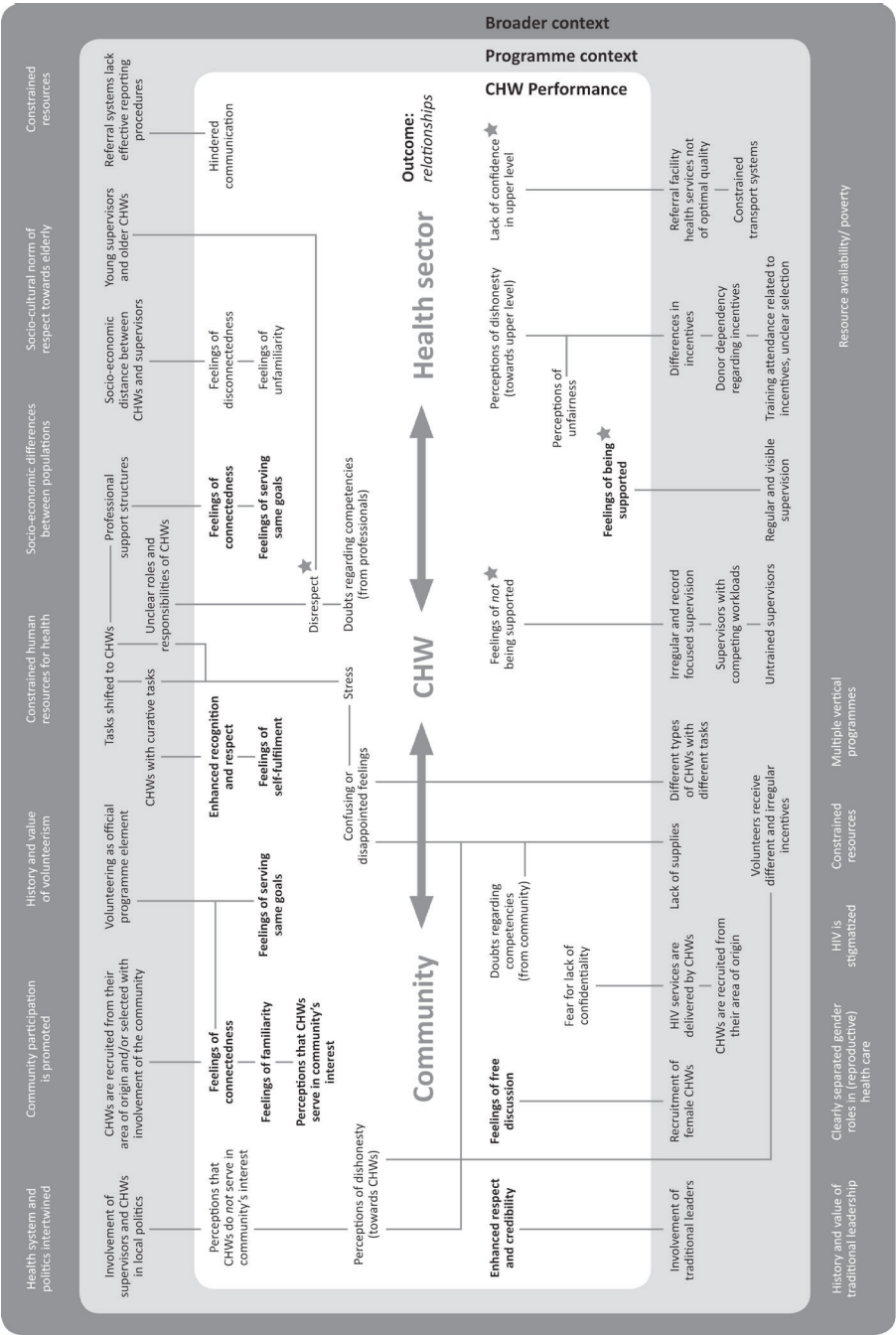
Figure 8.3 Overview of contexts and mechanisms that influence CHWs' relationships with the community and health sector

(Hernández et al. 2014). With regard to CHW training, a more integrated package (instead of multiple vertical training programmes) (Redick, Dini, and Long 2014) that includes professionalism, confidentiality and community roles could also strengthen CHWs' relationships with both communities and the health sector. Visible support from and supervision by health professionals can increase community recognition of and trust in CHWs (Glenton et al. 2013), in addition, quality of facility services linked to CHW programmes can also positively influence trust of communities in CHWs.

The influence of context on CHW and programme performance has been assessed in other studies (Kok et al. 2015a; Palazuelos et al. 2013). Besides similarities on how programme and broader contextual factors influenced relationships across the four countries, differences also emerged. In Malawi, HSAs are recruited and selected without community involvement, and they often do not serve in their area of origin. As a result, our study found that HSAs had weaker relationships with their communities than for example CHWs and APEs in Kenya and Mozambique, which led to lower perceived performance by the community. In Malawi, HSAs are salaried workers and officially part of the health sector, which is not the case in Kenya and Mozambique. However, the HEP in Ethiopia shows that integrated and salaried CHWs could still have trusting relationships with communities, when support systems with voluntary CHWs are a strong part of the programme. The preferred gender of CHWs was female in Ethiopia, related to their tasks in reproductive health. In Kenya, the gender preferences seemed to be mixed. In Mozambique, unrealistic expectations from the community regarding curative tasks of APEs was more profound than in the other countries (Give et al. 2015). This could be a result of health facilities being less accessible: Mozambique has the largest catchment population per CHW, while the country has a challenging topography. Expansion of the "shifting" of curative tasks to CHWs necessitates improved training, supervision and incentives (Fulton et al. 2011), and thus a better integration of CHWs in the health system. This requires sustainable resources and political will, but it could also require a transition in thinking of CHW programmes from being voluntary into being more formalized in nature. HEWs in Ethiopia are trained for a duration of one year, a long period compared to the duration of CHW training in the other countries. The question is, does this result in a better ability to establish trusting relationships, and a higher motivation and performance in the long term? Although not explicitly found in our study, trust from the side of the community could be enhanced by the idea that CHWs are competent and thus well-trained. The fact that expansion of curative tasks increased recognition from the community and feelings of self-fulfilment of the CHW, points into this direction. However, as shown in Figure 8.3, many other factors are also important in stimulating relationships to grow.

Strong relationships require trust (hence the use of the term "trusting relationships"). People need to invest time and effort into the relationship and must trust each other (Paillé, Grima, and Dufour 2015). Factors that influence levels of trust, such as

organizational support, feedback mechanisms and reward systems (Albrecht and Travaglione 2003; Nyhan 2000), have been identified by our study. The added value of our study is that it contains a holistic view, as CHWs' relationships with two sides, the communities and the health sector, were analysed. The dimensions of trust as presented by Hall et al. (2001), which include fidelity, competence, honesty, confidentiality and global trust were confirmed to be important with regard to CHWs' relationships with the community and health sector. Fidelity includes respect, agency, loyalty, caring and avoiding conflict of interest: attributes that were found to be important during selection of CHWs by community members. Connectedness, familiarity, serving the same goals, fairness and recognition were other dimensions of trust that emerged from our study.

Downwards accountability – from health sector towards community, was found to be weak in all countries, although the Kenyan CHW programme included most structures providing opportunities for information and feedback on CHW or programme performance. Community accountability is believed to enhance health systems' performance, but evidence is scarce (Molyneux et al. 2012). The finding that community accountability was limited, coupled with the observation that respondents did not bring up the correlation between the functioning of community accountability structures and trusting relationships, stresses the need for further research and action. Strengthening (existing) community accountability structures and linking them to health sector accountability structures is likely to have positive effects on relationships of CHWs with both communities *and* actors in the health sector (Lunsford et al. 2015).

It is challenging to compare CHW programmes in different countries with each other, as programmes have different set-ups and are situated in different socio-economic and cultural contexts. This large variance in context at the same time underpins the unique contribution of our study: it assists in identifying similarities and differences in contextual factors that shaped relationships between CHWs, communities and the health sector in different settings. This information is useful for CHW policy and programme development, but it should be taken into account that there are many different types of CHWs around the globe and that communities too are not homogenous, but diverse and evolving. We would like to be clear about the limitation attached to the chosen realist lens in data analysis and presentation. This study does not contain a full realist evaluation, but elements of a realist evaluation were used during the analysis of qualitative data from four countries. In addition, we stress the point made by Pawson that no realist study will ever be able to present a full picture of the context (Pawson et al. 2004). This applies to our study even more, as data were derived from a broader study on factors influencing performance of CHWs in the four countries, in which trusting relationships were found to be essential in enhancing CHW motivation and performance. Therefore, we do not claim to have a complete overview of all possible factors that shape relationships between CHWs, communities and actors in the health sector.

8.6 Conclusions and recommendations

This study demonstrates a complex interplay of influences on CHWs' relationships with their communities and actors in the health sector. In order to increase CHW motivation and performance, relationships between these actors need to be strong. Policy makers and programme managers should take into account broader and programme contexts, in order to trigger mechanisms that could generate trusting relationships. As outlined in the methods section and Figure 8.2, this study was partly conducted to input into the development of quality improvement interventions for the CHW programmes in Ethiopia, Kenya, Malawi and Mozambique. Currently, in the implementation districts of all countries, context-specific interventions that strengthen support structures from the side of the community and introduce supportive supervision of CHWs from the side of the health sector are being set up. These strategies aim to enhance trust and strengthen relationships between CHWs, communities and the health sector, which is needed to enable CHWs to respond to the opportunities offered by their unique intermediary position and promote universal health coverage.

PART 3 – Reflections

CHAPTER 9. Discussion and conclusions

Community health workers (CHWs) have a unique intermediary position between communities and the health sector. They form an essential group of health workers in many low- and middle-income countries (LMICs), delivering promotive, preventive and (limited) curative health services. CHWs have been shown to contribute to improved health of rural and poor communities (Lewin et al. 2010). There has been a renewed interest in CHW programmes in recent years. It is of importance, therefore, to examine how the performance of CHWs could be improved, taking into consideration that CHWs only receive basic training on a – mostly expanding – package of tasks, but continuously face limited resources and other challenges of the health system and community contexts in which they work. According to the definition of performance used in this thesis, a well-performing CHW would work in ways that are responsive, fair and efficient to achieve the best health outcomes possible, given the available resources and circumstances (WHO 2006). CHW performance comprises the following characteristics: self-esteem, motivation, attitudes, competencies, guideline adherence, job satisfaction, and capacity to facilitate community agency (ERT2 2012). The sum of these different characteristics yields CHW performance, showing that CHW performance is a social process and has multiple influencing factors.

This Chapter discusses the main findings of this thesis according to the study questions defined in Chapter 3, which is followed by a reflection upon the conceptual framework that guided the research. Next, the main conclusions and recommendations for policy and practice are presented. The Chapter ends with considerations regarding the strengths and limitations of the conducted research and recommendations for further research.

9.1 Discussion of main findings

The **aim of this thesis** was to gain insight into how performance of CHWs in LMICs can be improved, in order to contribute to the realization of better informed, more effective and sustainable CHW programmes and ultimately improved health status of poor and rural communities. The study questions that were developed to achieve this aim have been answered in detail in their respective Chapters in the form of articles. This section provides a short, integrated summary and discussion of the main findings.

The theoretical component of the research presented in this thesis addressed study questions 1-3:

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?*

Chapter 4 showed that variations in the design of CHW programmes or interventions have significant influence on CHW performance. The most prominent factors that influenced CHW performance in different settings from around the globe were related to:

- the definition and clarity of CHWs' tasks and the time they spent on service delivery;
- human resource management, including the selection process, the way CHWs were supervised and trained, and the kind of incentives they received;
- quality assurance processes, such as the use of standard operating procedures and programmatic guidelines;
- structures facilitating CHWs' links with the community and health sector, such as village health committees (VHCs) and the organization of professional support; and
- resources and logistics, including transport, CHW kits and job-aids.

These factors were often related to one another, were highly context-specific and could therefore not be seen separately from the health system and broader context in which they were situated.

Chapter 5 presented the most prominent contextual factors influencing CHW performance, derived from studies of CHW programmes from a variety of countries and settings. These factors related to:

- the community context, including cultural and gender norms, the education and knowledge level of CHWs' clients and the extent of disease-related stigma;
- the economy, more specific the economic hardship that CHWs cope with;
- the environment, including geography, distances to cover and climate;
- the health system policy, which included political commitment and the existence and extent of implementation of policies and legislation on CHWs or human resources for health in general; and
- the health system practice, which was related to the functionality of the health system as a whole and the embedment of CHW programmes within it.

These contextual factors formed a complex and interactive web and influenced the daily practice of CHW programmes through the experiences, mind-sets, and values that shape the behaviour of actors within them.

Factors that directly influenced performance at the level of the individual CHW did so by interfering or changing one or more of the characteristics of performance. For example,

studies reported an influence on competencies, self-esteem or motivation, whereby the influence on the latter two was mostly self-reported. It became clear that many factors that influence CHW performance also influenced one another. Factors could also have a direct influence on the end-users of CHWs' services (the community), such as on their health-seeking behaviour, and as such indirectly influence individual CHW performance. In addition, the performance of CHWs could have a reciprocal influence on the initial factors influencing CHW performance. Chapters 4 and 5 presented numerous examples of the ways in which different factors interplayed with each other. Three examples are given below. It is important to note that the examples do not intend to present a complete overview of (combinations of) pathways influencing CHW performance, rather they intend to illustrate the complexity of how CHW performance is shaped in certain settings.

Culture, gender and CHW performance

In certain cultures, gender roles and norms had an influence on health-seeking behaviour of people in the community, especially women. When women were not free to move around, interventions were developed in such a way that home visits were included in the work package, assuring that CHWs could reach their target group. This necessitated other features in the design of interventions, such as transport for the CHW and on-site supervision. When women were not free to interact with men outside their household, CHW programmes focused on selecting female CHWs according to set criteria. However, when the same cultural context prevented female CHWs from being free and able to interact with men in the community on health-related issues, the involvement of male CHWs was considered. In patriarchal societies, this had other implications for CHW programmes: as the society saw them as breadwinners of the family, male CHWs were less motivated to work on a voluntary basis than female CHWs. Furthermore, men were not seen as "caring" persons, and following this viewpoint, some CHW programmes had specific types of tasks (the more caring, and administrative and technical tasks) officially assigned to female and male CHWs respectively, with implications for workload division and communication between CHWs.

Economy, financial constraints and CHW performance

CHWs were motivated if they received remuneration or non-financial incentives, or even – in the case of volunteers – if they had hope to be compensated in the future. The economic situation in a country had an unavoidable influence on the financial model of the health system, which in turn had an influence on the types of incentive packages of CHW programmes and the price of health care for clients (which could influence health-seeking behaviour). Economic constraints sometimes resulted in stress experienced by

CHWs, because of their continuous exposure to the struggles of their clients. A lack of compensation for services rendered sometimes led to an inability of CHWs to provide for their family, leading to demotivation or neglecting their tasks as CHWs as a result of seeking other income. Financial constraints furthermore dissatisfied and demotivated CHWs, as they lacked resources such as job aids, drugs and equipment and felt unsupported, as intervention design elements such as supervision were often the first issues to "be cut off". In some cases, a vicious circle of demotivation could not be prevented, because community expectations could not be met and CHWs' position lost legitimacy.

Task shifting and CHW performance

In many contexts, CHW tasks seemed to expand, leading them to increasingly performing curative tasks. This often led to motivation and satisfaction, as a result of being able to assist people better and receiving recognition from community members. Expanding tasks required intensified training and supervision, which were mostly included in the intervention design. However, regulatory frameworks within the health system did not always accommodate these expanded CHW tasks. This could lead to CHWs not being supported in case of malpractice or conflict and lack of cooperation from other cadres when the most up-to-date CHW job description is not widely known. The latter could in turn hamper community trust and recognition for CHWs, leading to demotivation. In certain cases, task-shifting led to demotivation because of increased workload, but incentives remained the same.

While answering study questions 1-3, it became clear that situations in which CHWs' relationships with the community and the health sector were facilitated – through certain contextual factors or design elements – were associated with improved CHW performance. This triggered the research team to look deeper into how relationships were shaped between CHWs, their communities and actors in the health sector. This is covered in the empirical component of the research presented in this thesis, addressing study questions 4 and 5.

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?*

Factors that influenced CHWs' relationships with the community and health sector in Ethiopia (Chapter 6) and Malawi (Chapter 7) were related to certain programme design elements and cross-cutting issues. In both countries, CHWs' relationships with their communities were facilitated by:

- the nature of CHWs' position and role;
- the support in implementation of activities that CHWs received from traditional leaders, volunteers and the wider community; and
- community-driven monitoring and accountability mechanisms.

CHWs' relationships with actors in the health sector were facilitated by:

- the referral and supervision system;
- the training undertaken by CHWs;
- monitoring and accountability from the side of the health sector; and
- support that CHWs received from health professionals and managers.

Within the above programme design elements, the following cross-cutting factors triggered strong relationships:

- trust;
- communication and dialogue; and
- expectations (of actors in the community, the health sector and CHWs themselves).

The case studies showed that these factors, which shaped CHWs' relationships with communities and the health sector, particularly influenced CHW performance through motivation.

In Ethiopia, the fact that health extension workers (HEWs) were selected from the community that they served enhanced community trust in HEWs, partly facilitated by good attitudes and high self-esteem of HEWs as a result of serving their own community. The positive influence of the support that HEWs received from the health development army (HDA) on CHWs' relationships with community members is also worth mentioning. Working together with the HDA provided HEWs a vehicle for improved communication and dialogue with a wide variety of community members. The HDA presents an opportunity for further strengthening HEWs' relationships with the community, by expanding its function from providing support to HEWs' tasks towards monitoring HEWs' performance and accountability. In a number of areas, joint review meetings between the health sector, HEWs and community members already took place. Supervision with a fault-finding approach and without feedback – partly as a result of lack of resources and training of supervisors – hampered relationships between HEWs and supervisors. Although the supervision approach was not always conducive for the establishment of trusting relationships between CHWs and the "upper level", HEWs indicated that they felt supported when they received regular assistance in their daily work from health professionals at the health centre level, which enhanced their competencies and made them feel part of a team.

Health surveillance assistants (HSAs) in Malawi were assisted in their communication with community members by traditional leaders, which was also often the case for HEWs in Ethiopia. However in Malawi, relationships between HSAs and communities were more problematic than in Ethiopia, because HSAs often did not reside and come from their communities of service, which hampered community trust in HSAs. Prioritization of facility-based work further constrained relationships with the community, because of hindered communication as a result of not being present in the community. Furthermore, a high degree of mistrust was discovered between volunteers and HSAs and also between HSAs and their supervisors and managers related to (financial) incentives that were not always available and were assumed to be withheld from the persons who were supposed to receive them. There was further mistrust by HSAs of the health sector because of perceived favouritism related to training attendance, disrespect by other health workers, and lack of support from supervisors and management.

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?*

This study question was addressed in Chapter 8. The similarities and differences in "how" relationships of CHWs with communities and the health sector were shaped were analysed through the identification of mechanisms, which are the recourses that interventions offer to enable their subjects to make them work, more specifically the process of how relevant actors interpret and act upon the intervention stratagem. Where possible, we related context (C, in this case the CHW programme and broader societal context) to underlying generative mechanisms (M) leading to an outcome (O, in this case relationships). These are called context-mechanism-outcome (CMO) configurations (Pawson and Tilley 1997).

Figure 8.3 in Chapter 8 presents an overview of factors that influenced relationships between CHWs, communities and the health sector, derived from a multiple case study including Ethiopia, Kenya, Malawi and Mozambique. Perceived trusting relationships between CHWs and their communities were caused by the following mechanisms:

- feelings of connectedness, familiarity, serving the same goals, free discussion (all from both the CHW and the community side);
- perceptions that CHWs serve in the community's interest, enhanced recognition, respect and credibility (from the community side); and
- feelings of self-fulfilment (by the CHW).

For these mechanisms to be triggered, the following programme-related contextual factors were found to be important:

- CHWs to be recruited from their area of service;
- CHWs to be selected with involvement of communities;
- volunteers to form an official element of the programme;
- traditional leaders to be involved in the programme;
- curative tasks to have been shifted to CHWs; and
- CHWs to be female (only in contexts where gender roles in (reproductive) health care were separated).

The broader contexts in which the mechanisms were able to exist were contexts where community participation was promoted and valued, contexts with a history and value of volunteerism, or contexts where traditional leadership played an important and respected role at the community level.

Trusting relationships between CHWs and actors in the health sector were related to the following mechanisms:

- feelings of connectedness and serving the same goals (from both sides); and
- feelings of being supported (from the side of the CHW).

Only a few mechanisms leading to trusting relationship between CHWs and the health sector were identified, as compared to those leading to trusting relationships between CHWs and their communities. Moreover, few mechanisms related to feelings or behaviours of actors in the health sector were found, although this might be a limitation of the study itself. Other studies have been able to identify additional mechanisms, for example, related to health professionals reporting that CHWs assist them in reducing their workload (Glenton et al. 2013). For the identified mechanisms to take place, the following programme-related contextual factors were found to be important:

- professional support structures to be available;
- curative tasks to have been shifted to CHWs; and
- regular and visible supervision to take place.

The study also revealed contexts and mechanisms associated with weak relationships. For example, weak relationships between CHWs and their supervisors and managers were a result of:

- disrespect and doubts about CHWs' competencies (from the side of the health sector);
- feelings of disconnectedness, unfamiliarity and not being supported, a lack of confidence in the upper level (supervisors and management) and perceptions of dishonesty and unfairness of the upper level (from the side of the CHWs); and
- misunderstandings related to lack of communication (from both sides).

In certain cases, weak relationships between CHWs and their supervisors or managers had a negative knock-on effect on the strength of CHWs' relationships with their communities.

Some CMO configurations were more specific to particular settings. For example, communities could perceive CHWs as dishonest if CHWs were (forced to be) involved in politics (Ethiopia) or if volunteers received different and irregular incentives, as a result of multiple vertical programmes in a context were resources are scarce and receiving allowances to top up salaries is common (Malawi).

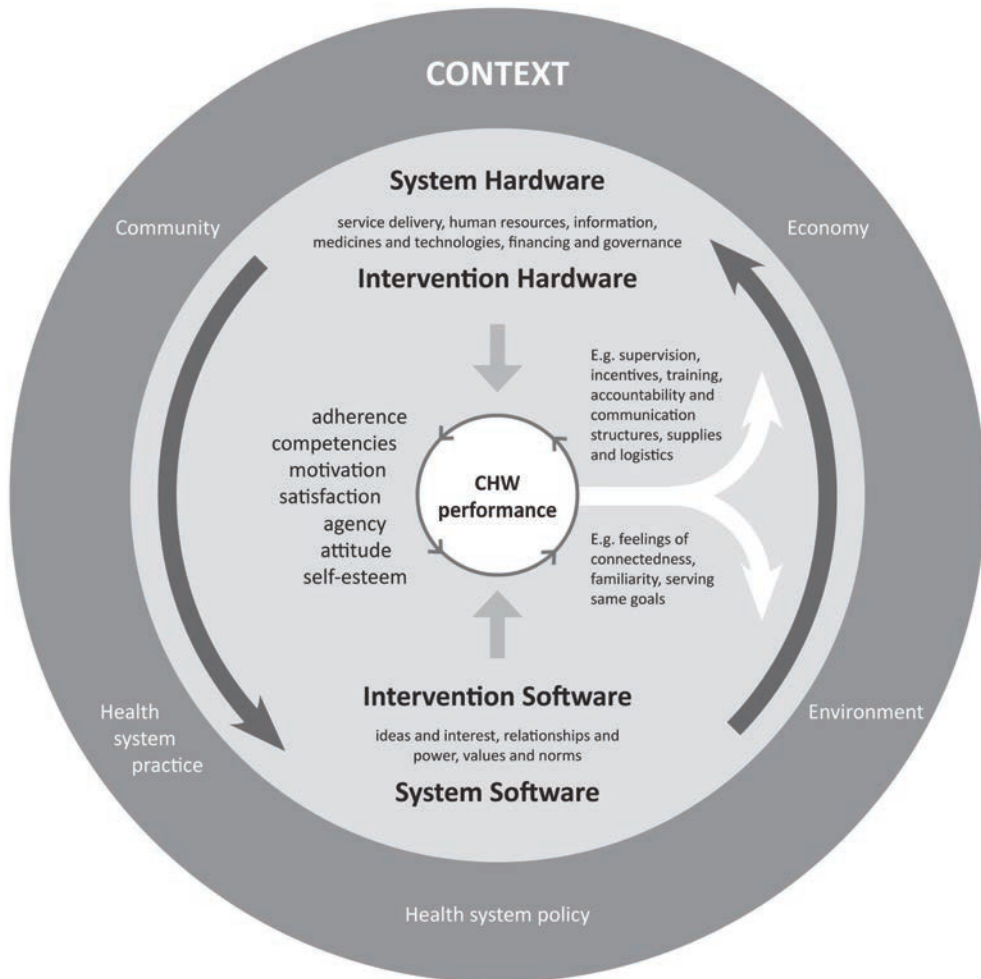## 9.2 Framework on community health worker performance

The complexity and intersection of factors that influence CHW performance call for the development of a framework that could assist policy makers and programme managers to shape their interventions and researchers to guide their studies. In Chapters 4-8 of this thesis, the initial conceptual framework (as presented in Figure 2.2) was tested and reflected upon. Figure 9.1 presents an adapted framework on CHW performance, in which the evidence from both the theoretical and empirical component of this thesis has been captured. The framework and its underlying set of hypotheses form a theory focusing on CHW performance as a social process, embedded in the health system seen as a social construction (Franco et al. 2002; Sheikh et al. 2011). The hypotheses on how the different elements presented in this framework affect each other form the cadres in which specific pathways that could lead to improved CHW performance are situated. These pathways, some of which have been discussed above as examples, can be tested in the upcoming two cycles of implementation research on quality improvement interventions within REACHOUT[13].

The framework and its underlying hypothesis

The framework has CHW performance in the centre, as this is the issue of focus. Different circles around CHW performance present the multiple layers of influencing factors, starting with the programme or intervention design in the inner circle and the health system and broader context in the outer circles. Health systems' related influencing factors are divided into "hardware" and "software" (Sheikh et al. 2011) and are coupled with hardware and software elements of intervention designs. System hardware includes the six building blocks of the health systems framework as presented in Chapter 2, Figure 2.1, and they affect intervention design factors, such as the supervision system; training, accountability and communication structures; incentives; and supplies and logistics (see also Section 9.1). These intervention design factors, in turn, influence CHW performance

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[13] More information about REACHOUT can be found in Chapter 3, Section 3.2.

Figure 9.1 Framework on CHW performance

through enabling CHWs to perform their jobs in a quality manner. The characteristics of CHW performance that are mostly influenced by hardware elements are CHWs' competencies and adherence to guidelines and procedures, in addition to motivation and satisfaction. System software includes the ideas and interest, relationships and power, values and norms of the most important actors in the health system and CHW programme or intervention (Sheikh et al. 2011). Issues such as trust, communication and dialogue and expectations shape the relationships between CHWs and their communities and actors in the health sector. The mechanisms that are triggered (for example, feelings of connectedness, familiarity, serving the same goals: see section 9.1) have effects on CHW performance, influencing characteristics such as self-esteem, attitudes and agency, in addition to motivation and satisfaction. The latter characteristics of CHW performance –

motivation and satisfaction – are influenced by both hardware and software elements, and therefore presented in the middle of the circle of CHW performance. The hardware and software elements continuously influence each other (indicated with the big arrows in the circle). For example, the availability and design of the supervision system influences the strength of relationships between CHWs and health system actors and sometimes also between CHWs and the community (Roberton et al. 2015). If relationships between CHWs and communities are constrained, intervention design elements (hardware) could be adjusted or introduced to improve software elements. For example, when representatives from existing community networks receive a formal role in identifying challenges in service delivery, testing solutions and monitoring changes within the CHW programme, relationships and thus CHW performance could improve (Lunsford et al. 2015).

CHW performance is not a static measure. The different characteristics of performance will be present to different extents at different times, and they do not stand on their own, but influence each other as well (indicated with the arrows in the circle of CHW performance). The "status" of CHW performance, in other words the constitution of its different characteristics, could have a reciprocal effect on the intervention, system and broader context in which the CHW is working (indicated by the two arrows from the centre pointing towards the surrounding circles). Actors in the CHW programme and in the health system and society as a whole have opinions and perceptions about CHW performance, which influence their trust in and relationships with CHWs, again influencing CHW performance. At the hardware side, assessments of guideline adherence or competencies of CHWs can lead to adjustments in how CHW are trained or supervised, which in turn can influence CHW performance.

Reflections on the framework

The presented framework substantially differs from the initial conceptual framework presented in Figure 2.2. The initial conceptual framework was developed based on a first reading of the literature and mainly shows system and intervention hardware elements influencing CHW performance. This suggests that the perspective of CHW performance as a social process has not been examined in detail in the literature. During the course of this research, the importance of relationships for CHW performance became clear, and further investigation into this sub-element of the software elements influencing CHW performance was undertaken. As a result, more light was shed on the mechanisms through which software elements triggered changes in CHW performance, and how these interplayed with mechanisms triggered by hardware elements. A clearer picture on factors influencing CHW performance emerged, and was summarized in the new framework. It needs to be noted that the research presented in this thesis did not focus on all software elements that could influence CHW performance: the focus was on the underlying issues

shaping relationships and issues like power were not researched in-depth. In addition, the research did not intend to reflect on the specific concept of CHW performance. The characteristics of (individual) CHW performance were taken from the initial reading of the literature and not individually analysed nor assessed, rather they were taken as (sometimes self-reported) outcome measures in the respective studies. The new framework does not visualize the effects of CHW performance at the end-user and impact level, however, it assumes that improved CHW performance leads to improved services, positive changes in health-seeking behaviour of and utilization of services by communities and ultimately impacts on the health of the population.

The adjusted framework touches upon some interesting considerations for policy, practice and research. Firstly, the realization that hardware and software elements are both needed and meant to strengthen each other calls for the incorporation of programme or intervention elements facilitating this process. This discussion further presents some recommendations on how to do this in Section 9.3. However, additional research is needed to attain a more complete overview of possibilities and it should be kept in mind that the broader context, such as social connectedness and trust within communities, is diverse; and thus CHW programme elements related to hardware can never fully "fix" problems related to the software. Secondly, the current literature clearly shows the influence of hardware elements on performance characteristics such as adherence and competencies, but less on agency, attitudes and self-esteem. When the interactive cycle of hardware with software elements is stimulated, we would expect characteristics such as self-esteem and agency to change as well, which would further improve CHW performance. Implications for the type of research that would be needed to observe these changes are discussed in Section 9.5.

9.3 Conclusions and recommendations for policy and practice

The main research question of this thesis is:

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

This research has demonstrated that a complex and interactive web of multiple factors influences performance of CHWs. The main findings give useful insight into how CHW programmes could be developed or adapted to improve CHW performance. It is of great importance that the context is taken into account during this process, as CHW performance is highly context-dependent. Nevertheless, several recommendations that are applicable to multiple contexts can be made for policy makers and programme managers aiming to optimize CHW programme performance.

1. **When developing the CHW profile and selection criteria, contextual realities and programme requirements need to be taken into consideration**

There is a large diversity in CHW profiles. In some cases, the profile of CHWs simply developed over time, in many other cases it was a result of targeted selection based on set criteria. In all case studies included in this thesis, it was found that CHWs perform better if they come from the community that they serve. In some cases, the profile of CHWs was influenced by contextual factors (for example, in the case of gender preference) or by programme tasks and goals (for example, if certain skills and competencies were needed and therefore a certain educational background was required). Thus, performance of CHWs could be improved if the CHW profile is well thought-through and selection is implemented to accommodate the requirements. CHWs perform if they are both "fit for purpose" and "fit to practise" in a country's context.

2. **When a mix of CHWs is preferred in order to share workload, tasks of and incentives for the different CHWs need to be clearly defined**

There are several CHW programmes that include both paid and voluntary CHWs in complementary roles. This mix was found to improve CHW performance in some settings, as teamwork made workload more manageable (Yeboah-Antwi et al. 2014). However, in other settings, a lack of clarity on tasks and differences in incentives led to problems between the CHWs and hindered their performance. Therefore, programmes that include both paid and voluntary CHWs need to ensure a clear task division, which is known by all relevant actors, as well as provide clear guidelines with regard to incentives for both types of CHWs. This is important to foster relationships between different types of CHWs and improve motivation and performance.

3. **When a mix of CHWs is present as a result of vertical programming, coordination and harmonization efforts could improve CHW performance**

In several countries, such as Kenya and Malawi, various vertical programmes use different types of CHWs. In this case, the mix of CHWs is not programme-based, but the fact that different (often non-governmental) organizations are present in one area results in a mix of CHWs. It has been shown that this situation often leads to lower CHW motivation and thus poorer performance, because of continuous comparison of benefit packages between different types of CHWs and lower recognition and trust from the community as a result of confusion regarding roles and diverse expectations. The latter can have further effects: if a woman visits a village clinic to receive contraceptives from a CHW and is sent back because another CHW, working for a different organization, is taking up this issue, it is questionable if the woman will take the extra effort to seek this service elsewhere. In

the case of an unintended mix of CHWs, a CHW programme mapping at the national and district levels could be considered, to provide input for improved coordination between vertical programmes and harmonization of, for example, incentive guidelines. This could clarify roles and improve collaboration between different types of CHWs. It could also assist in managing the expectations of the different actors involved, which is important for trust and relationship building.

4. There is room for optimization of the benefits of the unique intermediary position of CHWs between communities and the health sector

The intermediary position of CHWs between the community and health sector provides various challenges and opportunities that need to be taken into account to improve CHW performance.

a. The "voice" of communities in CHW programming needs to gain prominence

Our research stresses the importance of the involvement of both the community and health sector in the selection and monitoring of CHWs. They can be seen as programme or intervention elements that stem from the intermediary position of CHWs between these actors. Therefore, it is advisable to promote the establishment of functional structures that facilitate involvement of and relationships between all actors, such as joint review meetings and village health committees (VHCs). This could assist CHWs in their work, as coordinated monitoring may prevent CHWs from feeling torn between the different interests of their communities and the health sector. In many instances, it was found that there was more influence from the health sector than the community side regarding selection and performance monitoring, presenting an imbalance in power and accountability. Existing VHCs often supported CHWs in conducting their tasks and creating health care demand, but had limited or no accountability functions. The same was found in a recent realist analysis of minutes of community health committee meetings in Nigeria (Abimbola et al. 2015). Communities are part of health systems and are, in many LMICs, attached to the rest of the health system through CHWs. Our research shows that there is a need for improved community agency and ownership in (monitoring of) CHW programmes (Mkumbo et al. 2014; Roberton et al. 2015). This could be realized through clear guidelines regarding accountability functions, mentoring and support and enshrinement in law of village or community health committees (Abimbola et al. 2015).

b. The role of CHWs in giving voice to communities needs revitalization

The above call for more community voice is interesting in that CHWs themselves are often believed to be vehicles for facilitating community agency and triggering social change. Recently, some scholars stated that the function of CHWs as agents of social change has been pushed from the forefront by technical tasks focusing on attaining disease specific targets (Kalofonos 2014; Mishra 2014; Pérez and Martinez 2008; Sabo et al. 2013). This tendency has been affirmed in our review, although the few studies on CHWs' roles in stimulating community agency could be a result of the fact that conducting research on this "vaguer" role is more challenging. The ethnographic research of Kalofonos (2014) describes how the work of voluntary CHWs in Mozambique changed from a social- and spiritual-oriented community-level response to the AIDS epidemic to an expanded, more technical scope of work as a result of HIV testing and anti-retroviral treatment (ART) becoming available. This transition devalued the non-technical skills of the CHWs and thereby the people that embodied and represented them: older, poorly educated women (Kalofonos 2014). In India, an ethnographic study found that relationship building with the community was valued as very important by CHWs and that the narrow indicators used to measure health system performance, including a hierarchical structure and the value of statistical evidence above field-based experiences, could disturb the potential role of CHWs as agents of social change, cultural mediators and health promotors through effective community participation (Mishra 2014). These studies show that programme or intervention hardware elements can have a profound influence on software elements: task composition and the way in which performance is measured can have a bearing on how communities look at CHWs and thereby influence CHWs' capacity to relate to the community and facilitate agency. When CHWs are required to act as agents of social change, they themselves need to feel empowered (Kane et al. 2015). For example, they need to be trained in soft skills such as communication and problem-solving at community level (Redick et al. 2014). In addition, the introduction of new ways to measure CHW performance, focusing on for example agency and interaction with communities, could assist in further spearheading the role of CHWs as agents of social change.

c. CHWs' relationships with the health sector need improvement

Despite the fact that the health sector has more influence on CHW programming than communities, we found that relationships between CHWs and their supervisors and managers generally needed improvement. Our research shows that many CHWs did not feel supported nor respected by the upper level, which hindered motivation and performance. Joint training of CHWs with their supervisors could contribute to better relationships, as understanding about each other's roles and competencies can be established during the training. There is a need for improved, supportive supervision (Hill

et al. 2014; Marquez and Kean 2002), including training of supervisors in technical skills, the CHW programme itself and people management (Daniels et al. 2010; Hernández et al. 2014; Panda et al. 2015). As supervision is a form of human interaction (Clements 2007), strategies that reduce social distance between supervisor and supervisee (such as team building events) could also improve relationships. Thus, the hardware elements of interventions should reflect and take into account software elements, such as power relations and values and norms of actors involved, in order to yield better CHW performance. Improved supervision from the side of the health sector could have a positive ripple effect on CHWs' relationships with their communities, through increased recognition. A recent study from Tanzania affirms this finding (Roberton et al. 2015).

5. **Decisions regarding CHWs' integration into the health sector depend on programme needs and context and require considerable debate**

Recently, there has been a debate at the global and national levels about whether CHWs should be formally integrated workers in the health sector (Liu et al. 2011; Zulu et al. 2015; Zulu et al. 2014). Many Sub-Saharan African countries go into this direction[14], with guidance from the One Million CHW Campaign. This process is dependent upon political will and perceptions of relevant actors, including community members, on CHWs and CHW performance. Integration of CHWs as a formal cadre in the health sector requires accommodating CHWs' voices and rights through regulatory frameworks, career paths and worker associations (which are rarely found for any CHWs worldwide). The question whether to promote the integration of CHWs into the health sector is also attached to the unavoidable remuneration question: when can CHWs be volunteers and when is remuneration advisable? To be able to answer this difficult question, it is important to consider how remuneration would interact with or affect other programmatic and contextual factors.

a. *When CHWs have multiple workloads, remuneration could be considered, while assuring that their connection to communities remains strong*

Our findings support remuneration of CHWs when they have multiple tasks that require substantial time investments. Financial incentives need to be distributed in an equitable and reliable way (Strachan et al. 2012) to avoid mistrust between actors in the health system, as shown in the Malawi case study. Payment of CHWs is an essential motivator, as it contributes to meeting the basic needs for CHWs and their families, who often live in poor areas. However, philosophical considerations and financial realities can be the reasons for programmes not to pay (Cherrington et al. 2010). Some scholars argue that

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[14] Often aiming for a mix of paid and voluntary CHWs.

paid CHWs feel more answerable to the organization they are working for than to their communities, which could lead to mistrust and negative effects on CHW performance (Cherrington et al. 2010; Glenton et al. 2010; Maes 2014). In this case, hardware elements would have an unintended effect on software elements. On the one hand, payment of CHWs would lead to improved CHW motivation; on the other hand, it could lead to an increased distance between CHWs and communities. Both have contradicting effects on CHW performance. Innovative strategies that keep paid CHWs connected to their communities could be developed, and supervision and performance appraisal (with roles of both the health sector and communities) could be organized in such a way that they explicitly capture CHWs' capacity to facilitate community agency.

> **b. When CHWs work part-time and on a limited set of tasks, voluntary CHW programmes could be appropriate, if incentives are responsive to CHWs' realities**

Programmes that include voluntary, part-time CHWs with limited tasks have shown positive effects, especially in engaging the community in grass-roots health-related empowerment (Singh et al. 2015). The history and value of volunteerism has been identified as an important contextual factor influencing CHW performance. CHWs can have different reasons to volunteer, such as gaining social respect, religious and moral duty (Glenton et al. 2010), altruistic concerns for others, the desire not to be unemployed and (future) career advancement possibilities (Akintola 2010a; Akintola 2010b). However, a recent study showed ambivalence in motivation: uncertainty in achieving basic food security and improved socioeconomic status for themselves and their families made voluntary CHWs in Ethiopia request for remuneration (Maes 2012). Thus, the socio-economic, cultural and religious context can shape CHWs' expectations about incentives. Voluntary CHW programmes could make use of the contextual factors driving volunteerism, but at the same time ensure the incentives are responsive to this context.

> **c. Both paid and voluntary CHW programmes require serious investments**

Task-shifting to (often paid) CHWs requires further training, increased supervision and incentives (Ochieng et al. 2014; Sander et al. 2015; Zachariah et al. 2009). The challenge of voluntary CHW programmes is drop-out and, in the long term, maintaining sustainability. High turnover rates can result in extra costs to the programme, as CHWs need to be replaced and trained. Drop-out can (partly) be prevented by providing non-financial incentives, such as training (Haile, Yemane, and Gebreslassie 2014), materials such as bicycles, preferred access to health care services and recognition via "CHW days" or identity cards (Amare 2011; MCHIP 2014). When new tasks are added to the voluntary

CHWs' job, the cost benefit trade-off of volunteering may shift, and therefore workload assessment and re-evaluation of support and funding are advisable to avoid attrition (Kasteng et al. 2015). Whether voluntary or paid, CHW programmes require substantial financial investments for training, equipping and supporting CHWs (Daniels et al. 2014). The huge variety in possible incentives makes the division between paid and voluntary programmes less defined (Bhattacharyya et al. 2001) and perhaps unimportant, as programmes would offer (either financial or non-financial) incentives according to programme needs and context.

9.4 Research strengths and limitations

A major strength of this research is the combination of methods, which were chosen based on their suitability to answer the study questions. The order in which they were employed allowed each study to build on understanding gained in previous studies. The qualitative research synthesis provided insight into the variety of factors that could influence CHW performance in different contexts from around the globe. This insight was used in the development of the country case studies which were conducted using harmonized methods. The notion that relationships were instrumental for optimizing the benefits of CHWs' unique intermediary position between communities and the health sector, but were understudied, brought focus to the empirical component of the research. The multiple case study provided a suitable approach for exploring how relationships between CHWs, their communities and actors in the health sector were shaped and which mechanisms, in which contexts, triggered change in CHW performance. The wide variety of study participants provided good insight into different perspectives.

Another strength is that for the full duration of the research period, a group of researchers from various disciplines and countries were involved. This brought in different perspectives which enriched the research process, from study development to data analysis. At the country level, experienced data collectors who were familiar with the context conducted the field work and also participated in data analysis sessions. The experience of some of the researchers, including the PhD candidate, in district-level CHW programming added value to the analysis. In most study areas, findings were fed back to study participants. In addition, policy makers and programme managers played a role in validation of research findings. The research provided input into the development of quality improvement interventions in areas where the research was conducted.

The qualitative research synthesis was undertaken to unravel which factors influence CHW performance, and "why" and "how" they do so. This goal was only partially reached, because studies often lacked "thick descriptions" (Ceertz 1973). On the one hand, the inclusion of both qualitative and quantitative studies was a strength, as it allowed for studying CHW performance from all angles. On the other hand, including different study

types in research syntheses poses challenges in terms of both content and quality assessment (Mays, Pope, and Popay 2005), something that we also encountered. Inclusion of studies was decided using criteria related to the content of the study as captured in a data extraction form. The studies were also assessed on quality using an adjusted version of an existing tool containing general quality criteria in relation to both qualitative and quantitative research (see Chapter 4 and 5). However, study quality was not used as a reason for excluding studies. It also turned out to be not feasible to use the conducted quality assessment for weighing study results in the synthesis, as studies highly varied with regard to the influencing factors and characteristics of CHW performance they studied, making comparison between studies and decisions on their "weight" difficult. The researchers involved in data extraction reached a common understanding on how to apply content- and quality-related criteria before the process started by discussing some studies together. Further transparency about decisions made was safeguarded by double reading and joint analysis. Notwithstanding the above, the analysis remained an interpretive process in which full objectivity is never possible.

The qualitative research synthesis provided a wealth of data on CHW performance and offered different directions for further analysis. The choice to focus on relationships, and in particular the role of trust, was made by the research team based on data derived from the literature combined with the main emerging themes from the four country qualitative data sets. The choice was also informed by work of other scholars on the same topic, but which looked at different types of health workers (Gilson 2003; Hall et al. 2001). It is important to note that other aspects of relationships, such as commitment, communication and influence, could be important influencers of CHW performance as well. The questions posed regarding participants' views on factors influencing CHW performance were open ended (although probing was done on mainly hardware elements such as supervision and training), and in different contexts, the issues of relationships and trust were brought forward by different types of participants, suggesting these software elements were found to be important.

The fact that only one of the software elements was researched in-depth poses limitations to the framework as presented in Figure 9.1. The complexity of CHW performance did not allow the research team to study all the aspects presented in the adjusted framework. As such, we did not aim to present a complete theory on CHW performance, but rather to capture evidence derived from both the theoretical and empirical components of the conducted research. The framework stresses the importance of software elements besides hardware elements, something that turned out to be instrumental for CHW performance. It is important to further test this framework.

While the qualitative research synthesis covered the whole globe, the case studies were focused on Sub-Saharan Africa and only included CHW programmes in which CHWs had multiple tasks. The perspective of CHW performance as a social process stresses the

importance of the context, and therefore findings from one setting cannot be automatically valid in other settings as well. Having said this, we have been able to identify factors that influence CHW performance across different settings, supporting transferability of research findings.

9.5 Recommendations for further research

The research presented in this thesis opens up a range of questions for additional research that would further test the adjusted framework on CHW performance. It also raises issues regarding the way in which research is conducted.

Part of this thesis has shown the dearth of research on the software elements of the health system in general and of CHW programmes and interventions in particular. There is a need to better understand how ideas and interest, relationships and power, values and norms of actors in the health system positively or negatively affect CHW performance, or act as facilitators or pose limitations to the programme as a whole. It is also important to find out how interventions can be shaped to increase common understanding, improve relationships and balance power between different actors. Our study did not find many mechanisms related to feelings or behaviours of actors in the health sector that led to trusting relationships between them and CHWs. This could be an interesting topic for further research, to input into the development of interventions that stimulate trust between CHWs and actors in the health sector. In addition, programme designs facilitating community involvement in CHW programmes need to be further explored. Specifically, community accountability is an under-researched topic. The effects and functionality of different community accountability modalities need further study. There is also a need to shed more light on how the role of CHWs in facilitating community agency can be strengthened, and what implications this has for the design of interventions. In addition, it would be interesting to evaluate whether programmes that are designed with input from CHWs and community representatives are better tailored to the realities and needs of communities than programmes that are designed in a more top-down way.

With regard to the CHW programmes' hardware elements, in many instances the "how" and "why" questions have not been fully answered. These "how" and "why" questions are closely related to the software elements. There is a need for studies that compare the effects of and experiences with different modalities of, for example, supervision as well as studies that compare similar modalities in different contexts. This would yield evidence on specific pathways that could improve CHW performance. The influence of context on CHW and programme performance has been explored in this thesis, but many research gaps remain. For example, the political context can shape relationships between the government, health sector and communities, which can influence CHW programme design and performance. Future research needs to focus on different characteristics of CHW

performance, so that CHW performance in totality can be better understood. At the moment, motivation is often included as a measured or self-reported outcome. Attention to other outcome measures, such as competencies or self-esteem (presumably much more complex) is needed, preferably combined with outcomes at the level of the end-users or impact. However, it remains challenging to attribute measured impact to CHW performance, because of the complexity of factors influencing it.

The above calls for research methodologies that are suitable for studying complexity. As CHW performance is a complex social process, and is the sum of different characteristics of performance that all vary in nature and change over time, it could be best researched using multiple methods. Quantitative studies that could measure certain performance-related outcomes should ideally be combined with qualitative studies, to be able to explain "how" and "why" things work or do not work, for who and in which contexts. Although there is an increasing body of literature on factors influencing CHW motivation, there is still a lack of research that gains in-depth insight in the realities of the lives of CHWs and the communities they serve (Gilson et al. 2011; Maes 2014).

A suitable knowledge paradigm for researching CHW performance is the critical realist paradigm, which can be placed in the spectrum between positivism and relativism (Gilson et al. 2011). Critical realism locates causal relationships not at the level of events (where scientists observe the relationship between cause and effect and impose a meaning), but at the level of non-linear generative mechanisms that continuously interact with each other. It argues that this complex world of things and contingent tendencies constitutes the object of on-going scientific investigation (Harvey 2002). In addition, it argues that society is both the condition and the outcome of human agency, and human agency is both the production and re-production (or transformation) of society (Bhaskar 2009). Causal mechanisms are believed to reside in social relations and contexts as much as in individuals (Marchal et al. 2012). This makes critical realism a suitable knowledge paradigm for health policy and systems research, and studying CHW programmes in particular. It is important to measure CHW performance, but at the same time understand how this performance was reached.

CHW programmes have elements that could be researched through observation and measurement (hardware elements), but these elements are constructed and brought alive by actors through the meaning they attach to (their interpretation of) experiences (the software, see Figure 9.1) (Gilson et al. 2011; Sheikh et al. 2011). This resonates with the recent call regarding the importance of people-centred health systems and thus people-centred science, that takes into account that systems thrive on mutual trust, dialogue and reciprocity, and their effectiveness correlates with the strengths and nature of the relationships between all health systems actors (Sheikh et al. 2014b). When the research community complements questioning how things work from the sole viewpoint of the health sector with listening to the voices of CHWs and communities, we would be better

able to identify the mechanisms that can lead to improved CHW performance. Then, the benefit of CHWs' unique position between communities and the health sector could be optimized, and their role in achieving universal health coverage enhanced.

References

Abbott, L. and N. Luke. 2011. "Local Hierarchies and Distributor (Non) Compliance: A Case Study of Community-Based Distribution in Rural North India." *Health care for women international* 32(3): 225-42.

Abelson, J., F. A. Miller, and M. Giacomini. 2009. "What does it mean to trust a health system?: A qualitative study of Canadian health care values." *Health Policy* 91(1): 63-70.

Abimbola, S., S. K. Molemodile, O. A. Okonkwo, J. Negin, S. Jan, and A. L. Martiniuk. 2015. "'The government cannot do it all alone': realist analysis of the minutes of community health committee meetings in Nigeria." *Health policy and planning*: czv066.

Admassie, A., D. Abebaw, and A. D. Woldemichael. 2009. "Impact evaluation of the Ethiopian Health Services Extension Programme." *Journal of development effectiveness* 1(4): 430-49.

Agrawal, P. K., S. Agrawal, S. Ahmed, G. L. Darmstadt, E. K. Williams, H. E. Rosen, V. Kumar, U. Kiran, R. C. Ahuja, V. K. Srivastava, M. Santosham, R. E. Black, and A. H. Baqui. 2012. "Effect of knowledge of community health workers on essential newborn health care: a study from rural India." *Health Policy Plan* 27(2): 115-26.

Ahmed, S. M. 2008. "Taking health care where the community is: the story of the Shasthya Sebikas of BRAC in Bangladesh." *BRAC University Journal* V(1): 39-45.

Ajayi, I. O., C. O. Falade, B. O. Olley, B. Yusuf, S. Gbotosho, T. Iyiola, O. Olaniyan, C. Happi, K. Munguti, and F. Pagnoni. 2008. "A qualitative study of the feasibility and community perception on the effectiveness of artemether-lumefantrine use in the context of home management of malaria in south-west Nigeria." *BMC Health Serv Res* 8: 119.

Akintola, O. 2010a. "Perceptions of rewards among volunteer caregivers of people living with AIDS working in faith-based organizations in South Africa: a qualitative study." *Journal of the International AIDS Society* 13(1): 22.

Akintola, O. 2010b. "What motivates people to volunteer? The case of volunteer AIDS caregivers in faith-based organizations in KwaZulu-Natal, South Africa." *Health policy and planning*: czq019.

Alam, K., S. Tasneem, and E. Oliveras. 2012a. "Performance of female volunteer community health workers in Dhaka urban slums." *Social Science and Medicine* 75(3): 511-15.

Alam, K., S. Tasneem, and E. Oliveras. 2012b. "Retention of female volunteer community health workers in Dhaka urban slums: a case-control study." *Health Policy Plan* 27(6): 477-86.

Alamo, S., F. Wabwire-Mangen, E. Kenneth, P. Sunday, M. Laga, and R. L. Colebunders. 2012. "Task-shifting to community health workers: Evaluation of the performance of a peer-led model in an antiretroviral program in Uganda." *AIDS Patient Care and STDs* 26(2): 101-07.

Albrecht, S. and A. Travaglione. 2003. "Trust in public-sector senior management." *International Journal of Human Resource Management* 14(1): 76-92.

Alcock, G. A., N. S. More, S. Patil, M. Porel, L. Vaidya, and D. Osrin. 2009. "Community-based health programmes: role perceptions and experiences of female peer facilitators in Mumbai's urban slums." *Health Educ Res* 24(6): 957-66.

Amare, Y. 2011. "Non-financial incentives for voluntary community health workers: a qualitative study. Working Paper No. 2." The Last Ten Kilometers Project, JSI Research & Training Institute, Inc., Addis Ababa, Ethiopia.

Arem, H., N. Nakyanjo, J. Kagaayi, J. Mulamba, G. Nakigozi, D. Serwadda, T. C. Quinn, R. H. Gray, R. C. Bollinger, S. J. Reynolds, and L. W. Chang. 2011. "Peer health workers and AIDS care in Rakai, Uganda: a mixed methods operations research evaluation of a cluster-randomized trial." *AIDS Patient Care STDS* 25(12): 719-24.

Ashwell, H. E. and L. Barclay. 2009. "Outcome evaluation of community health promotion intervention within a donor funded project climate in Papua New Guinea." *Rural Remote Health* 9(4): 1219.

Atkinson, J. A., A. Vallely, L. Fitzgerald, M. Whittaker, and M. Tanner. 2011. "The architecture and effect of participation: A systematic review of community participation for communicable disease control and elimination. Implications for malaria elimination." *Malaria Journal* 10: 225.

Azad, K., S. Barnett, B. Banerjee, S. Shaha, K. Khan, A. R. Rego, S. Barua, D. Flatman, C. Pagel, A. Prost, M. Ellis, and A. Costello. 2010. "Effect of scaling up women's groups on birth outcomes in three rural districts in Bangladesh: a cluster-randomised controlled trial." *Lancet* 375(9721): 1193-202.

Banteyerga, H. 2011. "Ethiopia's health extension program: improving health through community involvement." *MEDICC review* 13(3): 46-49.

Baqui, A. H., S. Ahmed, S. El Arifeen, G. L. Darmstadt, A. M. Rosecrans, I. Mannan, S. M. Rahman, N. Begum, A. B. Mahmud, H. R. Seraji, E. K. Williams, P. J. Winch, M. Santosham, and R. E. Black. 2009a. "Effect of timing of first postnatal care home visit on neonatal mortality in Bangladesh: a observational cohort study." *BMJ* 339: b2826.

Baqui, A. H., S. E. Arifeen, H. E. Rosen, I. Mannan, S. M. Rahman, A. B. Al-Mahmud, D. Hossain, M. K. Das, N. Begum, S. Ahmed, M. Santosham, R. E. Black, and G. L. Darmstadt. 2009b. "Community-based validation of assessment of newborn illnesses by trained community health workers in Sylhet district of Bangladesh." *Trop Med Int Health* 14(12): 1448-56.

Baqui, A. H., S. E. Arifeen, E. K. Williams, S. Ahmed, I. Mannan, S. M. Rahman, N. Begum, H. R. Seraji, P. J. Winch, M. Santosham, R. E. Black, and G. L. Darmstadt. 2009c. "Effectiveness

of home-based management of newborn infections by community health workers in rural Bangladesh." *Pediatr Infect Dis J* 28(4): 304-10.

Baqui, A. H., S. El-Arifeen, G. L. Darmstadt, S. Ahmed, and E. K. Williams. 2008. "Effect of community-based newborn-care intervention package implemented through two service-delivery strategies in Sylhet district, Bangladesh: A cluster-randomised controlled trial." *Lancet* 371(9628): 1936-44.

Barros, A. J. D., C. Ronsmans, H. Axelson, E. Loaiza, A. D. Bertoldi, G. V. A. França, J. Bryce, J. T. Boerma, and C. G. Victora. 2012. "Equity in maternal, newborn, and child health interventions in Countdown to 2015: a retrospective review of survey data from 54 countries." *The Lancet* 379(9822): 1225-33.

Bartos, A., A. Tenorio, R. Saunero, J. Sinani, L. Lafuente, and F. Gutierrez. 2009. "Extending the duration of exclusive breastfeeding in El Alto, Bolivia through a community-based approach and the provision of health services." Child Health and Nutrition Research Initiative (CHNRI).

Behdjat, H., S. B. Rifkin, E. Tarin, and M. R. Sheikh. 2009. "A new role for Women Health Volunteers in urban Islamic Republic of Iran." *East Mediterr Health J* 15(5): 1164-73.

Bemelmans, M., T. Van Den Akker, N. Ford, R. Zachariah, A. Harries, E. Schouten, K. Hermann, B. Mwagomba, and M. Massaquoi. 2010. "Providing universal access to antiretroviral therapy in Thyolo, Malawi through task shifting and decentralization of HIV/AIDS care." *Tropical Medicine & International Health* 15(12): 1413-20.

Bhaskar, R. 2009. *Plato Etc: Problems of Philosophy and Their Resolution*. London, United Kingdom: Routledge.

Bhattacharyya, K., P. Winch, K. LeBan, and M. Tien. 2001. "Community health worker incentives and disincentives: how they affect motivation, retention, and sustainability." Arlington, Virginia: Basic Support for Institutionalizing Child Survival Project (BASICS II) for USAID.

Bhattacharyya, O. K., E. A. Estey, and M. Zwarenstein. 2011. "Methodologies to evaluate the effectiveness of knowledge translation interventions: a primer for researchers and health care managers." *Journal of clinical epidemiology* 64(1): 32-40.

Bhutta, Z. A., Z. S. Lassi, G. Pariyo, and L. Huicho. 2010. "Global experience of community health workers for delivery of health-related Millennium Development Goals: a systematic review, country case studies and recommendations for scaling up." Geneva, Switzerland: Global Health Workforce Alliance.

Bhutta, Z. A., Z. A. Memon, S. Soofi, M. S. Salat, S. Cousens, and J. Martines. 2008. "Implementing community-based perinatal care: results from a pilot study in rural Pakistan." *Bulletin of the World Health Organization* 86: 452-9.

Bhutta, Z. A., S. Soofi, S. Cousens, S. Mohammad, Z. A. Memon, I. Ali, A. Feroze, F. Raza, A. Khan, S. Wall, and J. Martines. 2011. "Improvement of perinatal and newborn care in rural Pakistan through community-based strategies: a cluster-randomised effectiveness trial." *Lancet* 377(9763): 403-12.

Bilal, N. K., C. H. Herbst, F. Zhao, A. Soucat, and C. Lemiere. 2011. "Health extension workers in Ethiopia: Improved access and coverage for the rural poor." In *Yes Africa Can: Success Stories from a Dynamic Continent*, edited by P. Chuhan-Pole and M. Angwafo, pp. 433-43. Washington D.C., USA: The World Bank.

Birhanu, Z., A. Godesso, Y. Kebede, and M. Gerbaba. 2013. "Mothers' experiences and satisfactions with health extension program in Jimma zone, Ethiopia: a cross sectional study." *BMC Health Serv Res* 13(1): 74.

Bisimwa, G., T. Mambo, P. Mitangala, C. Schirvel, D. Porignon, M. Dramaix, and P. Donnen. 2009. "Nutritional monitoring of preschool-age children by community volunteers during armed conflict in the Democratic Republic of the Congo." *Food and Nutrition Bulletin* 30(2): 120-27.

Björkman, M. and J. Svensson. 2009. "Power to the people: evidence from a randomized field experiment on a community-based monitoring project in Uganda." *The Quarterly Journal of Economics* 124(2): 735-69.

Bland, R. M., K. E. Little, H. M. Coovadia, A. Coutsoudis, and N. C. Rollins. 2008. "Intervention to promote exclusive breast-feeding for the first 6 months of life in a high HIV prevalence area." *AIDS* 22(7): 883-91.

Bloom, G. and H. Standing. 2001. "Pluralism and marketisation in the health sector: meeting health needs in contexts of social change in low and middle income countries." *Institüte of Development Studies-University of Sussex (IDS Working Papers No. 136)*: 15-56.

Bosch-Capblanch, X., S. Liaqat, and P. Garner. 2011. "Managerial supervision to improve primary health care in low- and middle-income countries." *Cochrane Database of Systematic Reviews* 9: CD006413.

Brenner, J. L., J. Kabakyenga, T. Kyomuhangi, K. A. Wotton, C. Pim, M. Ntaro, F. N. Bagenda, N. R. Gad, J. Godel, J. Kayizzi, D. McMillan, E. Mulogo, A. Nettel-Aguirre, and N. Singhal. 2011. "Can volunteer community health workers decrease child morbidity and mortality in southwestern Uganda? An impact evaluation." *PLoS ONE* 6(12): e27997-e97.

Burn, H. 2008. "Attrition of female health workers: An insight into the reasons why Lady Health Workers resign from Pakistan's National Programme for Family Planning and Primary Health Care." Leeds, UK: University of Leeds.

Byrne, A. and A. Morgan. 2011. "How the integration of traditional birth attendants with formal health systems can increase skilled birth attendance." *International Journal of Gynecology and Obstetrics* 115(2): 127-34.

Callaghan-Koru, J. A., K. Gilroy, A. A. Hyder, A. George, H. Nsona, A. Mtimuni, B. Zakeyo, J. Mayani, C. Cardemil, and J. Bryce. 2013. "Health systems supports for community case management of childhood illness: lessons from an assessment of early implementation in Malawi." *BMC Health Serv Res* 13(1): 55.

Callaghan-Koru, J. A., A. A. Hyder, A. George, K. E. Gilroy, H. Nsona, A. Mtimuni, and J. Bryce. 2012. "Health workers' and managers' perceptions of the integrated community case management program for childhood illness in Malawi: the importance of expanding access to child health services." *Am J Trop Med Hyg* 87(5 Suppl): 61-8.

Calnan, M. and R. Rowe. 2007. "Trust and health care." *Sociology Compass* 1(1): 283-308.

Campbell, C., A. Gibbs, S. Maimane, and Y. Nair. 2008. "Hearing community voices: Grassroots perceptions of an intervention to support health volunteers in South Africa." *Sahara J* 5(4): 162-77.

Campbell, C. and K. Scott. 2011. "Retreat from Alma Ata? The WHO's report on Task Shifting to community health workers for AIDS care in poor countries." *Glob Public Health* 6(2): 125-38.

Campbell, J., J. Buchan, G. Cometto, B. David, G. Dussault, H. Fogstad, I. Fronteira, R. Lozano, F. Nyonator, and A. Pablos-Méndez. 2013. "Human resources for health and universal health coverage: fostering equity and effective coverage." *Bulletin of the World Health Organization* 91(11): 853-63.

Campbell, N., E. Schiffer, A. Buxbaum, E. McLean, C. Perry, and T. M. Sullivan. 2014. "Taking knowledge for health the extra mile: participatory evaluation of a mobile phone intervention for community health workers in Malawi." *Global Health: Science and Practice* 2(1): 23-34.

CASP. 2015. "Critical Appraisal Skills Programme. Making sense of evidence about clinical effectiveness" [accessed on 24 Aug, 2015]. Available at: http://media.wix.com/ugd/dded87_29c5b002d99342f788c6ac670e49f274.pdf.

Ceertz, C. 1973. "Thick Description; Toward an Interpretive Theory of Culture." *The interpretation of cultures*: 3-30.

Celletti, F., A. Wright, J. Palen, S. Frehywot, A. Markus, A. Greenberg, R. A. de Aguiar, F. Campos, E. Buch, and B. Samb. 2010. "Can the deployment of community health workers for the delivery of HIV services represent an effective and sustainable response to health workforce shortages? Results of a multicountry study." *AIDS* 24 Suppl 1: S45-57.

Chanda, P., B. Hamainza, H. B. Moonga, V. Chalwe, and F. Pagnoni. 2011. "Community case management of malaria using ACT and RDT in two districts in Zambia: Achieving high adherence to test results using community health workers." *Malaria Journal* 10: 158.

Chang, L. W., J. Kagaayi, H. Arem, G. Nakigozi, V. Ssempijja, D. Serwadda, T. C. Quinn, R. H. Gray, R. C. Bollinger, and S. J. Reynolds. 2011. "Impact of a mHealth intervention for peer health workers on AIDS care in rural Uganda: a mixed methods evaluation of a cluster-randomized trial." *AIDS Behav* 15(8): 1776-84.

Charmaz, K. 2014. *Constructing grounded theory - 2nd edition*. London, UK: Sage Publications Ltd.

Chen, L., T. Evans, S. Anand, J. I. Boufford, H. Brown, M. Chowdhury, M. Cueto, L. Dare, G. Dussault, and G. Elzinga. 2004. "Human resources for health: overcoming the crisis." *The Lancet* 364(9449): 1984-90.

Chen, S. C., J. D. Wang, A. L. Ward, C. C. Chan, P. C. Chen, H. C. Chiang, R. Kolola-Dzimadzi, Y. M. Nyasulu, and J. K. Yu. 2011. "The effectiveness of continuing training for traditional birth attendants on their reproductive health-care knowledge and performance." *Midwifery* 27(5): 648-53.

Cherrington, A., G. X. Ayala, J. P. Elder, E. M. Arredondo, M. Fouad, and I. Scarinci. 2010. "Recognizing the diverse roles of community health workers in the elimination of health disparities: from paid staff to volunteers." *Ethnicity & disease* 20(2): 189.

Chibanda, D., P. Mesu, L. Kajawu, F. Cowan, R. Araya, and M. A. Abas. 2011. "Problem-solving therapy for depression and common mental disorders in Zimbabwe: piloting a task-shifting primary mental health care intervention in a population with a high prevalence of people living with HIV." *BMC Public Health* 11: 828.

Chopra, M., S. Munro, J. N. Lavis, G. Vist, and S. Bennett. 2008. "Effects of policy options for human resources for health: an analysis of systematic reviews." *Lancet* 371(9613): 668-74.

Church, K. and S. H. Mayhew. 2009. "Integration of STI and HIV prevention, care, and treatment into family planning services: a review of the literature." *Stud Fam Plann* 40(3): 171-86.

CNHDE. 2011. "Ethiopian Health Extension Program Evaluation Study, 2007-2010, Volume-II. Health post and HEWs performance Survey." Addis Ababa, Ethiopia: Center for National Health Development, Ethiopia; The Earth Institute at Columbia University, USA.

Cometto, G. and S. Witter. 2013. "Tackling health workforce challenges to universal health coverage: setting targets and measuring progress." *Bulletin of the World Health Organization* 91(11): 881-85.

Corbett, E., T. Guenther, and D. Sitrin. 2013. "Facilitated referral for newborns with danger signs: the role of community health workers." London, UK: Save the Children.

Cornman, D. H., S. Christie, L. M. Shepherd, S. MacDonald, K. R. Amico, L. R. Smith, P. A. Shuper, A. Adelaja, G. Mahlase, J. A. Frohlich, S. Pillay, U. G. Lalloo, W. A. Fisher, and J. D. Fisher. 2011. "Counsellor-delivered HIV risk reduction intervention addresses safer sex barriers of people living with HIV in KwaZulu-Natal, South Africa." *Psychology and Health* 26(12): 1623-41.

Counihan, H., S. A. Harvey, M. Sekeseke-Chinyama, B. Hamainza, R. Banda, T. Malambo, F. Masaninga, and D. Bell. 2012. "Community health workers use malaria rapid diagnostic tests (RDTs) safely and accurately: results of a longitudinal study in Zambia." *Am J Trop Med Hyg* 87(1): 57-63.

Crigler, L., K. Hill, R. Furth, and D. Bjerregaard. 2011. "Community Health Worker Assessment and Improvement Matrix (CHW AIM): a toolkit for improving CHW programs and services." USAID Health Care Improvement Project. Bethesda, MD: University Research Co., LLC (URC).

Crispin, N., A. Wamae, M. Ndirangu, D. Wamalwa, G. Wangalwa, P. Watako, and E. Mbiti. 2012. "Effects of selected socio-demographic characteristics of community health workers on performance of home visits during pregnancy: a cross-sectional study in Busia District, Kenya." *Global journal of health science* 4(5): 78-90.

CSA. 2012. "Ethiopia demographic and health survey 2011." Addis Ababa, Ethiopia and Calverton, Maryland, USA: Central Statistical Agency Ethiopia and ICF International.

CSA. 2014. "Ethiopia Mini Demographic and Health Survey 2014." Addis Ababa, Ethiopia: Central Statistical Agency.

Cueto, M. 2004. "The origins of primary health care and selective primary health care." *American Journal of Public Health* 94(11): 1864-74.

Dambisya, Y. M. and S. Matinhure. 2012. "Policy and programmatic implications of task shifting in Uganda: a case study." *BMC Health Serv Res* 12: 61.

Daniels, K., M. Clarke, and K. C. Ringsberg. 2012. "Developing lay health worker policy in South Africa: a qualitative study." *Health Res Policy Syst* 10: 8.

Daniels, K., B. Nor, D. Jackson, E. Ekstrom, and T. Doherty. 2010. "Supervision of community peer counsellors for infant feeding in South Africa: an exploratory qualitative study." *Human Resources for Health* 8(6).

Daniels, K., W. A. Odendaal, L. Nkonki, C. Hongoro, C. J. Colvin, and S. Lewin. 2014. "Incentives for lay health workers to improve recruitment, retention in service and performance." *The Cochrane Library*(7).

Darmstadt, G. L., S. El Arifeen, Y. Choi, S. Bari, S. M. Rahman, I. Mannan, P. J. Winch, A. S. Ahmed, H. R. Seraji, N. Begum, R. E. Black, M. Santosham, and A. H. Baqui. 2010. "Household surveillance of severe neonatal illness by community health workers in Mirzapur, Bangladesh: coverage and compliance with referral." *Health Policy Plan* 25(2): 112-24.

Das, L. K., P. Jambulingam, and C. Sadanandane. 2008. "Impact of community-based presumptive chloroquine treatment of fever cases on malaria morbidity and mortality in a tribal area in Orissa State, India." *Malar J* 7: 75.

Dawad, S. and G. Jobson. 2011. "Community-based rehabilitation programme as a model for task-shifting." *Disability and rehabilitation* 33(21-22): 1997-2005.

Dawson, P., Y. Pradhan, R. Houston, S. Karki, D. Poudel, and S. Hodgins. 2008. "From research to national expansion: 20 years' experience of community-based management of childhood pneumonia in Nepal." *Bull World Health Organ* 86(5): 339-43.

DCHS. 2013. "CHEWs new roles." Nairobi, Kenya: Division of Community Health Services.

De Brouwere, V., T. Dieng, M. Diadhiou, S. Witter, and E. Denerville. 2009. "Task shifting for emergency obstetric surgery in district hospitals in Senegal." *Reprod Health Matters* 17(33): 32-44.

De Savigny, D. and T. Adam. 2009. *Systems thinking for health systems strengthening*. Geneva, Switzerland: World Health Organization.

Dewing, S., C. Mathews, N. Schaay, A. Cloete, J. Louw, and L. Simbayi. 2012. "Behaviour change counselling for ARV adherence support within primary health care facilities in the Western Cape, South Africa." *AIDS and behavior* 16(5): 1286-94.

Diakite, O., D. R. Keita, and W. Mwebesa. 2009. "Village health committees drive family planning uptake communities play lead role in increased acceptability, availability." Washington D.C., USA: CORE Group.

Dick, J., M. Clarke, H. Zyl, and K. Daniels. 2007. "Primary health care nurses implement and evaluate a community outreach approach to health care in the South African agricultural sector." *International nursing review* 54: 383-90.

Dil, Y., D. Strachan, S. Cairncross, A. S. Korkor, and Z. Hill. 2012. "Motivations and challenges of community-based surveillance volunteers in the northern region of Ghana." *Journal of Community Health* 37(6): 1192-98.

Dixon-Woods, M. 2011. "Using framework-based synthesis for conducting reviews of qualitative studies." *BMC medicine* 9(1): 39.

Dynes, M., S. T. Buffington, M. Carpenter, A. Handley, M. Kelley, L. Tadesse, H. T. Beyene, and L. Sibley. 2013. "Strengthening maternal and newborn health in rural Ethiopia: early results from frontline health worker community maternal and newborn health training." *Midwifery* 29(3): 251-9.

Dynes, M. M., C. Hadley, R. Stephenson, and L. M. Sibley. 2014a. "A network study exploring factors that promote or erode interaction among diverse community health workers in rural Ethiopia." *Health policy and planning*: 1-12 doi:10.1093/heapol/czu113.

Dynes, M. M., R. Stephenson, C. Hadley, and L. M. Sibley. 2014b. "Factors shaping interactions among community health workers in rural Ethiopia: Rethinking workplace trust and teamwork." *Journal of Midwifery & Women's Health* 59(s1): S32-S43.

Earth_Institute. 2012. "One million community health workers. Technical task force report." USA: The Earth Institute Columbia University.

Edward, A., P. Ernst, C. Taylor, S. Becker, E. Mazive, and H. Perry. 2007. "Examining the evidence of under-five mortality reduction in a community-based programme in Gaza, Mozambique." *Transactions of the Royal Society of Tropical Medicine and Hygiene* 101(8): 814-22.

Elmardi, K. A., E. M. Malik, T. Abdelgadir, S. H. Ali, A. H. Elsyed, M. A. Mudather, A. H. Elhassan, and I. Adam. 2009. "Feasibility and acceptability of home-based management of malaria strategy adapted to Sudan's conditions using artemisinin-based combination therapy and rapid diagnostic test." *Malaria Journal* 8: 39.

ERT1. 2012. "Final report of evidence review team 1. Which community support activities improve the performance of community health workers?". U.S. Government Evidence Summit: Community and Formal Health System Support for Enhanced Community Health Worker Performance.

ERT2. 2012. "Final report of evidence review team 2. Which formal health system support activities improve the performance of community health workers?". U.S. Government Evidence Summit: Community and Formal Health System Support for Enhanced Community Health Worker Performance.

ERT3. 2012. "Final report of evidence review team 3. Enhancing community health worker performance through combining community and health systems approaches." U.S. Government Evidence Summit: Community and Formal Health System Support for Enhanced Community Health Worker Performance.

Franco, L. M., S. Bennett, and R. Kanfer. 2002. "Health sector reform and public sector health worker motivation: a conceptual framework." *Social Science & Medicine* 54(8): 1255-66.

Frymus, D., M. Kok, K. d. Koning, and E. Quain. 2013. "Community Health Workers and Universal Health Coverage. Knowledge gaps and a need based Global Research agenda by 2015." Global Health Workforce Alliance.

Fullerton, J. T., R. M. Schneider, and A. Auruku. 2011. "Malawi Community Case Management Evaluation." Washington D.C., USA: USAID.

Fulton, B. D., R. M. Scheffler, S. P. Sparkes, E. Y. Auh, M. Vujicic, and A. Soucat. 2011. "Health workforce skill mix and task shifting in low income countries: a review of recent evidence." *Hum Resour Health* 9(1): 1.

Furth, R. and L. Crigler. 2012. "Improving CHW program functionality, performance, and engagement: operations research results from Zambia. Research and Evaluation Report." USAID Health Care Improvement Project. Bethesda MD: University Research Co., LLC (URC).

Garenne, M. L., R. Coninx, and C. Dupuy. 1997. "Effects of the civil war in central Mozambique and evaluation of the intervention of the International Committee of the Red Cross." *J Trop Pediatr* 43(6): 318-23.

Ge, C., J. Fu, Y. Chang, and L. Wang. 2011. "Factors associated with job satisfaction among Chinese community health workers: a cross-sectional study." *BMC Public Health* 11: 884.

Geertz, C. 1994. "Thick description: Toward an interpretive theory of culture." *Readings in the philosophy of social science*: 213-31.

GHWA. 2010. "Integrating community health workers in national health workforce plans." Geneva, Switzerland: Global Health Workforce Alliance.

GHWA. 2012. "Synthesis paper. Developed out of the outcomes of four consultations on Community Health Workers and other Frontline Health Workers." Geneva, Switzerland: Global Health Workforce Alliance.

Gidman, W., P. Ward, and L. McGregor. 2012. "Understanding public trust in services provided by community pharmacists relative to those provided by general practitioners: a qualitative study." *BMJ Open* 2(3): e000939.

Gill, C. J., N. G. Guerina, C. Mulenga, A. B. Knapp, G. Mazala, and D. H. Hamer. 2012. "Training Zambian traditional birth attendants to reduce neonatal mortality in the Lufwanyama Neonatal Survival Project (LUNESP)." *Int J Gynaecol Obstet* 118(1): 77-82.

Gill, C. J., G. Phiri-Mazala, N. G. Guerina, J. Kasimba, C. Mulenga, W. B. MacLeod, N. Waitolo, A. B. Knapp, M. Mirochnick, A. Mazimba, M. P. Fox, L. Sabin, P. Seidenberg, J. L. Simon, and D. H. Hamer. 2011. "Effect of training traditional birth attendants on neonatal mortality (Lufwanyama Neonatal Survival Project): randomised controlled study." *BMJ* 342: d346 doi:10.1136/bmj.d346

Gilmore, B. and E. McAuliffe. 2013. "Effectiveness of community health workers delivering preventive interventions for maternal and child health in low-and middle-income countries: a systematic review." *BMC Public Health* 13(1): 1-14.

Gilroy, K. E., J. A. Callaghan-Koru, C. V. Cardemil, H. Nsona, A. Amouzou, A. Mtimuni, B. Daelmans, L. Mgalula, and J. Bryce. 2012. "Quality of sick child care delivered by Health Surveillance Assistants in Malawi." *Health Policy Plan* 28: 573-85.

Gilson, L. 2003. "Trust and the development of health care as a social institution." *Social Science & Medicine* 56(7): 1453-68.

Gilson, L. 2006. "Trust in health care: theoretical perspectives and research needs." *Journal of health organization and management* 20(5): 359-75.

Gilson, L. 2014. "Qualitative research synthesis for health policy analysis: what does it entail and what does it offer?" *Health policy and planning* 29(suppl 3): iii1-iii5.

Gilson, L., K. Hanson, K. Sheikh, I. A. Agyepong, F. Ssengooba, and S. Bennett. 2011. "Building the field of health policy and systems research: social science matters." *PLoS Med* 8(8): e1001079.

Gilson, L., N. Palmer, and H. Schneider. 2005. "Trust and health worker performance: exploring a conceptual framework using South African evidence." *Social Science & Medicine* 61(7): 1418-29.

Give, C., M. Sidat, H. Ormel, S. Ndima, R. McCollum, and M. Taegtmeyer. 2015. "Exploring competing experiences and expectations of the revitalized community health worker programme in Mozambique: an equity analysis." *Human Resources for Health* 13:54.

Glenton, C., C. C.J., B. Carlsen, A. Swartz, S. Lewin, J. Noyes, and A. Rashidian. 2013. "Barriers and facilitators to the implementation of lay health worker programmes to improve access to maternal and child health: qualitative evidence synthesis." *Cochrane Database of Systematic Reviews* 10: CD010414.

Glenton, C., I. B. Scheel, S. Pradhan, S. Lewin, S. Hodgins, and V. Shrestha. 2010. "The female community health volunteer programme in Nepal: decision makers' perceptions of volunteerism, payment and other incentives." *Soc Sci Med* 70(12): 1920-7.

Green, C. 2011. "Community monitoring in a volunteer health worker setting: a review of the literature." Kampala, Uganda: inSCALE - Malaria Consortium.

Gusdal, A. K., C. Obua, T. Andualem, R. Wahlstrom, J. Chalker, and G. Fochsen. 2011. "Peer counselors' role in supporting patients' adherence to ART in Ethiopia and Uganda." *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV* 23(6): 657-62.

Hadley, M. and D. Maher. 2000. "Community involvement in tuberculosis control: lessons from other health care programmes." *The International Journal of Tuberculosis and lung disease* 4(5): 401-08.

Haile, F., D. Yemane, and A. Gebreslassie. 2014. "Assessment of non-financial incentives for volunteer community health workers-the case of Wukro district, Tigray, Ethiopia." *Hum Resour Health* 12: 54-60.

Haines, A., D. Sanders, U. Lehmann, A. K. Rowe, J. E. Lawn, S. Jan, D. G. Walker, and Z. Bhutta. 2007. "Achieving child survival goals: potential contribution of community health workers." *Lancet* 369(9579): 2121-31.

Hall, M. A., E. Dugan, B. Zheng, and A. K. Mishra. 2001. "Trust in physicians and medical institutions: what is it, can it be measured, and does it matter?" *Milbank Quarterly* 79(4): 613-39.

Hamer, D. H., E. T. Brooks, K. Semrau, P. Pilingana, W. B. MacLeod, K. Siazeele, L. L. Sabin, D. M. Thea, and K. Yeboah-Antwi. 2012. "Quality and safety of integrated community case management of malaria using rapid diagnostic tests and pneumonia by community health workers." *Pathog Glob Health* 106(1): 32-9.

Hantrais, L. 1999. "Contextualization in cross-national comparative research." *International Journal of Social Research Methodology* 2(2): 93-108.

Harvey, D. L. 2002. "Agency and community: a critical realist paradigm." *Journal for the Theory of Social Behaviour* 32(2): 163-94.

Hermann, K., W. Van Damme, G. W. Pariyo, E. Schouten, Y. Assefa, A. Cirera, and W. Massavon. 2009. "Community health workers for ART in sub-Saharan Africa: learning from experience--capitalizing on new opportunities." *Hum Resour Health* 7: 31.

Hernandez, A. 2014. "Enabling the performance of nurses in rural Guatemala: the role of relationships." *Public Health and Clinical Medicine, Epidemiology and Global Health.* Umea, Sweden: Umea University.

Hernández, A. R., A.-K. Hurtig, K. Dahlblom, and M. San Sebastián. 2014. "More than a checklist: a realist evaluation of supervision of mid-level health workers in rural Guatemala." *BMC Health Serv Res* 14(1): 112.

Hien le, T. T., T. Takano, K. Seino, M. Ohnishi, and K. Nakamura. 2008. "Effectiveness of a capacity-building program for community leaders in a healthy living environment: a randomized community-based intervention in rural Vietnam." *Health promotion international* 23: 354-64.

Hill, Z., M. Dumbaugh, L. Benton, K. Källander, D. Strachan, A. ten Asbroek, J. Tibenderana, B. Kirkwood, and S. Meek. 2014. "Supervising community health workers in low-income countries–a review of impact and implementation issues." *Glob Health Action* 7.

Hill, Z., A. Manu, C. Tawiah-Agyemang, T. Gyan, K. Turner, B. Weobong, A. H. Ten Asbroek, and B. R. Kirkwood. 2008. "How did formative research inform the development of a home-based neonatal care intervention in rural Ghana?" *Journal of Perinatology* 28 Suppl 2: S38-45.

Hinojosa, S. Z. 2004. "Authorizing tradition: vectors of contention in Highland Maya midwifery." *Soc Sci Med* 59(3): 637-51.

Hoke, T. H., P. D. Blumenthal, E. Rasamihajamanana, and B. Razafindravony. 2008. "Safety, feasibility, and acceptability of community-based distribution (CBD) of Depot Medroxy Progesterone Acetate (DMPA) in Madagascar." North Carolina, USA: Family Health International.

Hoy, D., K. Southavilay, N. Chanlivong, C. Phimphachanh, V. Douangphachanh, and M. J. Toole. 2008. "Building capacity and community resilience to HIV: A project designed, implemented, and evaluated by young Lao people." *Glob Public Health* 3(1): 47-61.

Huber, D., N. Saeedi, and A. K. Samadi. 2010. "Achieving success with family planning in rural Afghanistan." *Bull World Health Organ* 88(3): 227-31.

ILO. 2014. "World Social Health Report 2014/15. Building economic recovery, inlusive development and social justice." Geneva, Switzerland: International Labour Office.

Jack, B. A., J. A. Kirton, J. Birakurataki, and A. Merriman. 2012. "The personal value of being a palliative care Community Volunteer Worker in Uganda: A qualitative study." *Palliative medicine* 26(5): 753-59.

Jaffar, S., B. Amuron, S. Foster, J. Birungi, J. Levin, G. Namara, C. Nabiryo, N. Ndembi, R. Kyomuhangi, A. Opio, R. Bunnell, J. W. Tappero, J. Mermin, A. Coutinho, and H. Grosskurth. 2009. "Rates of virological failure in patients treated in a home-based versus a facility-based HIV-care model in Jinja, southeast Uganda: a cluster-randomised equivalence trial." *Lancet* 374(9707): 2080-9.

Jaskiewicz, W. and K. Tulenko. 2012. "Increasing community health worker productivity and effectiveness: a review of the influence of the work environment." *Hum Resour Health* 10(1): 38.

Javanparast, S., F. Baum, R. Labonte, and D. Sanders. 2011. "Community Health Workers' Perspectives on Their Contribution to Rural Health and Well-Being in Iran." *American Journal of Public Health* 101(12): 2287-92.

Javanparast, S., F. Baum, R. Labonte, D. Sanders, Z. Rajabi, and G. Heidari. 2012. "The experience of community health workers training in Iran: a qualitative study." *BMC Health Serv Res* 12: 291.

Jensen, L. A. and M. N. Allen. 1996. "Meta-synthesis of qualitative findings." *Qual Health Res* 6(4): 553-60.

Kadzandira, J. M., W. Chilowa, and Unicef. 2001. *The role of health surveillance assistants (HSAs) in the delivery of health services and immunisation in Malawi*. Lilongwe, Malawi: University of Malawi, Centre for Social Research.

Kalofonos, I. 2014. "'All they do is pray': Community labour and the narrowing of 'care'during Mozambique's HIV scale-up." *Glob Public Health* 9(1-2): 7-24.

Kalyango, J. N., E. Rutebemberwa, T. Alfven, S. Ssali, S. Peterson, and C. Karamagi. 2012. "Performance of community health workers under integrated community case management of childhood illnesses in eastern Uganda." *Malar J* 11: 282.

Kane, S., M. Kok, H. Ormel, L. Otiso, M. Sidat, I. Namakhoma, S. Nasir, D. Gemechu, S. Rashid, M. Taegtmeyer, S. Theobald, and K. de Koning. 2015. "Empowering Community Health Workers: enabling them to be agents of social change." *Forthcoming publication*.

Kane, S. S., B. Gerretsen, R. Scherpbier, M. Dal Poz, and M. Dieleman. 2010. "A realist synthesis of randomised control trials involving use of community health workers for

delivering child health interventions in low and middle income countries." *BMC Health Serv Res* 10: 286.

Kassebaum, N. J., A. Bertozzi-Villa, M. S. Coggeshall, K. A. Shackelford, C. Steiner, K. R. Heuton, D. Gonzalez-Medina, R. Barber, C. Huynh, and D. Dicker. 2014. "Global, regional, and national levels and causes of maternal mortality during 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013." *The Lancet* 384(9947): 980-1004.

Kasteng, F., S. Settumba, K. Källander, A. Vassall, and i. S. Group. 2015. "Valuing the work of unpaid community health workers and exploring the incentives to volunteering in rural Africa." *Health policy and planning*: czv042.

Kebriaei, A. and M. S. Moteghedi. 2009. "Job satisfaction among community health workers in Zahedan District, Islamic Republic of Iran." *East Mediterr Health J* 15(5): 1156-63.

Kilpatrick, S., B. Cheers, M. Gilles, and J. Taylor. 2009. "Boundary crossers, communities, and health: exploring the role of rural health professionals." *Health & place* 15(1): 284-90.

Kim, M. H., S. Ahmed, W. C. Buck, G. A. Preidis, M. C. Hosseinipour, A. Bhalakia, D. Nanthuru, P. N. Kazembe, F. Chimbwandira, T. P. Giordano, E. Y. Chiao, G. E. Schutze, and M. W. Kline. 2012a. "The Tingathe programme: a pilot intervention using community health workers to create a continuum of care in the prevention of mother to child transmission of HIV (PMTCT) cascade of services in Malawi." *J Int AIDS Soc* 15 Suppl 2: 17389.

Kim, Y. M., S. Kalibala, S. Neema, J. Lukwago, and D. C. Weiss. 2012b. "Meaningful involvement of people living with HIV/AIDS in Uganda through linkages between network groups and health facilities: an evaluation study." *Psychol Health Med* 17(2): 213-22.

Kok, M. C., M. Dieleman, M. Taegtmeyer, J. E. W. Broerse, S. S. Kane, H. Ormel, M. M. Tijm, and K. A. M. de Koning. 2014. "Which intervention design factors influence performance of community health workers in low- and middle-income countries? A systematic review." *Health policy and planning*: 1-21 doi:10.1093/heapol/czu126.

Kok, M. C., K. Herschderfer, and K. de Koning. 2012. "Technical Consultation on the role of Community Based Providers in improving Maternal and Newborn health." Amsterdam, the Netherlands: Royal Tropical Institute.

Kok, M. C., S. S. Kane, O. Tulloch, H. Ormel, S. Theobald, M. Dieleman, M. Taegtmeyer, J. E. W. Broerse, and K. A. M. de Koning. 2015a. "How does context influence performance of community health workers in low-and middle-income countries? Evidence from the literature." *Health Research Policy and Systems* 13(1): 13.

Kok, M. C., A. Z. Kea, D. G. Datiko, J. E. W. Broerse, M. Dieleman, M. Taegtmeyer, and O. Tulloch. 2015b. "A qualitative assessment of Health Extension Workers' links with the community and health system in Ethiopia: opportunities for enhancing maternal health performance." *Human Resources for Health* 13:80.

Kok, M. C. and S. Muula. 2013. "Motivation and job satisfaction of Health Surveillance Assistants in Mwanza, Malawi: an explorative study." *Malawi Medical Journal* 25(1): 5-11.

Kok, M. C., I. Namakhoma, L. Nyirenda, K. Chikaphupha, J. E. W. Broerse, M. Dieleman, M. Taegtmeyer, and S. Theobald. 2015c. "Health Surveillance Assistants as intermediates between the community and health system in Malawi: Exploring how trust and relationships influence performance " *Forthcoming publication*.

Kouyate, B., F. Some, A. Jahn, B. Coulibaly, J. Eriksen, R. Sauerborn, L. Gustafsson, G. Tomson, H. Becher, and O. Mueller. 2008. "Process and effects of a community intervention on malaria in rural Burkina Faso: randomized controlled trial." *Malar J* 7: 50.

KPMG. 2013. "Devolution of Health Care Services in Kenya." KPMG.

Langston, A., J. Weiss, J. Landegger, T. Pullum, M. Morrow, M. Kabadege, C. Mugeni, and E. Sarriot. 2014. "Plausible role for CHW peer support groups in increasing care-seeking in an integrated community case management project in Rwanda: a mixed methods evaluation." *Global Health: Science and Practice* 2(3): 342-54.

Lassi, Z. S., B. A. Haider, and Z. A. Bhutta. 2010. "Community-based intervention packages for reducing maternal and neonatal morbidity and mortality and improving neonatal outcomes." *Cochrane Database of Systematic Reviews.* John Wiley & Sons, Ltd.

Lehmann, U. and L. Gilson. 2013. "Actor interfaces and practices of power in a community health worker programme: a South African study of unintended policy outcomes." *Health policy and planning* 28(4): 358-66.

Lehmann, U. and D. Sanders. 2007. "Community health workers: What do we know about them? The state of the evidence on programmes, activities, costs and impact on health outcomes of using community health workers." Geneva, Switzerland: World Health Organization.

Lemay, N. V., T. Sullivan, B. Jumbe, and C. P. Perry. 2012. "Reaching remote health workers in Malawi: baseline assessment of a pilot mHealth intervention." *Journal of health communication* 17 Suppl 1: 105-17.

Lewin, S., S. Munabi-Babigumira, C. Glenton, K. Daniels, X. Bosch-Capblanch, B. E. van Wyk, J. Odgaard-Jensen, M. Johansen, G. N. Aja, M. Zwarenstein, and I. B. Scheel. 2010. "Lay health workers in primary and community health care for maternal and child health and the management of infectious diseases." *Cochrane database of systematic reviews (Online)* 3: CD004015.

Lewis, J. 2010. "Busia Child Survival Project. Final Evaluation Report." pp. [57] p.: African Medical and Research Foundation (AMREF), United States Agency for International Development (USAID).

Lincoln, Y. S. and E. G. Guba. 1985. *Naturalistic inquiry*. London, UK: Sage.

Liu, A., S. Sullivan, M. Khan, S. Sachs, and P. Singh. 2011. "Community health workers in global health: scale and scalability." *Mount Sinai Journal of Medicine: A Journal of Translational and Personalized Medicine* 78(3): 419-35.

LSTM. 2012. "Reaching out and linking in: health systems and close-to-community services - Description of Work, Seventh Framework Programme." Liverpool, UK: Liverpool School of Tropical Medicine.

Lunsford, S. S., K. Fatta, K. E. Stover, and R. Shrestha. 2015. "Supporting close-to-community providers through a community health system approach: case examples from Ethiopia and Tanzania." *Human Resources for Health* 13(1): 12.

Maes, K. 2012. "Volunteerism or labor exploitation? Harnessing the volunteer spirit to sustain AIDS treatment programs in urban Ethiopia." *Human organization* 71(1): 54-64.

Maes, K. 2014. ""Volunteers Are Not Paid Because They Are Priceless": Community Health Worker Capacities and Values in an AIDS Treatment Intervention in Urban Ethiopia." *Medical anthropology quarterly* 00(0): 1-19.

Maes, K. and I. Kalofonos. 2013. "Becoming and remaining community health workers: Perspectives from Ethiopia and Mozambique." *Soc Sci Med* 87: 52-9.

Maher, D., J. L. C. Van Gorkom, P. C. F. M. Gondrie, and M. Raviglione. 1999. "Community contribution to tuberculosis care in countries with high tuberculosis prevalence: past, present and future." *The International Journal of Tuberculosis and lung disease* 3(9): 762-68.

Malarcher, S., O. Meirik, E. Lebetkin, I. Shah, J. Spieler, and J. Stanback. 2011. "Provision of DMPA by community health workers: what the evidence shows." *Contraception* 83(6): 495-503.

Mannan, I., S. M. Rahman, A. Sania, H. R. Seraji, S. E. Arifeen, P. J. Winch, G. L. Darmstadt, and A. Baqui. 2008. "Can early postpartum home visits by trained community health workers improve breastfeeding of newborns?" *J Perinatol* 28(9): 632-40.

Marchal, B., S. van Belle, J. van Olmen, T. Hoerée, and G. Kegels. 2012. "Is realist evaluation keeping its promise? A review of published empirical studies in the field of health systems research." *Evaluation* 18(2): 192-212.

Marquez, L. and L. Kean. 2002. "Making supervision supportive and sustainable: new approaches to old problems." *MAC paper* 4.

Martinez, R., R. Vivancos, B. Visschers, L. Namatovu, E. Nyangoma, and J. Walley. 2008. "Training needs, practices and barriers in the work of community reproductive health workers in Masindi district, Uganda." *Trop Doct* 38(2): 93-5.

Martiniuk, A., S. Smith, A. Deveridge, J. Berman, J. Negin, N. Mwambene, and E. Chingaipe. 2014. *Getting Treatment and Care to the Last Mile: Analyzing the Health Surveillance Assistant Cadre in Malawi*: Africa Initiative - Centre for International Governance Innovation.

Mays, N., C. Pope, and J. Popay. 2005. "Systematically reviewing qualitative and quantitative evidence to inform management and policy-making in the health field." *Journal of health services research & policy* 10(suppl 1): 6-20.

McCabe, T. and S. Sambrook. 2014. "The antecedents, attributes and consequences of trust among nurses and nurse managers: A concept analysis." *International journal of nursing studies* 51(5): 815-27.

McCoy, D., B. McPake, and V. Mwapasa. 2008. "The double burden of human resource and HIV crises: a case study of Malawi." *Hum Resour Health* 6(1): 16.

MCHIP. 2014. "Developing and Strengthening Community Health Worker Programs at Scale. A Reference Guide for Program Managers and Policy Makers." Baltimore, USA: Jhpiego.

McPherson, R. A., J. Tamang, S. Hodgins, L. R. Pathak, R. C. Silwal, A. H. Baqui, and P. J. Winch. 2010. "Process evaluation of a community-based intervention promoting multiple maternal and neonatal care practices in rural Nepal." *BMC Pregnancy Childbirth* 10: 31.

Medhanyie, A., M. Spigt, G. Dinant, and R. Blanco. 2012a. "Knowledge and performance of the Ethiopian health extension workers on antenatal and delivery care: a cross-sectional study." *Hum Resour Health* 10(1): 44.

Medhanyie, A., M. Spigt, Y. Kifle, N. Schaay, D. Sanders, R. Blanco, D. GeertJan, and Y. Berhane. 2012b. "The role of health extension workers in improving utilization of maternal health services in rural areas in Ethiopia: a cross sectional study." *BMC Health Serv Res* 12: 352.

Miller, P. C., G. Rashida, Z. Tasneem, and M. Haque. 2012. "The effect of traditional birth attendant training on maternal and neonatal care." *Int J Gynaecol Obstet* 117(2): 148-52.

Mireku, M., M. Kiruki, R. McCollum, M. Taegtmeyer, K. d. Koning, and L. Otiso. 2014. "Report on the context analysis of close-to-community health service providers in Kenya." Nairobi, Kenya: LVCT Health.

Mishra, A. 2014. "'Trust and teamwork matter': Community health workers' experiences in integrated service delivery in India." *Glob Public Health* 9:8(8): 960-74.

Mkumbo, E., C. Hanson, S. Penfold, F. Manzi, and J. Schellenberg. 2014. "Innovation in supervision and support of community health workers for better newborn survival in southern Tanzania." *International Health* 6(4): 339-41.

Moetlo, G. J., S. Pengpid, and K. Peltzer. 2011. "An Evaluation of the Implementation of Integrated Community Home-Based Care Services in Vhembe District, South Africa." *Indian Journal of Palliative Care* 17(2): 137-42.

MoH. 2000. "The Kaya Kwanga Commitment – a code of conduct to guide the partnership for health development in Mozambique." Maputo, Mozambique: Ministry of Health of Mozambique.

MoH. 2005. "Code of conduct governing the partnership between the Ministry of Health and non-governmental organizations." Maputo, Mozambique: Ministry of Health of Mozambique.

MoH. 2007. "Strategic Plan of Kenya Community Strategy. Implementation Guidelines for Managers of the Kenya Essential Package for Health at the Community Level." Nairobi, Kenya: Ministry of Health of Kenya.

MoH. 2010a. "O documento de Revitalizacao do Programa dos APEs." Maputo, Mozambique: Direcção Nacional de Saúde Pública, Ministry of Health of Mozambique.

MoH. 2010b. "Pontos Chave para a Implementação do Programa dos Agentes Polivalentes Elementares (APEs)." Maputo, Mozambique: Direcção Nacional de Saúde Pública, Ministry of Health of Mozambique.

MoH. 2010c. "Programa de Revitalização dos Agentes Polivalentes Elementares." Maputo: Direcção Nacional de Saúde Pública, Ministry of Health Mozambique.

Mohan, P., B. Kishore, S. Singh, R. Bahl, A. Puri, and R. Kumar. 2011. "Assessment of implementation of integrated management of neonatal and childhood illness in India." *Journal of health, population, and nutrition* 29(6): 629-38.

Molyneux, S., M. Atela, V. Angwenyi, and C. Goodman. 2012. "Community accountability at peripheral health facilities: a review of the empirical literature and development of a conceptual framework." *Health policy and planning* 27(7): 541-54.

MOPHS. 2010. "Evaluation Report of The Community Health Strategy Implementation in Kenya." Nairobi, Kenya: Ministry of Public Health and Sanitation.

Morfaw, F., L. Mbuagbaw, L. Thabane, C. Rodrigues, A.-P. Wunderlich, P. Nana, and J. Kunda. 2013. "Male involvement in prevention programs of mother to child transmission of HIV: a systematic review to identify barriers and facilitators." *Syst Rev* 2(5).

Mukanga, D., J. K. Tibenderana, J. Kiguli, G. W. Pariyo, P. Waiswa, F. Bajunirwe, B. Mutamba, H. Counihan, G. Ojiambo, and K. Kallander. 2010. "Community acceptability of use of rapid diagnostic tests for malaria by community health workers in Uganda." *Malaria Journal* 9: 203.

Mukanga, D., J. K. Tibenderana, S. Peterson, G. W. Pariyo, J. Kiguli, P. Waiswa, R. Babirye, G. Ojiambo, S. Kasasa, F. Pagnoni, and K. Kallander. 2012. "Access, acceptability and utilization of community health workers using diagnostics for case management of fever in Ugandan children: a cross-sectional study." *Malar J* 11: 121.

Mukherjee, J. S. and F. E. Eustache. 2007. "Community health workers as a cornerstone for integrating HIV and primary healthcare." *AIDS Care* 19 Suppl 1: S73-82.

Mumtaz, Z., S. Salway, C. Nykiforuk, A. Bhatti, A. Ataullahjan, and B. Ayyalasomayajula. 2013. "The role of social geography on Lady Health Workers' mobility and effectiveness in Pakistan." *Social Science & Medicine* 91: 48-57.

Munthali, A. and P. Mvula. 2009. "Evaluation of the MNCH Rapid scale up in Malawi. Working Document. Formative Research on HSAs Recording of Vital Events in Kasungu and Mangochi." Zomba, Malawi: Centre for Social Research, University of Malawi.

Mutalemwa, P., W. N. Kisinza, W. J. Kisoka, S. Kilima, J. Njau, F. Tenu, T. Nkya, and S. M. Magesa. 2009. "Community directed approach beyond ivermectin in Tanzania: a promising mechanism for the delivery of complex health interventions." *Tanzania journal of health research* 11(3): 116-25.

Naimoli, J. F., D. E. Frymus, T. Wuliji, L. M. Franco, and M. H. Newsome. 2014. "A Community Health Worker "logic model": towards a theory of enhanced performance in low-and middle-income countries." *Human Resources for Health* 12(1): 56.

Nandi, S. and H. Schneider. 2014. "Addressing the social determinants of health: a case study from the Mitanin (community health worker) programme in India." *Health policy and planning* 29(suppl 2): ii71-ii81.

Nasreen, H. E., S. Nahar, M. Al Mamun, K. Afsana, and P. Byass. 2011. "Oral misoprostol for preventing postpartum haemorrhage in home births in rural Bangladesh: how effective is it?" *Glob Health Action* 4: 7017. DOI: 10.3402/gha.v4i0.7017.

Ndima, S., M. Sidat, C. Give, H. Ormel, M. Kok, and M. Taegtmeyer. 2015. "Supervision of community health workers in Mozambique: a qualitative study of factors influencing motivation and programme implementation." *Human Resources for Health* 13:63.

Neal, S., A. A. Channon, S. Carter, and J. Falkingham. 2015. "Universal health care and equity: evidence of maternal health based on an analysis of demographic and household survey data." *International Journal for Equity in Health* 14(1): 56.

Nelson, B. D., R. Ahn, M. Fehling, M. J. Eckardt, K. L. Conn, A. El-Bashir, M. Tiernan, G. Purcell, and T. F. Burke. 2012. "Evaluation of a novel training package among frontline maternal, newborn, and child health workers in South Sudan." *Int J Gynaecol Obstet* 119(2): 130-5.

Nkonki, L., J. Cliff, and D. Sanders. 2011. "Lay health worker attrition: important but often ignored." *Bulletin of the World Health Organization* 89(12): 919-23.

Nsabagasani, X., S. Jesca Nsungwa, K. Kallander, S. Peterson, G. Pariyo, and G. Tomson. 2007. "Home-based management of fever in rural Uganda: community perceptions and provider opinions." *Malar J* 6: 11.

Nsona, H., A. Mtimuni, B. Daelmans, J. A. Callaghan-Koru, K. Gilroy, L. Mgalula, T. Kachule, and T. Zamasiya. 2012. "Scaling up integrated community case management of childhood illness: update from Malawi." *Am J Trop Med Hyg* 87(5 Suppl): 54-60.

Nyanzi, S., H. Manneh, and G. Walraven. 2007. "Traditional birth attendants in rural Gambia: beyond health to social cohesion." *Afr J Reprod Health* 11(1): 43-56.

Nyhan, R. C. 2000. "Changing the Paradigm Trust and its Role in Public Sector Organizations." *The American Review of Public Administration* 30(1): 87-109.

Nyirenda, L. and R. Flikke. 2013. "Frontline vaccinators and immunisation coverage in Malawi." *Forum for Development Studies.* pp. 27-46: Taylor & Francis.

Nyirenda, L., I. Namakhoma, K. Chikaphupha, M. C. Kok, and S. Theobald. 2014. "Report on the context analysis of close-to-community providers in Malawi." Lilongwe, Malawi: REACH Trust.

Ochieng, B. M., E. Akunja, N. Edwards, D. Mombo, L. Marende, and D. C. Kaseje. 2014. "Perceptions of health stakeholders on task shifting and motivation of community health workers in different socio demographic contexts in Kenya (nomadic, peri-urban and rural agrarian)." *BMC Health Serv Res* 14(Suppl 1): S4.

Okello, D. R. and L. Gilson. 2015. "Exploring the influence of trust relationships on motivation in the health sector: a systematic review." *Human Resources for Health* 13(16).

Olang'o, C. O., I. K. Nyamongo, and J. Aagaard-Hansen. 2010. "Staff attrition among community health workers in home-based care programmes for people living with HIV and AIDS in western Kenya." *Health Policy* 97(2-3): 232-7.

Oliveira-Cruz, V., C. Kurowski, and A. Mills. 2003. "Delivery of priority health services: searching for synergies within the vertical versus horizontal debate." *Journal of international development* 15(1): 67-86.

Omer, K., S. Mhatre, N. Ansari, J. Laucirica, and N. Andersson. 2008. "Evidence-based training of frontline health workers for door-to-door health promotion: a pilot randomized controlled cluster trial with Lady Health Workers in Sindh Province, Pakistan." *Patient education and counseling* 72: 178-85.

Osawa, E., T. Kodama, and E. Kundishora. 2010. "Motivation and sustainability of care facilitators engaged in a community home-based HIV/AIDS program in Masvingo Province, Zimbabwe." *AIDS Care* 22(7): 895-902.

Østergaard, L. R. 2015. "Trust matters: A narrative literature review of the role of trust in health care systems in sub-Saharan Africa." *Glob Public Health*(ahead-of-print): 1-14.

Paillé, P., F. Grima, and M.-È. Dufour. 2015. "Contribution to social exchange in public organizations: examining how support, trust, satisfaction, commitment and work outcomes are related." *The International Journal of Human Resource Management* 26(4): 520-46.

Palazuelos, D., K. Ellis, D. D. Im, M. Peckarsky, D. Schwarz, D. B. Farmer, R. Dhillon, A. Johnson, C. Orihuela, J. Hackett, J. Bazile, L. Berman, M. Ballard, R. Panjabi, R. Ternier, S. Slavin, S. Lee, S. Selinsky, and C. D. Mitnick. 2013. "5-SPICE: the application of an original framework for community health worker program design, quality improvement and research agenda setting." *Glob Health Action* 6: 19658.

Palmer, D. 2006. "Tackling Malawi's human resources crisis." *Reprod Health Matters* 14(27): 27-39.

Panda, B., S. Pati, S. Nallala, A. S. Chauhan, A. Anasuya, M. Som, and S. Zodpey. 2015. "How supportive supervision influences immunization session site practices: a quasi-experimental study in Odisha, India." *Glob Health Action* 8.

Pawson, R. 2006. *Evidence-based policy: A realist perspective*. London, UK: Sage publications.

Pawson, R., T. Greenhalgh, G. Harvey, and K. Walshe. 2004. "Realist synthesis: an introduction." Manchester, United Kingdom: ESRC Research Methods Programme. University of Manchester.

Pawson, R. and N. Tilley. 1997. *Realistic evaluation*. London, UK: Sage.

Paxman, J. M., A. Sayeed, A. Buxbaum, S. C. Huber, and C. Stover. 2005. "The India Local Initiatives Program: a model for expanding reproductive and child health services." *Stud Fam Plann* 36(3): 203-20.

Peltzer, K., C. Tabane, G. Matseke, and L. Simbayi. 2010. "Lay counsellor-based risk reduction intervention with HIV positive diagnosed patients at public HIV counselling and testing sites in Mpumalanga, South Africa." *Eval Program Plann* 33(4): 379-85.

Perez, F., H. Ba, S. G. Dastagire, and M. Altmann. 2009. "The role of community health workers in improving child health programmes in Mali." *BMC International Health and Human Rights* 9: 28. doi:10.1186/472-698X-9-28.

Pérez, L. M. and J. Martinez. 2008. "Community health workers: social justice and policy advocates for community health and well-being." *American Journal of Public Health* 98(1): 11.

Perry, H. and R. Zulliger. 2012. "How effective are community health workers? An overview of current evidence with recommendations for strenghtening community health worker programs to accelerate progress in achieving the health-related Millennium Development Goals." Baltimore, USA: Johns Hopkins Bloomberg School of Public Health.

Perry, H. B., R. Zulliger, and M. M. Rogers. 2014. "Community health workers in low-, middle-, and high-income countries: an overview of their history, recent evolution, and current effectiveness." *Annual review of public health* 35: 399-421.

Pfeiffer, J. 2003. "International NGOs and primary health care in Mozambique: the need for a new model of collaboration." *Social Science & Medicine* 56(4): 725-38.

Pongvongsa, T., D. Nonaka, J. Kobayashi, T. Mizoue, P. Phongmany, and K. Moji. 2011. "Determinants of monthly reporting by village health volunteers in a poor rural district of Lao PDR." *Southeast Asian J Trop Med Public Health* 42(5): 1269-81.

Posner, J., P. Kayastha, D. Davis, J. Limoges, C. O'Donnell, and K. Yue. 2009. "Development of leadership self-efficacy and collective efficacy: adolescent girls across castes as peer educators in Nepal." *Glob Public Health* 4(3): 284-302.

Prasad, B. and V. Muraleedharan. 2007. "Community Health Workers: a review of concepts, practice and policy concerns." Chennai, India: International Consortium for Research on Equitable Health Systems (CREHS).

Prata, N., C. Ejembi, A. Fraser, O. Shittu, and M. Minkler. 2012a. "Community mobilization to reduce postpartum hemorrhage in home births in northern Nigeria." *Social Science and Medicine* 74(8): 1288-96.

Prata, N., A. Gessessew, A. K. Abraha, M. Holston, and M. Potts. 2009. "Prevention of postpartum hemorrhage: options for home births in rural Ethiopia." *Afr J Reprod Health* 13(2): 87-95.

Prata, N., M. A. Quaiyum, P. Passano, S. Bell, D. D. Bohl, S. Hossain, A. J. Azmi, and M. Begum. 2012b. "Training traditional birth attendants to use misoprostol and an absorbent delivery mat in home births." *Social Science and Medicine* 75(11): 2021-27.

Puchalski Ritchie, L. M., M. Van Lettow, J. Barnsley, A. K. Chan, M. Joshua, A. L. C. Martiniuk, M. J. Schull, and M. Zwarenstein. 2012. "Evaluation of lay health workers' needs to effectively support anti-tuberculosis treatment adherence in Malawi." *International Journal of Tuberculosis and Lung Disease* 16(11): 1492-97.

Puett, C., J. Coates, H. Alderman, and K. Sadler. 2013. "Quality of care for severe acute malnutrition delivered by community health workers in southern Bangladesh." *Maternal and Child Nutrition* 9(1): 130-42.

Rahman, A., A. Malik, S. Sikander, C. Roberts, and F. Creed. 2008. "Cognitive behaviour therapy-based intervention by community health workers for mothers with depression and their infants in rural Pakistan: a cluster-randomised controlled trial." *Lancet* 372(9642): 902-9.

Rahman, M. and S. Tasneem. 2008. "Determinants of income of the Shasthya Shebikas: evidences from a pilot MNCH initiative in the Nilphamari district of Bangladesh." Dhaka, Bangladesh: BRAC Research & Evaluation Division.

Rahman, S. M., N. A. Ali, L. Jennings, M. H. Seraji, I. Mannan, R. Shah, A. B. Al-Mahmud, S. Bari, D. Hossain, M. K. Das, A. H. Baqui, S. El Arifeen, and P. J. Winch. 2010. "Factors affecting recruitment and retention of community health workers in a newborn care intervention in Bangladesh." *Hum Resour Health* 8: 12.

Rao, M. and E. Pilot. 2014. "The missing link–the role of primary care in global health." *Glob Health Action* 7.

Razee, H., M. Whittaker, R. Jayasuriya, L. Yap, and L. Brentnall. 2012. "Listening to the rural health workers in Papua New Guinea - The social factors that influence their motivation to work." *Social Science and Medicine* 75(5): 828-35.

Redick, C., H. S. Dini, and L. Long. 2014. "The Current State of CHW Training Programs in Sub-Saharan Africa and South Asia: What We Know, What We Don't Know, and What We Need to Do." One Million Community Health Workers Campaign, mPowering Frontline Health Workers, Intel and USAID.

Requejo, J. H. and Z. A. Bhutta. 2015. "The post-2015 agenda: staying the course in maternal and child survival." *Arch Dis Child* 100(Suppl 1): S76-S81.

Ritchie, J. and J. Lewis. 2003. *Qualitative research practice: A guide for social science students and researchers*. London, UK: Sage.

Ritchie, J. and L. Spencer. 2002. "Qualitative data analysis for applied policy research." *The qualitative researcher's companion*: 305-29.

Roberton, T., J. Applegate, A. E. Lefevre, I. Mosha, C. M. Cooper, M. Silverman, I. Feldhaus, J. J. Chebet, R. Mpembeni, and H. Semu. 2015. "Initial experiences and innovations in supervising community health workers for maternal, newborn, and child health in Morogoro region, Tanzania." *Human Resources for Health* 13(1): 19.

RoK. 2006. "Reversing the trends. The Second National Health Sector Strategic Plan of Kenya. Taking the Kenya Essential Package for Health to the Community. A Strategy for the Delivery of Level One Services." Nairobi: Republic of Kenya, Ministry of Health.

Root, R. and A. van Wyngaard. 2011. "Free love: a case study of church-run home-based caregivers in a high vulnerability setting." *Glob Public Health* 6 Suppl 2: S174-91.

Rosato, M., G. Laverack, L. H. Grabman, P. Tripathy, N. Nair, C. Mwansambo, K. Azad, J. Morrison, Z. Bhutta, H. Perry, S. Rifkin, and A. Costello. 2008. "Community participation: lessons for maternal, newborn, and child health." *Lancet* 372(9642): 962-71.

Rowe, A. K., D. de Savigny, C. F. Lanata, and C. G. Victora. 2005. "How can we achieve and maintain high-quality performance of health workers in low-resource settings?" *Lancet* 366(9490): 1026-35.

Rowe, S. Y., J. M. Kelly, M. A. Olewe, D. G. Kleinbaum, J. E. McGowan Jr, D. A. McFarland, R. Rochat, and M. S. Deming. 2007a. "Effect of multiple interventions on community health workers' adherence to clinical guidelines in Siaya district, Kenya." *Transactions of the Royal Society of Tropical Medicine and Hygiene* 101(2): 188-202.

Rowe, S. Y., M. A. Olewe, D. G. Kleinbaum, J. E. McGowan, Jr., D. A. McFarland, R. Rochat, and M. S. Deming. 2007b. "Longitudinal analysis of community health workers' adherence to treatment guidelines, Siaya, Kenya, 1997-2002." *Trop Med Int Health* 12(5): 651-63.

Rycroft-Malone, J., B. McCormack, A. M. Hutchinson, K. DeCorby, T. K. Bucknall, B. Kent, A. Schultz, E. Snelgrove-Clarke, C. B. Stetler, and M. Titler. 2012. "Realist synthesis: illustrating the method for implementation research." *Implementation science* 7(1): 33.

Sabo, S., M. Ingram, K. M. Reinschmidt, K. Schachter, L. Jacobs, J. Guernsey de Zapien, L. Robinson, and S. Carvajal. 2013. "Predictors and a framework for fostering community advocacy as a community health worker core function to eliminate health disparities." *American Journal of Public Health* 103(7): e67-e73.

Sadler, K., C. Puett, G. Mothabbir, and M. Myatt. 2011. "Community case management of severe acute malnutrition in southern Bangladesh." Medford, USA: Felnsteln International Center, Tufts University.

Sahay, S. and S. Mehendale. 2011. "Engaging community to support hiv prevention research." *Eastern Journal of Medicine* 16(2): 168-77.

Saleem, S., D. J. Rouse, E. M. McClure, A. Zaidi, T. Reza, Y. Yahya, I. A. Memon, N. H. Khan, G. Memon, N. Soomro, O. Pasha, L. L. Wright, J. Moore, and R. L. Goldenberg. 2007. "Chlorhexidine vaginal and infant wipes to reduce perinatal mortality and morbidity: a randomized controlled trial." *Obstet Gynecol* 115(6): 1225-32.

Samb, B., F. Celletti, J. Holloway, W. Van Damme, K. M. De Cock, and M. Dybul. 2007. "Rapid expansion of the health workforce in response to the HIV epidemic." *N Engl J Med* 357(24): 2510.

Sander, L. D., D. Holtzman, M. Pauly, and J. Cohn. 2015. "Time savings–realized and potential–and fair compensation for community health workers in Kenyan health facilities: a mixed-methods approach." *Human Resources for Health* 13(6).

Sanghvi, H., N. Ansari, N. J. Prata, H. Gibson, A. T. Ehsan, and J. M. Smith. 2010. "Prevention of postpartum hemorrhage at home birth in Afghanistan." *Int J Gynaecol Obstet* 108(3): 276-81.

Sanjana, P., K. Torpey, A. Schwarzwalder, C. Simumba, P. Kasonde, L. Nyirenda, P. Kapanda, M. Kakungu-Simpungwe, M. Kabaso, and C. Thompson. 2009. "Task-shifting HIV counselling and testing services in Zambia: the role of lay counsellors." *Hum Resour Health* 7: 44.

Saravanan, S., G. Turrell, H. Johnson, J. Fraser, and C. Patterson. 2011. "Traditional birth attendant training and local birthing practices in India." *Eval Program Plann* 34(3): 254-65.

Saravanan, S., G. Turrell, H. Johnson, J. Fraser, and C. M. Patterson. 2012. "Re-examining authoritative knowledge in the design and content of a TBA training in India." *Midwifery* 28(1): 120-30.

Satti, H., S. Motsamai, P. Chetane, L. Marumo, D. Barry, J. Riley, M. McLaughlin, K. Seung, and J. Mukherjee. 2012a. "Scaling up a comprehensive approach to improving maternal health in the mountains of lesotho." *International Journal of Gynecology and Obstetrics* 119: S472-S73.

Satti, H., S. Motsamai, P. Chetane, L. Marumo, D. J. Barry, J. Riley, M. M. McLaughlin, K. J. Seung, and J. S. Mukherjee. 2012b. "Comprehensive approach to improving maternal health and achieving MDG 5: Report from the mountains of Lesotho." *PLoS ONE* 7(8).

Schneider, H., H. Hlophe, and D. van Rensburg. 2008. "Community health workers and the response to HIV/AIDS in South Africa: tensions and prospects." *Health Policy Plan* 23(3): 179-87.

Scott, K. and S. Shanker. 2010. "Tying their hands? Institutional obstacles to the success of the ASHA community health worker programme in rural north India." *AIDS Care* 22 Suppl 2: 1606-12.

Shah, R., M. K. Munos, P. J. Winch, L. C. Mullany, I. Mannan, S. M. Rahman, R. Rahman, D. Hossain, S. El Arifeen, and A. H. Baqui. 2010. "Community-based health workers achieve high coverage in neonatal intervention trials: a case study from Sylhet, Bangladesh." *J Health Popul Nutr* 28(6): 610-8.

Shah, S. A., S. Kristensen, M. A. Memon, H. L. White, and S. H. Vermund. 2007. "Syndromic management training for non-formal care providers in Pakistan improves quality of care for sexually transmitted diseases STD care: a randomized clinical trial." *Southeast Asian J Trop Med Public Health* 38(4): 737-48.

Shankar, A. V., Z. Asrilla, J. K. Kadha, S. Sebayang, M. Apriatni, A. Sulastri, E. Sunarsih, and A. H. Shankar. 2009. "Programmatic effects of a large-scale multiple-micronutrient supplementation trial in Indonesia: using community facilitators as intermediaries for behavior change." *Food Nutr Bull* 30(2 Suppl): S207-14.

Sheikh, K., A. George, and L. Gilson. 2014a. "People-centred science: strengthening the practice of health policy and systems research." *Health Research Policy and Systems* 12(1): 19.

Sheikh, K., L. Gilson, I. A. Agyepong, K. Hanson, F. Ssengooba, and S. Bennett. 2011. "Building the field of health policy and systems research: framing the questions." *PLoS Med* 8(8): e1001073.

Sheikh, K., M. K. Ranson, and L. Gilson. 2014b. "Explorations on people centredness in health systems." *Health policy and planning* 29(suppl 2): ii1-ii5.

Sibamo, E. L. and T. M. Berheto. 2015. "Community satisfaction with the urban health extension service in South Ethiopia and associated factors." *BMC Health Serv Res* 15(1): 160.

Sibley, L. M., S. Tesfaye, B. Fekadu Desta, A. Hailemichael Frew, A. Kebede, H. Mohammed, K. Ethier-Stover, M. Dynes, D. Barry, and K. Hepburn. 2014. "Improving maternal and newborn health care delivery in rural Amhara and Oromiya regions of Ethiopia through the Maternal and Newborn Health in Ethiopia Partnership." *Journal of Midwifery & Women's Health* 59(s1): S6-S20.

Sidat, M., S. Ndima, M. Taegtmeyer, H. Ormel, R. McCollum, and C. Give. 2014. "Context analysis report of close-to-community providers in Mozambique." Maputo, Mozambique: University Eduardo Mondlane.

Simba, D. O. and D. C. Kakoko. 2009. "Volunteerism among out-of-school adolescent reproductive health peer educators: is it a sustainable strategy in resource constrained countries?" *Afr J Reprod Health* 13(3): 99-110.

Simon, S., K. Chu, M. Frieden, B. Candrinho, N. Ford, H. Schneider, and M. Biot. 2009. "An integrated approach of community health worker support for HIV/AIDS and TB care in Angonia district, Mozambique." *BMC International Health and Human Rights* 9: 13. doi:10.1186/472-698X-9-13.

Simwaka, B. N., S. Theobald, A. Willets, F. M. Salaniponi, P. Nkhonjera, G. Bello, and S. B. Squire. 2012. "Acceptability and effectiveness of the storekeeper-based TB referral system for TB suspects in sub-districts of Lilongwe in Malawi." *PLoS ONE* 7(9): e39746.

Singh, D., J. Negin, M. Otim, C. G. Orach, and R. Cumming. 2015. "The effect of payment and incentives on motivation and focus of community health workers: five case studies from low-and middle-income countries." *Human Resources for Health* 13(1): 58.

Smith Paintain, L., B. Willey, A. Sharkey, J. Kim, V. Buj, D. Schellenberg, and N. Ngongo. 2012. "A systematic review of strategies to increase demand, uptake and quality of community-based diagnosis and case management of malaria." New York, USA: London School of Hygiene & Tropical Medicine, UNICEF.

Smith, S., A. Agarwal, L. Crigler, M. Gallo, A. Finlay, F. A. Homsi, E. Lanfrod, C. Wiskov, and T. Wuliji. 2013. "Community Health Volunteer Program Functionality and Performance in Madagascar: A Synthesis of Qualitative and Quantitative Assessments. Research and Evaluation Report." University Research Co., LLC (URC).

Smith, S., A. Deveridge, J. Berman, J. Negin, N. Mwambene, E. Chingaipe, L. M. P. Ritchie, and A. Martiniuk. 2014. "Task-shifting and prioritization: a situational analysis examining the role and experiences of community health workers in Malawi." *Human Resources for Health* 12(1): 24.

Smith, S., A. Kelly, and G. Randhawa. 2007. "The provision of primary care interventions by community health support workers in Pakistan." *Community Pract* 80(4): 18-22.

Soofi, S., S. Ahmed, M. P. Fox, W. B. MacLeod, D. M. Thea, S. A. Qazi, and Z. A. Bhutta. 2012. "Effectiveness of community case management of severe pneumonia with oral

amoxicillin in children aged 2-59 months in Matiari district, rural Pakistan: a cluster-randomised controlled trial." *Lancet* 379(9817): 729-37.

Søreide, T., A. Tostensen, and I. A. Skage. 2012. *Hunting for per diem: the uses and abuses of travel compensation in three developing countries*. Oslo, Norway: Norwegian agency for development cooperation (Norad).

Sranacharoenpong, K. and R. M. Hanning. 2011. "Developing a diabetes prevention education programme for community health-care workers in Thailand: formative findings." *Primary health care research & development* 12(4): 357-69.

Srivastava, D. K., S. Prakash, V. Adhish, K. S. Nair, S. Gupta, and D. Nandan. 2009. "A study of interface of ASHA with the community and the service providers in Eastern Uttar Pradesh." *Indian J Public Health* 53(3): 133-6.

Stanback, J., A. K. Mbonye, and M. Bekiita. 2007. "Contraceptive injections by community health workers in Uganda: a nonrandomized community trial." *Bull World Health Organ* 85(10): 768-73.

Standing, H. and A. M. Chowdhury. 2008. "Producing effective knowledge agents in a pluralistic environment: what future for community health workers?" *Soc Sci Med* 66(10): 2096-107.

Strachan, D. L., K. Kallander, A. H. Ten Asbroek, B. Kirkwood, S. R. Meek, L. Benton, L. Conteh, J. Tibenderana, and Z. Hill. 2012. "Interventions to Improve Motivation and Retention of Community Health Workers Delivering Integrated Community Case Management (iCCM): Stakeholder Perceptions and Priorities." *Am J Trop Med Hyg* 87(5 Suppl): 111-9.

Succato, R., F. Aly, D. Mucache, and A. Soares. 1994. "Relatório da Avaliação do Desempenho dos APEs." Maputo, Mozambique: Cooperação Suíça - Ministério da Saúde (Moçambique).

Suri, A., K. Gan, and S. Carpenter. 2007. "Voices from the field: perspectives from community health workers on health care delivery in rural KwaZulu-Natal, South Africa." *J Infect Dis* 196 Suppl 3: S505-11.

Takasugi, T. and A. C. Lee. 2012. "Why do community health workers volunteer? A qualitative study in Kenya." *Public Health* 126(10): 839-45.

Tangcharoensathien, V., A. Mills, and T. Palu. 2015. "Accelerating health equity: the key role of universal health coverage in the Sustainable Development Goals." *BMC medicine* 13(1): 101.

Teela, K. C., L. C. Mullany, C. I. Lee, E. Poh, P. Paw, N. Masenior, C. Maung, C. Beyrer, and T. J. Lee. 2009. "Community-based delivery of maternal care in conflict-affected areas of eastern Burma: perspectives from lay maternal health workers." *Soc Sci Med* 68(7): 1332-40.

Teklehaimanot, A., Y. Kitaw, S. Girma, S. Seyoum, S. Desta, and Y. Ye-Ebiyo. 2007. "Study of the working conditions of health extension workers in Ethiopia." *Ethiopian Journal of Health Development* 21(3): 246-59.

Teklehaimanot, H. D. and A. Teklehaimanot. 2013. "Human resource development for a community-based health extension program: a case study from Ethiopia." *Human Resources for Health* 11(1): 39.

Tenthani, L., F. Cataldo, A. K. Chan, R. Bedell, A. L. Martiniuk, and M. van Lettow. 2012. "Involving expert patients in antiretroviral treatment provision in a tertiary referral hospital HIV clinic in Malawi." *BMC Health Serv Res* 12: 140.

Thorne, S., B. Paterson, S. Acorn, C. Canam, G. Joachim, and C. Jillings. 2002. "Chronic illness experience: insights from a metastudy." *Qual Health Res* 12(4): 437-52.

Topp, S. M. and J. M. Chipukuma. 2015. "A qualitative study of the role of workplace and interpersonal trust in shaping service quality and responsiveness in Zambian primary health centres." *Health policy and planning*: czv041.

Torpey, K. E., M. E. Kabaso, L. N. Mutale, M. K. Kamanga, A. J. Mwango, J. Simpungwe, C. Suzuki, and Y. D. Mukadi. 2008. "Adherence support workers: a way to address human resource constraints in antiretroviral treatment programs in the public health setting in Zambia." *PLoS ONE* 3(5): e2204-e04.

Tulenko, K., S. Møgedal, M. M. Afzal, D. Frymus, A. Oshin, M. Pate, E. Quain, A. Pinel, S. Wyndg, and S. Zodpeyh. 2013. "Community health workers for universal health-care coverage: from fragmentation to synergy." *Bull World Health Organ* 91: 847-52.

UN. 2014. "Open Working Group Proposal for Sustainble Development Goals." Open Working Group of the General Assembly on Sustainable Development Goals, United Nations.

Uzochukwu, B. S., O. E. Onwujekwe, E. A. Ezeilo, E. Nwobi, A. C. Ndu, and C. Onoka. 2008. "Integrated management of childhood illness in Nigeria: does short-term training of health workers improve their performance?" *Public Health* 122(4): 367-70.

Vichayanrat, T., A. Steckler, C. Tanasugarn, and D. Lexomboon. 2012. "The evaluation of a multi-level oral health intervention to improve oral health practices among caregivers of preschool children." *Southeast Asian Journal of Tropical Medicine and Public Health* 43(2): 526-39.

Viswanathan, K., P. M. Hansen, M. Hafizur Rahman, L. Steinhardt, A. Edward, S. H. Arwal, D. H. Peters, and G. Burnham. 2012. "Can community health workers increase coverage of reproductive health services?" *Journal of epidemiology and community health* 66(10): 894-900.

Walsh, D. and S. Downe. 2005. "Meta-synthesis method for qualitative research: a literature review." *Journal of advanced nursing* 50(2): 204-11.

Wang, H., C. A. Liddell, M. M. Coates, M. D. Mooney, C. E. Levitz, A. E. Schumacher, H. Apfel, M. Iannarone, B. Phillips, and K. T. Lofgren. 2014. "Global, regional, and national levels of neonatal, infant, and under-5 mortality during 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013." *The Lancet* 384(9947): 957-79.

Wang, J. W., C. N. Wei, K. Harada, K. Minamoto, K. Ueda, H. W. Cui, C. G. Zhang, Z. T. Cui, and A. Ueda. 2011. "Applying the social cognitive perspective to volunteer intention in

China: the mediating roles of self-efficacy and motivation." *Health Promot Int* 26(2): 177-87.

Warren, N., K. F. Norr, and G. B. Keeney. 2013. "Matroniya: The Lived Experiences of Rural Auxiliary Midwives in Koutiala, Mali." *Health care for women international* 34(6): 482-98.

WHO. 1978. "Declaration of Alma-Ata. International Conference on Primary Health Care, Alma-Ata, USSR, 6-12 September 1978."

WHO. 2006. "Working together for health: the World Health Report 2006." Geneva, Switzerland: World Health Organization.

WHO. 2007. "Everybody's business - strengthening health systems to improve health outcomes: WHO's framework for action." Geneva, Switzerland: World Health Organization.

WHO. 2008. "The World Health Report 2008: Primary health care (now more than ever)." Geneva, Switzerland: World Health Organization.

WHO. 2010. "The world health report: health systems financing: the path to universal coverage." Geneva, Switzerland: World Health Organization.

Willis-Shattuck, M., P. Bidwell, S. Thomas, L. Wyness, D. Blaauw, and P. Ditlopo. 2008. "Motivation and retention of health workers in developing countries: a systematic review." *BMC Health Serv Res* 8: 247.

Winch, P. J., K. E. Gilroy, S. Doumbia, A. E. Patterson, Z. Daou, A. Diawara, E. Swedberg, R. E. Black, and O. Fontaine. 2008. "Operational issues and trends associated with the pilot introduction of zinc for childhood diarrhoea in Bougouni district, Mali." *J Health Popul Nutr* 26(2): 151-62.

Wools-Kaloustian, K. K., J. E. Sidle, H. M. Selke, R. Vedanthan, E. K. Kemboi, L. J. Boit, V. T. Jebet, A. E. Carroll, W. M. Tierney, and S. Kimaiyo. 2009. "A model for extending antiretroviral care beyond the rural health centre." *J Int AIDS Soc* 12: 22.

Wringe, A., F. Cataldo, N. Stevenson, and A. Fakoya. 2010. "Delivering comprehensive home-based care programmes for HIV: a review of lessons learned and challenges ahead in the era of antiretroviral therapy." *Health Policy Plan* 25(5): 352-62.

Yakam, J. C. Y. and M. E. Gruénais. 2009. "Involving new actors to achieve ART scaling-up: difficulties in an HIV/AIDS counselling and testing centre in Cameroon." *International nursing review* 56(1): 50-57.

Yasuoka, J., K. C. Poudel, P. Ly, C. Nguon, D. Socheat, and M. Jimba. 2012. "Scale-up of community-based malaria control can be achieved without degrading community health workers' service quality: the Village Malaria Worker project in Cambodia." *Malar J* 11: 4.

Ye-Ebiyo, Y., Y. Kitaw, S. Girma, H. Desta, A. Seyoum, and A. Teklehaimanot. 2007. "Study on health extension workers: access to information, continuing education and reference materials." *Ethiopian Journal of Health Development* 21(3): 240-5.

Yeboah-Antwi, K., D. H. Hamer, K. Semrau, K. Z. Waltensperger, G. Snetro-Plewman, C. Kambikambi, A. Sakala, S. Filumba, B. Sichamba, and D. R. Marsh. 2014. "Can a community

health worker and a trained traditional birth attendant work as a team to deliver child health interventions in rural Zambia?" *BMC Health Serv Res* 14(1): 516.

Yeboah-Antwi, K., P. Pilingana, W. B. Macleod, K. Semrau, K. Siazeele, P. Kalesha, B. Hamainza, P. Seidenberg, A. Mazimba, L. Sabin, K. Kamholz, D. M. Thea, and D. H. Hamer. 2010. "Community case management of fever due to malaria and pneumonia in children under five in Zambia: a cluster randomized controlled trial." *PLoS Med* 7(9): e1000340.

Yin, R. K. 2013. *Case study research: Design and methods*. London, UK: Sage publications.

Yirga, D., K. Deribe, K. Woldemichael, M. Wondafrash, and W. Kassahun. 2010. "Factors associated with compliance with community directed treatment with ivermectin for onchocerciasis control in Southwestern Ethiopia." *Parasites and Vectors* 3: 48.

Zachariah, R., N. Ford, M. Philips, S.Lynch, M. Massaquoi, V. Janssens, and A. D. Harries. 2009. "Task shifting in HIV/AIDS: opportunities, challenges and proposed actions for sub-Saharan Africa." *Transactions of the Royal Society of Tropical Medicine and Hygiene* 103(6): 549-58.

Zachariah, R., R. Teck, L. Buhendwa, M. Fitzerland, S. Labana, C. Chinji, P. Humblet, and A. D. Harries. 2007. "Community support is associated with better antiretroviral treatment outcomes in a resource-limited rural district in Malawi." *Trans R Soc Trop Med Hyg* 101(1): 79-84.

Zerihun, A., M. Admassu, O. Tulloch, M. C. Kok, and D. G. Datiko. 2014. "Report on the context analysis of close-to-community providers in Ethiopia." Hawassa, Ethiopia: HHA-YAM.

Zulu, J. M., A.-K. Hurtig, J. Kinsman, and C. Michelo. 2015. "Innovation in health service delivery: integrating community health assistants into the health system at district level in Zambia." *BMC Health Serv Res* 15(1): 38.

Zulu, J. M., J. Kinsman, C. Michelo, and A.-K. Hurtig. 2014. "Integrating national community-based health worker programmes into health systems: a systematic review identifying lessons learned from low-and middle-income countries." *BMC Public Health* 14(1): 987.

Zulu, J. M., J. Kinsman, C. Michelo, and A. Hurtig. 2013. "Developing the national community health assistant strategy in Zambia: a policy analysis." *Health Res Policy Syst* 11(24): 10.1186.

Annexes

Annex 1. Search strategy

The full REACHOUT search strategy is available from the Royal Tropical Institute. The below presented search strategy is run in Embase. This search strategy was adjusted when needed for use in the other databases.

We based our search strategy on Lewin et al. (2010), but added terms to accommodate the broader range of close-to-community providers. We combined close-to-community providers with the term "health" (or "primary health care" and "community health services") and with impact or outcome measures and with specific search terms relating to either human resource management, quality assurance, monitoring and evaluation, community or policy factors. In general, limiters were: from 2003 till July 2013, English language and low- and middle-income countries (LMICs). Because of the large amount of hits, we only included studies from 2007 – July 2013.

We searched the following databases: Embase, PubMed, Cochrane library, CINAHL, Popline and NHS EED.

Embase search string

Close-to-community providers

#1	'voluntary worker' OR 'voluntary workers' AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#2	'paramedical personnel' AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#3	'health auxiliary' AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#4	'peer group' OR 'peer groups' AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#5	'health visitor' OR 'health visitors' AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#6	doula OR doulas OR douladural? AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#7	(lay OR voluntary OR volunteer OR volunteers OR untrained OR unlicensed OR non+professionals OR non+professional OR nonprofessionals OR nonprofessional OR 'non professional' OR 'non professionals' OR informal OR 'non formal' OR non+formal) NEAR/5 (worker OR workers OR visitor OR visitors OR attendant OR attendants OR aide OR aides OR support OR support* OR person* OR person OR helper OR helpers OR carer OR carers OR caregiver OR caregivers OR consultant OR consultants OR assistant OR assistants OR staff OR visit* OR visit OR midwife OR midwives OR provider OR providers OR 'care giver' OR 'care givers' OR practitioner OR practitioners) AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#8	paraprofessional OR paraprofessionals OR paramedic OR paramedics OR 'paramedical worker' OR 'paramedical workers' OR 'paramedical personnel' OR 'allied health personnel' OR 'allied health worker' OR 'allied health workers' OR 'support worker' OR 'support workers' OR 'home health aide' OR 'home health aides' AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#9	trained NEAR/3 (volunteer OR volunteers OR 'health worker' OR 'health workers' OR mother OR mothers) AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#10	(community OR communities OR 'community based' OR village OR villages OR frontline) NEAR/3 ('health worker' OR 'health workers' OR 'health care worker' OR 'health care workers' OR 'healthcare worker' OR 'healthcare workers' OR distributor OR distributors OR worker OR workers OR provider OR providers) AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#11	(community OR communities OR 'community based') NEAR/3 (volunteer OR volunteers OR aide OR aides OR support) AND [humans]/lim AND [english]/lim AND [2003-2013]/py

#12	(birth OR childbirth OR labor OR labour) NEXT/1 (attendant OR attendants OR assistant OR assistants) AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#13	monitrice OR monitrices AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#14	(lay OR peer) NEXT/1 (volunteer OR volunteers OR mentor* OR mentor OR counsel* OR support OR intervention OR interventions) AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#15	'church based' NEAR/3 (intervention OR interventions OR program* OR program OR counsel*) AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#16	linkworker OR linkworkers OR 'link worker' OR 'link workers' AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#17	'barefoot doctor' OR 'barefoot doctors' AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#18	outreach AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#19	home NEXT/1 (care OR aide OR aides OR nursing OR support OR intervention OR interventions OR treatment OR treatments OR visit* OR visit) AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#20	(care OR aide OR aides OR nursing OR support OR intervention OR interventions OR treatment OR treatments OR visit* OR visit) NEAR/3 (lay OR volunteer OR volunteers OR voluntary) AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#21	auxiliary NEAR/3 (worker OR workers OR nurse OR nurses OR midwives OR midwife) AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#22	'expert patient' OR 'expert patients' OR 'health promoter' OR 'health promoters' OR 'health extension worker' OR 'health extension workers' OR 'mentor mother' OR 'mentor mothers' AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#23	#19 AND #20
#24	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #21 OR #22 OR #23

Health or primary health care combined with impact and outcome measures

#25	health AND (effectiveness OR efficiency OR equity OR 'health care utilization' OR 'patient compliance' OR 'patient attitude' OR 'patient attitudes' OR 'health care quality' OR 'patient satisfaction' OR 'cost effectiveness analysis' OR 'cost benefit analysis') AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#26	('primary health care' OR 'community care') AND (effectiveness OR efficiency OR equity OR 'health care utilization' OR 'patient compliance' OR 'patient attitude' OR 'patient attitudes' OR 'health care quality' OR 'patient satisfaction' OR 'cost effectiveness analysis' OR 'cost benefit analysis') AND [humans]/lim AND [english]/lim AND [2003-2013]/py

Searches related to human resource management, quality assurance, monitoring and evaluation, community and policy factors

#27	'performance appraisal' OR 'personnel selection' OR 'personnel recruitment' OR 'personnel turnover' OR 'staff development' OR workload OR remuneration OR motivation OR incentive OR incentives OR disincentive OR disincentives OR 'job satisfaction' OR 'job performance' OR retention OR supervision OR 'task+shifting' OR 'task shifting' AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#28	'quality assurance' OR 'continuing education' OR 'management quality circles' AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#29	'monitoring and evaluation' OR 'medical information system' OR 'medical information systems' OR 'mobile health' OR mhealth OR ehealth OR m-health OR e-health AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#30	'community participation' OR ownership OR empowerment OR gender OR accountability OR 'village health committees' OR 'village health commitee' AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#31	decentralization OR decentralisation AND [humans]/lim AND [english]/lim AND [2003-2013]/py
#32	#27 OR #28 OR #29 OR #30 OR #31

LMICs

#33	'low and middle income countries' OR lmic OR 'low income countries' OR 'low income country' OR 'middle income countries' OR 'middle income country' OR africa OR asia OR 'developing country' OR 'developing countries' AND [humans]/lim AND [english]/lim AND [2003-2013]/py

Concluding searches

#34	#24 AND #25 AND #32 AND #33
#35	#24 AND #26 AND #32 AND #33

Annex 2. List of included studies and their basic characteristics

First author and year	Country	CHW	Health focus	Study objective	Study type	Included in Chapter 4 and/or 5
Abbott and Luke (2011)	India	Community-based distributors (CBDs)	Reproductive health Distributing contraceptives, referral	To uncover the conflicting expectations that many CBDs experience: to comply with project objectives without violating local social norms that limit interactions across status boundaries	Participant observation, Qualitative	4,5
Agrawal et al. (2012)	India	AWWs (*Anganwadi* workers)	Maternal health, family planning, child care Preventive and curative	To explore the relationship between the knowledge level of CHWs (AWWs and ANMs) and their antenatal home visit coverage and effectiveness of the visits, in terms of essential newborn health care practices at the household level in rural India	Quantitative	5
Ahmed (2008)	Bangladesh	CHWs: *Shasthya Sebikas* (SSs)	Multiple preventive and basic curative services	To describe the story of the SSs – the BRAC model of sustainable community health workers, including its problems and prospects	Qualitative, descriptive	4,5
Ajayi et al. (2008)	Nigeria	Community medicine distributors (CMDs)	Malaria in children less than 5 years Drug distribution and explanation	To determine the feasibility of introducing a new antimalarial drug to the community, especially in rural areas, and assess the community perception on its effectiveness	Qualitative	4,5
Alam et al. (2012a)	Bangladesh	CHWs	Maternal and neonatal health Promotion, preventive	To explore the issue of performance, identifying factors related to the level of activity of CHWs who remain on the registers and in their positions in urban slums in Bangladesh	Mixed methods	4
Alam et al. (2012b)	Bangladesh	CHWs	Maternal and neonatal health Promotion, preventive	To assess factors related to retention of CHWs in urban slums in Dhaka where BRAC has implemented the Manoshi project	Mixed methods	4,5

Alamo et al. (2012)	Uganda	Community antiretroviral therapy and tuberculosis treatment supporters (CATTS)	HIV Support for adherence, referral	To assess the performance of CATTS in scaling up ART in Reach Out, a community-based programme in Uganda	Mixed methods	4,5
Amare (2011)	Ethiopia	Voluntary CHWs (vCHWs)	Multiple	To document the implementation of the introduction of several non-financial incentives for vCHWs and engagement of community anchors to support vCHWs and assess their effectiveness	Qualitative	4,5
Arem et al. (2011)	Uganda	Peer health workers (PHWs)	HIV Psycho-social support, ARV adherence	To better understand PHW trial results (showing decreased loss to follow-up and decrease in virologic failure in the long term but not in the short term) and the underlying processes that led to those results	Mixed methods	4
Azad et al. (2010)	Bangladesh	Traditional birth attendants (TBAs) and facilitators of women groups	Maternal and neonatal health Preventive, referral, support	To test the generalizability and scalability of a community-based participatory approach with women's groups to address maternal and neonatal care in three rural districts of Bangladesh	Quantitative	4,5
Baqui et al. (2008)	Bangladesh	CHWs	Neonatal health Promotion, referral	To evaluate the effect of 2 service delivery strategies (a home based care model and a community care model) on neonatal health in rural Bangladesh	Quantitative (cluster-randomized controlled trial)	4
Baqui et al. (2009c)	Bangladesh	CHWs	Neonatal health Preventive, curative	To report the relative effectiveness of neonatal infection management by CHWs, qualified medical providers, and other types of providers or no treatment, using surveillance data that CHWs collected while assessing, referring, and treating neonates in the home-care study arm of a cluster randomized controlled trial (RCT)	Quantitative (study reports on one cluster arm of a cluster randomized controlled trial)	4
Baqui et al. (2009b)	Bangladesh	CHWs	Neonatal health Preventive, curative	To validate trained community health workers' recognition of signs and symptoms of newborn illnesses and classification of illnesses using a clinical algorithm during routine home visits in rural Bangladesh	Quantitative	4

Reference	Country	CHW type	Focus	Objective	Method	Score
Baqui et al. (2009a)	Bangladesh	CHWs	Neonatal health; Preventive, curative	To assess the effect of the timing of first postnatal home visit by community health workers on neonatal mortality	Quantitative	4,5
Bartos et al. (2009)	Bolivia	CHWs (called *manzaneras de la salud* in local language)	Maternal and neonatal health; Promotion	To evaluate a programme with the aim to extend the duration of breastfeeding in children less than 6 months living in the area of the Corea Municipal Health Network, El Alto, Bolivia	Mixed methods	4,5
Behdjat et al. (2009)	Iran	Women health volunteers (urban CHWs)	Promotion of using participatory approaches	To show the application of action research to inform policy-makers about potential changes in health care delivery and to describe and analyse a pilot project that refocuses on the tasks of urban CHWs in the Islamic Republic of Iran	Qualitative	4,5
Bhutta et al. (2008)	Pakistan	Lady health workers (LHWs), traditional birth attendants (TBAs, "Dais")	Maternal, neonatal and child health; Promotion, prevention	To investigate the feasibility of delivering a package of community-based interventions for improving perinatal care using LHWs and TBAs (Dais) in rural Pakistan	Mixed methods	4,5
Bhutta et al. (2011)	Pakistan	Lady health workers (LHWs), voluntary community health committees (CHCs) and traditional birth attendants (TBAs, "Dais")	Perinatal and newborn care; Primary care, promotion, prevention	To evaluate the effectiveness of a community-based intervention package, principally delivered through LHWs working with TBAs and community health committees, for reduction of perinatal and neonatal mortality in a rural district of Pakistan	Cluster randomized effectiveness trial	4,5
Bisimwa et al. (2009)	Congo	Community volunteers	Malnutrition among children under 5 years of age; Prevention, promotion, curative	To assess the effectiveness of monitoring the growth of preschool-age children by community volunteers through village nutrition committees in a context of endemic malnutrition and armed conflict in South Kivu	Quantitative	4
Bland et al. (2008)	South Africa	Lay (HIV and breast-feeding) counsellors	Exclusive breast-feeding (in both HIV-positive and HIV-negative women)	To report on an intervention designed to improve breastfeeding practices in all HIV-negative women and HIV-positive women who opted to breast-feed in a high HIV prevalence area with previously low rates of EBF (6% at 16 weeks)	Quantitative (nonrandomized intervention cohort study)	4

Brenner et al. (2011)	Uganda	Voluntary CHWs	Child health Health education, counselling "health promotion only" role	To assess volunteer community health workers' effect on child morbidity and health promoting behaviours	Mixed methods	4
Burn (2008)	Pakistan	Lady health workers (LHWs)	Basic health services (with emphasis on women and child health)	To discover and explore factors that cause LHWs to resign from Pakistan's LHW programme by gaining an insight into the experiences and opinions of resigned LHWs and understanding how these impacted on their decision to leave the programme	Qualitative	4,5
Callaghan-Koru et al. (2012)	Malawi	Health surveillance assistants (HSAs)	Childhood illnesses, family planning, tuberculosis (TB), voluntary counselling and testing for HIV Community case management (CCM)	To explore health workers and managers perceptions about CCM provided by HSAs during the programme's first year in Malawi	Qualitative	4,5
Callaghan-Koru et al. (2013)	Malawi	Health surveillance assistants (HSAs)	Childhood illnesses Case management of childhood illnesses	To assess selected health systems support (supervision, drug supply and job aids) for a national community case management programme for childhood illnesses in Malawi during the first year of implementation	Mixed methods	4,5
Campbell et al. (2008)	South Africa	Volunteers	HIV and AIDS Promotion, home based care	To report on community perceptions of a 3-year project which sought to train and support volunteer health workers in a rural community in South Africa	Qualitative	4,5
Celletti et al. (2010)	Brazil, Ethiopia, Malawi, Namibia, Uganda	CHWs	HIV Depending on country	To evaluate the contribution of CHWs with a focus on identifying critical elements of an enabling environment that can ensure they provide quality services in a manner that is sustainable.	Mixed methods	4

Chanda et al. (2011)	Zambia	CHWs	Malaria Promotion, prevention, treatment, referral in case of complicated malaria	To generate information on the capacity of CHWs to use rapid diagnostic tests and Artemisinin-based combination therapy as effective tools for home management of malaria (HMM). It was anticipated that results from this study could inform policy on the feasibility and effectiveness of a large scale HMM programmes implemented by CHWs.	Mixed methods, prospective evaluation	4,5
Chang et al. (2011)	Uganda	Peer health workers	HIV and AIDS Psycho social support, clinical and adherence monitoring	To evaluate the impact of the intervention of mobile phone used by peer health workers on aids care and assessing personal experiences with mobile phone use	Mixed methods	4
Chen et al. (2011)	Malawi	Trained traditional birth attendants (TBAs)	Maternal and neonatal health Prevention, referral, uncomplicated deliveries	To evaluate the effectiveness a TBA training programme by measuring the TBAs reproductive knowledge and by gathering data on the outcomes of the deliveries they assisted. The additional objectives were to determine the effect of factors such as age and years of education of the TBAs, test frequency and time elapsed from the last course on knowledge scores.	Quantitative	4
Chibanda et al. (2011)	Zimbabwe	Lay workers	HIV, TB but for this specific study common mental disorders and depression Health education, promotion	To gather data on the effectiveness of problem-solving therapy for depression and common mental disorders by lay workers and to see if the intervention would be feasible, and if so to gather ideas about how best to implement it on a larger scale	Mixed methods	4
Corbett, Guenther, and Sitrin (2013)	Malawi, Nepal, Bangladesh, Uganda	CHWs	Newborn care Curative, referral	To examine the role of CHWs in the identification and referral of newborns with danger signs in pilot areas of four countries where the Save the Children's Saving Newborn Lives programme supported community based maternal and newborn care packages	Qualitative	4

Cornman et al. (2011)	South Africa	(Trained) lay counsellors	HIV Counselling, health education regarding safe sex	After an exploratory study, a pilot study was conducted at a South African Department of Health-accredited antiretroviral therapy clinic in the uMgungundlovu Health District of KwaZulu-Natal, to evaluate a lay counsellor delivered HIV risk reduction intervention for its feasibility, acceptability and fidelity	Qualitative	4
Counihan et al. (2012)	Zambia	CHWs	Malaria Home based malaria testing	To assess CHW ability to use malaria rapid diagnostic test safely and accurately up to 12 months post training, in the home setting	Quantitative	4
Crispin et al. (2012)	Kenya	CHWs	Maternal health Home visits	To assess the performance of CHWs based on socio-demographic characteristics	Quantitative (cross sectional)	4
Dambisya and Matinhure (2012)	Uganda	CHWs	HIV, family planning, sexual and reproductive health Prevention, counselling	To assess the policy and programmatic implications of task shifting in Uganda	Qualitative	4,5
Daniels et al. (2012)	South Africa	Lay health workers (LHWs)	Multiple Prevention, curative	To explore the contemporary development of LHW policy in South Africa and to explain how gender was considered in this process	Qualitative	5
Darmstadt et al. (2010)	Bangladesh	CHWs	Antenatal, postnatal care, integrated management of childhood illness (IMCI) Home visits, referral	To examine outcomes of the surveillance programme including 1) factors associated with coverage of postnatal assessment by CHWs and 2) factors associated with compliance with referral by CHWs	Quantitative	4,5
Das et al. (2008)	India	Village volunteers, anganwadi workers	Malaria Promotion, preventive, curative	To assess the feasibility of establishing drug distribution centres through village volunteers in a tribal area in India where health-seeking practice of the community has been poor and to assess the impact of treatment of fever cases with chloroquine on morbidity, mortality and parasite prevalence in the community	Quantitative	4,5

Reference	Country	CHW type	Focus / service	Objective	Study design	Score
Dawad and Jobson (2011)	South Africa	Community rehabilitation facilitators	Rehabilitation (care for people with disabilities); Referral, awareness raising, care	To identify lessons to be learnt from community- based rehabilitation programmes using multi-skilled mid-level workers for increasing access to HIV care for people living in low-income rural areas without easily accessible health care infrastructure	Qualitative	4,5
Dawson et al. (2008)	Nepal	Female community health volunteers (FCHVs)	Child health, pneumonia; Prevention, curative	To describe Nepal's efforts, starting from the mid-1980s, to develop and implement community-based management of pneumonia	Descriptive paper of 20 years experience of community-based management of childhood pneumonia in Nepal	4,5
Dewing et al. (2012)	South Africa	Lay counsellors	HIV; Counselling, promotion	To evaluate the coverage and barriers to the implementation of a counselling intervention in ARV clinics, conducted by lay counsellors in South Africa	Mixed methods	4
Diakite et al. (2009)	Guinea	Community-based distributors (who are part of the village health committees (VHCs)	Family planning; Promotion	To highlight the VHC in the child survival project and the integration of family planning work, describe the VHC purpose, membership, and tasks, and conclude with some outcomes of Save the Children's family planning component in Mandiana and Kouroussa districts, Congo	Qualitative (descriptive)	4,5
Dick et al. (2007)	South Africa	Lay health workers (LHWs)	Multiple; Prevention, promotion, curative	To evaluate the effect of LHW recruitment, training and deployment of successful treatment completion by new smear-positive TB patients among permanent farm dwellers	Mixed methods, unblended cluster randomized trial	4
Dil et al. (2012)	Ghana	Community-based surveillance volunteers (CBSVs)	Multiple; Prevention, promotion	To explore factors that motivate, and the challenges faced by CBSVs in the Northern Region of Ghana	Qualitative	4
Edward et al. (2007)	Mozambique	Community health volunteers (CHVs)	Child health; Health education	To measure under-five mortality reduction in a community-based child survival programme	Quantitative	4

Elmardi et al. (2009)	Sudan	Malaria control assistants	Malaria Diagnosis, treatment, home-based	To assess the feasibility and acceptability of home-based management of malaria strategy using artemisinin-based combination therapy for treatment and rapid diagnostic test for diagnosis	Mixed methods	4,5
Furth and Crigler (2012)	Zambia	CHWs	HIV and AIDS Promotion, curative, counselling (positive living and ART adherence counselling)	To test the hypothesis that by applying the CHW AIM tool and addressing programme weaknesses identified through the process, organizations will be able to improve the functionality of their CHW programmes. 3 Key questions formed the foundation for the CHW AIM operations research activity: 1 Does application of the CHW AIM tool contribute to CHW programme functionality improvement; 2 what is the relationship between programme functionality, CHW engagement and CHW performance; 3 what are the costs associated with implementing the CHW AIM tool and what is the incremental cost effectiveness associated with its use?	Mixed methods	4,5
Ge et al. (2011)	China	CHWs	Multiple	To clarify the level of job satisfaction of Chinese CHWs between a metropolitan (Shenyang) and a small city (Benxi) in Liaoning province, China and explore its associated factors	Quantitative	4,5
Gill et al. (2011)	Zambia	Traditional birth attendants (TBAs)	Neonatal health Prevention, promotion, curative	To determine whether training TBA's to manage several common perinatal conditions could reduce neonatal mortality in the setting of a resource poor country with limited access to healthcare	Quantitative	4
Gill et al. (2012)	Zambia	Traditional birth attendants (TBAs)	Neonatal health Prevention, promotion, curative	To provide relevant details on how interventions in the Lufwanyama Neonatal Survival Project were developed and how Zambian TBAs were trained to perform them	Qualitative	4,5

Gusdal et al. (2011)	Ethiopia, Uganda	Peer counsellors	HIV Support, adherence ARV	To explore peer counsellors' work and their role in supporting patients' adherence to ART in resource-limited settings in Ethiopia and Uganda	Qualitative	4,5
Hamer et al. (2012)	Zambia	CHWs	Multiple, including the integrated management of malaria and pneumonia	To assess the quality and safety of having CHWs in rural Zambia use rapid diagnostic tests and provide integrated management of malaria and pneumonia	Quantitative (cluster RCT)	4
Hien le et al. (2008)	Vietnam	Community leaders (including village health workers)	Health education, promotion of healthy living environment in the community	To evaluate the effectiveness of an educational programme entitled 'Capacity building for community leaders in a healthy living environment,' and to assess the usefulness of a participatory style of education and the applicability of an inter-sectoral approach in the educational process	Mixed methods (randomized controlled study)	4
Hill et al. (2008)	Ghana	Community-based surveillance volunteers (CBSVs)	Neonatal health Promotion, curative	To provide information on intervention design by describing the process and information used to design a large scale community-based newborn intervention in Ghana (called Newhints)	Mixed methods	4,5
Hoke et al. (2008)	Madagascar	Community-based distribution (CBD) workers	Family planning using injectable contraceptives Prevention, distribution	To inform the Ministry of Health, Family Planning and Social Protection officials with evidence that CBD of Depot Medroxyprogesterone Acetate could be provided safely and effectively by lay health workers in Madagascar	Mixed methods	4,5
Hoy et al. (2008)	Laos	Village youth volunteers	HIV and AIDS, STIs Peer education, promotion	To assess the outcomes of the Lao Youth HIV and STI Response Project at the district and village levels in terms of: (1) the capacity of district project working teams to develop and implement their HIV and STI activity plans; (2) the sustainability of the project; and (3) the ability of young Lao people to respond to the risk of HIV and STIs through healthy behaviour change	Qualitative	4,5

Author (year)	Country	CHW type	Focus	Objective	Method	Score
Huber et al. (2010)	Afghanistan	CHWs	Family planning / Promotion, contraceptive injections	To assess the increase in contraceptive use in rural Afghanistan	Mixed methods	4,5
Jack et al. (2012)	Uganda	Community Volunteer Workers	Palliative care	To evaluate the motivation for becoming a volunteer and the personal impact of being a palliative care Community Volunteer Worker in Uganda	Qualitative	4,5
Jaffar et al. (2009)	Uganda	Field officers (who were trained lay workers)	HIV and AIDS / Curative	To assess home-based HIV care, with lay workers delivering antiretroviral therapy and monitoring patients versus facility-based HIV care	Quantitative (cluster randomized equivalence trial)	4
Javanparast et al. (2011)	Iran	CHWs	Multiple	To explore the perceptions of CHWs regarding their contribution to rural health in Iran	Qualitative	4,5
Javanparast et al. (2012)	Iran	CHWs	Female CHWs assist deliveries / Prevention, promotion	To analyse the CHW training process in Iran and how different components of training have impacted on CHW performance and satisfaction	Qualitative	4,5
Kalyango et al. (2012)	Uganda	Community medicine distributors (CMDs)	Integrated case management of childhood illnesses (iCCM) of Malaria and pneumonia / Curative	To compare the performance of CHWs in the dual management of malaria and pneumonia versus CHW management of malaria alone in children under five and to assess the factors influencing CHW performance	Mixed methods	4,5
Kebriaei and Moteghedi (2009)	Iran	CHWs (called *behvarz* in local language)	Multiple health focus / Primary health care services	To investigate job satisfaction levels overall and in various areas among health care workers in the community and to suggest approaches that could improve job satisfaction	Quantitative (cross-sectional survey)	4
Kim et al. (2012b)	Uganda	Network support agents and people living with HIV (PLHIV) groups	HIV / Home based palliative care, adherence counselling, prevention, referral	To evaluate a programme that was aiming for: increased access and utilization of prevention, treatment, care and support services by households affected by HIV and AIDS, strengthening of the organizational capacity of PLHIV networks and empowering and training of PLHIV to deliver HIV and AIDS services	Qualitative	4

Kim et al. (2012a)	Malawi	CHWs	HIV Care regarding prevention of mother to child transmission	To evaluate a CHW based patient case management system for prevention of mother to child transmission	Quantitative cohort study	4,5
Kok and Muula (2013)	Malawi	Health surveillance assistants (HSAs)	Multiple	To assess motivation, job perception and satisfaction of HSAs in Mwanza district, Malawi	Qualitative	4,5
Kouyate et al. (2008)	Burkina Faso	Women group leaders	Malaria Curative	To evaluate the feasibility and effectiveness of an intervention aimed at improving case management of malaria in under five children through primary caretakers in collaboration with local women groups and existing health centres	Quantitative (cluster randomized controlled effectiveness trial)	4
Lemay et al. (2012)	Malawi	Health surveillance assistants (HSAs), community-based distribution agents	mHealth	Aimed to answer: To what extent has the SMS network in Salima and Nkotakota districts a) reduced the communication gap between health workers and their district teams and increased access to information among these health workers? B) improved the ability of CHWs to provide quality services and care?	Mixed methods Evaluation of a pilot mHealth intervention	4
Lewis (2010)	Kenya	CHWs, traditional birth attendants (TBAs)	Multiple health focus Home visits, health education	To evaluate the Busia Child Survival Project in Busia and Samia districts, Kenya	Mixed methods	4
Maes and Kalofonos (2013)	Ethiopia, Mozambique	CHWs	HIV and AIDS Prevention, promotion, recruitment of patients, support	To provide policymakers with a holistic understanding of how and why people become and remain CHWs and to generate in-depth understanding of life histories that lead people to become CHWs, their reasons to stay CHWs in particular their relationships with intended beneficiaries after becoming CHWs and their social and economic aspirations	Qualitative	4,5
Mannan et al. (2008)	Bangladesh	CHWs	Maternal and neonatal health Promotion	To study whether postpartum visits by trained CHWs reduce newborn breastfeeding problems	Cluster RCT	4,5

		Community reproductive health workers (CRHWs)	Reproductive health / Promotion	Objective	Method	Score
Martinez et al. (2008)	Uganda	Community reproductive health workers (CRHWs)	Reproductive health / Promotion	To assess the current practices, barriers and training needs of CRHWs	Qualitative	4,5
McPherson et al. (2010)	Nepal	Female community health volunteers (FCHVs)	Maternal and neonatal health / Health promotion	To assess the assumption that FCHVs are effective at promoting care-seeking and desired household practices and that a booklet will facilitate the communication of messages, reinforce the FCHVs' counselling and stimulate intra-household discussion	Qualitative	4,5
Medhanyie et al. (2012b)	Ethiopia	Health extension workers (HEWs)	Multiple health focus	To assess utilization to maternal health services by women in rural villages in Ethiopia	Quantitative / Cross sectional survey	4,5
Miller et al. (2012)	Pakistan	Traditional birth attendants (TBAs)	Family planning, deliveries, neonatal care, postnatal care / Promotion, curative	To determine whether traditional birth attendants (TBAs) trained via the "SMART Dai" method were superior to untrained TBAs in knowledge and practice regarding maternal and newborn care	Cluster RCT	4
Moetlo et al. (2011)	South Africa	Community home based care workers	Multiple health focus / Prevention, promotion, curative	To evaluate the implementation of integrated community home-based care services in Vhembe District, Limpopo Province, South Africa	Quantitative cross sectional	4
Mohan et al. (2011)	India	Anganwadi workers (AWWs), accredited social health activists (ASHAs)	Child care / Promotion	To assess the progress of integrated management of neonatal and childhood illnesses in India, to identify the programme bottlenecks, and also assess the effect on coverage of key newborn and childcare practices	Quantitative (analysis secondary data)	4
Mukanga et al. (2010)	Uganda	Community medicine distributors (CMDs)	Malaria / Curative	To assess community acceptability of the use of Rapid Diagnostic Tests (RDTs) by CMDs in Uganda	Qualitative	4,5
Mukanga et al. (2012)	Uganda	CHWs	Malaria, pneumonia / CCM (for children under 5)	To assess household access, utilization and acceptability of the use of rapid diagnostic tests and respiratory rate timers by CHWs following one year of implementation	Quantitative (cross sectional household survey)	4,5

Study	Country/Focus	Worker type	Health focus	Aim	Methods	Score
Mukherjee and Eustache (2007)	Focus on Haiti (for other parts of the study also data from Mexico, Peru, USA are included)	CHWs	Multiple health focus Promotion, prevention, curative	To describe the contribution of the non-governmental organization, Zanmi Lasante, to the HIV prevention and treatment scale-up and to the ongoing efforts to improve primary health care services in the public health system in Haiti	Mixed methods	4,5
Mutalemwa et al. (2009)	Tanzania	Community implementers, also known as community directed distributors	Community direction intervention Multiple health focus Distribution of drugs	To determine the extent to which the community direction intervention process can be used for the delivery of other health interventions with different degrees of complexity	Qualitative	4,5
Nasreen et al. (2011)	Bangladesh	CHWs: *Shasthya Kormis* (SKs), *Shasthya Sebikas* (SSs), newborn health workers	Maternal, neonatal and child health	To investigate whether a single dose of 400µg oral misoprostol could prevent postpartum haemorrhage in a community home-birth setting and to assess its acceptability and feasibility among rural Bangladeshi women	Quantitative	4,5
Nelson et al. (2012)	South Sudan	Frontline health workers (FHWs), including traditional birth attendants (TBAs), maternal-child-health workers, community midwives, CHWs	Mother and child health Community based delivery assistance	To develop, implement, and evaluate an evidence-based maternal, newborn, and child survival package for FHWs in South Sudan	Mixed methods	4,5
Nsabagasani et al. (2007)	Uganda	Voluntary community-based drug distributors	Malaria Curative	To explore community perceptions, health worker and drug provider opinions of community based distribution of pre-packed antimalarials (HOMAPAK) and its effect on management of fever and use of other antimalarials	Qualitative	4,5
Nyanzi et al. (2007)	Gambia	Traditional birth attendants (TBAs)	Multiple Prevention, promotion, curative	To understand the different roles that TBAs play in rural Gambia, exploring within and beyond metaphors of health in order to examine broader socio-cultural constructs	Qualitative	4,5

Author (year)	Country	CHW type	Focus	Aim	Method	Score
Olang'o et al. (2010)	Kenya	CHWs	HIV home based care; Prevention, promotion, curative	To examine the attrition rates of CHWs from the home based care programme in Nyang'oma division, Bondo district, Nyanza province in western Kenya and to examine the trend, proximate and underlying causes and discuss the implications of attrition on the health care system and on support to those living with HIV and AIDS	Qualitative	4,5
Omer et al. (2008)	Pakistan	Lady health workers (LHWs)	Multiple	To demonstrate the effective use of community-based evidence for health promotion by LHWs in Sindh province, Pakistan	Quantitative	4,5
Osawa et al. (2010)	Zimbabwe	Care facilitators (CFs)	HIV home based care; Prevention, promotion, curative	To understand the socio-demographic factors influencing the motivation and sustainability of CFs engaged in a community home-based HIV and AIDS programme, and the association between motivational outcomes, self-assessed performance, and CFs' perception toward the work and work environments in the community home-based HIV and AIDS programme in Masvingo Province, Zimbabwe	Quantitative	4,5
Peltzer et al. (2010)	South Africa	Lay HIV counselling and testing counsellors	HIV; Prevention, promotion, counselling, testing	To evaluate the feasibility, fidelity, and effect of a HIV risk reduction intervention delivered to HIV-infected patients by lay counsellors during routine HIV counselling and testing public service in Mpumalanga, South Africa	Mixed methods	4,5
Perez et al. (2009)	Mali	CHWs	Child health; Promotion, preventive	To assess the performance of CHWs in the promotion of child health services at the household level in the district of Djenné, region of Mopti, Republic of Mali	Mixed methods	4,5
Pongvongsa et al. (2011)	LAO PDR	Village health volunteers (VHVs)	No info on focus; Prevention, promotion, curative	To identify determinants of monthly reporting among VHVs in a rural district of Lao PDR	Quantitative	4

Posner et al. (2009)	Nepal	Peer educators	Caste-associated menstrual prohibitions and the vulnerability of adolescent girls and women to HIV HIV risk awareness	To examine how self-efficacy and collective efficacy function to bring about individual and normative behavioural change among the adolescent girls who facilitated a non-formal education programme	Quantitative	4,5
Prata et al. (2009)	Ethiopia	Trained traditional birth attendants (TBAs)	Maternal health, Deliveries Preventive, curative	To determine the safety and feasibility of home-based prophylaxis of postpartum haemorrhage with misoprostol, including assessment of the need for referrals and additional interventions	Intervention trial, mixed methods	4
Prata et al. (2012b)	Bangladesh	Trained traditional birth attendants (TBAs)	Maternal health, deliveries Referral	To evaluate TBA's knowledge acquisition, knowledge retention and changes in attitudes and practices related to postpartum haemorrhage management in home births after undergoing training on the use of misoprostol and a delivery mat	Quantitative	4,5
Prata et al. (2012a)	Nigeria	Community oriented resource persons, drug keepers, trained traditional birth attendants (TBAs)	Maternal health Counselling, referral	To demonstrate the importance of community mobilization in the uptake of a health intervention, namely, community-based distribution of misoprostol to prevent postpartum haemorrhage	Quantitative	4,5
Puchalski Ritchie et al. (2012)	Malawi	Health surveillance assistants (HSAs)	TB Many tasks on treatment, support	To identify and explore barriers and facilitators to LHWs' efforts to support anti-TB treatment adherence in Malawi	Qualitative	4
Puett et al. (2013)	Bangladesh	CHWs	Child health: immunization, acute respiratory infections, malnutrition Prevention, promotion	To assess the quality of care provided by CHWs in managing cases of severe acute malnutrition by provision of community-based management of acute malnutrition protocols	Mixed methods	4,5
Rahman et al. (2008)	Pakistan	Lady health workers (LHWs)	Mental health Prevention	To assess the effect of an intervention (that integrated cognitive behaviour therapy-based intervention into the routine work of community-based primary health workers in rural Pakistan) on maternal depression and infant outcomes	Quantitative (Cluster RCT)	4

Rahman and Tasneem (2008)	Bangladesh	Shasthya Shebikas (SSs), CHWs	Multiple: MNCH, Malaria, midwifery, TB, antenatal care Prevention, promotion, curative	To explore whether and how the income earning capability varied among the new and old SSs, due to introduction of MNCH activities in the Nilphamari district of northern Bangladesh, including factors influencing their motivation and sustenance	Quantitative	4,5
Rahman et al. (2010)	Bangladesh	CHWs	Maternal and neonatal health Prevention, promotion, curative	To assess factors affecting recruitment and retention of CHWs who were part of an intervention trial that evaluated effectiveness of two different service delivery models of a package of maternal and newborn care	Mixed methods	4,5
Razee et al. (2012)	Papua New Guinea	Various rural health workers: health extension officers, officers-in-charge, sisters-in-charge, CHWs and nursing officers	Not described, focus of article was on motivation and performance of health workers	To investigate how social factors impact on health worker motivation and performance in rural health services in Papua New Guinea	Qualitative	4,5
Root and van Wyngaard (2011)	Swaziland	Trained caregivers	HIV and AIDS Home care	To explore the concept of religious health assets and its relevance to HIV and AIDS	Qualitative	4,5
Rowe et al. (2007a)	Kenya	CHWs	Child health	To assess the effect of quality improvement interventions and explore the effect of other non-intervention related factors on CHW performance in Siaya district, Kenya	Quantitative (cross sectional survey)	4
Rowe et al. (2007b)	Kenya	CHWs	Child health Preventive, curative	To investigate the changes in CHWs' adherence to treatment guidelines over time and to assess whether refresher training had an immediate or enduring effect on adherence	Quantitative (longitudinal study)	4
Sadler et al. (2011)	Bangladesh	CHWs	Child health Preventive, curative	To examine the effectiveness and feasibility of adding diagnosis and treatment of severe acute malnutrition to the community case management package delivered by community health workers outside health facilities in Barisal, Bangladesh	Qualitative	4,5

Study	Country	Cadre	Topic	Objective	Method	
Sahay and Mehendale (2011)	India	Peer educators	HIV and AIDS Promotion, preventive	To describe steps and experiences in the establishment of Community Involvement Plan of the National AIDS Research Institute in Pune, India and lessons learnt in this process	Qualitative (descriptive)	4
Saleem et al. (2007)	Pakistan	Traditional birth attendants (TBAs)	Home deliveries	To determine the safety of 0.6% chlorhexidine vaginal and neonatal wipes and to estimate whether a randomized trial of 0.6% chlorhexidine vaginal and neonatal wipes could be conducted in home-delivery settings in Pakistan	Mixed methods (including a randomized controlled trial)	4,5
Sanghvi et al. (2010)	Afghanistan	CHWs	Maternal and neonatal health Prevention of postpartum haemorrhage by distributing misoprostol	To test the safety, acceptability, feasibility, and effectiveness of community-based education and distribution of misoprostol by CHWs for prevention of postpartum haemorrhage at home birth in Afghanistan	Quantitative (non-randomized experimental design)	4,5
Sanjana et al. (2009)	Zambia	Lay counsellors	HIV Counselling and testing	To review the effectiveness of lay counsellors in addressing staff shortages and the provision of HIV counselling and testing services	Mixed methods	4,5
Saravanan et al. (2011)	India	Trained traditional birth attendants (TBAs)	Maternal health Deliveries	To assess the ways in which a TBA training programme in India has been successful in disseminating evidence-based knowledge on birthing practices	Quantitative	4,5
Saravanan et al. (2012)	India	Traditional birth attendants (TBAs)	Design of a TBA training programme Deliveries	To assess the extent to which there is a synthesis of both biomedical and locally practiced knowledge in the content and community involvement in the design of TBA a training programme in India	Systematic literature review	4,5

Satti et al. (2012a)	Lesotho	Traditional birth attendants (TBAs, who became later clinic affiliated maternal health workers)	Maternal health No information	To report the experience in rural Lesotho, where Partners in Health in partnership with the Lesotho Ministry of Health and Social Welfare has implemented a pilot programme that provides comprehensive care for pregnant women from the community to the health centre level, linking key primary care services (including HIV testing and treatment) to antenatal care and facility-based delivery	Quantitative, (uncontrolled before-after study)	4,5
Schneider et al. (2008)	South Africa	CHWs (as umbrella concept for amongst others community development workers, community development practitioners, mid-level worker, community caregivers, child and youth care workers, youth workers, probation officers/community service officers and early childhood development practitioners)	Multiple health focus, including HIV, TB Prevention, promotion	To examine the current generation of CHWs in South Africa in the light of the history and international experience with CHWs, with a focus on their central role in the response to HIV and AIDS, to analyse the national policy context and then report on the empirical reality of CHWs in the primary health care system of one of the nine provinces (Free State) of the country, and to discuss the effectiveness, tensions and prospects of sustainability of CHWs in the South African health system	Qualitative	4,5
Scott and Shanker (2010)	India	Accredited social health activists (ASHAs)	Maternal and child health, family planning Prevention, promotion, curative	To obtain insight into how best to support CHW programmes	Qualitative	4,5

Study	Country	Provider	Topic / Focus	Objective	Method	Score
Shah et al. (2007)	Pakistan	Non-formal providers (sex-clinic practitioners)	Sexually transmitted diseases (including HIV) / Curative	To assess whether introducing training for syndromic case management to Pakistani sex-clinic practitioners, with or without the provision of sexually transmitted diseases syndromic packets, could enhance the quality of the care they provide to symptomatic men	Quantitative (randomized, controlled, three-armed trial)	4
Shah et al. (2010)	Bangladesh	CHWs	Neonatal health / Prevention, cleaning of umbilical cord	To research practical implications and operational challenges associated with the deployment of large cadres of community-based workers within an efficacy trial of chlorhexidine for cleansing the umbilical cord	Case study within a cluster RCT	4,5
Shankar et al. (2009)	Indonesia	Community facilitators	Maternal health (micronutrient deficiencies in pregnant women) / Promotion, preventive	To examine the additional health-care impacts that have resulted from the overall engagement of the Supplementation with Multiple Micronutrients Intervention Trial (SUMMIT) programme activities within the community and the role of the community facilitators in promoting positive health behaviours	Quantitative (randomized, double-blind, controlled clinical trial)	4,5
Simba and Kakoko (2009)	Tanzania	Peer educators	Reproductive health, sexually transmitted infections / Education, support, referral	To explore the motive behind voluntarism among adolescent peer educators in Mbeya region, Tanzania with a view to making recommendations on strategies for sustaining peer education activities	Mixed methods	4,5
Simon et al. (2009)	Mozambique	Agente polivalente elementares (APEs), TB volunteers, agente comunitário de saúde, traditional birth attendants (TBAs), HIV support groups	Multiple health topics / Prevention, support, curative	To present a participant-observer description of the evolution of community health worker support to the health services in Angonia district, Mozambique	Qualitative, descriptive	4,5
Simwaka et al. (2012)	Malawi	Trained informal providers (shop owners)	TB / Advise on medicine, referral	To determine the effectiveness and acceptability of a store keeper based referral system for TB suspects in urban settings of Lilongwe, Malawi	Mixed methods	4,5

Smith et al. (2007)	Pakistan	Different "support workers" (including lady health workers (LHWs), lady health visitors, lady health assistants and CHWs)	Multiple (TB, maternal and child health)	To learn from Pakistan's experience with support workers to improve access of the UK system for ethnic minority groups	Qualitative	4,5
Smith et al. (2013)	Madagascar	Community health volunteers (CHVs)	Multiple Prevention, promotion, curative	To synthesize the findings from a qualitative and a cross-sectional study on CHV programme functionality and performance in Madagascar	Mixed methods	4,5
Soofi et al. (2012)	Pakistan	Lady health workers (LHWs)	Pneumonia in children aged 2-59 months Preventive, curative	To establish whether community case identification and management of severe pneumonia by oral antibiotics delivered through community health workers has the potential to reduce the number of infants dying at home	Quantitative (Cluster RCT)	4,5
Sranacharoenpong and Hanning (2011)	Thailand	Community health care workers (CHCWs)	Diabetes and other diseases Health promotion, basic health care	To investigate barriers to and support for implementing a community-based diabetes prevention education programme for CHCWs and to get preliminary input into programme design from the perspectives of health-care professionals and potential programme recipients of Chiang Mai province, Thailand	Qualitative	4,5
Srivastava et al. (2009)	Uttar Pradesh, India	Accredited social health activists (ASHAs)	Antenatal and postnatal care, maternal health Primary medical care, education, counselling	To conduct a rapid appraisal of the functioning of ASHA in the community and her interface with community and service providers	Mixed methods	4,5
Stanback, Mbonye, and Bekiita (2007)	Uganda	Community reproductive health workers (CRHWs)	Family Planning Contraceptives, referral	To compare the safety and quality of contraceptive injections by community-based health workers with those of clinic-based nurses in a rural African setting	Mixed methods (non-randomized community trial)	4
Suri et al. (2007)	South Africa	CHWs	TB, HIV Monitoring directly observed treatment, education, promotion	To examine the perspectives of CHWs to identify ways of improving the current CHW programme to more effectively combat the spread of HIV infection and TB in South Africa	Mixed methods	4,5

Study	Country	CHWs	Multiple health focus	Objective	Method	Score
Takasugi and Lee (2012)	Kenya	CHWs	Preventive, promotion	To examine determinants of work motivation of voluntary CHWs in Kenya	Qualitative	4,5
Teela et al. (2009)	Myanmar	Maternal health workers (MHWs)	Maternal Health / Prevention, promotion, curative	To evaluate the feasibility and impact of community-based provision of evidence-based maternal health interventions via the mobile obstetric maternal health worker (MOM) project in eastern Burma	Qualitative	4,5
Teklehaimanot et al. (2007)	Ethiopia	Health extension workers (HEWs)	16 packages of the Health Extension Package	To assess the working conditions of the first batch of HEWs (deployed in early 2005) and their job satisfaction	Qualitative	4,5
Tenthani et al. (2012)	Malawi	Expert patients (People living with HIV)	HIV, ART / Health education, promotion, advice	To assess the performance and acceptability of expert patients in HIV care provision in Zomba Central Hospital	Mixed methods	4
Torpey et al. (2008)	Zambia	Health care workers and adherence support workers (ASWs)	HIV and AIDS / Adherence counselling, ART	To assess the effectiveness of ASWs in adherence counselling, treatment retention and addressing inadequate human resources at health facilities	Mixed methods	4
Uzochukwu et al. (2008)	Nigeria	Community health extension workers (CHEWs)	IMCI	To assess if shorter training on IMCI will improve performance of health workers	Mixed methods	4,5
Vichayanrat et al. (2012)	Thailand	Lay health workers (LHWs)	Oral health / Promotion	To demonstrate the application of the social ecological model to oral health interventions and to evaluate its effects on oral health practices among caregivers of children in Thailand and their determinants at multiple levels	Semi-experimental design using mixed methods	4
Viswanathan et al. (2012)	Afghanistan	CHWs	Family planning, antenatal care, maternal health / Prevention, promotion, curative	To determine if presence of a CHW in the community is associated with increased use of modern contraception, antenatal care and skilled birth attendance in Afghanistan	Quantitative (household survey)	4,5
Wang et al. (2011)	China	Community health volunteers	No specific focus / Prevention	To determine whether perceptions of a volunteer organization environment are associated with volunteer intention and whether this relationship is mediated by self-efficacy and motivation	Quantitative	4

Winch et al. (2008)	Mali	CHWs	IMCI, Malaria Prevention, promotion, curative	To: a) evaluate community promotion of zinc treatment and identify more effective channels of communication b) identify and resolve obstacles to implementation of zinc through community health centres and through a system of village drug kits managed by CHWs and c) identify factors that facilitate or impede the adoption of appropriate home management (treatment) of diarrhoea, including supplementation with zinc	Mixed methods	4,5
Wools-Kaloustian et al. (2009)	Kenya	Community care coordinators	HIV Prevention, promotion, curative	To assess a model for extending antiretroviral care through community care coordinators, regarding acceptability and feasibility	Mixed methods	4,5
Yasuoka et al. (2012)	Cambodia	Village malaria workers (VMWs)	Malaria Referral, prevention, case detection, education	To assess if expansion of activities of VMWs interferes with the quality of service of their original tasks in malaria control	Quantitative	4
Yeboah-Antwi et al. (2010)	Zambia	CHWs	Child health Curative, referral regarding malaria and pneumonia	To assess the effectiveness and feasibility of using CHWs to manage pneumonia and malaria in children with the aid of Rapid Diagnostic Tests (RDTs) per protocol	Cluster RCT	4
Ye-Ebiyo et al. (2007)	Ethiopia	Health extension workers (HEWs)	Multiple	To make a clear needs assessment of continuing education and clearly map out and articulate priorities in and identify resources to undertake continuing education for HEWs	Qualitative	5
Yirga et al. (2010)	Ethiopia	Community drug distributors (CDDs)	Onchocerciasis Ivermectin distribution	To identify what factors are associated with community directed treatment with Ivermectin compliance	Quantitative (case control study)	4
Zachariah et al. (2007)	Malawi	Volunteers	HIV and AIDS Household visits, referral, drug distribution	To verify if community support influences ART outcomes among HIV positive individuals placed on ART in a rural district in Malawi	Quantitative	4

Abbreviations

AIDS	Acquired immune deficiency syndrome
APE	Agente polivalente elementar
ART	Anti-retroviral therapy
ASHA	Accredited social health activist
ASW	Adherence support worker
AWW	Anganwadi worker
CASP	Critical Appraisal Skills Programme
CATTS	Community antiretroviral therapy and tuberculosis treatment supporter
CBD	Community-based distributor/ community-based distribution
CBSV	Community-based surveillance volunteer
CCM	Community case management
CDD	Community drug distributor
CF	Care facilitator/ Community facilitator
CHCW	Community health care worker
CHC	Community health committee
CHEW	Community health extension worker
CHS	Community Health Strategy
CHT	Community health team
CHV	Community health volunteer
CHW	Community health worker
CMD	Community medicine distributor
CMO	Context-mechanism-outcome
CRHW	Community reproductive health worker
CTC	Close-to-community
CVW	Community volunteer worker
FCHV	Female community health volunteer
FGD	Focus group discussion
FHW	Frontline health worker
HDA	Health development army
HEP	Health Extension Programme
HEW	Health extension worker
HFC	Health facility committee
HIV	Human immunodeficiency virus
HRH	Human resources for health
HSA	Health surveillance assistant

HTC	HIV counselling and testing
iCCM	Integrated community case management
IMCI	Integrated management of childhood illness
KIT	Koninklijk Instituut voor de Tropen
LHW	Lay health worker/ Lady health worker
LMIC	Low- and middle-income country
LSTM	Liverpool School of Tropical Medicine
MHW	Maternal health worker
NGO	Non-governmental organization
PHW	Peer health worker
PLHIV	People living with HIV
RCT	Randomized controlled trial
SK	Shasthya Kormi
SMS	Short message service
SS	Shasthya Sebika
SSI	Semi-structured interview
TB	Tuberculosis
TBA	Traditional birth attendant
NGO	Non-governmental organization
UNICEF	United Nations Children's Fund
vCHW	Voluntary community health worker
VHC	Village health committee
VHV	Village health volunteer
VMW	Village malaria worker
WHO	World Health Organization

Summary

Background

Community health workers (CHWs) form an essential part of the health system in many low- and middle-income countries (LMICs). They deliver promotive, preventive and some curative health services to – often poor and vulnerable – communities. The continuing shortage of human resources for health combined with evidence that CHWs can contribute to improved community health has led to a renewed interest in CHW programmes in recent years.

There are many different types of CHWs: voluntary or paid, with multiple or single tasks. They have in common that they are the first point of contact for communities regarding health issues. They hold an intermediary position between communities and the health sector. They only receive basic training on a mostly expanding package of tasks.

Experience from the last decades has shown that CHW programmes face constraints, partly because of inadequate support structures and limited resources, and partly because of gaps in knowledge about how to improve CHW performance. This thesis aims to identify which factors can influence performance, and "why" and "how" they do so, to gain insight into how performance of CHWs and CHW programmes as a whole could be improved. We understand performance as a transactional social process between CHWs and their environment. In this thesis, CHW performance at the individual level is taken as the sum of different elements, such as self-esteem, motivation, attitudes, competencies, guideline adherence, job satisfaction and capacity to facilitate community agency.

Methodology

The presented research is divided into two parts: a theoretical component, consisting of a qualitative research synthesis, and an empirical component, including single case studies and a qualitative comparative multiple case study. The qualitative research synthesis was based on a systematic review of the literature on factors influencing performance of CHWs in LMICs. An initial conceptual framework on CHW performance was refined into a more comprehensive framework including a variety of factors that influence CHW performance. This framework was used in the development of qualitative studies on factors influencing CHW performance in Ethiopia, Kenya, Malawi and Mozambique. The studies included interviews and focus group discussions with CHWs and different actors in the community and health sector. In Ethiopia and Malawi, the data from these studies were analysed focusing on a major emerging theme: the facilitating role of relationships in improving CHW performance. These two case studies specifically focused on underlying

factors that either facilitated or constrained relationships between CHWs and actors in the community and health sector. A multiple case study with a realist "lens" compared data from all four countries, thereby identifying similarities and differences in how relationships were shaped in different settings and providing evidence that could be used to improve CHW programmes in other settings.

Factors influencing community health worker performance

Chapters 4 and 5, presenting the theoretical component of the research, focus on factors related to the design of CHW programmes or interventions and contextual factors influencing CHW performance. These factors were related to issues such as human resource management, structures facilitating links between CHWs and the community and health sector, resources and logistics, and the broader community and health system context. The different factors formed a complex and interactive web. Factors that directly influenced performance at the level of the individual CHW did so by changing one or more of the above mentioned elements or characteristics of performance. Most studies reported motivation as performance outcome measure.

The qualitative research synthesis made clear that situations in which CHWs' relationships with the community and the health sector were facilitated – through certain contextual factors or design elements – were associated with improved CHW performance. This triggered the research team to look deeper into how relationships were shaped between CHWs, their communities and actors in the health sector. This is covered in the empirical component of the research, presented in Chapters 6-8.

Factors that influenced CHWs' relationships with the community and health sector in Ethiopia (Chapter 6) and Malawi (Chapter 7) were related to certain programme design elements, such as support, supervision and accountability structures, and the cross-cutting issues of trust, communication and dialogue, and expectations (of actors in the community, the health sector and CHWs themselves). In Ethiopia, community involvement in the selection of health extension workers (HEWs) and support from the health development army positively influenced relationships between HEWs and community members, thereby improving CHW performance. In Malawi, relationships between HSAs and communities were more problematic as a result of mistrust from the community. This was related to HSAs not residing in and coming from their communities of service and feelings of unfairness regarding (financial) incentives. In both countries, supervision with a fault-finding approach and without feedback hampered relationships between HEWs and supervisors and thereby also CHW motivation and performance.

The multiple case study, presented In Chapter 8, further examined the CHW programme and broader societal contexts and the underlying mechanisms that were leading to a

(positive or negative) outcome in relationships between CHWs, the community and health sector in the four countries mentioned above. Trusting relationships between CHWs, their communities and the health sector were caused by mechanisms such as feelings of connectedness, familiarity, being supported and serving the same goals. The study also identified mechanisms leading to mistrust and hampered relationships, such as feelings of disconnectedness and disrespect. Contextual factors that triggered these mechanisms were related to the CHW programme, such as CHW selection with (or without) involvement of the community and regular and visible supervision (or the lack thereof), and the broader contexts, such as contexts where community participation was promoted and valued, or where resources were available (or not). In certain cases, weak relationships between CHWs and their supervisors or managers had a negative knock-on effect on the strength of CHWs' relationships with their communities.

Framework on community health worker performance

The results from the different studies led to adaptations of the framework on CHW performance (Chapter 9). The adapted framework stresses the multiple layers of influencing factors and the non-static character of CHW performance. Influencing factors at the system and intervention level are divided into "hardware" and "software" elements. The hardware represents the essential health system functions: service delivery, human resources, information, medicines and technologies, financing and governance. At the level of the intervention, it represents elements like the supervision system; training, accountability and communication structures; incentives; and supplies and logistics. The software represents the ideas and interests, relationships and power, values and norms of the most important actors in the health system and intervention: in this case CHWs; community members, including traditional leaders; and CHW supervisors, managers and other (professional) health workers. The hardware and software elements continuously influence each other, and are both needed to improve CHW performance. However, whether this is the case depends upon the broader context, which influences system- and intervention-related factors. The adapted framework could assist policy makers and programme managers to shape CHW interventions in ways that improve CHW performance.

Conclusions and recommendations for policy and practice

Despite the fact that CHW performance is not static and highly context-dependent, making it difficult to predict whether mechanisms triggering CHW performance in one setting would do the same in another setting, several recommendations that are applicable to multiple contexts can be made based on the research conducted.

When developing the CHW profile and selection criteria, contextual realities and programme requirements need to be taken into consideration. CHW performance can improve if their profile fits the context, such as in the case of gender preferences.

When a mix of CHWs is preferred in order to share workload, tasks of and incentives for the different CHWs need to be clearly defined, to prevent confusion and mistrust between communities, CHWs and other health workers. When a mix of CHWs is present as a result of vertical programming, coordination and harmonization efforts are needed to improve CHW performance. The research conducted in Malawi clearly showed the negative effects of uncoordinated vertical programmes on relationships between different actors and CHW motivation and performance.

There is room for optimization of the benefits of the unique intermediary position of CHWs between communities and the health sector. Despite that in many LMICs, CHWs connect communities to the health sector, the "voice" of communities in CHW programming needs to gain prominence. CHWs have a role to play in facilitating community agency. This role needs revitalization and equal attention next to the (easier to measure) technical skills to achieve disease-specific targets. CHWs' relationships with the health sector also need improvement. Hardware elements like supervision and training could be available, but if relationships between CHWs and supervisors or managers are constrained because of a lack of trust or communication or differing expectations, CHW performance can suffer.

Decisions regarding CHWs' integration into the health sector depend on programme needs and context and require considerable debate. When CHWs have multiple workloads, remuneration could be considered, while assuring that their connection to communities remains strong. When CHWs work part-time and on a limited set of tasks, voluntary CHW programmes could be appropriate, if incentives are responsive to CHWs' realities. Both paid and voluntary CHW programmes require serious investments with regard to training, supervision and incentives that fit the context and promote trust between different actors.

Recommendations for further research

Part of this thesis has shown the dearth of research on the software elements of CHW programmes and interventions. Many studies focus on the hardware elements, leaving the "how" and "why" questions mostly unanswered. Our research was able to shed more light on only one of the software elements: relationships. More research on how to trigger software-related mechanisms leading to improved CHW performance is needed to realize improved and people-centred health systems. Therefore, it is important to include the voices of CHWs, communities and other actors in the health system in research. This

would shed more light on how to optimize the benefit of CHWs' unique position between communities and the health sector and their contribution towards universal health coverage.

Acknowledgements

This thesis has been written with the support of many people. I would like to thank my promotor Jacqueline Broerse for reminding me about my plans for a PhD; she knew I always had that ambition. Thank you for giving me the opportunity to work on the PhD at the Athena Institute. I highly value the scientific input you gave me, while at the same time giving me the freedom to keep the work practice-focused, the way I wanted it to be. I am very grateful to my co-promotor Marjolein Dieleman. She triggered me to get the most out of my findings and showed me new ways of thinking, which has broadened my view and resulted in a great learning experience. Marjolein, I especially would like to thank you for your persistence in our discussions and I hope many are still to follow. I am grateful for the energetic and encouraging support of both of my supervisors.

Even before the involvement of my PhD supervisors, I found myself surrounded by a bunch of smart and enthusiastic researchers involved in REACHOUT. Let me first mention Miriam Taegtmeyer from the Liverpool School of Tropical Medicine, the "founder" of the project. I had the privilege to work with her from the proposal writing stage, and I have learned a lot from her as my "unofficial" supervisor. Thank you very much for your tireless support, it was comforting to find you still online in the late hours! I also would like to thank Korrie de Koning, my colleague from the Royal Tropical Institute (KIT). She has given me the opportunity, being a relatively "newbie" within KIT, to take on this project in 2012. I appreciate the trust you gave me, as well as your guidance and at the same time freedom to allow me to develop the research.

I have been privileged to be part of the "REACHOUT family". Sally, you have inspired me to dive deeper into some of the social science stuff. This has brought me, as a public health researcher from the start, new perspectives. Thank you very much. Ginge, I thank you for the scientific and moral support you always give me, and for the fun we had in Ethiopia. To my KIT colleagues Hermen and Sumit: thank you very much for your support and patience in discussions regarding the huge literature review we conducted. Also thanks to Mandy Tijm, who assisted me with the extensive reading during the review. I would like to give a special thanks to my colleagues from Ethiopia, particularly Daniel, Aschenaki and Meti, for giving me the opportunity to conduct the context analysis together with you from the beginning till the end. I am very grateful for the space you gave me and the smooth way of working together. We will always remember our muddy trip to Chire, far away in the highlands. The same goes for my colleagues from the Malawi team: Ireen, Kingsley and Lot, thank you for accepting me as part of the team, for the wonderful workshops we had together and the leisure time, being all "Malawians" and fans of the same reggae band (Ma Backs – also quite instrumental in the accomplishment of this thesis).

About the author

Maryse Kok graduated in management, policy analysis and entrepreneurship in the health and life sciences, with a specialization in international public health, at the VU University Amsterdam in 2004. She started her career in policy advice in the field of infectious diseases and, later on, sexual and reproductive health and rights at the Dutch Ministry of Health, Welfare and Sport. Having been involved in the development of several international treaties on health and development, she decided to gain more practical experience in the area of public health in developing countries. She worked in Mwanza district, Malawi, in the management and coordination of curative and preventive health services. It was in Malawi where her interest in community health workers started. Together with the district team, she introduced new methods of supervision and performance appraisal, leading to enhanced motivation and performance of community health workers. She joined the Royal Tropical Institute (KIT) in November 2011, and got the opportunity to expand her work on performance of community health workers in the REACHOUT project. This research consortium, led by the Liverpool School of Tropical Medicine, aims to generate knowledge to strengthen the performance of community health workers and other close-to-community health care providers in Bangladesh, Ethiopia, Indonesia, Kenya, Malawi and Mozambique. Her work for this project has resulted in this PhD thesis. Her current activities within KIT can be placed in the broad area of health systems strengthening in low- and middle-income countries. She is particularly involved in research and advice in human resources for health, community health systems and sexual and reproductive health and rights. She teaches health system research in the Master in Public Health/International Course in Health Development at KIT. Her other relevant publications related to this thesis are:

Vaughan, K., **M. C. Kok**, S. Witter, and M. Dieleman. 2015. "Costs and cost-effectiveness of community health workers: evidence from a literature review." *Human Resources for Health (2015) 13:71.*

Ndima, S. D., M. Sidat, C. Give, H. Ormel, **M. C. Kok**, and Taegtmeyer M. 2015. "Supervision of community health workers in Mozambique: a qualitative study of factors influencing motivation and programme implementation." *Human Resources for Health (2015) 13:63.*

McPake, B., I. Edoka, S. Witter, K. Kielmann, M. Taegtmeyer, M. Dieleman, K. Vaughan, E. Gama, **M. Kok**, D. Datiko, L. Otiso, R. Ahmed, N. Squires, C. Suraratdecha, and G. Cometto. 2015. "Cost-effectiveness of community-based practitioner programmes in Ethiopia, Indonesia and Kenya." *Bulletin of the World Health Organisation; 93:631–639A.*

Frymus, D., **M. Kok**, K. de Koning, and E. Quain. 2013. "Community Health Workers and Universal Health Coverage. Knowledge gaps and a need based Global Research Agenda by 2015." *Global Health Workforce Alliance Working Paper, October 2013.*

Kok, M. C., and A. S. Muula. 2013. "Motivation and job satisfaction of Health Surveillance Assistants in Mwanza, Malawi: an explorative study." *Malawi Medical Journal 25(1): 5-11 March 2013.*

Kok, M, K. Herschderfer, and K. de Koning. 2012. "Technical consultation on the role of community based providers in improving Maternal and Newborn Health, Final report." *Royal Tropical Institute, the Netherlands, 2012.*

Community health workers form an essential part of the health system in low- and middle-income countries, connecting communities with the health sector. The continuing shortage of human resources for health combined with evidence that community health workers effectively bring health care closer to communities has led to a renewed interest in community health worker programmes. This thesis explores how a complex mix of factors influence community health worker performance, articulating the importance of trust, relationships and expectations between different actors in the health system, with a focus on Sub-Saharan Africa. The insights gained are relevant for policy makers, programme managers and researchers in the field of human resources for health and community health worker programmes. They give directions on how to optimize performance in resource-constrained settings, so that the benefit of community health workers' unique position between communities and the health sector and their role in achieving universal health coverage can be enhanced.