District health management and its association with health system performance in the Eastern Region of Ghana

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List of Acronyms

CHAG:	Christian Health Association of Ghana
CHPS:	Community-based Health Planning Services
DA:	District Assembly
DHA:	District Health Administration
DDHS:	District Director of Health Service
DHM:	District health manager
DHMT:	District Health Management Team
DHIMS:	District Health Information Management System
DMO:	District Medical Officer
GES:	Ghana Education Service
GHS:	Ghana Health Service
GoG:	Government of Ghana
GST:	General Systems Theory
HIV:	Human Immunodeficiency Virus
HR:	Human Resources
HRH:	Human Resources for Health
HRM:	Human Resource Management
HPSR:	Health Policy and Systems Research
HSS:	Health Systems Strengthening
IGF:	Internal generated funds
LMIC:	Low and middle income country
LSTM:	Liverpool School of Tropical Medicine
MDG:	Millennium Development Goal
MoFA:	Ministry of Food and Agriculture
MoH:	Ministry of Health
MPH	Masters of Public Health
NADMO:	National Disaster Management Organization

NGO:	Non-governmental organization
NHIS:	National Health Insurance Scheme
OOP:	Out-of-pocket
RDHS:	Regional Director of Health Services
RHA:	Regional Health Administration
RHMT:	Regional Health Management Team
SDG:	Sustainable Development Goal
UHC:	Universal Health Coverage
UN:	United Nations
WHO:	World Health Organization

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The whole is indeed greater than the sum of its parts.

Executive summary

Introduction

Effective and efficient management and leadership play an important role in ensuring robust and responsive health systems worldwide. In many African countries, including Ghana, which is of focus in current thesis, district health managers (DHMs) have been mandated by national levels to ensure that the people living within their respective districts have access to high quality health services. The DHMs are responsible for overseeing various health programs, and for ensuring that the appropriate resources (i.e. health workers, medicine, equipment and supplies) are at the right place at the right time. Moreover, they play an important role in ensuring that health workers' remain motivated in terms of carrying out their jobs. Shortcomings in national health objectives in low-and middle-income countries are partially being attributed to weak management at district level. However, there is limited knowledge on public health system managers, and district health management practices in low- and middle-income countries. Most research on health management has taken place in hospital settings or in the private sector, and primarily in high-income settings.

This thesis is an integral part of the project PERFORM2Scale, which aims at implementing and scaling up a management strengthening intervention at district level in Ghana, Uganda and Malawi. The PERFORM2Scale project (https://www.perform2scale.org/) is funded by the European Union's Horizon 2020 Research and Innovation Program.

Aim and objectives

The aim of this thesis is to analyze district health management, and its association with health system performance in Ghana. The specific objectives are: 1) To analyze how district health management emerges, hereunder the contextual, organizational and individual aspects that enable or hinder DHMs in carrying out their functions. 2) To assess managerial capacity at district level in Ghana, Uganda and Malawi. 3) To analyze the association between district health management and health system performance in Ghana, and 4) to analyze managerial practices related to health worker transfers in Ghana. This dissertation seeks to provide insights into district health management that may guide the development of management strengthening strategies in Ghana, and other countries with similarly decentralized health systems.

Methods

This thesis consists of four empirical studies and a commentary on management capacity strengthening. The empirical studies were conducted through a combination of quantitative, qualitative, and mixed-methods research approaches. Objective 1 was addressed through a qualitative study based on semi structured in-depth interviews with DHMs (n=15), their supervisors at regional level (n=4) and NGO partners (n=2). A data triangulation approach was applied to analyze the various study participants' perspectives on aspects affecting DHMs in carrying out their responsibilities. Objective 2 was addressed through a self-administered cross-sectional survey, in which information was gathered on DHMs' socio-demographic background; previous management experience and training; the extent of available management support systems; the DHMs self-assessed management competencies and skills; perceived team dynamics; job satisfaction, motivation and organizational commitment. The study includes a comparative descriptive analysis of data collected among DHMs within PERFORM2Scale districts in Ghana (n=32), Uganda (n=17) and Malawi (n=15). Objective 3 was achieved by applying the same cross-sectional survey distributed among DHMs in six districts in the Eastern Region of Ghana (n=59). A descriptive analysis was performed to identify individual and institutional capacity needs, and a non-parametric one-way analysis was applied to test whether there were significant differences in the measured aspects across different performing districts. Health system performance was derived from 17 nationally defined health indicators listed in the Ghana League Table of District Performance. Lastly, Objective 4 was addressed through semi-structured in-depth interviews with DHMs (n=9), regional health administrators (n=2) and national health administrators (n=7) who were involved in the posting and transfer of health workers; a structured face-to-face survey with recently transferred health workers (n=44); and a review of national posting policies and procedures. A data triangulation approach was applied to analyze the different stakeholder perspectives and potential discrepancies between practices and policies. Process maps were developed based on insights from health managers' and transferred health workers, to picture the complexities of health workforce management practices in Ghana.

Results and Discussion

Objective 1: How district health management emerges, hereunder the contextual, organizational and individual aspects that enable or hinder DHMs in carrying out their functions

District health management practices emerge through a complex interplay of contextual, organizational and individual aspects. The contextual aspects include centralized planning and priority setting, priorities among elected officials, inadequate infrastructure, challenging work conditions, delayed disbursement of funds and staff shortages. These affect organizational processes and the way DHMs carry out their role. The hierarchical organizational structures and agendas driven by vertical programs provide DHMs with limited authority to make decisions that are responsive to community needs. The DHMs limited authority combined with restricted opportunities for professional development dampens their motivation and the effort they are willing to expend. Nonetheless, several enabling organizational aspects that provide DHMs with direction and a clear perception of their role were also identified. These include positive dynamics within the district health management teams, good relations with supervisors at the regional level, a well-functioning performance management system, available job descriptions, information systems, policies and guidelines, and highly qualified District Directors. At the individual level, a need for enhancing general management and leadership skills were called for by DHMs as well as by their superiors and peers. The findings demonstrate that district health management is complex, and that strengthening hereof requires systemic approaches.

Objective 2 and 3: District health management capacity and its association with health system performance

Less than half of the study respondents in both Uganda (47%) and Ghana (48%) had received formal training in management and leadership, and more than one third had less than 1 year of managerial experience before being posted to their position (information unavailable for Malawi). The DHMs in Ghana rated their competencies, as well as the availability of management support systems more favorable compared with Uganda and particularly Malawi. Moreover, study participants in Ghana appeared to be more positive in terms of team dynamics, job motivation, satisfaction and organizational commitment compared with Uganda (information unavailable for Malawi). Nonetheless, individual and institutional capacity needs were identified within the six districts in Ghana, including managerial staff shortages, restricted funds and logistics to carry out essential supervision and monitoring activities, and limited management and leadership qualifications among DHMs.

It was identified that DHMs in high performing districts rated their overall management and leadership competencies ($p=0.02$), organizational commitment ($p<0.01$), teamwork ($p=0.02$) and communication within teams ($p<0.01$) better compared with lower performing districts.

Objective 4: Managerial practices related to health worker transfers.

One of the core functions of DHMs in Ghana is to appropriately staff health facilities through health worker transfers. Transfers are typically initiated by the DHMs, yet health workers may also initiate a transfer if they wish to leave their current posting. Transfers initiated by health workers were typically based on family and living conditions. Meanwhile, transfers initiated by managers typically were based on service requirements and performance. Managerial practices related to transfers appeared to be insufficiently guided by explicit policies and procedures, and thus depending on the discretion of the DHMs. The posting policies state underlying principles of fairness and transparency, however health worker perceptions of a non-transparent system existed. It was identified that transfer decisions frequently are made with limited involvement of health workers. The limited transparency in managers' transfer decisions, combined with a lack of incentives for postings in deprived areas, were identified as contributing to dissatisfaction and intentions to leave among health workers.

Conclusion

This study was initiated to contribute to the limited knowledge and evidence surrounding district health management in LMICs. It provides insights into the characteristics of district health managers, and the organization and context in which they are embedded. These insights may be applied to strengthen district health systems in Ghana, as well as in other similarly decentralized settings in LMICs. This thesis provides a number of recommendations that may be considered, including

- *Strengthen information channels and policies that ensure involvement of district health managers' in national decision-making, planning and priority setting:* In order to ensure district health systems that are led by motivated management teams, and health services that are more responsive to community needs, decision-makers at the national level may consider granting DHMs higher levels of autonomy in terms of how resources should be spent. Mechanisms, including information channels and policies, may also be developed to ensure involvement of DHMs in decision-making and priority setting.

- *Integrate and prioritize "system software" in policies and strategies:* At the management level, findings suggest that DHMs' confidence in their own abilities, commitment and teamwork are associated with health system performance. Moreover, that their ability and willingness to carry out their functions are largely shaped by interpersonal factors (i.e. supportive supervision, relationships within DHMTs). At the health delivery level, findings suggest that managers' insufficient involvement of health workers in transfer decision-making may result in job dissatisfaction. To ensure an efficient and effective system, the *human dimension* should be taken into account to a higher extent. This may be encouraged through different mechanisms, for example by creating more 'people-centered' policies and by introducing performance metrics such as health worker satisfaction, absenteeism and turnover that may incentivize changed behaviors and practices, such as enhanced participatory decision-making, improved working conditions and supportive supervision.
- *Institutionalize management and leadership qualifications at district level:* Study participants emphasized management and particularly leadership competencies as being important for all DHMs to navigate within the resource-constrained and complex context. Yet, management and leadership requirements were insufficiently defined for DHMT members, except the District Directors. Strategies to ensure appropriate competencies may be institutionalized by for example providing effective and short-term certified trainings to all DHMs as part of their orientation. The recruitment process of core DHMT members may also be enhanced to ensure that candidates possess the appropriate competencies by undertaking case interviews, requiring management and leadership experience with demonstrated results, or certain educational qualifications.
- *Institutionalize district-to-district learning:* The observed differences in health system performance between relatively similar districts suggest that inter-district learning may be considered as a viable management strengthening approach.
- *Enhance information on the managerial workforce:* There is limited information available on the managerial health workforce at the district level in Ghana. The WHO 2030 Workforce Strategy suggests a registry containing essential information on the health workforce. Such registry should include information on managerial staff cadres that can facilitate development, planning and monitoring of management strengthening initiatives.

CHAPTER 1

Introduction

A District Health Administration office building in the Eastern Region of Ghana

1. Introduction

1.1. Global attention on health system strengthening

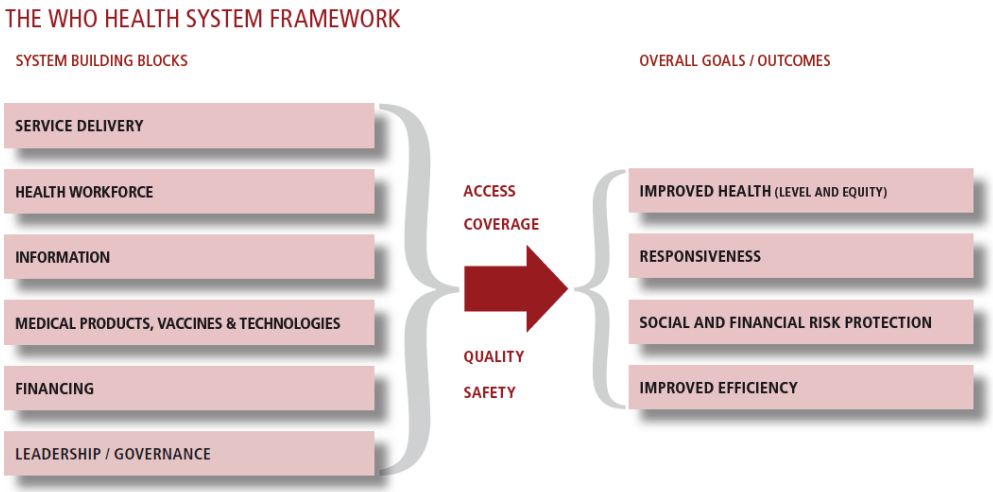
There has been dramatic improvements in health outcomes in low – and middle income countries (LMICs) in the last decades, largely due to the 2015 global agenda including the Millennium Development Goals (MDGs) developed in 2000 by the United Nations (UN) (Kruk et al., 2018). Health was a predominant priority in the MDGs; three out of eight goals were health-related (MDG4: Reduce child mortality, MDG5: Improve maternal health; and MDG6: combat HIV-AIDS, malaria and other diseases) (United Nations, 2015a). On the basis of these, donor organizations prioritized health investments, and development assistance for health increased from USD 11.6 billion in 2000 to USD 33.1 billion in 2012 (Murray, 2015). As a result, the MDGs led to significant reductions in the global number of deaths of children under five; enhanced vaccine coverage; lower maternal mortality rates; better access to antiretroviral therapy treatments for HIV patients; and the list goes on (United Nations, 2015a). However, the goals were not fully met; of the 75 countries defined as MDG priorities, only 33% achieved the targets set for MDG4 and 8% MDG5 (Witter et al., 2019). Moreover, evidence suggest that the poorest and most disadvantaged population groups were disproportionately left behind (Naimoli et al., 2018).

The failure to achieve the MDGs have been partially attributed to weak health systems, particularly in Sub-Saharan Africa (Naimoli et al., 2018). Health systems have been defined by the World Health Organization (WHO) as "*all organizations, institutions, resources, and people whose primary purpose is to improve health*" (World Health Organization, 2007). Shortfalls in health systems span across the six health system building blocks (Figure 1). The shortfalls include weak management and leadership for efficient service delivery; critical health worker shortages; poor distribution of health workers; demotivated staff; ineffective health surveillance systems; inadequate systems for procurement and distribution of essential medicines and vaccines; and health financing mechanisms that to a large extent rely on out-of-pocket payments (Sheikh et al., 2015, Evans et al., 2008, Egger, 2007, Tiwari et al., 2018). The deficits within each of the building blocks hinder access to and coverage of high quality health services that are affordable and responsive to the population health needs (Kruk and Freedman, 2008, Egger, 2007).

The renewed UN sustainable development agenda for 2030 pledges *to leave no one behind* (United Nations, 2015b). In order to do so, the importance of health systems strengthening (HSS) has been recognized globally, but with a particular emphasis on health systems in Sub-Saharan Africa. Governments and donors have been encouraged to shift their focus gradually from traditional disease control initiatives towards efforts to strengthen health systems (Naimoli et al., 2018, Mangham and Hanson, 2010, Seims et al., 2012, Evans et al., 2008).

The WHO defines HSS as any array of initiatives and strategies that improve one or more of the six essential building blocks in the WHO health system framework, in ways that achieve more equitable and sustained improvements across health services and health outcomes (Egger, 2007, Adam et al., 2012). *Strengthening* health systems is about permanently making the health system function better, not just filling gaps or *supporting* the system to produce better short-term outcomes (Chee et al., 2013). *Supporting* the health system can include any activity that improves services, such as upgrading facilities and equipment or distributing mosquito nets, whereas *strengthening* the health system requires more comprehensive and holistic changes to for example policies, regulations, and organizational structures that enable more effective resource utilization or motivate changes in behavior (Chee et al., 2013, Witter et al., 2019).

Figure 1 The building blocks of a health system



The increased global attention and commitment to strengthen national health systems is evident in many ways (Swanson et al., 2010, Frenk, 2010). In the literature, there has been a significant increase in health systems research, particularly in Sub-Saharan Africa (Phillips et al., 2015); professional journal-led efforts have been established, such as The Lancet Global Health Commission of High-Quality Health Systems in the Sustainable Development Goal (SDG) Era (Kruk et al., 2017).

Moreover, organizations and alliances among multilateral and bilateral development agencies committed to grow the HSS knowledge base have emerged, such as Health Systems Global and the Alliance for Health Policy and Systems Research (HPSR) (Naimoli et al., 2018). The global agenda for 2030 includes SDGs targeting HSS, such as substantially enhancing health financing and the recruitment, development, training and retention of the health workforce in developing countries (United Nations, 2015b). Consequently, there has been observed a changed focus in development assistance for health. In the MDG era (2000-2015) focus was primarily on specific diseases (i.e. HIV/AIDS, Tuberculosis, Malaria), whereas focus since implementation of the SDGs has increased on sector-wide approaches and health sector support (Micah et al., 2020). There has been an overall global trend of increasing development health assistance expenditures for HSS strategies and initiatives since 1990 (IHME, 2019).

1.2. Management: an overseen ingredient in health systems strengthening

Despite the immense focus on HSS, inadequate attention has been directed towards management, a key ingredient of high performing health systems (Bradley et al., 2015, Kwamie, 2015, Yeager and Bertrand, 2016, Dovlo, 2016, Powell-Jackson et al., 2019, de Savigny and Adam, 2009, Newbrander et al., 2012, Bonenberger et al., 2015, Longest, 2015). Weak health system management has been considered as a contributing factor to the failures in achieving the MDGs and in scaling up coverage of effective health services (Daire et al., 2014, Egger and Ollier, 2007, Egger et al., 2005, Mangham and Hanson, 2010, Tetui et al., 2016, Travis et al., 2004).

Management refers to a set of processes, including planning, budgeting, organizing, staffing, controlling and problem solving, that are needed to reach set objectives. In order to systematically target objectives, managers' need to be able to create plans on how to achieve set objectives, budget for them, organize and staff for implementation, and control the process to keep it on track (Kotter, 1996). Moreover, in practice, health system managers', particularly those in lower resource setting, often need to hold leadership skills too, including abilities to communicate, align and inspire actors to work towards set objectives (Dovlo, 2016, Daire et al., 2014, Kotter, 2001). Thus, in the following management also refers to leadership, despite the two concepts being theoretically distinct (Kotter, 2001).

Ensuring an optimal and efficient use of resources through effective management is critical for sustaining health systems worldwide. This is particularly relevant in LMICs where public health systems face a severe scarcity of human, material and financial resources to meet substantial health needs (Fetene et al., 2019, Bradley et al., 2013, Curry et al., 2010, Lega et al., 2013, Agyepong et al., 2018, Oliveira-Cruz et al., 2003, Vriesendorp et al., 2010).

Most research on management practices has taken place in the private industry or within service delivery organizations, such as hospitals - predominantly in high-income countries (Powell-Jackson et al., 2019, Bradley et al., 2015). Meanwhile, there has been little research on the role management plays in regards to strengthening the public health sector in LMICs (Bradley et al., 2015, Powell-Jackson et al., 2019, Curry et al., 2012). The existing research is primarily based on case studies that are limited in scope and rigor (Bradley et al., 2015, Rockers and Barnighausen, 2013). Nonetheless, the research indicates that strengthened management processes among public health administrators in LMICs can positively influence health services delivery and health outcomes (Seims et al., 2012, Edwards et al., 2015, Kwamie et al., 2014, Mansour et al., 2010, Fetene et al., 2019, Mutale et al., 2017, Perry, 2008). This aligns with more rigorous research findings from the private industry and hospitals, which demonstrate that strong managerial processes are associated with higher productivity, growth, financial performance, lower mortality rates and achievement of goals (Sadun et al., 2017, Lemos and Scur, 2016, Bloom and Van Reenen, 2007, Lega et al., 2013, Dorgan, 2010).

1.3. Management within decentralized health systems

Many LMICs have implemented health sector reforms that include some degree of health system decentralization (Cobos Munoz et al., 2017). Health system decentralization refers to transferring managerial, fiscal and/or technical responsibilities and decision-making authority for a set of defined health service functions from central level (i.e. Ministry of Health) to sub-national levels (i.e. regions, provinces and districts) (Mills et al., 1990).

The extent of responsibilities and decision-space transferred to lower levels is determined by the form of health sector decentralization chosen within the country. Broadly, there are three forms of decentralization, namely *deconcentration* to local governments; *delegation* to independent agencies; and *devolution* to local governments that are independent of the central government (Mills et al.,

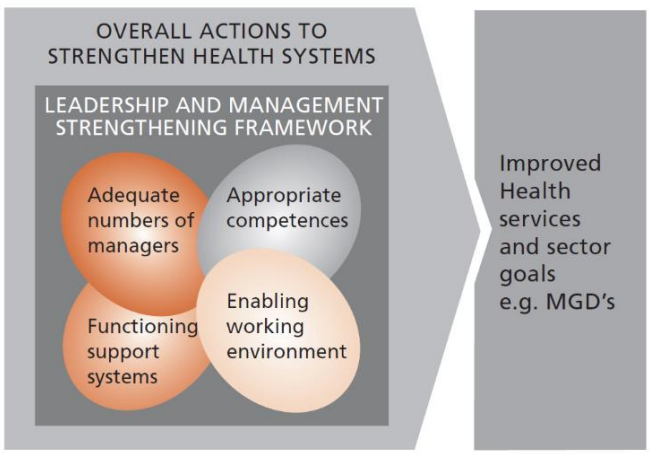
1990). The scope of functions and degree of autonomy transferred to lower levels tend to be highest in devolved settings, and lowest in deconcentrated settings (Couttolenc, 2012).

The rationale behind decentralization is that local authorities are better positioned than central authorities to make informed decisions regarding local conditions, and thus more likely to allocate and control resources efficiently and effectively. Moreover, that local decision-making may lead to greater equity in the allocation of resources, and health systems that are responsive to community needs and preferences (Mills et al., 1990).

In most African countries, health sector decentralization efforts have focused on the district level (Chatora and Tumusiime, 2004). Consequently, *District Health Management Teams* (DHMTs) have been established and mandated to ensure that people living within their respective district have access to high quality health services that are provided by motivated health workers. Broadly, the DHMTs have to oversee various national and donor/NGO-funded health programs and ensure that the appropriate resources (i.e. health workers, medicine, equipment and supplies) are at the right place at the right time in order to reach defined nationally defined objectives (LaFond et al., 2002, Bossert et al., 2015, Henriksson et al., 2017).

According to the WHO framework on management and leadership, four conditions have to be met to ensure that the DHMTs are able to perform effectively, efficiently and sustainably (Figure 2) (Egger et al., 2005). Firstly, there has to be a sufficient number of managers. Secondly, these have to hold appropriate competencies, including skills, knowledge and attitudes. Thirdly, they have to be supported by functioning management support systems. Lastly, they have to be embedded within an enabling work environment.

Figure 2 Management and Leadership in Health Systems (World Health Organization, 2009)



Nevertheless, these four conditions are rarely met in LMICs, and local health managers are thus restrained in carrying out their duties effectively and efficiently (Bradley et al., 2015, Filerman, 2003, Egger et al., 2005, World Health Organization, 1987, Meessen and Malanda, 2014, Bonenberger et al., 2016).

Firstly, a shortage of district-level management cadres have been reported in many LMICs (World Health Organization, 2016, Egger and Ollier, 2007). Notwithstanding, it is difficult to estimate the number of sub-national managers in LMICs, and where they are deployed to (World Health Organization, 2007, Egger and Ollier, 2007, Green and Collins, 2003, World Health Organization, 2016). In depositories for human resources for health, management cadres typically fall under the categorization "support workers" or are classified based on their basic qualification, which often is a medical diploma or some degree (i.e. nurse, doctor, pharmacists) (Tiwari et al., 2018, Mutale et al., 2017, Daire et al., 2014, World Health Organization, 2007, Ghana Ministry of Health, 2007).

Secondly, literature suggests weak management and leadership competencies among local health managers in LMICs (Egger and Ollier, 2007, Egger et al., 2005, Schneider et al., 2006, Puoane et al., 2008, Hanson and Mangham, 2010, Filerman, 2003, Bradley et al., 2015, World Health Organization, 2009). Statements on weak management are frequently based on the managers' having a medical background and thus limited training/experience in management, and not on actual competency assessments. There is a lack of competency frameworks for public health system managers and no standardized way of measuring competencies among managers (Hahn and Gil Lapetra, 2019, Fetene et al., 2019, Powell-Jackson et al., 2019). Furthermore, most countries do not have national strategies outlining schemes for managers' acquisition of competencies (World Health Organization, 2007, Hahn and Gil Lapetra, 2019). Management education is largely reserved for business curricula, and very limited in medical or public health training globally (Bradley et al., 2015, Pfeffermann and Kurth, 2014). In Africa, graduate degrees, including a Masters of Public Health (MPH), have gained currency and become a wide-spread pre-requisite for public health practice, in particular for the head of the DHMTs (Agyepong et al., 2018). However, it has been questioned whether such degree adequately can prepare district health managers (DHMs) for operational management roles (Filerman, 2003). Beyond the MPH degree, competencies among DHMs in LMICs

are typically built through short-term project-based activities and courses, which are explained further in section 1.4 (Agyepong et al., 2018, World Health Organization, 2007).

Thirdly, critical support systems for DHMTs in many LMICs have shortfalls, particularly ones relating to mechanisms involving planning and financial management. Despite decentralization, local health managers often have limited authority to make decisions on strategic planning and financial management. In turn, they have to await prescriptive work plans, budgetary guidelines and allocated funds from the national level (Blaise and Kegels, 2004, Kwamie, 2015). This top-down approach partially stems from national concerns about the lack of management capacity at the lower levels. Moreover, it is rooted in classical management theories, including the bureaucratic management theory developed by Max Weber and the administrative management theory by Henri Fayol, which suggest that top down planning ensures efficiency and cost-effectiveness (Sakyi et al., 2011). However, these systems are not fit for purpose, as local levels often experience delayed planning frameworks from the central level; time-consuming and non-integrated documentation requirements; untimely information about planned program activities; delayed release of district funds; and unanticipated changes in budget allocations (Asante et al., 2006, Egger and Ollier, 2007, Bonenberger et al., 2016, Henriksson et al., 2017). Moreover, health systems are social institutions constructed by human behavior that may be irrational and non-compliant with orders given from the top level (Blaauw et al., 2003). Further, the top-down approaches may prevent agile planning and resource allocation that properly reflects rapidly changing priorities at the local level (Blaise and Kegels, 2004). It may also discourage creative and innovative problem solving (Swanson et al., 2015, Kwamie, 2015, Gilson et al., 2017b).

Lastly, DHMTs in most LMICs face multiple challenges in their work environment (LaFond et al., 2002, Henriksson et al., 2017, Henriksson et al., 2019, Egger and Ollier, 2007). These include the mentioned health system governance structures that are dominated by bureaucracy and hierarchical management, which may hinder DHMTs from making and implementing effective decisions to address district health system challenges. Moreover, delayed release of district funds from the central level, coupled with a generally low per capita health spending in many LMICs, create an environment in which DHMTs have to operate with scarce resources (human, material and financial) (Asante et al., 2006). Further, there is a large presence of donor and NGO funded health programs in LMICs, which frequently operate with systems that are poorly integrated into national systems. This causes inefficient practices where DHMTs have to coordinate, monitor and report within several parallel

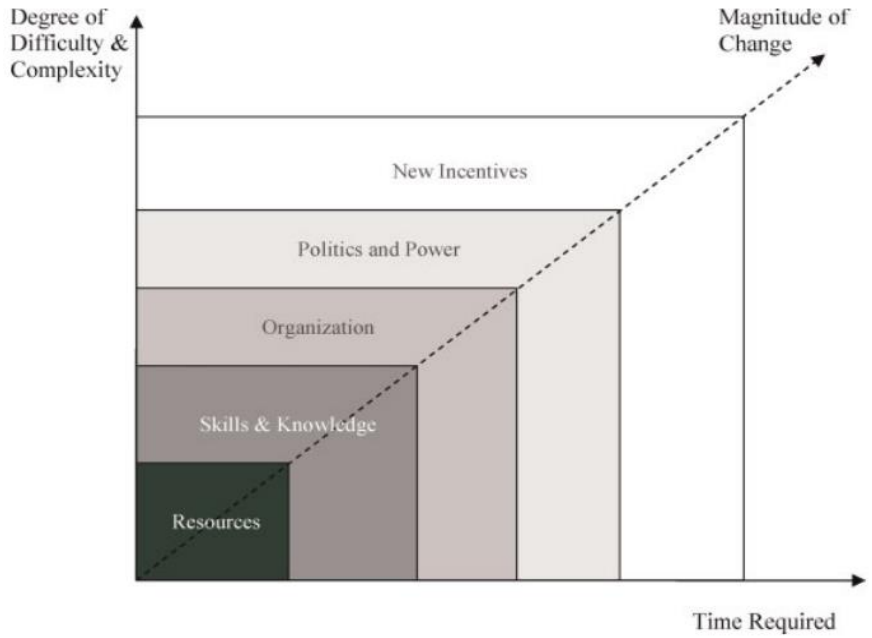
systems (Egger and Ollier, 2007, Henriksson et al., 2017, Kwamie et al., 2015, Newbrander et al., 2011, Conn et al., 1996).

1.4. Strengthening management at the district level

As demonstrated in the previous section, namely by the WHO framework (Figure 2), there are several dimensions that need to be addressed in order to strengthen management capacity at the district level. Capacity has been defined as "*the ability of individuals, organizations, or institutions to perform appropriate functions effectively, efficiently, and sustainably*" (UNDP, 1998). Capacity development can be addressed by targeting gaps and weaknesses at different levels (Figure 3) (Brinkerhoff, 2007).

Interventions to strengthen management capacity may involve input of resources (i.e. money, supplies, and equipment), transfer of skills and knowledge, or technical assistance for organizational strengthening. Further, they may target institutional structures, including policies, rules and regulations (Dovlo, 2016). This could involve changes in budgetary structures, health financing or human resource policies and guidelines ('Politics and Power', Figure 3). Moreover, interventions may include implementation of financial and non-financial incentives (i.e. increased remuneration or widening of DHMTs decision-space) from the national level to encourage local authorities to achieve national health objectives ('New incentives', Figure 3) (Bossert, 1998). According to Herzberg's two-factor motivation-theory, interventions that allow individuals to grow professionally or increases their responsibility are most likely to enhance their motivation, and thus willingness to exert and maintain an effort towards reaching organizational goals (Herzberg, 2003, Dieleman et al., 2003, Christensen et al., 2012).

Figure 3 Capacity development model (Brinkerhoff, 2007)



Most efforts aimed at strengthening management at district level target the skills and knowledge of DHMTs (Cassels and Janovskzy, 1995, Daire et al., 2014, Dorros, 2006). The most commonly applied approach for enhancing managerial competencies is *formal learning,* consisting primarily of classroom training (Daire et al., 2014, Dorros, 2006). Another frequently applied approach is *on-the-job training* (Belrhiti et al., 2016, Edwards et al., 2015, Diaz-Monsalve, 2004, Conn et al., 1996). This can range from informal learning, for example by having a junior manager work with a mentor/senior manager, to a more formal program structure that prepares managers for a higher post within the organization (Dorros, 2006). Lastly, *Action Research* has also been widely used (Seims et al., 2012, Perry, 2008, Kwamie et al., 2014, Mansour et al., 2010, Martineau et al., 2018). This approach takes on a learning-by-doing approach, as it uses real-life tasks of DHMTs as a vehicle for learning. This approach promotes teamwork, and introduces the DHMTs to tools that can be integrated into their daily practice. The tools enable the DHMTs to identify, address, and solve problems more effectively within their decision-space (Dorros, 2006).

Frequently, skills and knowledge are targeted because there is a widespread perception of management capacity as being a question of competencies to be developed through training (Kwamie et al., 2015, Kwamie et al., 2014, Seims et al., 2012, Curry et al., 2012). Secondly, because interventions such as the ones mentioned above require less time, and are less complex compared with interventions that aim to change institutional features (Figure 3). They involve inputs that can be easily measured (i.e. training courses held, individuals trained, organizations assisted) and outcomes

that can be tallied and reported on (i.e. enhanced competencies, immunization rates, health service coverage), which is advantageous in order to report on progress and demonstrate rapid results (LaFond et al., 2002, Brinkerhoff, 2007). Lastly, external actors (i.e. development partners, NGOs, donors) are amenable to strengthen skills and knowledge among DHMTs somewhat independently of political and governmental settlements (Brinkerhoff, 2007). Donors and NGOs are often responsible for management strengthening efforts in LMICs, as country governments may lack sufficient funds, skilled trainers or well-established education institutions to tackle management development and training (Potter and Brough, 2004, LaFond et al., 2002, Conn et al., 1996).

Nevertheless, according to Herzberg's motivation theory, Brinkerhoff's capacity development model (Figure 3) and other leading theories on change (Kotter, 1996, Heifetz and Linsky, 2002), the magnitude of change created by interventions targeting skills and knowledge are limited if they are not coupled with institutional changes in for example budgetary, political, policy or regulatory structures (Kotter, 1996, Bradley et al., 2015, Bulthuis et al., 2020b, Christensen et al., 2012). Skills and knowledge among managers are necessary, but not sufficient to ensure effective and efficient management practices that lead to improved population health outcomes (Aragón and Giles Macedo, 2010). One can for example ask what difference a *competent* manager are willing and/or able to make, if she/he are inhibited in making effective decisions due to organizational and institutional features (Potter and Brough, 2004, Henriksson et al., 2017). Nevertheless, inadequate attention has been paid to understanding how contextual factors, including organizational and institutional capacities, affect DHMs ability and willingness to carry out their tasks.

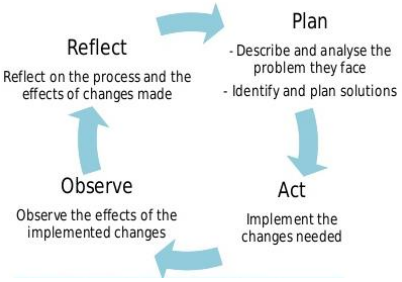
1.4.1.The PERFORM2Scale Project

This thesis is an integral part of the project PERFORM2Scale project which takes place in Uganda, Ghana and Malawi (PERFORM2Scale Consortium, 2017). The PERFORM2Scale project builds on the PERFORM project (2011-2015), which implemented a management strengthening intervention (MSI) across districts in Ghana, Uganda and Tanzania (Martineau et al., 2018). The MSI is based on the Action Research approach (Mshelia et al., 2013). Researchers from PERFORM2Scale facilitate and support DHMTs in systematically working through various Action Research cycles (Figure 4). During this process the DHMTs are trained in applying various problem-solving and action-oriented tools and techniques, including process/stakeholder mapping and problem trees for root cause analysis. These tools enable them to identify health service areas in need of improvement, and to plan solutions (*Plan*);

to implement solutions (*Act*); to observe whether the solutions are effective (*Observe)*; and to reflect on whether and how these can be optimized (*Reflect)*.

In order for the MSI to have a wider impact, the PERFORM2Scale aims to develop and evaluate a sustainable approach for scaling it up to additional districts in Ghana, Malawi and Uganda. The scale-up strategy includes working with governments, as well as non-governmental organizations and other stakeholders to develop plans and networks to sustain the implementation and expansion of the MSI at district level.

Figure 4 The Action Research Cycle (Mshelia et al., 2013)



The PERFORM2Scale project is funded by the European Commission (Horizon 2020, grant agreement number 733360), and driven by a global consortium. The PERFORM2Scale Consortium comprises eight partner institutions, three from Africa and five from Europe. Each African partner has been paired with a European partner. The paired research partners share responsibility for the implementation of the MSI in the respective African country (cf. Table 1).

Table 1 Paired partners within the PERFORM2Scale Consortium

Country	African research partners	European paired partners
Ghana	School of Public Health, University of Ghana	Swiss Tropical and Public Health Institute, Switzerland
Malawi	REACH Trust Malawi	Centre for Global Health, Trinity College, Ireland Maynooth University, Ireland
Uganda	School of Public Health, Makere University	Liverpool School of Tropical Medicine, United Kingdom

Support to paired partnerships provided by the Royal Tropical Institute, Netherlands

1.5. Insights into the health system in Ghana

This thesis focuses primarily on district health management in Ghana due to the PERFORM2Scale partnership between Swiss Tropical and Public Health Institute and the School of Public Health, University of Ghana. Thus, this section aims to provide the reader with an insight into the context and structure of the health system in Ghana, including the environment in which the DHMTs operate.

1.5.1. Contextual factors affecting the health system

Ghana is a lower middle in West Africa that gained its independence from British rule as the first African country in 1957. Ghana has an estimated population of around 30 million (World Bank, 2018), whereof an estimated 43% reside in rural areas, and 13% live under the poverty line on less than USD1.90 per day (World Bank, 2016) . Poverty-related diseases remain to be the leading causes of death in Ghana, notably malaria (IHME, 2017). Notwithstanding, the country has experienced vast economic development within the last decades, largely due to its natural resources of oil, gold and cocoa. The economic growth has led to an increased life expectancy. In 2017, the life expectancy at birth was 63.7 years compared with 57.0 in 2000 and 45.8 in 1960 (World Bank, 2017).

Ghana is considered as a stable constitutional democracy that is administratively divided into 16 regions and 260 districts (World Bank, 2019). The Government of Ghana (GoG) has made several efforts to decentralize. Hereunder, attempts to devolve functions and responsibilities relating to development from the central level to lower tier government administrations. The local governments are framed by the Local Governance Act 936 from 2016, which replaces the Local Government Act 462 from 1993 (Sumah and Baatiema, 2019). As mentioned in section 1.2, devolution is the most comprehensive type of decentralization. Ideally, *devolution* entails democratically-elected decision-makers that have authority to raise revenue and make decisions over development priorities based on local conditions with a large degree of independence from the central government (Mills et al., 1990). However, the current format in Ghana resembles *deconcentration*, as policy planning and strategy setting remains at the national level. Moreover, the most powerful members of local governments, including the District Chief Executive, are all appointed by the ruling central government and not elected by the local community (Van Belle and Mayhew, 2016). This diminishes the intended effects of decentralization, mentioned in section 1.2.

At district level, the local governments are referred to as District Assemblies (DA). The DAs role and responsibilities regarding health are not clearly defined, yet oftentimes they support the DHMTs. Depending on the political priorities defined by the GoG, the DAs can take active part in health activities for example by supporting training of health personnel or construction of Community-based Health Planning Services (CHPS) compounds (Van Belle and Mayhew, 2016, Ayee and Dickovick, 2010). Nevertheless, typically the DAs contribution to the district health budgets are minor (2-5%).

The district health systems are primarily funded through allocations from the MoH, which comprise funds from development partners (85%) and GoG (15%) (Kwamie et al., 2014). However, the MoH allocations have been described as being inadequate for maintaining district health activities. In addition, the central allocations to the districts are unpredictable and frequently delayed (Van Belle and Mayhew, 2016, Couttolenc, 2012). Thus, to sustain the provision of health services, DHMTs frequently take a percentage of the internally generated funds (IGFs) of the health centers (Kwamie et al., 2014). The IGFs consist of the fees that patients pay for services (OOP) and reimbursements by the National Health Insurance Scheme (NHIS) (Van Belle and Mayhew, 2016). The shortcomings in MoH allocations is partially due to the GoG only allocating 3.7% of the national gross domestic product to health, which is short of its commitment in the Abuja Declaration to spend 15% on health (Adua et al., 2017, Micah et al., 2020).

The limited financial resources to the health sector affect the DHMTs operation as it affects the amount of available resources (human, material, financial) within the districts. The shortage of healthcare personnel in Ghana is one of the most impactful resource deficiencies, particularly in rural areas (Adua et al., 2017, Agyepong et al., 2004). There is 1.04 health workers (physicians, nurses, midwives) per 1000 people in Ghana (Antwi et al., 2013). This is significantly lower than what is recommended by WHO for achieving 80% coverage, namely 2.3 health workers per 1000 people (World Health Organization, 2006). The staff shortage is partially caused by a lack of access to medical education (Frenk et al., 2010). Moreover, by many of the existing health professionals opting to migrate to higher income countries, due to higher salaries, better working conditions, and more opportunities for professional growth (Anarfi et al., 2010). It is reported that 57% of doctors and 24% of nurses who graduated in Ghana, are working abroad (Adua et al., 2017). The migration of health workers is commonly referred to as “brain drain” (Adua et al., 2017, Anarfi et al., 2010).

1.5.2.Health system governance

Health system governance is widely defined, yet in current thesis it refers to the rules that distribute authority, roles and responsibilities within the health system (Pyone et al., 2017, Brinkerhoff and Bossert, 2013). In Ghana, the head of the health sector, namely the MoH is placed in the capital Accra. The MoH sets the strategic direction of the health sector, formulate policies, mobilize resources, provide technical advice for health programs, liaise with international health organizations and aid agencies, as well as monitor and regulate health care delivery (Couttolenc, 2012). Moreover, it is in charge of the country's three teaching hospitals and health personnel development, including training and education hereof (Couttolenc, 2012).

Meanwhile, management and operation of all other public health facilities are carried out by the government agency Ghana Health Service (GHS). The GHS and Teaching Hospital Act 525 in 1996 involved a delegation of authority from MoH to GHS, as part of the GoG decentralization efforts. It mandated GHS to "*provide and prudently manage comprehensive and accessible health services with special emphasis on primary health care at regional, district and sub-district levels in accordance with approved national policies"* (Kwamie et al., 2015). In order to meet this mandate, GHS has deconcentrated the decision-making down national, regional and district lines. The GHS headquarters in Accra is headed by the Director General, his deputy, and eight divisional directors. These oversee the GHS Regional Health Administrations (RHAs) established within each of the 16 regions. The RHAs are headed by Regional Health Management Teams (RHMT), each led by a Regional Director of Health Services (RDHS). They oversee the district level within their respective region. The district level encompasses GHS District Health Administrations (DHA) that comprise the DHMTs that are headed by a District Director of Health Services (DDHS). Aligning with the hierarchical structure, the DDHS reports up to the RDHS, who in turn reports directly to the GHS Director General, who is accountable to the MoH. Besides being vertically accountable to the higher levels of GHS, the DDHS is horizontally accountable to the DAs (Van Belle and Mayhew, 2016, Couttolenc, 2012).

The majority of health services in Ghana are delivered by the public sector, however an estimated third of health services are provided by private facilities and by para-public non-profit, mission based facilities run by the Christian Health Association of Ghana (CHAG). The public health service delivery takes place at five levels, namely teaching hospitals, regional hospitals, district hospitals, health centers, and CHPS facilities. As mentioned, the MoH is responsible for the teaching hospitals. The regional hospitals are administered by the RHAs, meanwhile district hospitals are

managed by separate district hospitals administrations. This leaves the DHMTs with the responsibility for overseeing health services delivery at health centers and CHPS within their district. Sub-district and community health management teams have been established to support DHMTs in this pursuit.

1.5.3. Functions, competencies and decision-space among DHMTs in Ghana

The DHMTs comprise the DDHS and a set of DHMs, including administrative, technical and operational managers, such as health services administrators, disease control officers, and health promotion officers (Bonenberger et al., 2015). Their primary role is to execute national policies and plans to ensure that the given objectives are achieved at district level (Kwamie et al., 2015, Ghana Ministry of Health, 2014b). This involves core management tasks, include development of action *plans* that align with the national policies; ensuring implementation of health services and programs through *organizing* material resources such as medicine, equipment and supplies across health facilities; *staffing* health facilities to ensure equitable access to healthcare; *coordinating* national and donor-funded programs; *controlling* frontline staff and health service delivery through monitoring and supervision; and lastly they have to be able to *problem-solve* if things are not going as planned (Bonenberger et al., 2015). Moreover, they have to carry out leadership activities in order *to align people;* they need to communicate, inspire and motivate health workers, the DAs, health partners and community members to take part in achieving the district health objectives set by the national level (Dovlo, 2016, Daire et al., 2014, Kwamie, 2015).

Evidence on whether district managers in Ghana hold the appropriate qualifications and competencies is lacking, as in other LMICs (Asante et al., 2006, Agyepong, 1999, Bonenberger et al., 2015, Sumah and Baatiema, 2019, Sakyi et al., 2011). The opportunities for formalized health management and leadership training in Ghana is limited. There is one accredited institute specifically targeted health administration and management, namely the Ghana Institute of Management, Planning and Administration (GIMPA), which is located in Accra (GIMPA, 2019). If district funds allow, the DDHS is strongly encouraged to participate in the six week certified course on health administration and management. Nevertheless, most DHMs learn how to perform management tasks on the job (Agyepong et al., 2001, Bonenberger et al., 2016, Kwamie et al., 2014). Other district-level management and leadership initiatives that have taken place in Ghana, include the Strengthening District Health Initiative, Leadership Development Program and the PERFORM Project, which all have applied an Action Research approach (Kwamie et al., 2014, Martineau et al., 2018, Cassels and

Janovskzy, 1995). As most other management strengthening interventions in LMICs (cf. section 1.4), these efforts have been relatively short-term, and have focused primarily on enhancing the individual capacity among managers. Moreover, none of these have been institutionalized and have thus only taken place within specifically selected districts.

As described in the sections above, most decision-making remains centralized, despite GoGs efforts to decentralize. The DHMTs have to plan according to priorities set at the national level. Moreover, the financial resources allocated from MoH to DHMTs are oftentimes earmarked and accompanied by prescriptive guidelines (Kwamie et al., 2014). Human resource management, including health worker remuneration and staffing of health facilities, is also largely under central control. For example, the DHMTs do not have the authority to remunerate health personnel, which restrains the measures they can take in terms of encouraging good staff performance. Furthermore, the DHMTs do not have the authority to fire or hire personnel (Sumah and Baatiema, 2019, Bossert and Beauvais, 2002). Consequently, the DHAs have to staff facilities by transferring health personnel between facilities within the district (Kwamie et al., 2017). Studies from different LMICs, including Ghana, have linked posting and transfer mechanisms to health worker dissatisfaction, low morale, absenteeism and poor quality of health services (Kwamie et al., 2017, Abimbola et al., 2017, Sheikh et al., 2015). Nonetheless, posting and transfer mechanisms and practices in Ghana, as well as in other LMICs, remain poorly understood and largely under-researched (Rowe et al., 2005).

1.6. Rationale

The rationale behind the research compiled in this thesis is rooted in the pivotal role district health management plays in order to achieve national health objectives in Ghana, as well as in other LMICs. Ineffective and inefficient health management processes may among other things result in services that are non-responsive to community needs, misuse of limited resources, and a demotivated and inequitably distributed health workforce. This ultimately leads to sub-optimal health services, or in worst case no health services being delivered to those who need it most. Nevertheless, many governments in LMICs, including Ghana, have paid inadequate attention to ensure effective district health management. This is for example evident by the fact that countries hire medical staff to fill management positions and that they categorize management cadres as “support workers” in human

resource depositories. In turn, there are rarely specific employee development strategies outlined for this staff cadre.

This thesis seeks to contribute with research on district health management that may lead to an enhanced awareness about the importance hereof. Moreover, it seeks to generate insights that may inform strategies and initiatives to strengthen management at district level. The research compiled in this thesis is guided by the following knowledge gaps that have been identified in this chapter.

Firstly, most research on management has taken place within hospitals or in the private sector – and mostly in high-income settings. Thus, there is limited knowledge on district health managers within the public health sector in many African countries. This includes information on their qualifications, competencies and whether they have access to available management support systems. In addition, the link between district health management and health system performance remains largely unexplored.

Moreover, management practices related to staffing of district health facilities are poorly understood, despite them being associated with dissatisfaction among frontline health workers. As mentioned, brain-drain is a major challenge in Ghana as there already is a short supply of health workers. Ensuring satisfied and motivated health workers is an important mean to increase retention. In order to alter and improve management practices related to staffing, awareness of current staffing mechanisms, including transfer of health workers between facilities, is needed.

Lastly, there is a widespread global perception of management capacity as being a question of competencies to be developed through training. As demonstrated in this chapter, competencies are indeed necessary, yet not sufficient to ensure efficient and effective management practices. There is a need to alter the prevailing view on management to ensure improved management practices through other approaches than training. This calls for 'system thinking' research that clearly demonstrates how district health managers' processes and practices are affected by the organization and context in which they are embedded (de Savigny and Adam, 2009). In general, there is an abundance of literature on how organizational and contextual aspects may affect individual behavior, however evidence related to public health system management in LMICs is lacking.

CHAPTER 2

Aim and Objectives

A District Health Administration office building in the Eastern Region of Ghana

2. Aim and objectives

2.1. Aim

The overall goal of this thesis is to contribute to the health systems strengthening knowledge base by providing state-of-the-art insights into district health management. The insights learned from this research may guide the development of management strengthening strategies in Ghana, and possibly other countries with decentralized health systems.

More specifically this thesis aims to analyze district health management in the Eastern Region of Ghana, and its association with health systems performance. In order to achieve this aim, four specific objectives have been established.

2.2. Objectives

The specific objectives of current thesis are

1. To analyze how contextual, organizational and individual aspects affect district health managers in carrying out their functions.
2. To assess managerial capacity at district level in Ghana, Uganda and Malawi
3. To analyze the association between district health management and health system performance in Ghana
4. To analyze managerial practices related to health worker transfer processes in Ghana

2.2.1. Structure of the thesis

The thesis comprise nine chapters. *Chapter 3* includes an overview of methodologies used, including the analytical approach and ethical considerations. *Chapter 4* comprises a study that explores how district health management emerges within a complex health system, and how such insights can be used to strengthen management capacity. *Chapter 5* relates to the second objective, and includes a working paper that provides a cross country comparison of management capacity in the selected PERFORM2Scale districts in Ghana, Malawi and Uganda. *Chapter 6* relates to the third objective, and provides a descriptive quantitative analysis of the availability of DHMs, their competencies, functional support systems and enabling environment. Moreover, it explores the association between

management capacity and district health system performance in Ghana. *Chapter 7* relates to the fourth objective and explores managerial processes relating to health worker transfer processes. *Chapter 8* presents an editorial piece that provides an opinion on how management capacity strengthening should be tackled through a system approach. *Chapter 9* includes a general discussion of the findings and implications hereof, such as how they can contribute to strengthen district management and health systems in Ghana and other LMICs. Moreover, it concludes the thesis with suggestions for future research.

Table 2 Definition of terms used throughout this thesis

Terms	Definitions
Capacity	Ability of individuals, organizations, or institutions to perform appropriate functions effectively, efficiently, and sustainably to achieve stated objectives.
Capacity strengthening	Efforts towards strengthening the ability of individuals, organizations, or institutions to perform appropriate functions effectively, efficiently, and sustainably
Competency	A combination of skills, knowledge and attitudes
Skills	A learned ability to do a specific job or task
Management	A set of processes and tasks (i.e. planning, budgeting, organizing, staffing, controlling) needed to meet set objectives. In addition, management in current thesis also refers to a set of leadership activities (i.e. align, motivate, inspire, encourage and empower actors)
Decision-space	The range of decisions that individuals have authority to make

CHAPTER 3

Methodology

The road to data collection in the Eastern Region of Ghana

3. Methodology

This thesis takes on a publication-based format, which implies that a detailed description of study setting, design and applied methods is provided separately within each chapter. Nevertheless, this chapter aims to provide a more detailed insight into the study setting in which the research was performed. Moreover, it provides an overview of the methodological and analytical approaches that have been applied to explore each of the objectives.

3.1. Study setting

Ghana was selected as a country case study for this research due to its involvement in the PERFORM2Scale project, and the paired partnership between the Swiss Tropical and Public Health Institute and the School of Public Health, University of Ghana. At the time this study was initiated (2017), Ghana was divided into ten administrative regions and 216 districts. However in 2019, the president Nana Akufo-Addo of the New Patriotic Party, expanded the number of regions to 16 and districts to 260 in an attempt to ensure more effective administration and devolution of power.

Figure 5 Map of the ten regions in Ghana at the time of the study (2017)

The study was carried out in the Eastern Region of Ghana, which is located just north of the capital Greater-Accra Region (Figure 5). The Eastern Region of Ghana was not affected by the regional restructuring, and thus continues to have 26 administrative districts. This study focuses on six of

these, namely 1) Fanteakwa, 2) Yilo Krobo, 3) Upper Manya, 4) Kwahu West, 5) Suhum, and 6) Akwapim North (Figure 6). These six districts, which are described more in-depth below based on Annual District Reports from each district, were selected based on their involvement in either the PERFORM or the PERFORM2Scale project (cf. Table 3) .

Figure 6 Study districts in the Eastern Region of Ghana

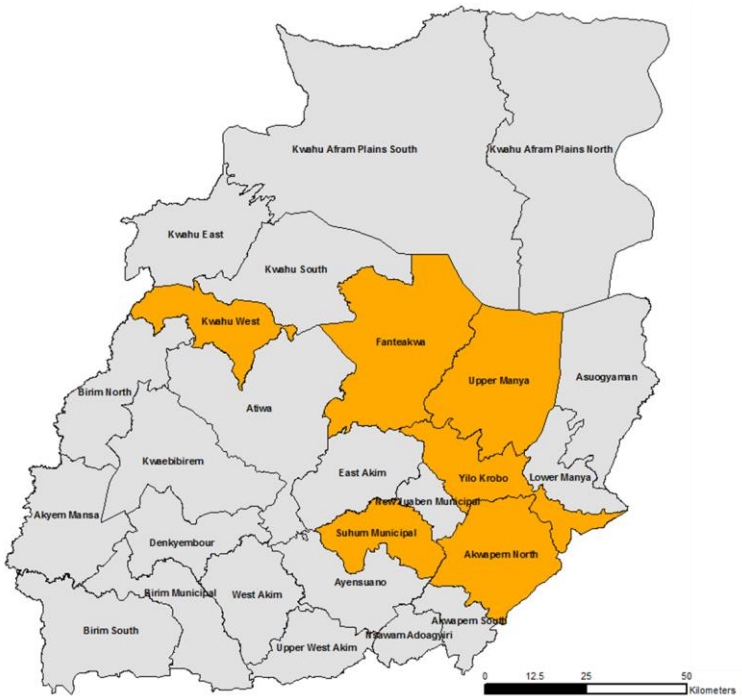


Table 3 Information on study districts

	Fanteakwa	Yilo Krobo	Upper Manya	Kwahu West	Suhum	Akwapim North
Size (sq. km)	1.066	805	658	414	450	544
Population	130.295	104.888	83.865	111.813	105.605	165.271
Sub-districts	7	7	6	7	9	6
PERFORM2Scale	X	X			X	
PERFORM			X	X		X

Fanteakwa

Fanteakwa was established in 1988 as part of the GoG decentralization policy (Ghana Health Service, 2018b). It is one of the largest districts in the Eastern Region, which is located in a mountainous, rainforest zone of Ghana. Due to the regions' geographical location, the districts, including Fanteakwa, experience heavy rainfalls between June and October. Roads connecting the major roads to outreach communities are mainly laterite, meaning they are dusty during the dry season, and muddy – and at

times unmotorable – during the rainy season. Not all communities within the district have stable electricity or access to telecommunication networks, meaning that they are cut off from mobile communication and internet access. Moreover, more than 60% of the population do not have access to potable water. Poor accessibility to health facilities in terms of affordability and transportation has been a key challenge. The major management challenges reported by the DHMTs in the end of 2016 included shortage of critical staff at the facility level, inadequate inflow of funds, lack of accommodation for DHMT members and health workers, aging motorbikes with high cost of maintenance, inconsistencies in data, and incomplete reporting. The DHMTs key partners and collaborators for health include the DA, Fanteakwa NHIS, Ghana Education Service (GES), Ministry of Food and Agriculture (MoFA), National Disaster Management Organization (NADMO), and World Vision Ghana (Ghana Health Service, 2018b).

Yilo Krobo

Yilo Krobo was also established in 1988 (Ghana Health Service, 2018f). About half of the estimated road network within the municipal is motorable tarred roads linking the municipal to major towns, including Accra and Koforidua. Over half of the settlements in the municipality are connected to the national electricity grid. Meanwhile telecommunication services in the municipal are limited. Key challenges reported by the DHMT in the beginning of 2018, included inadequate staff for service delivery, lack of a hospital to provide comprehensive health care delivery, data management issues, lack of facility space for service delivery and staff accommodation, inadequate support visits to service delivery points, and non-functional motorbikes. Important health partners include DA, Yilo Krobo NHIS, GES, MoFA, Hunger Project, and the Chris Meck Foundation (Ghana Health Service, 2018f).

Upper Manya Krobo

Upper Manya Krobo, a predominantly rural district, was established in 2008 (Ghana Health Service, 2018e). It is considered one of the most deprived districts in the Eastern Region. Most settlements in the district are clay houses scattered across farmlands. Many of these are without access to the electricity grid or telecommunication networks. Moreover, the road network is very poor and consists mainly of unpaved roads that becomes impassible during the rainy season, and consequently isolate many communities. Access to health services is challenged by staff inadequacy and the poor road networks. Key challenges reported by the DHMT in the end of 2017 include a lack of means for

transportation, inadequate funds to run health programs, difficult terrain to work in especially in rainy periods, weak surveillance systems, and crash programs that make implementation of planned activities difficult. The DHA in Upper Manya collaborates and receives support from several stakeholders and NGOs. These include the DA, Plan GHANA, the Hunger Project and Marie Stopes International (Ghana Health Service, 2018e).

Kwahu West

Kwahu West was established in 2004 (Ghana Health Service, 2018c). Around 50% of the population resides in the district capital Nkawkaw, which is the second largest urban town in the Eastern Region. The Kumasi-Accra highway runs through the district, yet most of the roads in the district are rugged and unpaved. This makes transportation and access to health services difficult in the rainy season. Several of the communities within Kwahu West do not have access to the electricity grid. The key challenges reported by the DHMT includes inadequate staff at the CHPS, inadequate CHPS compounds (only 4 of 37 CHPS have permanent compounds), inadequate vehicles for services delivery, unbefitting office space within the DHA, and a lack of accommodation for the DHMT members (Ghana Health Service, 2018c).

Suhum

Suhum was established in 2012 (Ghana Health Service, 2018d). It has a large road network, however only a small proportion being truck roads. The condition of the remaining roads has been described as deplorable. Meanwhile, the coverage of telecommunication networks is reportedly good across the municipality. The DHMTs key challenges include high maternal mortality rates; weak and old vehicles that prevent monitoring and supervision, and thus effective health delivery; inadequate and erratic budget allocations from the national level; delayed reimbursements from NHIS; inadequate supplies and equipment at facilities; poor data capture at sub-district level; weak community-based surveillance systems; and weak management and leadership skills among the DHMT members (Ghana Health Service, 2018d).

Akwapim North

Akwapim North was established in 1988 (Ghana Health Service, 2018a). The district comprise large towns that are connected to Accra and Koforidua by an excellent road network. Smaller towns suffer

from feeder roads of which some are impassable during the rainy season. The majority of communities within the district have access to the electricity grid, as well as to telecommunication networks. The key challenges reported by the DHMTs included a lack of funds to conduct regular supportive supervision to the facilities; data inconsistency; health service delivery issues such as low detection rates of severe acute malnutrition cases (Ghana Health Service, 2018a).

3.2. Methodological and analytical approach

Research pertaining to management and leadership in health systems is complex, as it requires perspectives on both individual, organizational and institutional processes and capacities, and the interaction between these (Kwamie et al., 2014). To navigate this complexity, this thesis employed a combination of quantitative, qualitative and mixed-methods research approaches. Through these, multiple perspectives were obtained from various stakeholders, including frontline health workers, DHMs, the DDHS, district hospital administrators, members of the RHMT, the RDHS, staff at the GHS headquarters, and staff working in NGOs that partner with the districts (i.e. Chris Meck Foundation and World Vision Ghana). Table 4 provides a summary of the methods used to explore each objective, as well as information on when data was collected.

Table 4 Summary of the applied methods by objective

Objective	**1.** *Analysis of how district health management emerge in a complex health system*	**2.** *Assessment of management capacity in Ghana, Malawi and Uganda*	**3.** *Association between management and health system performance in Ghana*	**4.** *Analysis of health worker transfer practices in Ghana*
Methods	In-depth interviews	Self-administered survey	Self-administered survey	- In-depth interviews - Face-to-face survey - Review of official policies and procedures on posting and transfer of health workers
Participants	- Members of the RHMT (n=4) - Members of the DHMTs (n=15) - Staff from district NGOs* (n=2)	DHMs from Ghana (n=32), Uganda (n=18) and Malawi (n=15)	DHMs (n=59)	- Transferred HWs (n=44) - RHMT members (n=3) - DHMT members (n=9) - GHS HQ staff (n=7)
Setting	PERFORM and PERFORM2Scale districts	PERFORM2Scale districts in Ghana, Uganda and Malawi	PERFORM and PERFORM2Scale districts	PERFORM districts
Time of data collection	February-April 2018	February-June 2018	February-March 2018	May-July 2014

*RHMT: Regional Health Management Team, DHMT: District Health Management Team; HWs: Frontline health workers; GHS HQ: Ghana Health Service Headquarters;*Chris Meck and World Vision Ghana,*

A total of four studies were conducted in the frame of this thesis. The first study (Objective 1, table 4) was a qualitative study aiming to explore how district health management emerge, hereunder aspects that enable or hinder DHMs' in carrying out their functions. The DHMs were thus the core unit of research, however to verify their observations, a data source triangulation approach was applied (Patton, 1999). Consequently, the study was based on 21 interviews with purposively sampled DHMs, their supervisors at the regional level and NGO partners. The interviews were facilitated by semi-structured interview guides that were conceptualized based on the WHO management and leadership framework (Figure 2) (Appendix 1, 2 and 3). The interviews were coded by using a general inductive approach, as described by Hsieh and Shannon (38). Following a content analysis, global themes were generated by using a systems theory approach, in which data were organized into individual, organizational and contextual aspects affecting management capacity at district level.

The second study (Objective 2, table 4) was based on a self-administered cross-sectional survey that gathered information on the DHMs' socio-demographic background; previous management experience and training; the extent of available management support systems; the DHMs self-assessed management competencies and skills; perceived team dynamics; job satisfaction, motivation and organizational commitment (Appendix 4 and 5). A comparative descriptive analysis was conducted based on data collected within PERFORM2Scale districts in Ghana, Malawi and Uganda. This study serves as a report intended for learning within the PERFORM2Scale consortium, and thus differentiates from the remaining studies that are developed as scientific publications.

The third study (Objective 3, Table 4) was based on the same self-administered cross-sectional survey as the second study (Appendix 4). A descriptive analysis was applied to identify individual and institutional capacity needs across districts within the Eastern Region of Ghana, meanwhile a non-parametric one-way analysis was applied to test whether there were significant differences in the measured aspects across different performing districts (Cuzick, 1985). District performance was assessed via the Ghana League Table of District Performance, which is applied quarterly and annually to assess and rank district health management teams based on how they perform in relation to 17 nationally defined health-related key performance indicators (i.e. outpatient attendance per capita, data entry completeness, data entry timeliness, antenatal care coverage etc.).

The fourth study was based on semi-structured in-depth interviews with national, regional and district health managers who were involved in posting and transfer of health workers; a structured face-to-face survey with health workers who had recently transferred; and GHS policies and

procedures that guides posting and transfer of staff (Ghana Health Service, 2015). The in-depth interviews were guided by semi-structured interview guides, and concerned the administrators' role in managing transfers and their reasons for initiating transfers. Moreover, it concerned their perceptions of why health workers' request transfer, and how health workers were involved in transfer decisions. Meanwhile, the survey explored health workers' reasons for their transfer and how their transfer had been handled, including how they were involved. A data triangulation approach combining the information gathered from administrators and health workers was applied to analyze and verify the different perspectives and potential discrepancies between practices and policies (Bekhet and Zauszniewski, 2012, Flick, 2004). Process maps were generated based on the collected information to create a pictorial representation of transfer practices, both for transfers initiated by administrators, as well as for transfers initiated by health workers. Process mapping is a methodological tool recommended for health systems research (Peters, 2014, Wilkinson et al., 2018).

All semi-structured in-depth interviews conducted in relation to this thesis have been carried out as described by Britten and Boyce (Britten, 1995, Boyce and Neale, 2006).Qualitative data collected via in-depth interviews were recorded, and subsequently transcribed and analyzed in NVivo Software 12.0. Meanwhile, survey data was entered in EpiInfo and imported into Stata Statistical Software 15.0 for analysis (StataCorp, 2017).

3.3. Ethical considerations

This thesis is an integral part of the PERFORM2Scale project, which is led by the Liverpool School of Tropical Medical. Thus, ethical clearance for all studies included in current thesis have been obtained from the Research Ethics Committee of LSTM (ID NO: 17-046). Ethical clearance have also been obtained from the Ghana Health Service Ethical Review Committee (ID NO: GHS-ERC009/12/17 and ERC004/01/20). Moreover, written informed consent was collected from all study participants.

CHAPTER 4

How does district health management emerge within a complex health system? Insights for capacity strengthening in Ghana

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A road in Fanteakwa District

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4. How does district health management emerge within a complex health system? Insights for capacity strengthening in Ghana

4.1. Abstract

Introduction: District health managers (DHMs) play a pivotal role in the operation of district health systems in low - and middle income countries, including Ghana. Their capacity is determined by their competencies, but also by the organization and system in which they are embedded. The objective of this paper is to explore how district health management emerges from contextual, organizational and individual factors in order to demonstrate that capacity strengthening efforts at district level need to transcend individual competencies to take on more systemic approaches.

Methods: Semi-structured interviews (n=21) were conducted to gain insight into aspects that affect district health management in the Eastern Region of Ghana. Interviews were conducted with DHMs (n=15) from six different districts, as well as with their superiors at the regional level (n=4) and peers from non-governmental organizations (n=2). A thematic analysis was conducted by using an analytical approach based on systems theory.

Results: Contextual aspects, such as priorities among elected officials, poor infrastructure and working conditions, centralized decision-making, delayed disbursement of funds and staff shortages, affect organizational processes and the way DHMs carry out their role. Enabling organizational aspects that provide DHMs with direction and a clear perception of their role, include positive team dynamics, good relations with supervisors, job descriptions, appraisals, information systems, policies and guidelines. Meanwhile, hierarchical organizational structures, agendas driven by vertical programs and limited opportunities for professional development provide DHMs with limited authority to make decisions and dampens their motivation. The DHMs ability to carry out their role effectively depends on their perception of their role and the effort they expend, in addition to their competencies. In regards to competencies, a need for more general management and leadership skills were called for by DHMs as well as by their superiors and peers.

Conclusion: Systemic approaches are called for in order to strengthen district health management capacity. This study can provide national policy-makers, donors and researchers with a deeper understanding of factors that should be taken into consideration when developing, planning, implementing, and assessing capacity-building strategies targeted at strengthening district health management.

4.2. Introduction

In many low and middle-income countries (LMICs), including Ghana, district health managers' (DHMs) are the ones who facilitate the management and implementation of primary healthcare. They have to translate national health policies, as well as human, material and financial inputs, into accessible, high quality health services, and thus play a pivotal role in district health systems (Doherty et al., 2018, Meessen and Malanda, 2014, Kwamie et al., 2014, Bradley et al., 2015). Shortcomings within district health systems in LMICs, such as an unequally distributed health workforce, high levels of absenteeism, medicine stock-outs and poor health outcomes, are often attributed to weak management capacity (Doherty et al., 2018, Mangham and Hanson, 2010, Bradley et al., 2015, Kwamie et al., 2014, Egger et al., 2005, Egger et al., 2007, Egger and Ollier, 2007, Prashanth et al., 2014b).

Capacity has been defined as the "*ability of individuals, organizations or systems to perform appropriate functions effectively, efficiently and sustainably*" (Bates et al., 2011). However, capacity strengthening within the health sector often focuses on enhancing the skills and technical capacity of individuals (McEvoy et al., 2016, Bates et al., 2014). Individuals do however not operate in a vacuum, and their capacity is strongly influenced by the system and context in which they are embedded (Kwamie et al., 2015, Bates et al., 2014).

Since the 1980s, management strengthening interventions (MSIs) have had a predominant focus on strengthening the DHMs' individual competencies rather than the system capacity (Kwamie et al., 2015, Kwamie, 2015, Agyepong, 1999, Potter and Brough, 2004). Individual competencies among DHMs are indeed critical for them to carry out their job in an effective and efficient way (Conn et al., 1996, Diaz-Monsalve, 2004, Mansour et al., 2010, Seims et al., 2012, Mutale et al., 2017, Tetui et al., 2017, Gholipour et al., 2018, Kwamie et al., 2014, Sucaldito et al., 2014, Bonenberger et al., 2016, Kwamie, 2015, Kwamie et al., 2015). Nevertheless, it has been posed that leadership and management within complex adaptive systems, such as the district health system, need to be considered as more than the act of individuals, and rather as something that emerges through an interplay of many interacting forces (Uhl-Bien et al., 2007). District health managers' operate within a context that incentivizes them to act in a certain way, and their practices are to a high extent influenced by, and interdependent with other entities at the sub-district, district, regional and national level (Kwamie et al., 2014, Kwamie, 2015, Lipsitz, 2012, Newbrander et al., 2012, Brinkerhoff, 2007, de Savigny and Adam, 2009, Peters, 2014, Kwamie et al., 2015).

Inadequate attention has been paid to the influence of the context and organizational structures in which DHMs operate in sub-Saharan Africa, including Ghana (Agyepong et al., 2018, Kwamie et al., 2015). Thus, the aim of this paper is to explore how district health management emerges, hereunder the contextual, organizational and individual aspects that enable or hinder DHMs in carrying out their functions. The findings may provide national policy-makers, donors and researchers with a deeper understanding of factors that should be taken into consideration when developing, planning, implementing and assessing capacity-building strategies targeted at strengthening district health management. Moreover, findings may elicit the need to expand management strengthening beyond the traditional approaches that perceive managers as being outside the system with objective abilities to change the system (Kwamie et al., 2015).

Management structures within the Ghana health system

In Ghana, the Ministry of Health (MoH) is in charge of policy making and setting the strategic direction for the health sector. Meanwhile, the semi-autonomous agency Ghana Health Service (GHS) has been mandated by the MoH to implement the national health policies through management and operation of nearly all public health facilities. To take on this mandate, the GHS is administratively organized at the national, regional and district level (Couttolenc, 2012). The GHS headquarters oversee the GHS Regional Health Administrations (RHA) that are located within each region. At the time this study took place, there were 10 regions in Ghana, subdivided into 216 districts. The RHAs, led by the Regional Director of Health Services, oversee the District Health Administrations (DHA) that are established within each district. The DHAs are run by district health management teams (DHMTs), who are responsible for the operation and management of public health facilities within their district, including health centers and Community-based Health Planning Services (CHPS) (Couttolenc, 2012). The DHMTs may consist of up to 12 core members that are led by a District Director of Health Services (DDHS). To our knowledge, there is no official document outlining core members of DHMTs, however they typically include administrative officers (i.e. DDHS, Deputy Director of Nursing Services and Health Administrators), technical officers (i.e. Public Health Nurse, Disease Control, Health Information, Nutrition, Health Promotion Officers), and operational officers (i.e. Finance, Human Resource and Supply Officers). The core managers are assisted by various program heads, for example coordinators of community health - and disease control programs (i.e. CHPS, Tuberculosis, Malaria and HIV coordinators). The DHMTs are vertically accountable to RHAs, who in turn are

accountable to GHS headquarters. Moreover, the DHAs are horizontally accountable to the local governments, namely the district assemblies. The district assemblies are the highest political decision-making bodies within the districts, and play an important role in deciding how state resources are allocated within the districts (Sumah and Baatiema, 2019). The funds allocated to health by the district assemblies in each district depends on the priorities of the district assembly and the lobbying power of the district health directorate (Agyepong, 1999). The private sector, non-governmental and faith-based organizations, as well as donor partners, also play an important role in adding resources and addressing challenges related to service delivery within the Ghana health system.

National initiatives to strengthen management and leadership at district level have taken place in Ghana, including the Leadership Development Program (LDP) and the Strengthening District Health System Initiative (SDHI) (Kwamie et al., 2015). The LDP has been implemented in districts across Ghana since 2008. It takes on a team-based approach in which DHMTs in tandem apply management and leadership practices (i.e. root cause analysis, action planning, monitoring and evaluation etc.) to address service delivery problems. Improved practices, team – and work climate were observed during the program and shortly thereafter, however were not sustained (Kwamie et al., 2014). The unsustainability was partially attributed to it being introduced in a top-down manner by regional officers, which diminished the DHMs own decision-making and thus ownership (Kwamie et al., 2014). The SDHI was implemented in the late 1980's, and also focused on individual and team competencies, including problem analysis and problem solving (Kwamie et al., 2016). It was sustained for a while due to its focus on local ownership and a close-knit network between the then district leaders who shared management strengthening ideas amongst each other after the duration of the program. As a result of the program, the DHMTs became better planners and advocates for their needs as their capacity and confidence increased. Consequently, their decision-space was increased. Nonetheless, the momentum of the SDHI waned after a couple of years partly due to the existing district leaders no longer being in the districts, partly due to a lack of financial support for programming (Kwamie et al., 2016).

4.3. Methods

Study setting

This study was conducted in six districts in the Eastern Region of Ghana. The districts were selected based on their involvement in the PERFORM2Scale project, which aims to scale-up a MSI at district level in Uganda, Malawi and Ghana.

Study design and population

This study took on an exploratory approach using qualitative interviews to gain insight into aspects that enable or hinder DHMs in carrying out their duties in a way that improves health service delivery and population health outcomes at district level. The DHMs were thus the core unit of research, however to verify their observations, a data source triangulation approach was applied (Patton, 1999). In addition to inviting DHMs to participate in the study, regional health administrators and staff from local NGOs within the study districts were invited to participate. The regional health administrators supervise the DHMTs and thus have a good oversight of the resources and support systems available at district level, as well as the individual capacity among DHMs. Meanwhile, the NGOs collaborate closely with the DHMTs in the field and have insights into how contextual, organizational or individual aspects affect the DHMs. Access to study participants were obtained through their involvement in the PERFORM2Scale project. The sampling strategy was purposive, as described by Ritchie et al (Ritchie and Lewis, 2003), however some of the invited DHMs could not participate due to a national mass distribution of long lasting insecticide-treated bed nets taking place at the same time as this study.

Data collection

Semi-structured in-depth interviews were carried out in February and March 2018, and were conducted by the first, third and fourth author of this paper. The interviews were facilitated by semi-structured interview guides, which were conceptualized based on the World Health Organizations leadership and management strengthening framework (Egger et al., 2005). Separate interview guides were developed for the DHMs, regional health administrators and the NGO staff, respectively. However, the three guides included similar questions relating to: 1) DHMs' roles and responsibilities; 2) DHMs qualifications, 3) required and perceived management competencies among DHMs; 4) DHMs relationship with external partners (non-governmental organizations (NGOs), donors, academic institutions) and stakeholders at the national, regional, and sub-district level; and 5) the organizational

and environmental context surrounding DHMs, and how it affects the DHMs in carrying out their responsibilities (Appendix . Individual interviews were conducted at the study participants' workplace, and lasted approximately 40 minutes. All interviewees were informed about the interviewers' affiliation and the procedure of data collection.

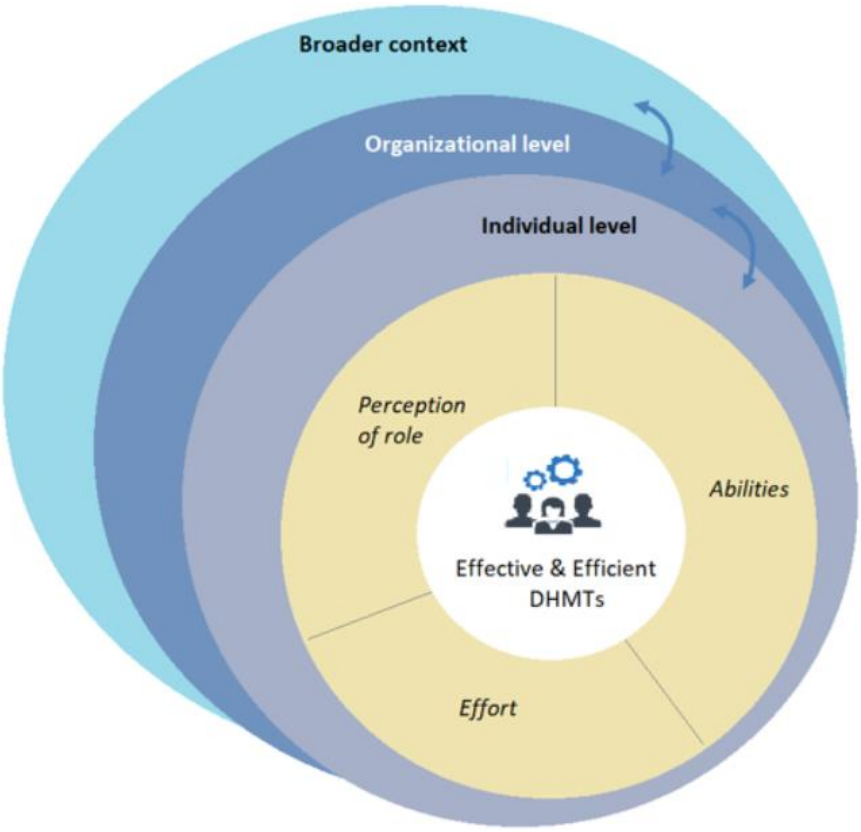
Data analysis

The interviews were transcribed and subsequently coded in the qualitative research software Nvivo 12 by using a general inductive approach, as described by Hsieh and Shannon (Hsieh and Shannon, 2005). Following a content analysis, global themes were generated by using a systems theory approach, in which data from DHMs, regional administrators and NGOs were organized into individual, organizational and contextual aspects affecting management capacity at district level (Rowe et al., 2005, Beerel, 2009, Prashanth et al., 2014a). The framework in Figure 7 demonstrates that the broader context refers to situational circumstances and characteristics that influence the behavior among DHMs, such as available resources, relationships with stakeholders, policies and regulations. Meanwhile, the organizational context refers to the characteristics of the organization of GHS in which the DHMTs are embedded, including organizational processes and culture, available management support systems and structures, including the DHMs decision-making authority. Lastly, the individual aspects refer to 1) the DHMs perception of their role, 2) their abilities and 3) the effort they put into carrying out their duties in an efficient and effective way. These three sub-themes have been described by Byars and Rue as affecting the degree to which an individual is fulfilling his or her assigned job tasks (Byars and Rue, 2008).

Ethics

This study was carried out as an integral part of PERFORM2Scale under the lead of the Liverpool School of Tropical Medicine (LSTM). Ethical clearance was obtained from the Research Ethics Committee of LSTM (ID No.: 17-046) and the GHS Ethics Review Committee (No.:GHS-ERC004/01/20). Written informed consent was obtained from all study participants, and they were informed about the possibility to withdraw from the interview at any time.

Figure 7 Framework on aspects affecting effective and efficient District Health Management



Broader context: Infrastructure (buildings, roads, power supplies); Resources (financial, material and human); Politics (stakeholders); Policies and regulations (health sector reform); Social values and norms

Organizational level: Management support structures and systems; Policies; Guidelines; Decision-making authority; Organizational culture

Individual level:

- *Perception of role*: Clarity of role, job descriptions, guidelines, supervision, feedback
- *Abilities:* DHMs autonomy to make decisions, resource availability, competencies and skills
- *Effort:* DHMs commitment, motivation, job satisfaction, and the dynamics among team members

4.4. Results

A total of 21 key stakeholders participated in the study, including fifteen DHMs, four regional health administrators and two staff members from two different health-related NGOs located within two of the study districts (Table 5). The mean age of the DHMs participating in the study was around 41 years, and the average time spent in their current management position was approximately three and half years. Six of the DHMs were female (40%), which was a bit less than the actual proportion (~50%) of females within the DHMTs. One of the regional participants and one of the NGO staff representatives were females. No systematic differences were observed between men and women in the interviews, and the results do thus not emphasize gender related perspectives.

The sample represented the majority of core DHMT positions within the selected districts. However, we were unable to interview a health promotion, human resource and supply officer due to them being occupied by the ongoing national mass distribution of bed nets.

Contextual, organizational and individual aspects, and how they relate and interrelate to shape management at district level, are discussed respectively in the sections below.

Table 5 Overview of interview participants

Occupation	**n**
Regional level	**4**
Regional Director	1
Research Officer	1
Administrator	1
Human Resource Officer	1
District level	**15**
District Director of Health Services	3
Deputy Director of Nursing Services	1
Health Administrator	1
Health Information Officer	4
Nutrition Officer	2
Disease Control Officer	2
Public Health Nurse	1
Staff from health-related non-governmental organizations within the districts	**2**
Total	**21**

Contextual aspects

All participants at district, regional and NGO level, repeatedly mentioned the infrastructure and physical environment surrounding the district health facilities as a barrier for the DHMs to carry out their activities, in particular those posted in rural terrains. Not only did they report on the DHMs difficulties in getting to the facilities for their essential supervision and monitoring responsibilities, but they also expressed concerns about the distance they had to travel to work at the DHA.

"We do not have accommodation around, we are all living far away, so we cannot come easily to the office to do some work. People also come late because of that reason" (DHM)

Appropriate accommodation is rarely offered to the DHMs when they are posted to a position in the district. This poses a challenge because the number of effective work hours are reduced significantly as they have to travel long distances to get to and from work. Moreover, in a setting with poor infrastructure, this poses a substantial safety risk at each commute. One manager mentioned how his colleague had been involved in an accident and lost her ability to walk. The limited number of motor vehicles, as well as money for fuel, were also mentioned by all study participants as a hurdle for the DHMs in terms of carrying out their essential monitoring and supervision activities.

The inadequate resources allocated to the districts not only manifests in mobility issues and thus activities that cannot be carried out due to long commuting distances and time spent on traveling, it further manifest in work places that diminish effectivity and efficiency, i.e. poor lighting, lack of internet connection, hot office temperatures, overcrowded offices and lack of equipment at health facilities.

"...look at this office...this is where we work. (…) It does not really depict a well-performing office. When it comes to performance the space that you will be allocated with will add on to your performance. Your office should not be as such when you enter the office and within 5-10 minutes you are tired" (DHM)

The regional administrators also emphasized these challenges, and demonstrated frustration about their inability to address the issues at district level, due to delayed release of district health funds and health insurance reimbursement from the national level.

"…if the health insurance is not giving back (…) then how do we get the money to buy the resources and things. That is the issue. So part of the problem is the payment of the services that we have rendered to health insurance which is not being paid back. So resources are locked." (RHA)

The shortage of human resources for health, both at the frontline and within the DHAs, and the DHMs limited decision-space to hire additional staff were emphasized by DHMs, as well as by RHAs and NGO staff members. The shortage within the DHA, forces the DHMs to take on responsibilities that they are not equipped or prepared for, and increases their workload. The overburden may render them inefficient in their core duties. The quote below demonstrate how a DHM took on myriad roles during his previous posting

"When I was in my old place, I was a transport officer, a CHPS coordinator, I was the Procurement Officer and the Nutrition Officer at the same time. And any time the Disease Control Officer wasn't there I acted as the Disease Control Officer" (DHM)

Meanwhile, the staff shortage at the frontlines hinder DHMTs in their planning, coordination and execution of activities.

"because they [HR at sub-district level] *are not there, it means that all these tasks not actually are performed for the sub-district (…) meaning the system can only be weak because the pillars are not working"* (DHM)

The regional health administrators and the DDHS stated that annual objectives were unmet due to the lack of financial, material and human resources. Moreover, one of the NGO respondents stated that she had experienced that DHMs due to a lack of resources and delayed funding were restrained from carrying out monitoring activities, and for example following up on frontline health workers that the NGO had supported the DHMT in training, causing the trainees to lose their newly acquired skills.

Study participants from the region, districts and NGOs, emphasized the importance of the DHMs having a good relationship with the officials at the district assembly in order for them to receive additional resources and support to achieve district health objectives.

"(…) we are all competing for the same resources. Education, health, agriculture (…). We are competing, so we need to have a very workable relationship with them [the District Assembly]*"* (DHM)

Presence of NGOs within the districts and a good working relationship between the DHMTs and these, as well as with donor partners play a role in DHMTs reaching their goals of improving health indicators. Not only because the NGOs may support the DHMTs with material resources and capacity building at the sub-district level, but also because the NGOs independently work on projects that aim to improve health outcomes within the district. Non-governmental organizations were not present within all the study districts.

"(…) when an NGO comes in and tells me that their objective is to reduce maternal or neonatal deaths at least that burden will be off my chest. They will be coming to help me to surmount those problems." (DHM)

Organizational aspects

At the organizational level, structures and processes supporting the DHMTs in carrying out their tasks, were identified. The ones mostly emphasized as enhancing the capacity of the DHMs include 1) positive team dynamics, frequent information and knowledge sharing within the DHMTs, via Whatsapp groups and weekly meetings; and 2) a good and highly dynamic relationship between the district and regional level with regular communication and frequent supervisory check-ins. Moreover, national directives (i.e. work plans, job descriptions, policies and guidelines) and the availability of health and HR information systems for surveillance, were mentioned as supporting the DHMs in carrying out their duties. However, DHMs raised concerns about the information systems relying on poor connection, as well as on substandard data collection and reporting at sub-district levels. Moreover, job descriptions were not always aligning with actual responsibilities and data reporting forms were at times outdated. In addition, multiple DHMs expressed a need for additional directives (i.e. on community engagement, social and resource mobilization).

Another emphasized management support structure was the performance management system in which structured appraisals take place, both between the DDHS and RHA, as well as between the DDHS and the remaining DHMs. The system provides the DDHS and DHMs with supportive supervision, feedback and holds them accountable. Nevertheless, the system was undermined by the fact that identified strengths and needs rarely could be rewarded or addressed due to a lack of institutional support and resources. The RHA and some DHMTs had established informal award systems, for example best DHMT and employee prizes, respectively, however this form of recognition was generally not described by the DHMs as effective in terms of motivating them to do a better job.

"Formally the district is supposed to sponsor some people to go and do some management training. But anytime those opportunities come, they tell us they do not have the funds to be able to support. So when you have a chance to do, for instance, when I went and did my management training I sponsored it myself." (DHM)

Both DHMs and regional administrators reported that DHMs agendas were dominated by vertical programs. These were perceived positively in terms of adding resources to the district health system, however were described as contributing to a culture with little focus on systems strengthening. The vertical programs have rigid requirements, inflexible funding and often come along with separate reporting systems that are not integrated into existing systems. The DHMs have limited authority to decide on how to utilize the resources, and cannot integrate them in a way that strengthens the overall health system.

"…the vertical programs come with spreadsheets that have direct and very fixed, rigid requirements (…). The assumption of the program funders is that the [existing district health] *system is working. (…). If the funding of a vertical program was flexible to integration, in that case, it can be also integrated in a way that will make both the system and the vertical programs sustainable."* (DHM)

Continuous community engagement was for example highlighted by a DDHS as being critical for sustaining health improvements within the districts, however the lack of flexible resources and guiding policies, restrained them from carrying out such activities. Moreover, the prescriptive directives from

higher levels contributed to an organizational culture within some of the districts that not encouraged DHMs to make data-driven decisions, as demonstrated by the quote below

"We do not make decisions out of data (…) I have been trained to use data. But we could have an interaction, and most of the information I am giving you will not be based on the knowledge that I have. Why? Because we do not have this culture [to use data]. *(…) you have to influence by leadership (…) for the culture to change and become more adaptive to what the data shows"* (DHM)

The vertical programs frequently target "popular" areas, such as disease control, leaving the DHMs with limited funds to cover other areas. To make the most of the resources allocated, integrated monitoring takes place, in which DHMs go jointly to the sub-districts and monitor a wide range of services areas. This ensures efficient use of scarce resources by giving "neglected" areas some attention. However, it reportedly also compromises the overall quality of the essential monitoring and supervision activities.

"…you don't get time to do a detailed monitoring. (…). When you're doing the monitoring and support visit you are supposed to sit there and watch the person do the work, and if there are loop holes or some problems you take over and let the person observe you, so that you can correct them" (DHM)

Nevertheless, the DHMs stated that the integrated monitoring provides them with a common understanding of the different DHMT members' role and responsibilities, which is helpful in situations where a DHM is transferred or on leave, and others have to take over.

Aspects at the individual level

As depicted at the individual level in the framework (Figure 7), effective and efficient DHMTs are likely to be determined by: 1) the DHMs perception of their role; 2) their abilities to carry out their responsibilities; and ultimately, by 3) the effort they put into carrying out their tasks.

The DHMs appeared to have a clear perception of their role due to the dynamics and frequent information sharing within the DHMTs, and the strong relationship with the regional level who provides

supportive supervision. However, the shortage of HR, which causes the DHMs to take on additional roles, imposed a risk of them taking on roles they were not prepared sufficiently for.

The DHMs ability to meet objectives depends on their competencies, as well as on whether they have autonomy to make decisions and resources to execute plans. As described in the sections above, the two latter aspects were limited. In terms of competencies, the study participants reported that the DDHS' are required to have a Master's degree in Public Health and some years of public health experience. However, requirements of leadership or managerial experience were not formalized. This was a concern at the regional level.

"The leaders who are appointed… sometimes have no leadership skills… in terms of cannot convince...cannot lead meetings…cannot hold any stakeholder meetings with communities and with the persons working there. So it's a gap. So even if you are given the best of resources, you can't perform. So the structures, as getting people who are qualified, and then making sure roles are specified..." (RHA).

Nevertheless, the regional health administrators simultaneously stated that the 26 DDHS' within the Eastern Region at the time of this study were well-qualified. They all possessed the required qualifications, in addition to having a certificate in Health Administration and Management from the Ghana Institute of Management and Public Administration (GIMPA). This certificate is recommended by the national level, yet the DHMTs have to find place to fund it within the given district health budget. In addition, DDHS candidates with no managerial experience are recommended to understudy a practicing DDHS for some months prior to taking the position. Meanwhile, there appeared to be no formalized requirements for the remaining DHMs.

"…the appointment of these managers at the district and sub-district level should be formalized. Like they appoint DDHS. Some laid down criteria will be there, so that the person qualify" (RHA)

The majority of the DHMs reported not having received any formal management and leadership training prior to being assigned to their role, but having acquired their competencies at their job. Nevertheless, general management and leadership skills among all DHMs, and not only the DDHS, were called for by the regional administrators, NGOs as well as by the DHMs themselves. Leadership

skills in particular were described as being critical for DHMs to motivate frontline staff within the limited resource settings, and to compete with other sectors on resource inputs from the district assembly and NGOs, who frequently serve several sectors within the districts. To enhance the DHMs general management and leadership skills, the district has to fund their training from its own funds. This combined with no one to cover for the person who goes away for training, results in such trainings rarely being offered to the DHMs. Meanwhile, trainings provided through vertical programs were described as primarily targeting the DHMs technical skills rather than their general management and leadership skills.

Lastly, the effort the DHMTs put into carrying out their activities were positively affected by the DHMT dynamics and supportive supervision from the regional level and respective DDHS'. Nevertheless, various aspects also appeared to impede their motivation, including the limited resources and opportunities for professional growth, as well as their restricted autonomy to make decisions.

"…you have highly trained leaders [referring to the DDHS']*, but because of the way they* [higher levels] *are managing the system, they are dampening their spirit (…) So though you can do a lot, you have the skills to perform...but the way things are done we are unable to do anything".* (DHM)

The sections above and the quote below demonstrate how contextual and organizational aspects influence the individual practices of DHMs, and that these need to be taken into consideration when aiming to strengthen district health management.

"You can train the person, but no matter how you train the person (…) if there is a system failure...you can have all the competent people in the system because (…) you are not going to work in isolation. (…). You are looking at management as a system (…) you need to make sure that all the systems are working properly (…)" (RHA)

4.5. Discussion

The aim of this study was to explore how district health management emerges, hereunder the contextual, organizational and individual aspects that enable or hinder DHMs in carrying out their functions. Our findings paint a picture of district health management in which it is evident that management capacity not emerges from the skills and competencies of the individual managers alone, but through a complex interplay of elements within the different levels. The political, social and economic context, such as human, material and financial resource availability, mode of decentralization in terms of decision-making, and priorities among elected officials and other health partners, affect organizational structures, processes and values, which in turn affect the DHMs abilities and motivation to carry out their duties.

Supported by previous studies, this study identified contextual aspects, such as delayed release of national health funds; poor infrastructure and working conditions; staff shortages at district and sub-district level; good working relationships within district and between districts and regions; lack of opportunities for professional development; and limited decision-making power, as affecting the DHMs ability and willingness to carry out their tasks effectively and efficiently (Tabrizi et al., 2017, Bonenberger et al., 2016, Henriksson et al., 2017, Kwamie et al., 2015, Kigume and Maluka, 2018, Kolehmainen-Aitken, 2004). Moreover, management and in particular leadership competencies among DHMs, including abilities to effectively communicate, inspire and align employees and potential partners that can provide support, has in this study, as well as in other studies, been emphasized as a mean to achieve results within the given contextual and organizational arrangements (Hahn and Gil Lapetra, 2019, Gilson and Agyepong, 2018, Dovlo, 2016).

Insights for strengthening management at district level

Findings of this study underline that strengthening management capacity at district level should be considered at multiple levels rather than only at the individual level. The contextual level affects the organizational level through its provision of incentives and an enabling environment (Woodhill, 2010, Aragón and Giles Macedo, 2010, Franco et al., 2002, Sheikh et al., 2014). The organizational level affects the individuals' ability and willingness to perform by providing a framework of structures, processes and procedures (McEvoy et al., 2016). In turn, the individual practices at the district level take part in maintaining and shaping the organizational context. The contextual and organizational

aspects are less tangible to change compared with individual capacity, however critical for creating sustainable improvements (Potter and Brough, 2004, Brinkerhoff, 2007).

Certain policies need to be in place in order to ensure an enabling and incentivizing environment for the DHMTs. Policies and accountability structures should ensure that resource inputs are distributed in a timely manner. Similar to other studies in Ghana, we found that untimely release of national health insurance reimbursements, as well as delays in state and development partner funds, demoralize and prevent DHMs from carrying out their activities (Bonenberger et al., 2016, Asante et al., 2006, Couttolenc, 2012). We did not explore the bottlenecks in the disbursement of funds, however these must be identified and addressed to ensure that the DHMs have the necessary resources to carry out their tasks. Advocating for enhancing the commitment and budgetary allocation to health by the Government of Ghana may also serve as a mean to create a more enabling environment for DHMs. Currently the allocation to health falls short of the 15% pledge in the Abuja declaration (Adua et al., 2017). Moreover, in concordance with another study from Ghana, we found that resource inputs from local governments to some extent rely on personality driven relations and preferences among elected officials at the district assemblies (Kwamie et al., 2015). Currently, the Local Government Act 462 does not clearly define the roles and responsibilities of district assemblies in terms of health, and practices relying on the DHMs ability to lobby are thus encouraged.

The organizational context is largely affected by political decisions on health system organization, and the scarcity of resources in the broader context. The hierarchical, top-down approach to problem-solving, both through the vertical programs and through the hierarchical structures of GHS, hinder creative and adaptive district management that are responsive to local health challenges (Kwamie et al., 2015, Swann, 2018, Swanson et al., 2015).

This study demonstrated that prescriptive directives and fixed funding diminish bottom-up learning, data-driven decision-making, and limits the DHMs from integrating funds into activities, such as community engagement that strengthens the district health system in ways that are necessary for sustaining improvements. In turn, this lessens the DHMs sense of ownership and internalization of organizational goals and thus the effort they execute (Franco et al., 2002, Kwamie et al., 2015, Aragón and Giles Macedo, 2010).

Other studies have also emphasized that vertical and donor programs in Ghana often interrupt and delay coordinated activities at the district level, as they are poorly planned, communicated, and come along with separate reporting systems (Mutale et al., 2013a, Bonenberger et al., 2016, Kwamie

et al., 2014). The latter was confirmed in this study. Lack of integrated health information systems has been associated with poor quality data (Mutale et al., 2013a). Thus, parallel reporting systems should be prevented. Ways to do so may be explored in future research or by looking to other countries, such as Rwanda where the MoH has commenced implementation of a nationwide comprehensive electronic medical record system that ensures that parallel systems are not created (Mutale et al., 2013a). Furthermore, in order for DHMs to make decisions based on reliable and timely information, our findings indicate that information systems firstly must be optimized by strengthening data reporting mechanisms at sub-district level and by ensuring access to information systems in all geographic areas, including those with poor tele network.

Adaptations in organizational structures and processes are needed to enable DHMs to strengthen district health systems. Nonetheless, these have evolved through decades, and will take time and political will to change (Brinkerhoff, 2007). Some studies suggest that a critical mass of people with leadership skills at district level is likely to push changes in the context (Gilson and Agyepong, 2018, Gilson et al., 2017b). In addition, learning from leadership development history in Ghana, confident and capacitated DHMTs may push for more decision-space, as well as for changes in current organizational structures and cultures that diminish bottom-up learning (Kwamie et al., 2016). In addition, they may hold higher levels accountable to delayed disbursements and to enhancing district health funding.

Ensuring a sustained critical mass of leaders that are able and willing to push for change, firstly require policies that ensure management and leadership competencies among assigned health system managers. This study demonstrated that all DDHS' within the Eastern Region held a certificate in Health Administration and Management, largely due to this being an institutionalized recommendation for filling this role. Meanwhile, there were no formalized management and leadership requirements for the remaining DHMs, similar to in other LMICs (Hahn and Gil Lapetra, 2019). Consequently, these had little exposure to management and leadership training, and district health funds were not prioritized to enhance these competencies.

Moreover, sustained management capacity at district level may be enhanced by building on existing structures and capacities. Confirmed by another study in Ghana, we identified aspects that enable DHMs to carry out their functions, including good relations within and between the districts and regions; as well as the performance management system, in which supportive supervision takes place (Kwamie et al., 2015). The regions who have positive relations with the districts are well positioned to

match learning between well-performing and less performing districts based on insights from the performance management system. Peer-review of management practices in which DHMTs learn from other DHMTs take place to some extent in the Eastern Region of Ghana. However, it has to our knowledge not been institutionalized and is not widely applied, demonstrated by neither of the DHMs in current study emphasizing peer-learning from other districts. A study from the Eastern Region of Ghana found that better performing districts had transformational leaders that use a participatory approach that promotes bottom-up communication to solve problems (Adjei et al., 2010). Inter-district learning may be an advantageous and sustainable approach to strengthen management and leadership as peers are familiar with the contextual barriers, and how to achieve better performance with the means available within the given culture and context (OECD, 2008). Moreover, it is inexpensive, and learning from the LDP, using peers for mentorship and coaching may enhance commitment among the DHMs, compared with a top-down approach. Future research may look into approaches to strengthen management and leadership that build on structures and capacities that already are in place.

Strengths and limitations

To understand situations systemically means to put them into context, and a 'system approach' to capacity strengthening at district level, thus first and foremost requires a thorough understanding of the context in which the DHMs operate (Aragón and Giles Macedo, 2010). We explored this context through the eyes of DHMs and those they work closely with. The DHMs are at the center of management strengthening interventions, yet their voices are often left unheard despite knowing best what capacity is needed and how it best can be developed and sustained within their culture and context (OECD, 2008). Moreover, by including individuals who work closely with the DHMs, we gained a richer and more objective view of aspects influencing district health management. To gain a further understanding of the context in which the DHMs are embedded, future research may however also include other district health actors, including local governments, sub-district health teams and frontline health workers.

Certain aspects affecting how district health management emerges may have been overseen as this study not included all core members of the DHMTs due to the ongoing mass distribution of bed nets. However, we argue that the risk of having overseen any major challenges is minor as multiple DDHS' and regional health administrators who have a holistic overview were included in the study.

Data was categorized into contextual, organizational and individual factors that may impact how district health management emerges, however these systemic layers and categorizations of elements within these, are not definitive, and may leave out some factors that affect management capacity. Other studies have for example emphasized that DHMs also are influenced by their personal family and socio-economic situation, remuneration, and stability of employment (Heerdegen et al., 2019).

4.6. Conclusion

This study draws attention to aspects at the individual, organizational, and contextual level that influence how district health management emerges. Aspects that enable and hinder DHMs in carrying out their functions were identified, and may provide national policy-makers, donors and researchers with a deeper understanding of factors that should be taken into consideration when developing, planning, implementing and assessing capacity-building strategies targeted at strengthening district health management.

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CHAPTER 5

Cross-country report on management capacities among district health managers in Ghana, Uganda and Malawi

Published within the PERFORM2Scale Health Systems Research Consortium

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5. Cross-country report on management capacities among district health managers in Ghana, Uganda and Malawi

5.1. Executive summary

Introduction

Between 2011 and 2014, the PERFORM project introduced an effective management strengthening intervention (MSI) targeted at strengthening management and leadership skills among district health managers across three districts respectively in Ghana, Uganda and Tanzania. To increase the impact of the MSI, the PERFORM2Scale project (2017-2021) is scaling up the MSI by implementing it in additional districts in Ghana, Uganda and Malawi. The PERFORM2Scale project aims at developing and evaluating a sustainable approach to scale up the MSI, which applies an Action Research approach to management strengthening.

In order to assess and provide evidence on whether the MSI leads to improvements in perceived management and leadership skills, teamwork as well as confidence and independence among district health managers, a survey was conducted prior to the implementation of the MSI. The survey, completed by the district health managers' within the PERFORM2Scale countries, is to be repeated at the end of the project.

Objective

This report aims to (1) describe qualifications and management competencies among DHMT members in Ghana, Uganda and Malawi, including characteristics of the DHMs and the systems they work in; and (2) to compare patterns across the three study settings.

Method

In primo 2018, a survey was distributed to district health managers in three PERFORM2Scale study districts in Ghana, Uganda and Malawi respectively (nine districts in total). The inclusion criteria for study participation were 1) being a member of the District Health Management Team in one of the selected PERFORM2Scale districts at the time of the study, and 2) having a management and/or leadership role, including supervision responsibilities. In Uganda and Ghana, but not Malawi, the health managers also assessed the work environment within their respective district health teams.

Descriptive analyses were carried out in Stata Statistical Software V.15.0. All analyses were stratified by country.

Results

A total of 64 district health managers participated in the survey, namely 18 from Uganda, 32 from Ghana and 15 from Malawi. The district health managers provided information about their management qualifications and assessed the availability of functioning support systems within their district, as well as their general and specific health system management and leadership competencies.

Nearly half of the study respondents in both Uganda (47%) and Ghana (48%) had received formal training in management and leadership, such as degrees in health management. The majority of all study participants had received informal management training within the past 12 months.

Differences were observed between the three countries. District health managers in Malawi rated their competencies as well as the availability of management support systems least favorable compared with Ghana and Uganda. Ratings made by the district health managers in Uganda were slightly lower, yet closely aligned with the Ghanaian ratings.

The proportion of district health managers who rated their management competencies as excellent was highest in Ghana (22%) compared with Uganda (12%) and Malawi (0). However, overall the minority of respondents rated their overall management and leadership competencies as excellent. Between countries, managers in Malawi appeared to be least confident in their competencies, in particular the female managers. Within countries, there were a striking difference in how males and females in Malawi, perceive their management competencies

Moreover, study participants from Ghana appeared to perceived team dynamics more positively compared with the other two countries.

Discussion and conclusion

The findings in current report indicate various areas in which there are room for improvement, such as ensuring that district health managers' in all countries have up-to-date job descriptions, regular team meetings to facilitate knowledge and information sharing, supportive supervision as well as access to policy guidelines and procedures. The observed differences in self-rated competencies between the three countries can be caused by a myriad of reasons, such as differences in available support

systems and in exposure to management training and experience. However, the differences may also be caused by contextual factors within the three countries, which have not been explored in this report.

This report may assist in facilitating discussions and learning between PERFORM2Scale researchers in the three countries, and between the country researchers and the respective district health management teams.

5.2. Background

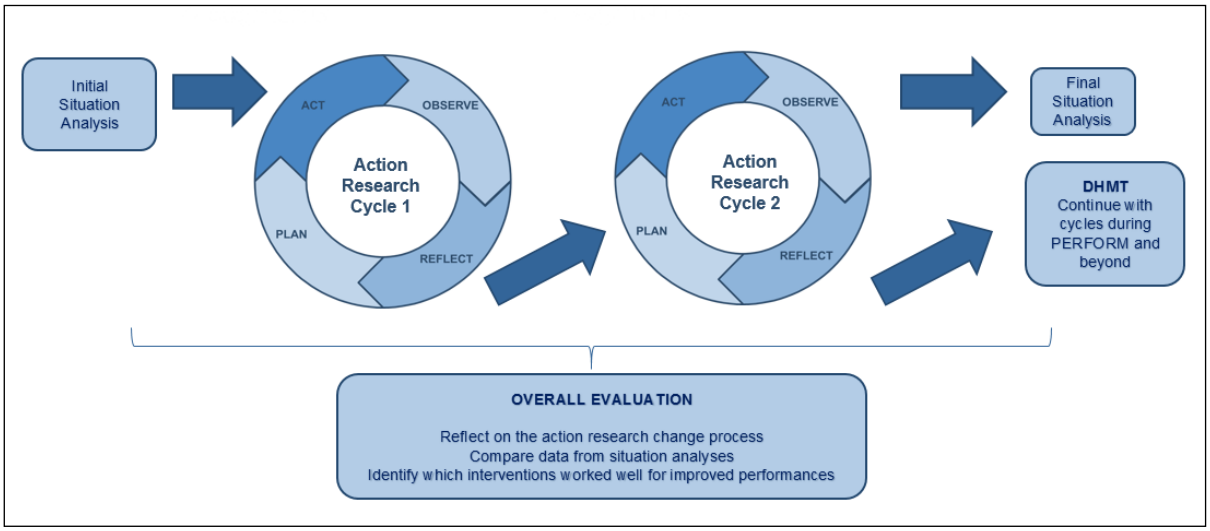
This report is based on the survey 'District Health Managers' Self-Assessed Management Capacity' ("Tool 12"), which took place as part of the 5-year project PERFORM2Scale "Strengthening management at district level to support the achievement of Universal Health Coverage" (2017-2021). The overall aim of the PERFORM2Scale project is to develop and evaluate a sustainable approach to scaling up a district level Management Strengthening Intervention (MSI) in different and changing contexts. The MSI that is being scaled up was developed in the PERFORM project (2011-2014), where it was tested within District Health Management Teams (DHMTs) across Uganda, Ghana and Tanzania.

Based on the assumption that district-level health managers in decentralized contexts are well-positioned to take a system-wide approach to improving the performance of frontline health workers, the PERFORM project focused on strengthening the leadership and management skills of managers (Mshelia et al., 2013). Management capacity among district health managers is defined as them having the abilities to keep the district health system functioning (Dorros, 2006, Kotter, 2001, Daire et al., 2014). They must have the abilities to organize themselves effectively within their district health management teams in terms of encouraging teamwork, tackling problems collectively, spreading motivation and positive staff attitudes (Gilson et al., 2017b). Moreover, they must have the abilities to manage health services (i.e. planning, supervising, monitoring quality and coverage), resources (i.e. staff, budgets, drugs, equipment, buildings and information), and stakeholders (external relations, partners, community members, service users and intersectoral stakeholders) (Bradley et al., 2015, Newbrander et al., 2012, Fetene et al., 2019).

The PERFORM MSI was based on a participatory cyclical Action Research approach (see Figure 8). Thus, the MSI consisted of a situational analysis in each study district conducted by the DHMTs and facilitated by the project's locally based Country Research Teams (CRTs) to identify and prioritize workforce performance and service delivery problems (Mshelia et al., 2013). The district management teams were supported by the facilitators in a process of 1) detailed problem analysis where root causes of the identified problems were identified, and 2) development of appropriate work plans within current resource constraints to address identified problems (**Plan**, Figure 8). The work plans were subsequently implemented over an 8-months period (**Act,** Figure 8). The facilitators helped the DHMTs to review the implementation of their work plans (**Observe**, Figure 8) through follow-up visits and joint district meetings. Moreover the DHMTs were asked to record the process in reflective

diaries (Mshelia et al., 2013, Mshelia et al., 2016). The diaries were used to record how activities were implemented, any challenges in implementation, and effects of the activities on health workforce performance and service delivery, as well as any unintended effects (**Reflect,** Figure 8) in order to contribute to continuous learning. If one of the implemented activities proved ineffective the DHMTs were encouraged to either modify or drop the activity. Neither is considered a failure of the strategy, but the decision should be based on a reflection undertaken, based on the Plan, Act and Observe steps of the action research cycle. The purpose of the action research approach is not only to solve immediate problems but also to learn which activities worked, for whom, and under what circumstances.

Figure 8 The Action Research cycle used by PERFORM



The PERFORM MSI proved effective in strengthening management and improving health workforce performance (Martineau et al., 2018). To increase the impact, PERFORM2Scale is scaling up the PERFORM MSI by implementing it in additional districts across Uganda, Ghana and Malawi. The MSI is initially implemented in three districts within each country, and later scaled up to nine district within each country. The initial group of districts are referred to a District Group 1.

Prior to the MSI implementation, district health managers' within the PERFORM2Scale districts were asked to assess their managerial capacity via a self-administered survey. The survey is to be repeated at the end of the project in order to assess and provide evidence on whether the intervention led to improvements in perceived management and leadership skills, teamwork as well as confidence and independence of DHMTs.

The aim of this report is to (1) describe qualifications and management competencies among DHMT members in Ghana, Uganda and Malawi, including characteristics of the DHMs and the systems they work in, at baseline; and (2) to compare patterns across the three study settings

Ultimately, the findings from this cross country comparison may demonstrate areas in need of improvement, and facilitate learning and discussions within and between the country settings.

5.3. Methods

Study design and setting

In primo 2018, a cross-sectional survey was conducted to make a baseline assessment of the managerial capacity at district level prior to the planned MSI implementation in mid-2018. The survey was distributed in a total of nine districts, three within each of the PERFORM2Scale countries, namely Malawi, Ghana and Uganda.

The selection of districts varied across the countries. In Uganda, Luwero district was selected based on its participation in the PERFORM project, meanwhile the other two Ugandan districts were selected based on their proximity to Luwero district. In Ghana, the study districts were selected based on their willingness to participate, them being clustered close to each other, them representing different degrees of performance according to the Ghana District League Table, and their geographic entities (urban and rural). In Malawi, the districts were selected in consultation with the Ministry of Health based on criteria such as proximity, minimal stakeholders working on management strengthening initiatives, and the districts' willingness to participate. Table 6 provides a profile of the selected study sites.

Table 6 Country and district profile

Variable	**Uganda**	**Ghana**	**Malawi**
Population	Luwero: 486.400 Nakaseke: 219.900 Wakiso; 2.391.,500 Total: 3.097.800	Yilo Krobo: 104.888 Fanteakwa: 130.295 Suhum: 108.053 Total: 343.236	Dowa: 772.569 Ntchisi: 317.069 Salima: 478.346 Total: 1.567.984
Sub-counties	Luwero: 10 Nakeseke: 10 Wakiso: 31	Yilo Krobo: 6 Fanteakwa: 7 Suhum: 9	-
Region	Central Region	Eastern Region	Central Region
Urbanization	Luwero: Rural Nakaseke: Rural Wakiso: Urban	Yilo Krobo: Urban Fanteakwa: Rural Suhum: Semi-Urban	Dowa: Rural Ntchisi: Rural Salima: Rural
Health Facilities			
Hospitals	Luwero: 2 Nakaseke 2 Wakiso: 11	Yilo Krobo: 0 Fanteakwa:1 Suhum:1	Dowa: 4 Ntchisi:1 Salima: 1
Health Centers	Luwero: 79 Nakaseke: 24 Wakiso: 220	Yilo Krobo: 13 Fanteakwa: 2 Suhum: 5	Dowa: 18 Ntchisi: 11 Salima: 18
Maternity home	NA	Yilo Krobo: 3 Fanteakwa: 2 Suhum: 0	NA
Community Health and Planning Services	NA	Yilo Krobo:46 Fanteakwa:35 Suhum:26	NA
Health Workers	Luwero: 600 Nakaseke: 478 Wakiso: 875	Yilo Krobo: Fanteakwa: Suhum:	Dowa: 1027 Ntchisi: 584 Salima: -
Burden of Disease	Malaria, Pneumonia, cold/cough, UTI, worms, diarrhea	Malaria; Upper Respiratory Tract Infections; Rheumatism and other joint pains, Diarrhea	Malaria, Pneumonia HIV/Aids, tuberculosis, malnutrition

NA: Not applicable

Study population

The inclusion criteria for study participation in the survey across all countries were 1) working at the district health administration in one of the selected PERFORM2Scale districts at the time of the study, and 2) having a management and/or leadership role, including supervision responsibilities.

Data collection methods

Data was collected by the Country Research Teams within each of the respective PERFORM2Scale countries. Uganda and Ghana collected data through Survey I (Appendix 4), which had been pilot tested and adapted to the local context in both settings. Meanwhile, Malawi collected data using Survey II (Appendix 5), cf. Table 7. Survey II had not been piloted prior to its application.

Survey I and II include many of the same items, however differ in various aspects too. Both surveys collected data regarding 1) the district health managers' socio-demographic information, 2) their previous management experience and training; 3) available management support systems; 4) general

management and leadership competencies, 5) specific health system management and leadership competencies. In addition, Survey I gathered information on the district health managers' perception of being part of their district health management team, including their teamwork, communication within the team, their job satisfaction, motivation and organizational commitment. Survey I included a total of 132 items, hereof 2 open-ended items. Whereas Survey II, which was applied in Malawi, included a total of 101 items, hereof 2 open-ended items. Both surveys took approximately 30 minutes to complete.

Table 7 Data collection in Uganda, Ghana and Malawi

Country	Data collection dates	Data collection tool	Duration to complete	Collected by
Uganda	October 2018	Survey version I	One week	CRT
Ghana	February-April 2018	Survey version I	Approx. two weeks	CRT Swiss TPH
Malawi	June 2018	Survey version II	On the day of data collection	CRT

Data analysis

Data from the surveys were analyzed in STATA v.14 (Stata 14; StataCorp LP, College Station, TX, USA). Descriptive statistics including frequencies, means, standard deviation, range and proportions were used to summarize the data. All analyses have been stratified by country.

Ethical approval

The survey was carried out under the project PERFORM2Scale led by the Liverpool School of Tropical Medicine (LSTM). Ethical clearance was firstly obtained from the Research Ethics Committee of LSTM (ID No.: 17-046). Ethical approval in Ghana, Uganda and Malawi is summarized in Table 8. Moreover, written informed consent was obtained from all study participants and personal data were anonymized prior to analysis.

Table 8 Ethical approval in Uganda, Ghana and Malawi

Country	Ethical clearance and approval obtained by	Date
Uganda	Higher Degree Research Ethics Committee Uganda National Council for Science and Technology Research Ethics Committee	23 November 2017
Ghana	Ghana Health Service Ethical Review Committee Eastern Regional Health Administration (ID No.: GHS-ERC:009/12/17)	18 December 2017
Malawi	National Committee on Research Ethics in Social Science and Humanities (NO.P.12/17/232)	18 January 2018

5.4. Results and discussion

Characteristics of District Health Managers

A total of 64 district health managers participated in the study, namely 18 from Uganda, 32 from Ghana and 15 from Malawi. The response rates in Ghana and Uganda were over 90%, meanwhile the response rate in Malawi was estimated to be around 60% (the total number of district health managers' was not reported). Non-participation in the study was primarily caused by conflicting schedules and the DHMs being unavailable/too busy to participate. Moreover, one health manager in both Ghana and Uganda opted not to respond. The number of individuals who opted not to respond in Malawi is unreported.

The socio-demographic characteristics of the study participants have been summarized in Table 9. Certain data points are missing for Malawi given the application of the different surveys.
The proportion of female district health managers was similar in Ghana (50%) and Malawi (47%). Meanwhile, the proportion of female managers was lower in Uganda (29%).

- The average age of district health managers across the three countries was similar. The average age was between 37 and 39 years old.
- The average number of years in the current position was between 5 and 6 years in both Uganda and Ghana. In Malawi this data was not available.
- A bachelor degree was the highest qualification among the majority of district health managers in both Ghana (47%) and Uganda (65%). A Diploma was the highest qualification for a large proportion of DHMs in Ghana (41%), yet not in Uganda (9%). A Master's degree was held by more district health managers in Uganda (24%) compared with Ghana (9%). Information on 'Highest Qualification' is missing for study participants in Malawi.
- In Uganda and Malawi the most frequent educational background was medicine, meanwhile a Public Health background was most frequent in Ghana.
- The composition of the district health management teams and titles among the district health managers' varied between the three countries. .

Table 9 Characteristics of district health managers in Uganda, Ghana and Malawi (n=64)

Characteristics	Uganda (n=17)	Ghana (n=32)	Malawi (n=15)
Sex			
Male	12 (71)	16 (50)	8 (53)
Female	5 (29)	16 (50)	7 (47)
Age			
Mean	37.3	39.9 (9.1)	38.9
Range	28-55	30-58	24-53
Years in current position			
Mean	5.1 (4.0)	5.7 (5.1)	-
Range	1-13	0.3-20	-
Highest qualification			
Diploma	1 (6)	13 (41)	-
Bachelor‘s Degree	11 (65)	15 (47)	-
Master‘s Degree	4 (24)	3 (9)	-
Other	1 (6)	1 (3)	-
Educational background*			
Public Health	5 (29)	20 (63)	1 (6)
Medical Doctor/Medicine	8 (47)	1 (3)	7 (47)
Nursing	2 (12)	5 (16)	3 (20)
Midwifery	2 (12)	1 (3)	-
HR Management	1 (6)	3 (9)	3 (20)
Accounting/Finance	-	4 (13)	1 (6)
Nutrition	-	3 (9)	-
Other	5 (29)	-	-
	Health information, Biostatistics, Management, Pharmacy		
District health management team respondents			
	District Health Officer (n=3), Health sub-district in charge (n=6), ADHO-Environmental Health (n=1), Biostatistician (n=3), Human Resource for Health (n=3), Senior nursing officer (n=1), Dispense/Pharmacist (n=1)	Accountant (n=3), Administrator (n=2), Deputy Director of Nursing Services (n=2), Disease Control Officer (n=6), District Director of Health Services (n=3), Health Information Officer (n=4), Health Promotion Officer (n=1), Human Resource Officer (n=1), Nutrition Officer (n=3), Public Health Nurse (n=3), Other n=3)	District Health Officer (n=3), Accountant (n=1), District Medical Officer (n=4), DEHO (n=1), District Nutrition Officer (n=3), HR (n=1), Human Resource Officer (n=2)

* *Multiple answers allowed: **Post grad diploma* *The percentage may exceed 100% for items where multiple answers could be selected (i.e. educational background).

Previous management experiences and training

An overview of the district health managers' exposure to management training and experience is provided in Table 10.

- The minority of the district health managers in Uganda (12%) had management experience from other districts before being posted in their current position, meanwhile almost half of district health managers in Ghana had previous district health management experience (44%). Data not available for Malawi.
- In Uganda, more than one third (41%) of the district health managers reported having "*No*" or "*Less than 1 year*" of professional management experience prior to their current position. In Malawi, this proportion was even higher (80%). In Ghana, the majority of district health managers (42%) reported having between one and five years of management experience.
- Nearly half of the study respondents in both Uganda (47%) and Ghana (48%) had received formal training in management and leadership, such as degrees in health management and administration. Data not available for Malawi.
- The majority of all study participants had received informal management training within the past 12 months. This proportion was highest in Malawi (83%), followed by Ghana (58%) and lowest in Uganda (53%). In Uganda and Ghana, the informal trainings were typically initiated by the Ministry of Health or by various NGOs. Data not available for Malawi.

Overall, district health managers in Malawi appeared to have had least exposure to management experience, meanwhile Ghanaian district health managers had been mostly exposed. Less than half of the district health managers in Ghana and Uganda reported having received formal management training, despite this being associated with better district health management practices (Powell-Jackson et al., 2019, Agyepong et al., 2018). Meanwhile, the majority of district health managers across all three countries reported having received informal training in management, however the specifics of the trainings are not known. Study participants in Ghana reported that district health management trainings oftentimes focus on specific program components, such as disease management, and that they are not directly target challenges related to general management and health workforce performance (Heerdegen et al., 2020a).

Table 10 Study participants' management and leadership experience in Uganda, Ghana and Malawi

	Uganda (n=17)	Ghana (n=32)	Malawi (n=15)
Worked in another DHMT prior to current position			
Yes	2 (12)	14 (44)	-
No	15 (88)	18 (56)	-
Professional management experience before entering DHMT position			
No experience/<1 year	7 (42)	8 (26)	12 (80)
1-5 years	5 (29)	13 (42)	2 (13)
>5 years	5 (29)	10 (32)	1 (7)
Received formal training in management and leadership			
No	9 (53)	16 (52)	-
Yes	8 (47)	15 (48)	-
Received informal training in management and leadership			
No	8 (47)	13 (42)	*1 (7)
Yes	9 (53)	18 (58)	*14 (83)
If yes, the number of days of informal training within the past 12 months			
≥1 day	-	4 (22)	-
2-5 days	5	9 (50)	-
6-10 days	1	1 (6)	-
>10 days	2	4 (22)	-

*Formal management training: 1) Health management, Leadership and Management, Leadership , 2) Advanced diploma in Health Leadership, Graduate degree in education, management and leadership, Post-graduate diploma in project planning and management, 3) Post-graduate diploma in management; *Question phrased differently in Survey II, cf. appendix*

Functional management support systems

Table 11 provides an overview of the available management support systems and structures within each country.

- In terms of job descriptions, all study participants in Ghana and the majority in Uganda (88%) had received a job description. However, a proportion of study participants in Ghana (13%) and Uganda (19%) reported that their job description were not accurate to their current position. The majority of district health managers in both Uganda (56%) and Ghana (41%) reported that they to a large extent were taking on additional roles beside those that were stated in their job description. Data on this is not available for Malawi. The majority of district health managers in Uganda (41%) and Ghana (56%) expressed confidence in their access to relevant national and/or regional guidelines/procedures that support them in carrying out their functions (i.e. procedures on mass vaccination, malaria management). Meanwhile, in Malawi, none of the district health managers' expressed full confidence in their access to relevant policies and guidelines.
- In Ghana, the majority of the district health managers (84%) reported that regular team meetings take place to a high extent to support them in carrying out their role and

responsibilities. This proportion was smaller in Uganda (25%) and Malawi (20%). Further, the accessibility to minutes or recordings of team meetings were most accessible in Ghana (84%) compared with Uganda (56%). Data not available for Malawi.

- Shortcomings were observed across all countries in perceived receipt of supportive supervision, feedback and mentoring. The proportion of managers who reported supportive supervision to a large extent was highest in Ghana (56%) followed by Uganda (24%) and Malawi (7%).
- The majority of district health managers across all three countries reported that they were prevented from carrying out their planned activities due to inadequate logistics and infrastructure and funds. The proportion of managers' who reported that adequate funds to carry out functions were available '*not at all/to a very limited extent*' was highest in Uganda (77%) followed by Ghana (66%) and Malawi (36%). In regards to logistics and infrastructure, the proportion of managers' who reported these as being not available or to a very limited extent, was highest in Malawi (100%) followed by Uganda (56%) and Ghana (53%)
- District managers were asked whether they were supported by systems within the following areas: 1) Planning and budgeting; 2) Procurement of drugs and other commodities; 3) Data management; 4) Human Resource (HR) management; and 5) Community level structures or groups to enable community involvement. Information on the latter was not collected for Malawi. Shortcomings in systems for procurement of drugs and other commodities, HR management and community involvement appeared to most prominent in Uganda. Meanwhile, shortcoming in systems for community involvement, planning and budgeting were most prominent in Ghana. The majority of the district health managers in Malawi reported that support systems within all areas, except for procurement and drugs, were in place to no or a little extent.

The accessibility and availability of the above mentioned mechanisms (i.e. job descriptions, national guidelines, regular team meetings and minutes hereof, supportive supervision, adequate funds, logistics and infrastructure, and management support systems) are essential to enable district health managers in carrying out their role and responsibilities (Tetui et al., 2016, Kwamie, 2015, Egger et al., 2005). District health managers in both Uganda and Ghana reported having job descriptions, which are necessary to provide clarity about needed competences, expected roles and the district health

managers' degree of authority. However, the health managers' reported that they took on additional roles besides what was stated in their job description, indicating the managers take on responsibilities that they not necessarily have the time nor appropriate competencies for.

Moreover, not all district health managers expressed confidence in whether they had access to policy guidelines and procedures. Guidelines and procedures are important for guiding district health managers', and enable them to carry out their work in a more efficient and standardized way (Egger et al., 2005, Egger and Ollier, 2007). Efforts should be made to ensure that all health managers' have access to these. Leadership among the district directors may play an important role, as they are the ones responsible for ensuring that all district health management team members are aware and compliant with any updated guidelines and procedures.

Regular district health management meetings are key for planning and coordinating the district health services (Egger and Ollier, 2007). District management teams in Uganda and Malawi may in this regard have a look to Ghana, where district health managers reported substantially more frequent team exchanges and meetings.

Supervision plays a critical role in creating an enabling work environment where health managers are appraised and incentivized to perform better (Bradley et al., 2013, Bosch-Capblanch et al., 2011, Marquez and Kean, 2002). A relatively high number of district health managers' reported receiving sub-optimal supervision.

District health managers across all three countries perceive funds, logistics and infrastructure to be inadequate for carrying out their planned activities. This may affect their motivation negatively and prohibit them from carrying out essential supervision tasks. It should be ensured that resources are received by districts in a timely manner, yet equally important is to build competencies in managing scare resources, which PERFORM2Scale aims to do. Moreover, user-friendly systems for effective resource management and budgeting should be in place in all countries.

Table 11 Functional management support systems in Uganda, Ghana and Malawi

	Uganda (%)	Ghana (%)	Malawi (%)
Have you been provided with a job description?	*n=17*	*n=32*	-
Yes	15 (88)	32 (100)	-
No	2 (12)	0	-
Is your job description up-to date and accurate in terms of your roles and responsibilities?	*n=16*	*n=32*	-
Yes	13 (81)	28 (87)	-
No	3(19)	4 (13)	-
Additional responsibilities besides what is stated in job description	*n=16*	*n=32*	-
Not at all/Small extent	1 (6)	4 (13)	-
To a moderate extent	6 (38)	15 (47)	-
To a large extent	9 (56)	13 (41)	-
Access to relevant national and/or regional guidelines within your work area	*n=17*	*n=32*	*n=14*
Not at all/Small extent	3 (18)	2 (6)	1 (7)
To a moderate extent	6 (35)	12 (38)	13 (93)
To a large extent	8 (47)	18 (56)	0
Regular team meetings	*n=17*	*n=32*	*n=14*
Not at all/To a small extent	4 (24)	0	3 (21)
To a moderate extent	7 (41)	5 (15.6)	8 (57)
To a large extent	6 (25)	27 (84.4)	3 (21)
Available records of team meetings	*n=16*	*n=32*	-
Not at all/Small extent	4 (25)	2 (6)	-
To a moderate extent	3 (19)	3 (9)	-
To a large extent	9 (56)	27 (84)	-
Supportive supervision, feedback and mentoring from supervisor	*n=17*	*n=32*	*n=14*
Not at all/Small extent	7 (41)	5 (16)	1 (7)
To a moderate extent	6 (35)	12 (38)	12 (86)
To a large extent	4 (24)	15 (47)	1 (7)
Adequate funds to carry out planned activities	*n=17*	*n=32*	**n=14*
Not at all/Small extent	13 (77)	21 (66)	5 (36)
To a moderate extent	4 (24)	10 (31)	9 (64)
To a large extent	0	1 (3)	0
Adequate logistics and infrastructure to carry out planned activities	*n=17*	*n=32*	*n=8*
Not at all/Small extent	10 (59)	17 (53)	8 (100)
To a moderate extent	7 (41)	13 (41)	0
To a large extent	0	2 (6)	0
Is there a system in place to support you within the following areas?			
Planning and budgeting	*n=17*	*n=32*	*n=15*
Not at all/Small extent	2 (12)	6 (19)	6 (40)
To a moderate extent	3 (35)	14 (44)	9 (60)
To a large extent	9 (53)	12 (38)	0
Procurement of drugs and other commodities	*n=15*	*n=26*	**n=9*
Not at all/Small extent	5 (33)	3 (12)	1 (11)
To a moderate extent	5 (33)	11 (42)	6 (67)
To a large extent	5 (33)	12 (46)	2 (22)
Data management	*n=17*	*n=26*	*n=7*
Not at all/Small extent	2 (12)	2 (8)	4 (57)
To a moderate extent	7 (41)	11 (42)	2 (29)
To a large extent	8 (47)	13 (50)	1 (14)
Human Resource management	*n=17*	*n=28*	*n=13*
Not at all/Small extent	5 (29)	4 (14)	7 (54)
To a moderate extent	7 (41)	10 (36)	2 (15)
To a large extent	5 (29)	14 (50)	3 (23)
Community-level structures or groups that enable community involvement	*n=17*	*n=29*	-
Not at all/Small extent	5 (29)	7 (24)	-
To a moderate extent	9 (53)	15 (52)	-
To a large extent	3 (18)	7 (24)	-

**Phrased differently in Survey II, cf. appendix*

Management and leadership competencies

Study participants were asked to provide an overall rating of their management and leadership competencies. Figure 9 includes all district health managers' (n=64) rating of their overall management competencies, while Figure 10 demonstrates the male managers' rating (n=36) and Figure 11 demonstrates the female managers' rating (n=28).

Figure 9 Overall ratings of management and leadership competencies in Uganda, Ghana and Malawi (n=64)

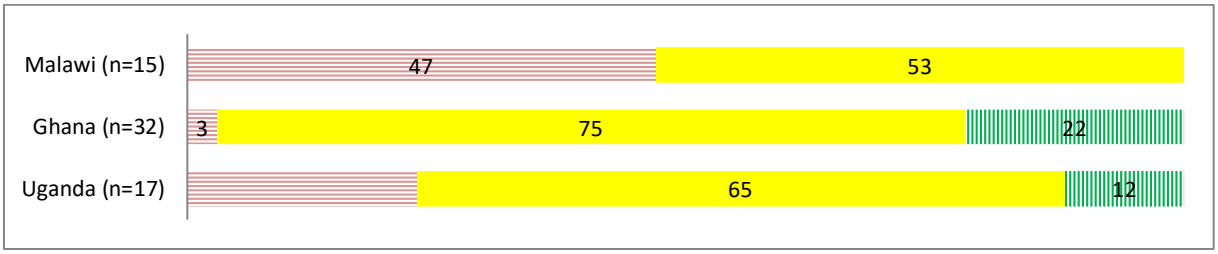
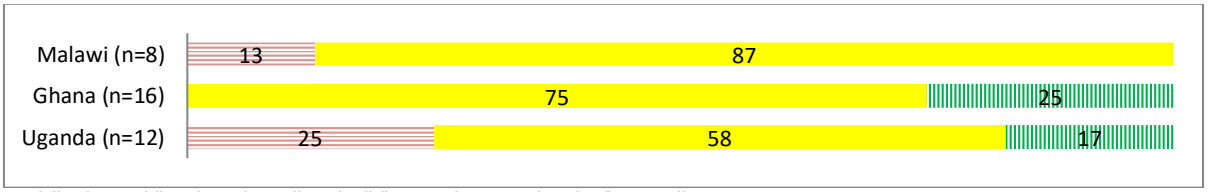
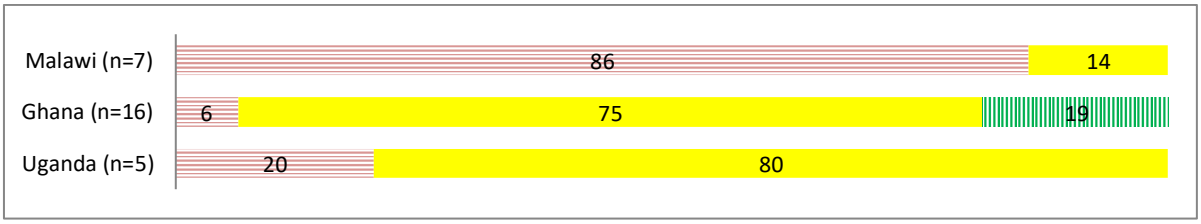


Figure 10 Overall ratings of management and leadership competencies, males (n=36)



Red (horizontal lines): *Fair,* Yellow (solid): *Good,* Green (vertical)*; Excellent*

Figure 11 Overall ratings of management and leadership competencies, females (n=28)



Red (horizontal lines): *Fair,* Yellow (solid): *Good;* Green (vertical)*; Excellent*

The proportion of district health managers who rated their management competencies as excellent was highest in Ghana (22%) followed by Uganda (12%). However, overall the minority of respondents rated their overall management and leadership competencies as excellent. Between countries, managers in Malawi appeared to be least confident in their competencies. Within countries, a difference was observed in males and female managers' confidence in their competencies. In Malawi, there was a striking difference in how males and females perceive their management competencies. Female managers' appeared to be much less confident in their competencies compared to their male counterparts. Differences between males and females were not as prevalent in Uganda and in particular Ghana.

In addition to their overall management and leadership competencies, study participants were asked to assess their interpersonal skills; leadership skills; conflict handling skills; as well as their time planning skills. Mean scores for the sum scales are reported in Table 12.

Table 12 General management and leadership competencies in Uganda, Ghana and Malawi

	Uganda (n=17)	**Ghana (n=32)**	**Malawi (n=15)***
Interpersonal skills	*4.3 (0.6)*	*4.7 (0.5)*	NA
Leadership skills	*4.4 (0.6)*	*4.6 (0.4)*	2.8 (0.3)
Conflict handling skills	*3.9 (1.2)*	*4.5 (0.8)*	2.9 (0.6)
Time planning skills	*3.8 (0.9)*	*4.7 (0.6)*	2.7 (0.4)

5 point Likert scale (*1: Strongly Disagree 2: Disagree 3: Neutral 4: Agree 5: Strongly agree*). Interpersonal Skills: 2 items, Leadership Skills: 5 items, Conflict Handling:1 item, Time Planning Skills: 3 items; *4 point Likert scale (*1: Not at all 2: To a small extent 3: To a moderate extent 4: To a large extent*). Leadership Skills: 13 items, Conflict Handling:2 items Time Planning Skills: 7 items

In Ghana, district health managers' appeared to be very confident in their interpersonal, leadership, conflict handling and time planning skills (cf. Table 12). Similar findings were observed in Uganda, however with less confidence in regards to conflict handling (3.9/5) and time planning skills (3.8/5). Participants in Malawi rated their competencies as being lower, and thus appeared to be less confident in their abilities.

Specific health system management skills and competencies

Table 13 presents the district health managers perception of their specific health system management abilities. The competencies assessed include those relating to 1) oversight and coordination, 2) human resource management; 3) resource management; 4) information management; 5) leadership skills; 6) service delivery and community involvement. The two surveys included similar items, yet variations apply in item phrasing and response scales (5 point versus 4 point Likert scale). Moreover, survey II, which was applied in Malawi, did for example not include many items regarding financial and resource management. Thus, it is difficult to compare findings from Malawi with findings from Uganda and Ghana.

- Overall, district health managers appeared to be confident in their abilities within the aspect "Oversight and coordination", including their competencies in carrying out a situational analysis, problem analysis, planning, implement, monitoring and reporting. They either agreed or strongly agreed to statements relating to their competencies, such as *"I am confident in carrying out a situational analysis*". Meanwhile, district health managers in Malawi appeared to be less

confident as they on average responded either “To a small extent” or “To a moderate extent” to similar statements.

- The highest level of confidence regarding human resource management competencies was observed among the district health managers in Ghana, followed by Uganda.
- In Uganda, resource management and financial management appeared to be the areas in which district health managers’ felt least confident. The latter also applies to the district health managers in Ghana.
- Study participants from Malawi were in average not very confident about their abilities within health information management compared with respondents in both Ghana and Uganda.

The findings reveal variations in the district health managers’ confidence relating to their management skills and competencies across the three countries. Ghanaian health managers appeared to be most confident in their health system specific competencies followed by Uganda. Study participants in Malawi were generally less confident in their abilities.

Table 13 Specific health system management skills and competencies in Uganda, Ghana and Malawi

	Uganda n (SD)	**Ghana n (SD)**	**Malawi * n (SD)**
Oversight and Coordination	*n=17*	*n=32*	*n=15*
Situational analysis[1]	4.2 (0.9)	4.5 (0.5)	2.7 (0.5)
Problem analysis[2]	4.5 (0.5)	4.4 (0.5)	2.1 (0.5)
Planning[3]	4.0 (0.7)	4.1 (0.8)	1.9 (0.5)
Implementation and Monitoring[4]	4.1 (0.7)	4.3 (0.6)	2.3 (0.3)
Reporting[5]	4.2 (0.9)	4.6 (0.5)	2.6 (0.6)
Human Resource Management[6]	*n=17*	*n=32*	*n=15*
Mean (SD)	4.1 (0.7)	4.4 (0.9)	2.4 (0.5)
Resource Management[7]	*n=17*	*n=28*	NA
Mean (SD)	3.9 (1.0)	4.4 (0.9)	
Financial Management[8]	*n=17*	*n=29*	NA
Mean (SD)	3.8 (1.0)	3.9 (1.0)	
Information Management[9]	*n=17*	*n=29*	*n=14*
Mean (SD)	4.3 (0.7)	4.6 (0.5)	1.8 (0.7)
Service Delivery & Community Involvement[10]	*n=17*	*n=31*	*n=15*
Mean (SD)	4.0 (0.7)	4.4 (0.6)	2.3 (0.6)

5 point Likert scale (*1: Strongly Disagree 2: Disagree 3: Neutral 4: Agree 5: Strongly agree*) 1) 4 items 2) 6 items, 3) 7 items, 4) 3 items, 5) 2 items, 6) 11 items, 7) 4 items, 8) 3 items 9) 3 items 10) 3 items; *4 point Likert scale (*1: Not at all, 2: Small extent, 3: Moderate extent, 4: Large extent*) 1) 10 items2) 6 items, 3) 7 items, 4) 3 items, 5) 2 items, 6) 11 items, 7) 4 items, 8) 3 items 9) 3 items 10) 5 items

Being part of the District Health Management Team

District health managers in Ghana and Uganda were asked to assess their working environment by responding to items regarding 1) teamwork, 2) communication, 3) job motivation, 4) job satisfaction and 5) organizational commitment. A sum-score was calculated for each of the domains, and the mean of these are presented in Table 14.

Overall the ratings across district health managers' in Ghana and Uganda were quite similar. Across both countries, overall positive ratings were observed in regards to teamwork, communication and organizational commitment, while lower scores were observed for motivation and job satisfaction. In terms of teamwork, Ghana had marginally higher ratings (4.3) compared with Uganda (4.1). The communication within teams was also assessed more positively in Ghana (4.4.) compared with Uganda (4.0). Meanwhile, Uganda had slightly higher ratings in terms of job motivation (3.9), satisfaction (3.7) and organizational commitment (4.5) compared with how district health managers in Ghana rated job motivation (3.8), satisfaction (3.5) and organizational commitment (4.3).

Table 14 District health administration work environment in Uganda and Ghana

Construct	Questions	Uganda	Ghana	Malawi
Teamwork	Sum-score	4.1	4.3	N/A
	1. I really feel that I belong to a team	4.6	4.5	
	2. I look forward to being with the members of the DHMT each day	4.2	4.4	
	3. There is a lot of support and encouragement within the DHMT	4.2	4.3	
	4. It is very difficult to settle problems within the DHMT (*R)	4.0	4.3	
	5. The people I work with cooperate to get the job done	4.3	4.4	
	6. Team members keep their thoughts to themselves, rather than risk speaking out (*R)	3.7	4	
	7. I often work in groups as part of my job	3.9	4.3	
Communication	Sum-score	4.0	4.4	N/A
	8. There is frequent communication within the team	4.0	4.3	
	9. Team members communicate often through a variety of channels (spontaneous meetings, email, phone etc.)	4.2	4.6	
	10. Relevant information is shared openly by all team members	4.2	4.2	
	11. There has been conflict within our team regarding the openness of the information flow (*R)	3.7	4.3	
Job motivation	Sum-score	3.9	3.8	N/A
	12. These days, I feel motivated to work as hard as I can	4.2	3.9	
	13. I only do this job so that I get paid at the end of the month (*R)	4.5	4.2	
	14. I do this job as it provides long term security for me (*R)	3.1	3.2	
Job satisfaction	Sum-score	3.7	3.5	N/A
	15. In general, I am satisfied with my job	4.1	4.2	
	16. I think there are many other jobs which are more interesting than mine (*R)	2.8	3.0	
	17. My current job fulfills the expectations I had before I started it	4.0	3.9	
	18. I would like to get another job because I am not satisfied (*R)	3.9	4.0	
	19. My current job is pleasant	3.2	4.1	
	20. I think my current job is interesting and fascinating	3.4	3.9	
Organizational commitment	Sum-score	4.5	4.3	N/A
	21. I am considering leaving this DHMT (*R)	4.5	4.1	
	22. Deciding to work for this District Health Administration was a definite mistake on my part (*R)	4.6	4.5	
	23. There is not too much to be gained by sticking with this District Health Administration indefinitely (*R)	4.2	4.2	

*R (reverse): The scale for negatively worded questions was 1 (Strongly agree) to 5 (Strongly disagree). Thus a high score shows *disagreement with a negative statement* and is therefore suggestive of positive rating of being part of the DHMT

5.5. Overall discussion and conclusion

This report aimed at providing an overview of the findings of the survey '*District Health Managers' Self-Assessed Management Capacity*' that was conducted as part of the project PERFORM2Scale in nine districts across Ghana, Uganda and Malawi.

District health managers in the three countries provided information about their management qualifications and assessed the availability of functioning support systems, as well as their confidence relating to their general and specific health system management and leadership competencies. Moreover, study participants from Uganda and Ghana assessed the work environment within their respective district health management teams.

Areas in need of improvement, and differences between the three countries have been highlighted in the "Results and Discussion" section. Generally, it appeared that district health managers' in Uganda and Ghana were more confident in their abilities, held more managerial qualifications, and were more satisfied with their access to functional management support systems. Meanwhile district health managers' in Malawi to a larger extent rated the systems they worked in as well as their competencies as being inadequate. The latter was particularly rated negative by the female district health managers' in Malawi, meanwhile observed gender-related differences were less prevalent in the two other countries.

The differences observed between the three countries may be caused by a myriad of factors. In Malawi, for example, only rural districts were included. Oftentimes, rural districts are more challenged in many regards which may have led to more negative ratings. Moreover, the response rate in Malawi was lower than in the other two countries. The reasons for non-response in Malawi was not well-documented, and there may have been a risk of selection bias in the ones who opted to participate in the survey.

The differences between the different countries may also be considered in light of their different stages of political and economic development. Ghana is defined as a lower-middle income country, meanwhile Uganda and Malawi are classified as low income countries (World Bank, 2020). This naturally impacts the resources available to the district health managers, including their opportunities to advance their competencies. Moreover, they have undergone different health reforms, including varying degrees of decentralization, which may affect current district health management structures and processes (Bossert and Beauvais, 2002, Bulthuis et al., 2020a).

Lastly, the self-reported ratings may have been impacted by different values, beliefs and norms within the three countries. The self-assessment methodology applied in current study, based on the concept of self-efficacy that posits that individuals who feels greater confidence in their ability to perform is more like to successfully perform. However, given that neither of the surveys have been subjected to larger pilot studies in which validity and reliability have been explored and compared, it is difficult to make conclusions on the impact of the cultural context on self-reported measures.

The differences between countries have not been explored further in this report, which aimed to provide an overview of the survey findings for the PERFORM2Scale consortium. However, there is potential for further research in future PERFORM2Scale undertakings. This report may assist in facilitating discussions and learning between the PERFORM2Scale country research teams, and between the country research teams and the respective district health management teams.

CHAPTER 6

Managerial capacity among district health managers and its association with district performance: A comparative descriptive study of six districts in the Eastern Region of Ghana

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A prize for district health performance

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6. Managerial capacity among district health managers and its association with district performance: A comparative descriptive study of six districts in the Eastern Region of Ghana

6.1. Abstract

Introduction: District health managers play a pivotal role in the delivery of basic health services in many countries, including Ghana, as they are responsible for converting inputs and resources such as, staff, supplies and equipment into effective services that are responsive to population needs. Weak management capacity among local health managers has been suggested as a major obstacle for responsive health service delivery. However, evidence on district health managers' competencies and its association with health system performance is scarce.

Aim: To examine managerial capacity among district health managers and its association with health system performance in six districts in the Eastern Region of Ghana.

Methods: Fifty-nine district health managers' in six different performing districts in the Eastern Region of Ghana completed a self-administered questionnaire measuring their management competencies and skills. In addition, the participants provided information on their socio-demographic background; previous management experience and training; the extent of available management support systems, and the dynamics within their district health management teams. A non-parametric one-way analysis was applied to test the association between management capacity and district performance, which was measured by 17 health indicators.

Results: Shortcomings within different aspects of district management were identified, however there were no significant differences observed in the availability of support systems, characteristics and qualifications of district health managers across the different performing districts. Overall management capacity among district health managers were significantly higher in high performing districts compared with lower performing districts ($p=0.02$). Furthermore, district health managers in better performing districts reported a higher extent of teamwork ($p=0.02$), communication within their teams ($p<0.01$) and organizational commitment ($p<0.01$) compared with lower performing districts.

Conclusion: The findings demonstrate individual and institutional capacity needs, and highlights the importance of developing management competencies and skills as well as positive team dynamics among health managers at district level.

6.2. Introduction

Decentralization of health care, where authority and responsibilities for service delivery are transferred from higher levels (e.g. central, federal or national) to lower levels (e.g. state, regional, district, sub-district), is frequently perceived as a way to improve health system performance as local authorities are better able to make informed decisions regarding local conditions (Bossert et al., 2015, Liwanag and Wyss, 2018, Conn et al., 1996). However, in order to improve performance, individual capacity among local health managers are needed (Fetene et al., 2019, Bossert et al., 2015, Diaz-Monsalve, 2004, Kwamie et al., 2015). Moreover institutional capacities, such as functional support systems and enabling work environments, including an appropriate level of autonomy for the managers', must be in place (Egger and Ollier, 2007).

This study focuses on district health managers (DHMs) working within District Health Management Teams (DHMTs) in Ghana. In Ghana, the DHMTs follow administrative directives issued by Ghana Health Service (GHS), the central level public health sector agency. The DHMTs have narrow decision-space with limited political and fiscal decentralization (Kwamie et al., 2016). Nevertheless, they are mandated to convert inputs and resources, such as finance, staff, supplies, equipment and infrastructure into effective services that are responsive to the population needs (Kolehmainen-Aitken, 2004, Egger and Ollier, 2007, Rockers and Barnighausen, 2013, Tavrow et al., 2002). This mandate demands management capacity among the DHMs, defined as them having the abilities to keep the system functioning (Dorros, 2006, Kotter, 2001, Daire et al., 2014); they must have the abilities to organize themselves effectively within the DHMTs in terms of encouraging teamwork, tackling problems collectively, spreading motivation and positive staff attitudes (Gilson et al., 2017b). Moreover, they must have the abilities to manage health services (i.e. planning, supervising, monitoring quality and coverage), resources (i.e. staff, budgets, drugs, equipment, buildings and information), and stakeholders (external relations, partners, community members, service users and intersectoral stakeholders) (Bradley et al., 2015, Newbrander et al., 2012, Fetene et al., 2019). Literature suggests weak management and leadership capacities among local health managers globally (Egger and Ollier, 2007, Egger et al., 2005, Schneider et al., 2006, Puoane et al., 2008, Hanson and Mangham, 2010, Filerman, 2003). However, a lack of tools for assessing management capacity among DHMs, results in limited knowledge about their actual competencies and qualifications (Tetui et al., 2016, Kolehmainen-Aitken, 2004, Egger et al., 2005).

Several studies suggest a positive association between district-level management capacity and health system performance (Seims et al., 2012, Edwards et al., 2015, Waiswa et al., 2016, Lega et al., 2013, Kwamie et al., 2014, Mansour et al., 2010, Fetene et al., 2019, Mutale et al., 2017). However, the study of Fetene et al in Ethiopia (2019) is to our knowledge the only in a lower income setting that has applied a quantifiable and precise measurement of management capacity at district level. Moreover, Fetene et al's study appear to be the first to investigate the association between district level management capacity and health system performance measured by a wider set of public health indicators (Fetene et al., 2019). Further research is thus called for.

To enhance current knowledge on management capacity at district level and its association with health system performance in LMICs, this study aims to (1) explore qualifications and management competencies among DHMT members in Ghana, including characteristics of the DHMs and the systems they work in; and (2) to examine whether management capacity among DHMs is associated with health system performance.

Findings from this study can inform policy-makers and the global health community on areas in need of improvement for effective district health management in Ghana and other LMICs. Moreover, it can shed light on the importance of strengthening management capacity among local health managers in order to improve health system performance.

6.3. Methods

Ethics statement

This study was carried out as an integral part of the project PERFORM2Scale (P2S) under the lead of the Liverpool School of Tropical Medicine (LSTM). Ethical clearance was obtained from the Research Ethics Committee of LSTM (ID No.: 17-046) and the GHS Ethics Review Committee (ID No.: GHS-ERC:009/12/17). Additionally, permission was obtained from the Eastern Regional Health Administration. Written informed consent was obtained from all study participants and personal data were anonymized prior to analysis.

Study design

This cross-sectional study, consisting of a self-administered survey, took place as part of the baseline assessment of the P2S project aiming to scale up a piloted district management strengthening intervention (Martineau et al., 2018).

Study setting

The survey took place in February and March 2018 in 6 of the 26 districts in the Eastern Region of Ghana. The study included the same districts as those in the P2S project. The districts were selected based on the following inclusion criteria: 1) willingness to participate in P2S, 2) them being clustered close to each other, 3) them representing different degrees of performance and (4) geographic entities (urban and rural). Characteristics of the study districts are available in Table 15.

Study population

Inclusion criteria for participation in the study were 1) being employed as a DHMT member in one of the P2S study districts at the time of the study; and 2) having supervisory, administrative and management responsibilities within the study district.

Table 15 Characteristics of the six study districts

	District 1	District 2	District 3	District 4	District 5	District 6
Population	165.271	85.810	108.053	130.295	104.888	114.409
Sub-districts	7	7	9	7	6	7
Geographical setting	Semi-Urban	Rural	Semi-Urban	Rural	Urban	Semi-urban
Health Facilities	60	47	32	40	62	50
District Hospitals	1	1	1	1	-	2
Health Centers	6	5	5	2	13	9
Maternity home	2	2	0	2	3	2
CHPS	47	39	26	35	46	37
District Performance*	43.0	47.0	52.0	52.25	56.50	61.50
Burden of Disease**	Malaria; Upper Respiratory Tract Infections;Anaemia	Malaria; Rheumatism and other joint pains; Upper Respiratory Tract Infections	Malaria; Diarrhea; Upper Respiratory Tract Infection	Malaria; Upper Respiratory Tract Infections; Rheumatism & other Joint pains	Malaria; Upper Respiratory Tract Infections; Rheumatism and other joint pains	Malaria; Upper Respiratory Tract Infections; Skin Diseases

**Based on the Ghana League of District Performance, **Based on OPD attendance*

Data collection

Each DHM completed a self-administered questionnaire assessing their management competencies and skills (Appendix 4). The questionnaire included 132 closed - and open-ended items divided into seven sections; 1) socio-demographic background; 2) management experience and exposure to management training; 3) functional management support structures and systems (i.e. for planning and budgeting, procurement of drugs and other commodities, data and human resource management); 4) general management competencies (i.e. interpersonal skills; leadership and conflict handling skills; time planning); 5) specific health system management competencies (oversight and coordination; human resource management; resource management; financial management; information management; service delivery and community involvement); 6) overall management performance; and lastly 7) being part of a DHMT (teamwork, communication, organizational commitment, job motivation and satisfaction among DHMs).

The DHMs rated their overall management capacity on a five-point Likert scale ranging from 1 (very poor) to 5 (excellent). The remaining items relating to competencies and being part of the DHMT were rated from 1 (“Strongly Disagree”) to 5 (“Strongly agree”), while the availability of management support systems and structures were rated from 1 (“To a small extent”) to 5 (“To a high extent”).

A paper-based version of the questionnaire was distributed to DHMT members by members of the P2S research team. Prior to doing so, the aim of the survey was explained to the respondents and they were given the opportunity to ask questions for clarity.

Validity of the questionnaire

The survey measuring managerial capacity among DHMs were developed by the authors due to absence of an existing assessment tool at the time of the study. The survey was developed based on a 1) literature review on what facilitates good management at district level in LMICs, and 2) on in-depth interviews conducted as part of the P2S initial context analysis, with DHMs, as well as with their supervisors (Regional Health Administrators) and peers (NGOs working within the study districts). To further ensure face and content validity, the questionnaire was developed and reviewed in an iterative process with five experts from the P2S consortium, including professionals from Ghana to ensure the appropriateness for a Ghanaian context. A total of 109 items were specifically developed for this study, while 22 were existing validated indexes.

The questionnaire was validated through five separate cognitive interviews with five DHMs' in two non-study districts in the Eastern Region, a similar approach to other studies (Drennan, 2003, Sperling et al., 2017). The interviewees were asked to think loud when completing the questionnaire and explain why they responded as they did in order to identify questions that may elicit response error. The questionnaire was adjusted based on the five first interviews, and followed by five additional cognitive interviews with five other DHMs in the non-study districts.

Data analysis

District performance

The dependent variable in our analysis is district performance. District performance is stated in Table 15, with District 1 having the lowest performance score and District 6 the highest performance score. Each of the study districts' performance was extracted from the Ghana League Table of District Performance (TDP), which includes data from the District Health Information Management System (DHIMS2) on 17 public health indicators, cf. Figure 12. The TDP ranks the 26 districts in the Eastern Region according to their aggregated annual performance score (average of four quarters). In 2017, the average annual score across the 26 districts ranged from 41.75 to 70.0 on a scale of 100.

Figure 12 District performance health indicators included in the Ghana League Table of District Performance

(1) Outpatient Department Visits per capita, **(2)** Percentage of teenage pregnancies among ANC registrants, **(3)** Family planning Acceptor rate; **(4)** Percentage skilled deliveries, **(5)** Measles-Rubella-2 coverage, **(6)** Under 5 Malaria Case Fatality Rate, **(7)** % Pregnant women tested HIV positive, **(8)** Penta 3 coverage, **(9)** Isoniazid Preventive Therapy, **(10)** Antenatal Coverage, **(11)** Authorisation completeness, **(12)** Authorisation Timeliness, **(13)** Integrated Disease Surveillance and Response (IDSR) Weekly Timeliness, **(14)** IDSR Monthly Completeness, **(15)** Non Polio AFP rate, **(16)** Data Entry Completeness, **(17)** Data Entry Timeliness

Independent variables

Characteristics of the DHMs, i.e. their sex, age, educational background, previous management experience and training, as well as systemic factors, i.e. the number of DHMs in each DHMT and available management support systems and structures were included as independent variables.

The primary independent variable, namely the DHMs' management capacity, was measured by the item *"Overall, how would you rate your management and leadership skills and competencies?"*. In addition, sum variables measuring the DHMs' general management and leadership skills were included, i.e. their conflict handling and interpersonal skills (e.g. *"I ensure that staff under my supervision feel their contributions are valued and appreciated"*) (3 items), leadership skills (i.e. *"I am confident in my abilities to direct and motivate people I work with")* (5 items), and time planning skills ("*I plan my workload by setting up daily/weekly/monthly to-do-lists"*) (3 items). Moreover sum variables were included on the DHMs' competencies related to health system management, i.e. oversight and coordination (4 items), problem analysis (6 items), planning (7 items), implementation and monitoring (3 items) and reporting (2 items), as well as their skills within human resource management (11 items), resource management (4 items), information management (3 items), financial management (3 items) and service delivery and community involvement (3 items). The internal consistency of the sum scales were tested by the Cronbach alpha to ensure a reliability coefficient of 0.7 or higher (Santos, 1999, Feldt et al., 1987).

Lastly, validated scales were included measuring the DHMs' ability to organize themselves effectively within their DHMTs, i.e. their teamwork (7 items) (Rodwell et al., 1998), job satisfaction (6 items) (Vandenabeele, 2009), motivation (3 items)(Mbindyo et al., 2009) and organizational commitment in terms on their desire to stay (3 items) (Vandenabeele, 2009). Moreover, an adapted and shortened version of Hoegl et al. items on communication within the DHMT (4 items) were included (Hoegl and Gemuenden, 2001).

Statistical analysis

Bivariate analyses were performed to evaluate differences across the different performing districts in DHM characteristics and available management support systems and structures. Non-parametric one-way analyses were applied, namely Fisher's exact test for categorical variables and Kruskal Wallis test for continuous variables.

In order to test the hypothesis that management capacity among DHMs was positively associated with health system performance, we used a non-parametric test for trend across ordered groups (Cuzick, 1985). In light of the relatively low number of DHMs in each district, a multivariable regression model was not developed due to concerns about the reliability of the model.

All statistical analyses were performed with the statistical software Stata (Stata 14; StataCorp LP, College Station, TX, USA).

6.4. Results

A total of 61 DHMs were invited to participate in the study. Hereof 59 completed the questionnaire (96.7% response rate). Non-respondents were caused by DHMs opting not to respond due to their busy schedule (n=2). Six DHMs could not be included in the study as they were on maternity or sick leave (n=4) or absent during the research teams' site visit (n=2).

Comparative analysis of district health managers' in different performing districts

Shortages of core administrative managers were observed in District 2, 4 and 6 (Table 16). All districts had a DHM within the technical areas of disease control, nutrition and health information, yet two districts were missing a Health Promotion Manager (4 and 5) and a Public Health Nurse (1 and 3). In terms of operational managers, half the districts were missing a HR Officer as well as a Supply Officer. Finance officers were present in all districts, except District 1.

There were no significant differences in the demographic and educational characteristics of the DHMs across the six districts (Table 17). Most of the DHMs' had a clinical background (20.3%) or a background in public health (35.4%). The most frequent highest educational qualification was a bachelor degree (44.1%) followed by a certificate/diploma (42.4%). More than one third of the respondents (34.5%) had less than 1 year of management experience prior to their current position. Moreover, less than half of the respondents (41.1%) had received formal training in management and

leadership, i.e. degrees, certificate or diplomas. More than half (64.8%) had received informal management training within the last 12 months, i.e. mentoring, in-service training, non-certified programs.

Table 16 Members of the District Health Management Teams across study districts

	District 1	District 2	District 3	District 4	District 5	District 6
Administrative managers	**3**	**2**	**3**	**1**	**3**	**1**
Director of Health Services	***1	1	1	1	1	1
Administrator	1	1	1	-	1	-
Dep. Dir. of Nursing Services	1	-	1	-	1	-
Technical managers	**5**	**6**	**5**	**6**	**6**	**7**
Public Health Nurse	-	ˣ1	-	1	2	*1
Disease Control Officer	2	2	2	2	2	2
Health Information Officer	***1	1	1	2	1	1
Nutrition Officer	1	ˣ1	1	1	1	1
Health Promotion Officer	1	1	1	-	-	**2
Operational managers	**2**	**1**	**2**	**3**	**1**	**2**
Finance Officer	-	1	1	1	1	1
Supply/Procurement Officer	1	-	1	1	-	-
Human Resource Officer	1	-	-	1	-	1
Other	**2**	**1**	**1**	**-**	**3**	**1**
Pharmacist	1	-	-	-	-	-
Mental Health Officer/Psychiatry Nurse	-	1	1	-	**2	-
Principal Nursing Officer/CHN	1	-	-	-	*1	-
Quality Assurance Officer	-	-	-	-	-	*1
Total (n=67)	12	10	11	10	13	11
Active DHMT members (n=63)	12	10	11	10	11	9
Responded to survey (n=59)	10	8	11	10	11	9

*CHN: Community Health Nurse, *Sick/maternity leave;**1 missing due to sick leave;***Absent; ˣNon-respondents*

Table 17 Characteristics of study participants across different performing district

	D1 (n=10)	D2 (n=8)	D3 (n=11)	D4 (n=10)	D5 (n=11)	D6 (n=9)	Total (n=59)	*p
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	
Sex								0.98
Male	5 (50.0)	5 (62.5)	6 (54.5)	5 (50.0)	5 (45.5)	4 (44.4)	30 (50.9)	
Female	5 (50.0)	3 (37.5)	5 (45.5)	5 (50.0)	6 (54.5)	5 (55.6)	29 (49.1)	
Age								**0.37
Mean (range)	39.1 (29-57)	39.5 (32-54)	41.6 (30-58)	35.6 (30-54)	42 (33-57)	36.8 (27-55)	39.2 (27-58)	
Educational background								0.99
Public Health	3 (30.0)	3 (37.5)	5 (45.4)	3 (30.0)	3 (27.7)	4 (44.4)	21 (35.6)	
Medical Doctor /Nursing/Midwife	2 (20.0)	3 (37.5)	1 (9.1)	2 (20.0)	3 (27.7)	1 (11.1)	12 (20.3)	
Accounting/Financing	0	1 (12.5)	1 (9.1)	2 (20.0)	1 (9.1)	1 (11.1)	6 (10.2)	
Human Resource Management	1 (10.0)	0	1 (9.1)	1 (10.0)	0	0	3 (5.1)	
Nutrition	1 (10.0)	0	1 (9.1)	1 (10.0)	1 (9.1)	1 (11.1)	5 (8.5)	
Other	3 (30.0)	1 (12.5)	2 (18.2)	1 (10.0)	3 (27.3)	2 (22.2)	12 (20.3)	
Highest educational qualification								0.97
Certificate/Diploma	4 (40.0)	4 (50.0)	6 (54.6)	3 (30.0)	4 (36.4)	4 (44.4)	25 (42.4)	
Bachelor	5 (50.0)	2 (25.0)	4 (36.4)	5 (50.0)	6 (54.5)	4 (44.4)	26 (44.1)	
Master/PhD	1 (10.0)	2 (25.0)	1 (9.1)	2 (20.0)	1 (9.1)	1 (11.1)	8 (13.6)	
Years in current position								0.52
<5	6 (60.0)	3 (37.5)	3 (27.3)	7 (70.0)	7 (63.6)	4 (44.4)	30 (50.9)	
5-10	3 (30.0)	4 (50.0)	6 (54.6)	2 (20.0)	2 (18.2)	5 (55.6)	22 (37.3)	
>10	1 (10.0)	1 (12.5)	2 (18.2)	1 (10.0)	2 (18.2)	0	7 (11.9)	
Previous management experience								0.88
<1yrs	5 (50.0)	3 (37.5)	3 (30.0)	3 (30.0)	2 (18.2)	4 (44.4)	20 (34.5)	
1-5yrs	2 (20.0)	2 (25.0)	2 (20.0)	6 (60.0)	5 (45.5)	3 (33.3)	20 (34.5)	
5+ yrs	3 (30.0)	3 (37.5)	5 (50.0)	1 (10.0)	4 (36.4)	2 (22.2)	18 (31.0)	
Experience from other DHMTs								0.48
Experience	4 (40.0)	6 (75.0)	6 (54.5)	4 (40.0)	4 (36.4)	6 (66.7)	30 (50.9)	
No experience	6 (60.0)	2 (25.0)	5 (45.5)	6 (60.0)	7 (63.6)	3 (33.3)	29 (49.2)	
Formal Management & Leadership training								0.40
Formal training	4 (44.4)	2 (28.6)	4 (40.0)	7 (70.0)	4 (36.4)	2 (22.2)	23 (41.1)	
No formal training	5 (55.6)	5 (71.4)	6 (60.0)	3 (30.0)	7 (63.6)	7 (77.8)	33 (58.9)	
Informal Management and Leadership training within the 12 months								0.44
Informal training	7 (77.8)	6 (85.7)	6 (54.5)	7 (78.8)	5 (45.5)	5 (45.5)	35 (64.8)	
No informal training	2 (22.2)	1 (14.3)	5 (45.5)	2 (22.2)	6 (54.5)	6 (54.5)	19 (35.2)	

**Fisher's exact, **Kruskal Wallis test*, 1) *Master of Science in Pharmacy (n=1), Bachelor in Health Service Administration (n=1), Diplomas in Management, Health Promotion and Disease Control (n=3),* 2) *Masters in Disease Control and Prevention (n=1), a Bachelor in Health Administration (n=1) and a Bachelor in Business Administration (n=1),* 3) *Bachelor's in Health Management (n=1), Masters in General Management (n=1), Diploma in Purchasing and Supply (n=1), Master of Philosophy in Leadership (n=1)*

Differences in system factors across different performing districts

Table 18 demonstrates whether management structures and systems were in place to support DHMs in carrying out their role. There were no significant differences across the districts. All DHMs reported having received job descriptions specifying their respective tasks. However, the majority (88.1%) reported that they to a moderate/large extent took on additional roles and responsibilities that were not stated in their job description. All DHMs, except from in two districts (4 and 6), reported having access to relevant national and/or regional guidelines within the different work areas (i.e. on disease surveillance and response for disease control officer, postings of health workers for HR officers, budgeting for finance officers). Regular team meetings (weekly) took place to a moderate (20.3%) or large extent (79.7%) in all districts, and records of team meetings were available (96.1%). In regards to supportive supervision, feedback and monitoring from supervisors, 10.3% reported receiving no or little supervision. Over half of the respondent reported inadequate funds (69.5%), logistics and infrastructure (55.9%) for carrying out their planned activities.

The majority of respondents rated support systems to be in place to a moderate or large extent, particularly in regards to data management (91.4%), procurement of drugs and other commodities (88.5%) and HR management (87.8%). The largest inadequacies were observed in terms of systems for planning and budgeting (19.6%), as well as for engaging communities (23.1%).

Table 18 Functional support systems across different performing district

	D1 (n=10)	D2 (n=8)	D3 (n=11)	D4 (n=10)	D5 (n=11)	D6 (n=9)	Total (n=59)	p*
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	
Additional responsibilities besides what is stated in job description								0.59
Not at all/Small extent	2 (20)	0	2 (18.2)	0	2 (18.2)	1 (11.8)	7 (11.8)	
To a moderate/large extent	8 (80)	8 (100)	9 (81.8)	10 (100)	9 (81.8)	8 (88.9)	52 (88.1)	
Access to relevant national and/or regional guidelines within your work area								0.18
Not at all/Small extent	2 (20)	0	2 (18.2)	0	0	0	4 (6.9)	
To a moderate/large extent	8 (80)	7 (100)	9 (81.8)	10 (100)	11 (100)	9 (100)	54 (93.1)	
Regular team meetings								0.87
To a moderate extent	2 (20.0)	2 (25.0)	2 (18.2)	2 (20.0)	1 (9.1)	3 (33.3)	12 (20.3)	
To a large extent	8 (80.0)	6 (75.0)	9 (81.8)	8 (80.0)	10 (90.9)	6 (66.7)	47 (79.7)	
Available records of team meetings								0.93
Not at all/Small extent	0	0	0	1 (10.0)	1 (9.1)	0	2 (3.4)	
To a moderate/large extent	10 (100)	8 (100)	11 (100)	9 (90.0)	10 (90.9)	9 (100)	57 (96.1)	
Supportive supervision, feedback and mentoring from your supervisor								0.12
Not at all/Small extent	0	1 (12.5)	2 (18.2)	3 (30.0)	0	0	6 (10.3)	
To a moderate/large extent	10 (100)	7 (87.5)	9 (81.8)	7 (70.0)	11 (100)	8 (100)	52 (89.7)	
Adequate funds to carry out planned activities								0.59
Not at all/Small extent	7 (70.0)	6 (75.0)	9 (81.8)	7 (70.0)	5 (45.5)	7 (77.8)	41 (69.5)	
To a moderate/large extent	3 (30.0)	2 (25.0)	2 (18.2)	3 (30.0)	6 (54.6)	2 (22.2)	18 (30.5)	
Adequate logistics and infrastructure to carry out planned activities								0.42
Not at all/Small extent	5 (50.0)	4. (50.0)	8 (72.7)	5 (50.0)	4 (36.4)	7 (77.8)	33 (55.9)	
To a moderate/large extent	5 (50.0)	4 (50.0)	3 (27.3)	5 (50.0)	7 (63.6)	2 (22.2)	26 (44.1)	
Are there systems and structures in place to support within the following areas?								
Planning and budgeting								0.89
Not at all/Small extent	2 (22.2)	1 (9.1)	3 (30.0)	2 (18.3)	2 (25.0)	1 (14.3)	11 (19.6)	
To a moderate/large extent	7 (77.9)	10 (90.9)	7 (70.0)	9 (81.8)	6 (75.0)	6 (85.7)	45 (80.4)	
Procurement of drugs and other commodities								0.42
Not at all/Small extent	2 (25.0)	2 (20.0)	1 (14.3)	0	1 (12.5)	0	6 (11.5)	
To a moderate/large extent	6 (75.0)	8 (80.0)	6 (85.7)	9 (100)	7 (87.5)	10 (100)	46 (88.5)	
Data management								0.68
Not at all/Small extent	0	0	1 (11.1)	2 (18.2)	1 (12.5)	1 (10.0)	5 (8.6)	
To a moderate/large extent	9 (100.0)	11 (100)	8 (88.9)	9 (81.8)	7 (87.5)	9 (90.0)	53 (91.4)	
Human resource management								0.98
Not at all/Small extent	1 (12.5)	1 (10.0)	1 (12.5)	2 (20.0)	1 (12.5)	0	6 (12.2)	
To a moderate/large extent	7 (87.5)	9 (90.0)	7 (87.5)	8 (80.0)	7 (87.5)	5 (100)	43 (87.8)	
Community-level structures or groups that enable community involvement								0.14
Not at all/Small extent	3 (42.9)	1 (10.0)	1 (11.1)	5 (50.0)	1 (12.5)	1 (12.5)	12 (23.1)	
To a moderate/large extent	4 (57.1)	9 (90.0)	8 (88.9)	5 (50.0)	7 (87.5)	7 (87.5)	40 (76.9)	

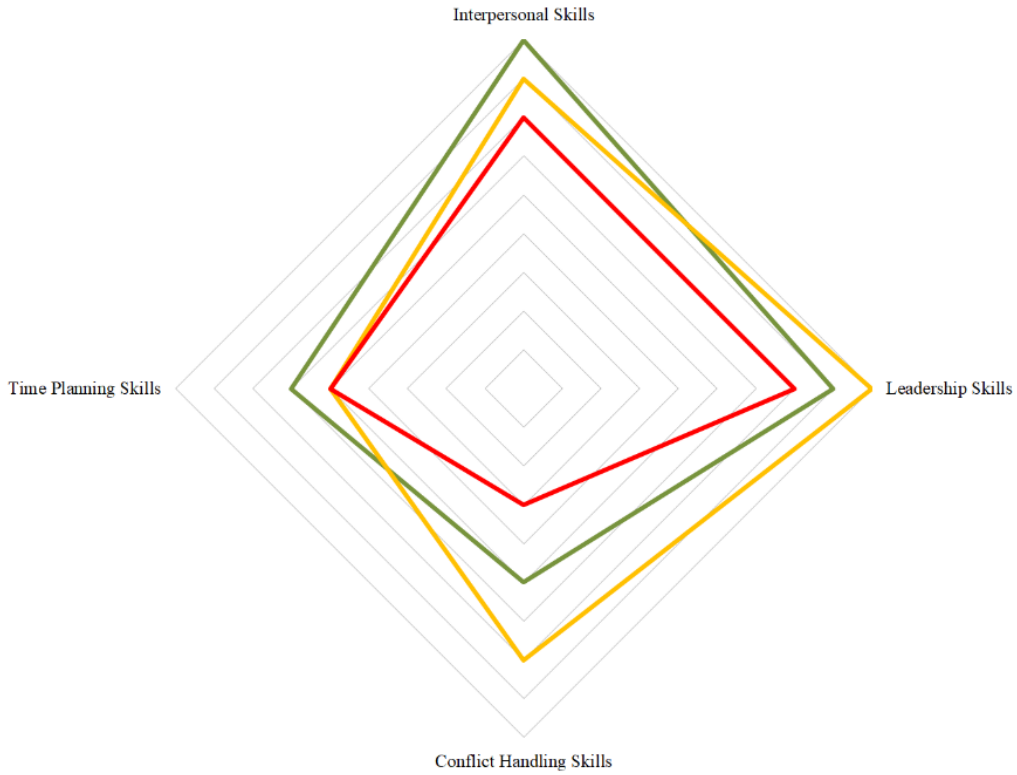
**Fisher's exact t-test*

The association between management capacity and district performance

As shown in Table 19, the DHMs overall rating of their management capacity was significantly associated with district performance; the self-assessed management capacity tended to increase from the low to high performing districts (p=0.017).

The difference across district groups in general management and leadership competencies was not significant (Figure 13). However, as shown in Figure 13, there is an evident tendency among DHMs in the lower performing districts to rate their interpersonal, leadership and conflict handling skills more negatively than the DHMs in the higher performing districts.

Figure 13 General management and leadership competencies among District Health Managers in high, mid and low performing districts



Red: Lowest performing districts (District 1 & 2), Yellow: Mid performing districts (District 3 & 4), Green: Highest performing districts (District 5 & 6). No statistical significant difference (p>0.05, oneway non-parametric test for trend); Interpersonal Skills: 2 items, Cronbach alpha 0.88, Time Planning Skills: 3 items, Cronbach alpha 0.86, Leadership Skills: 5 items, Cronbach alpha 0.9, Conflict Handling: 1 item

Competencies within the various health system management domains did not differ significantly between the districts (Table 19). District health managers' across all districts appeared to be confident in their skills related to reporting and carrying out situational and problem analyses, yet less confident in their planning, implementation and monitoring skills. Competencies within

management of human resources, resources and finances were rated less positively compared with information management, service delivery and community involvement.

Dynamics among the DHMs, i.e. teamwork, communication and organizational commitment, differed across the districts (Table 19), with a tendency of higher ratings in the higher performing districts. The highest performing district group scored best on all measures, except motivation where District 3 had a higher average score.

A total of 55.2% of the respondents stated that they did not reach their objectives set in their Annual Appraisal Form for the previous year, and 94.9% stated a desire to improve their management competencies within certain areas (results not shown). The areas mentioned included financial management (n=7), information management (n=5), HR management (n=2), general management and leadership skills (n=12), conflict management (n=4), time planning (n=3), communication (n=2), report writing (n=3), how to involve community members (n=2), advocacy and lobbying (n=3) and supervision skills (n=3). Lastly, seven people mentioned that they would like to improve specific competencies, i.e. research, reproductive and child health, malaria control and information management (i.e. gathering, analyzing and reporting information from facilities, stakeholders and communities to improve health services).

Table 19 Management capacity across different performing districts

District	District 1	District 2	District 3	District 4	District 5	District 6	Total	p*
Overall Management Capacity	*n=10*	*n=8*	*n=11*	*n=10*	*n=11*	*n=9*	*n=59*	
Mean (SD)	3.5 (1.0)	3.9 (0.6)	4.1 (0.3)	4.2 (0.6)	4.3 (0.5)	4.1 (0.3)	4.0 (0.6)	**0.02**
Oversight and Coordination	*n=10*	*n=8*	*n=11*	*n=10*	*n=11*	*n=9*	*n*=59	
Situational analysis[1]	4.4 (0.6)	4.3 (0.5)	4.5 (0.5)	4.5 (0.6)	4.5 (0.6)	4.4 (0.6)	4.4 (0.5)	0.47
Problem analysis[2]	4.1 (0.7)	4.5 (0.5)	4.4 (0.5)	4.4 (0.5)	4.4 (0.7)	4.5 (0.6)	4.4 (0.6)	0.25
Planning[3]	4.0 (0.9)	4.4 (0.7)	4.0 (0.7)	3.9 (0.8)	4.2 (0.8)	4.3 (0.7)	4.1 (0.8)	0.63
Implementation and Monitoring[4]	4.1 (0.7)	4.5 (0.8)	4.1 (0.7)	4.4 (0.7)	4.4 (0.7)	4.3 (0.7)	4.3 (0.7)	0.78
Reporting[5]	4.6 (0.7)	4.6 (0.6)	4.5 (0.5)	4.5 (0.7)	4.7 (0.5)	4.5 (0.5)	4.6 (0.5)	0.84
Human Resource Management[6]	*n=7*	*n=7*	*n=9*	*n*=9	*n*=10	*n*=6	*n=48*	
Mean (SD)	4.5 (0.5)	4.2 (0.6)	4.1 (0.6)	3.9 (0.9)	4.3 (1.0)	4.2 (0.8)	4.2 (0.7)	0.91
Resource Management[7]	*n=9*	*n=7*	*n=8*	*n*=10	*n*=10	*n*=9	*n=53*	
Mean (SD)	4.1 (0.8)	4.5 (0.4)	4.3 (0.6)	3.7 (1.2)	4.5 (0.5)	3.8 (0.6)	4.1 (0.8)	0.18
Financial Management[8]	*n=8*	*n=8*	*n=10*	*n*=9	*n*=10	*n*=8	*n=53*	
Mean (SD)	3.9 (0.6)	4.2 (1.1)	4.2 (0.6)	3.5 (1.2)	4.1 (1.3)	3.8 (1.2)	3.9 (1.0)	0.74
Information Management[9]	*n=9*	*n=8*	*n=10*	*n*=9	*n*=9	*n=8*	*n=54*	
Mean (SD)	4.4 (0.9)	4.6 (0.9)	4.5 (0.5)	4.6 (0.5)	4.7 (0.4)	4.2 (0.6)	4.5 (0.7)	0.22
Service Delivery & Community Involvement[10]	*n=9*	*n=6*	*n=8*	*n*=7	*n*=7	*n*=7	*n=44*	
Mean (SD)	4.4 (0.5)	4.7 (0.5)	4.5 (0.5)	4.5 (0.5)	4.2 (0.7)	4.0 (0.6)	4.4 (0.6)	0.17
Dynamics within the DHMT	*n=10*	*n=8*	*n=11*	*n=10*	*n=11*	*n=9*	*n=59*	
Teamwork	3.8 (0.8)	4.1 (0.7)	4.4 (0.4)	4.2 (0.6)	4.3 (0.5)	4.5 (0.4)	4.2 (0.6)	**0.01**
Communication	3.8 (0.7)	4.1 (0.8)	4.5 (0.5)	4.0 (0.8)	4.6 (0.5)	4.7 (0.4)	4.3 (0.7)	**<0.01**
Motivation	3.1 (0.9)	3.3 (0.7)	3.9 (0.7)	4.0 (0.7)	3.3 (0.5)	3.7 (0.7)	3.6 (0.7)	0.12
Job satisfaction	3.5 (0.4)	3.4 (0.6)	3.5 (0.4)	3.5 (0.7)	3.6 (0.5)	3.8 (0.5)	3.5 (0.5)	0.11
Organizational commitment	3.7 (0.5)	3.6 (0.9)	4.5 (0.6)	4.0 (1.1)	4.3 (0.7)	4.6 (0.8)	4.1 (0.8)	**<0.01**

*Oneway non-parametric test for trend (nptrend); Sum-scales mean score: 1) 4 items, Cronbach alpha 0.76, 2) 6 items, Cronbach alpha 0.88, 3) 7 items, Cronbach alpha 0.92, 4) 3 items, Cronbach alpha 0.92, 5) 2 items, Cronbach alpha 0.83, 6) 11 items, Cronbach alpha 0.95 7) 4 items, Cronbach alpha 0.93 8) 3 items, Cronbach alpha 0.84 9) 3 items, Cronbach alpha 0.93 10) 3 items, Cronbach alpha 0.73

6.5. Discussion

No systematic differences were observed across the different performing districts in terms of DHMT characteristics, functional support systems and specific management competencies. Nevertheless, differences were found in overall perceived management capacity, organizational commitment, teamwork and communication within the DHMTs. Management capacity and DHMT dynamics were positively correlated with health system performance.

District health managers and the system they work in

Despite not being able to explain the differences in health system performance by systematic differences in the characteristics of DHMs and available functional management support systems, our findings contribute to health system research by identifying areas in which district health systems can be strengthened (Tetui et al., 2016, Kolehmainen-Aitken, 2004, Egger et al., 2005).

The WHO Leadership and Management Strengthening framework lists an adequate number of DHMs as an important element in having a robust health system (Egger and Ollier, 2007). We observed shortcomings in the number of core managers, converging with other studies in LMICs (Muchekeza et al., 2012, Egger and Ollier, 2007, Bonenberger et al., 2015). When staff shortages exist, current DHMs have to take on additional roles, which leaves them with a higher workload and tasks they do not have the appropriate competencies for. This will consequently affect their output (Tabrizi et al., 2017), and may be the reason why more than half of the DHMs in this study did not reach their annual objectives. The DHMTs do not have authority to hire additional staff members, and thus depend on higher levels to recruit an adequate number of DHMs. This can be challenging in settings with a scare workforce, yet it is essential in order to have a well-functioning decentralized health system.

In our study, almost half of the DHMs had received formal management training. In Ghana, the District Directors of Health Services who lead the DHMTs, are strongly encouraged to undergo a certified management training course at the Ghana Institute of Management and Public Administration to prepare them for their role (GIMPA, 2019). Thus, Ghana seems to be advancing in terms of competent DHMs compared to other countries, where DHMs often are described as clinical staff that have been promoted to management positions with little or no structured management training (Dorros, 2006, Gholipour et al., 2018, Tabrizi et al., 2017, Tabrizi et al., 2016, Mutale et al., 2017).

However, there is still improvement potential; more than one third of DHMs in this study had less than one year of management experience before entering their current role, and the majority had a bachelor degree or lower as highest educational qualification. Moreover, the majority of the respondents stated a desire to develop their competencies in order to carry out their job.

Additional areas with room for improvement include the extent of supervision provided to DHMs. Supervision plays a critical role in creating an enabling work environment where DHMs are appraised and incentivized to perform better (Dieleman et al., 2009, Bradley et al., 2012, Waweru et al., 2013). Moreover, regular meetings and structures to enable community involvement should be present to a larger extent. Regular meetings have been described as an effective strategy to improve performance as they create a forum for addressing pressing issues, reflecting on progress and sharing information (Tetui et al., 2016, Kwamie et al., 2015, Tabrizi et al., 2017). Community engagement can be helpful to identify needs and gain feedback from the community, in addition to enhancing accountability of health workers, and is thus an important component to train and empower DHMs in (Chen et al., 2004, Tabrizi et al., 2016).

This study demonstrates that DHMs perceive funds, logistics and infrastructure to be inadequate for carrying out planned activities. Irregularity in budgetary transfers in Ghana (Bonenberger et al., 2016, Chen et al., 2004), as well as in other countries (Steffensen and Trollegaard, 2000, Tabrizi et al., 2017), results in DHMTs not having money to buy fuel and maintain vehicles. This affects their motivation negatively and prohibits them in carrying out essential supervision tasks (Muchekeza et al., 2012, Bonenberger et al., 2016). Apart from ensuring that resources are received by districts in a timely manner, DHMs' competencies in managing resources (financial, material and human) should be enhanced. Moreover, user-friendly systems for effective planning and budgeting should be in place.

District management capacity and its association with health system performance

Overall, management competencies were positively rated by the DHMs in this study. However, potential for improvement was identified within certain areas, i.e. time planning, conflict handling and resource management (financial, material and human), converging with other studies on district health management (Tabrizi et al., 2016, Asante et al., 2011, Waweru et al., 2013). Further research should look into the most effective ways to enhance such skills. Filerman suggest that essential management competencies are learned most effectively if the training takes place where the managers' work, within

the team and it addresses existing challenges (Filerman, 2003). Gholipour et al describes that the academic credibility of the instructors are important, and that meeting and sharing experiences with peers from other districts also can be an effective approach to strengthen district management (Gholipour et al., 2018).

A positive association was identified between the DHMs' overall assessment of their management competencies and district health performance. Moreover, higher ratings of general management and leadership skills (Figure 13) were observed among DHMs in the higher performing districts. The relatively small sample may have prevented the detection of a statistical significant association.

There was no association observed between district performance and the DHMs assessment of competencies within the specific health system domains. Moreover, the specific management competencies were generally rated more positively than the overall managerial capacity. The discrepancy may be caused by the fact that a subgroup of the DHMs responded to the items within the various domains, namely those involved in carrying out tasks related to the specific areas. These may thus have been particularly competent within their defined area of responsibility.

The higher ratings may also reflect areas, which frequently are targeted by management training, i.e. information management, reporting, implementation and monitoring. Technical skills relating to these areas are essential, yet do not necessarily improve the DHMs abilities to organize themselves effectively within the DHMTs, in terms of encouraging teamwork, tackling problems collectively, spreading motivation and positive staff attitudes. The DHMs assessments of communication, teamwork and organizational commitment were associated with their assessment of their overall managerial capacity, as well as with district performance. In alignment, Seims et al found that strengthening leadership and management skills among DHMs in Kenya through a team-based approach led to significant increases in health-service delivery (Seims et al., 2012). The importance of building abilities among DHMs to work effectively within teams has been confirmed by other studies as well (Tetui et al., 2016, Gilson and Agyepong, 2018, Diaz-Monsalve, 2004, Rockers and Barnighausen, 2013, Tabrizi et al., 2017), and an emphasis on this should thus be ensured in district level management strengthening efforts.

It is important to note that management capacity among DHMs only is one of many factors that may affect district performance. Firstly, regardless of management competencies and skills, management practices may be constrained by the DHMs lack of authority to make decisions. Priorities

at higher levels determine how DHMs carry out their responsibilities, which limits them in responding to the needs of their district (Bonenberger et al., 2015, Bonenberger et al., 2016). Secondly, district health system performance is affected by a myriad of other factors than district management, which were not adjusted for in current study. These include the economic status of a district, household economic conditions and poverty, general infrastructure, degree of urbanization, health facility management, social, religious affiliations and traditional beliefs that may render healthcare utilization (Singh et al., 2014, Fetene et al., 2019, Macarayan et al., 2019). Nevertheless, the positive association between district management and health system performance is confirmed in adjusted analyses performed in Fetene et al's study in Ethiopia. Their findings suggest that stronger management among district health officers magnify the positive effects of strong management at health facility level. Being the first point of primary care, management at health facilities play an important role in Ghana too (Avoka and Seidu, 2017) . Future studies may explore management at health facility level and its synergy with management at district level.

Measures of management capacity and health system performance

Management capacity is a complex concept to measure. This study measured it through a self-administered survey, which is an approach that has been used in other studies (Diaz-Monsalve, 2003, Dargahi and Shaham, 2012, Khadka et al., 2013, Pillay, Gholipour et al., 2018). The self-assessment methodology is founded on the concept of self-efficacy that posits that individuals who feels greater confidence in their ability to perform is more likely to successfully perform (Mutale et al., 2017). However, it is important to be aware of the fact that differences may exist between self-reported management behavior and actual behavior as observed by subordinates, superiors and peers (Burke and Collins, 2001). Managers' self-ratings tend to be inflated, which most likely also is the case in this study, where positive ratings in general were observed despite previous research suggesting a lack of capacity among DHMs. This study is to our knowledge the first study to measure management capacity through a questionnaire that were thoughtfully developed to assess management competencies among DHMs in a time and cost efficient way; validity and reliability was sought through expert review and cognitive interviews, which have been described to be effective when exploring new or poorly described concepts (Drennan, 2003). The identified correlation between self-reported managerial capacity and the objective measure of district performance, may be an indicator of criterion-related validity (Bolarinwa, 2015). Nevertheless, further reliability and validity measures may

enhance the effectiveness of the questionnaire; internal validity can be improved by including observations and additional assessments of the DHMs capacity from their superiors (Regional Health Administration), subordinates (health facilities) and peers (NGOs and other stakeholders) (Howard et al., 2018).

The outcome variable, district performance, is based on data from DHIMS2, and the analyses were thus carried out under the assumption that DHIMS2 data in Ghana is reliable (Amoakoh-Coleman et al., 2015). However, it should be noted that inconsistencies can occur in DHMIS2, i.e. late or non-reporting from some health facilities, which could introduce misclassification bias of the exposure. Lastly, quality of care, which is an essential aspect of health system performance (Kruk et al., 2018), was not reflected by the seventeen TDP indicators. Future research concerning health system performance should take this into consideration.

Study limitations

The causal relationship between management capacity and performance cannot be established due to the cross-sectional study design; high performing districts may for instance have attracted highly competent DHMs or the confidence of DHMs self-assessment may have been affected by them being aware of the ranking of their districts' performance. If the district performance has affected the DHMs perception of their competencies, there may be differential misclassification and thus a biased measure of association. Moreover, the test of significance may have been influenced by the relatively small sample size; an effect that failed to be significant ($p<0.05$) could prove significant in a larger samples. Further exploration of this research topic would benefit from longitudinal studies, as well as from larger studies with more statistical power and greater generalizability.

Due to the sample size, adjusted analyses could not be performed, and the confounding effect of mentioned factors affecting health system performance have not been established. Future studies may, if their sample size allows, eliminate confounding factors by running adjusted analyses, or by comparing performance between similar districts in regards to socio-demographic district characteristics. The latter was attempted in current study where there were no major differences across the districts in terms of DHM characteristics (Table 17) and availability of functional support systems (Table 18). Moreover, all study districts were located in the same region, governed by the same Regional Health Administration, and thus similar in terms of the DHMs level of authority, regional guidelines and procedures, climate and disease burden, cf. Table 15.

The inclusion of different performing, urban and rural districts makes current study findings generalizable to districts within the Eastern Region, yet to ensure external validity the questionnaire has to be tested in other settings.

6.6. Conclusion

The complexity of district management and its association with health system performance is difficult to capture. However, despite the study limitations, our findings indicate a strong association between self-reported management capacity and health system performance at district level in Ghana, which should be researched further. Moreover, this study identified areas within district health management that should be improved through policy making, i.e. inadequate supervision, funds and logistics available to DHMs, and targeted efforts, i.e. the DHMs motivation, specific management competencies and lack of management support systems.

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CHAPTER 7

Health worker transfer processes within the public health sector in Ghana: a study of three districts in the Eastern Region

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A Health Center in the Eastern Region of Ghana

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7. Health worker transfer processes within the public health sector in Ghana: a study of three districts in the Eastern Region

7.1. Abstract

Introduction: The lack of appropriate policies and procedures to ensure transparent transfer practices is an important source of dissatisfaction among health workers in low- and middle income countries. In order to alter and improve current practices, a more in-depth and context-specific understanding is needed. This study aims to 1) identify rationales behind transfer decisions in Ghana and 2) to examine how transfers are managed in practice versus in policies.

Methods: The study took place in 2014 in three districts in Eastern Ghana. The study population included 1) national, regional and district health administrators with decision-making authority in terms of transfer decisions, and 2) health workers who had transferred between 2011 and 2014. Data was collected through semi-structured - and structured face-to-face interviews focusing on rationales behind transfer decisions; health administrators' role in managing transfers; and health workers' experience of transfers. A data triangulation approach was applied to compare identified practices with national policies and procedures.

Results: A total of 44 health workers and 21 administrators participated in the study. Transfers initiated by health workers were mostly based on family conditions and preferences to move away from rural areas, while transfers initiated by administrators were based on service requirements, productivity and performance. The management of transfers was not guided by clear and explicit procedures, and thus often depended on the discretion of decision-makers. Moreover, health workers frequently reported not being involved in transfer decision-making processes. We found existing staff perceptions of a non-transparent system.

Conclusion: Our findings suggest a need to foster incentives to attract and retain health workers in rural areas. Moreover, health-worker centered procedures and systems that effectively guide and monitor transfer practices must be developed to ensure that transfers are carried out in a timely, fair and transparent way.

7.2. Introduction

In low and middle income countries (LMICs) posting and transfer (PT) practices, referring to how frontline health workers and administrators are geographically posted and transferred within public health facilities, have been recognized as a main barrier for having an effective workforce (McPake and Koblinsky, 2009, Schaaf and Freedman, 2013, Abimbola et al., 2017). Previous studies found that health workers' dissatisfaction with their postings and inadequate support for them to discharge their roles effectively are linked to absenteeism, low morale, and poor quality of health services (Garimella and Sheikh, 2016, Lawan et al., 2017, Sheikh et al., 2015)

In Ghana, as well as in other LMICs, policies and procedures to guide PT decisions exist, yet they have been described as being ambiguous, arbitrary, and non-transparent in practice (Kwamie et al., 2017, Garimella and Sheikh, 2016, Sheikh et al., 2015, Purohit et al., 2016). Due to a lack of clear guidelines and procedures, PT decisions are likely to be formally or informally negotiated outcomes based on diverging interests from the ones posting or transferring and the ones being posted or transferred (Kwamie et al., 2017, Sheikh et al., 2015, Schaaf and Freedman, 2013)

The healthcare system in Ghana is administratively organized at the national, regional, and district level (Kwamie et al., 2016). The national level, Ghana Health Service (GHS) headquarters, posts newly graduated health professionals to the ten regions in Ghana, each of which are headed by a Regional Health Administration (RHA). The RHA oversee the districts' human resource (HR) demands, and distribute health workers accordingly. The districts, headed by the District Health Administrations (DHA) and District Hospitals (DH), are responsible for adequately staffing all public health facilities and hospitals within their district. The DHA and DH do not have the authority to hire or fire. Thus, staffing is frequently done by transferring existing staff between facilities, including DHs, health centers and Community-based Health Planning Services (CHPS). Transfers can take place between facilities within the same district (intra-district), between facilities in different districts within the same region (inter-district) or between facilities in different regions (inter-regional). Transfers can be initiated by health administrators in charge or by health workers.

There is a paucity of research on transfer practices (Garimella and Sheikh, 2016, Schaaf and Freedman, 2013, Sheikh et al., 2015). By gathering perspectives from health administrators with decision-making authority in terms of PT and frontline health workers who have transferred within the public health service delivery agency in Ghana, namely GHS, this exploratory study aims 1) to identify

rationales behind transfer decisions and 2) to examine how transfers are managed in practice versus current PT policies and procedures.

7.3. Methods

Study design

To explore an under-researched topic, this study used a mixed-methods triangulation design combining a structured questionnaire, in-depth interviews and policy documents. The semi-structured interview guide and questionnaire were developed to explore the processes relating to the transfer of health workers, including the roles and responsibilities of involved health administrators.

Study setting

This study was conducted in three districts in the Eastern Region of Ghana, including Akwapim North, Kwahu West and Upper Manya Krobo in 2014 (Table 20). Akwapim North is mostly urban, Kwahu West semi-urban, while Upper Manya Krobo is predominantly rural (Bonenberger et al., 2014). Upper Manya Krobo has the lowest proportion of health facilities and high-level cadres, including doctors (0.7%), registered nurses (19.4%) and midwives (9%).

Table 20 Study district characteristics

	Akwapim North	Kwahu West	Upper Manya Krobo	Total
Population	142,275	97,556	78,158	317,989
Clinical Health Workforce	231 (37.4)	253 (40.9)	134 (21.7)	618 (100)
Doctors	8 (3.5)	9 (3.6)	1 (0.7)	18 (2.9)
Medical Assistants	7 (3.0)	3 (1.2)	4 (3.0)	14 (2.3)
Registered Nurses	58 (25.1)	71 (28.1)	26 (19.4)	155 (25.1)
Midwives	43 (18.5)	31 (12.3)	12 (9.0)	86 (13.9)
Community Health Nurses	50 (21.6)	53 (20.9)	56 (41.8)	159 (25.7)
Auxiliary Nurses/Health Assistant	46 (19.9)	67 (26.5)	28 (20.9)	141 (22.8)
Allied Health Workers	16 (6.9)	16 (6.3)	6 (4.5)	38 (6.1)
Pharmacists	3 (1.3)	3 (1.2)	1 (0.7)	7 (1.1)
Health facilities	23 (37.1)	27 (43.5)	12 (19.4)	62 (100)
Hospitals	1 (4.3)	1 (3.7)	1 (8.3)	3 (4.8)
Health centers	9 (39.1)	8 (29.6)	5 (41.7)	22 (35.5)
CHPS facilities	13 (56.5)	18 (66.7)	6 (50.0)	39 (59.7)
Main burden of diseases	1. Malaria 2. Upper Respiratory Tract Infections 3. Hypertension Diarrhea*	1. Hypertension Malaria* 2. Malaria, Diarrhea* 3. Skin diseases Upper Respiratory Infections*	1. Malaria 2. Rheumatism Diarrhea* 3. Anemia	

*Information from the time of study in 2014, *Different burden of disease between children and adults; * indicates disease among children.*

Study population

The study population included health workers, who transferred between 2011 and 2014, and health administrative staff members from the central level (GHS), regional level (RHA) and the district level (DHA and DH), who were involved in transfer decisions. Health workers were invited to participate if they fulfilled the following criteria: 1) worked at a public health facility in one of the study districts at the time of the study, 2) had transferred geographically between facilities between January 2011 and May 2014. Health administrative staff members were invited to participate if they 1) were primarily involved in management of transfers, 2) worked at the GHS, RHA or selected DHAs and DH at the time of the study.

Data collection

Each health worker completed a structured face-to-face survey including closed and open-ended items. The survey gathered socio-demographic and employment information, and explored their reasons for transferring and how their transfer was managed, including how they were involved. The health administrators underwent semi-structured in-depth interviews as described by Britten (Britten, 1995). The interviews concerned their role in managing transfers and reasons for initiating transfers; how health workers were involved; and their perceptions of why health workers' request transfers. Study participants were interviewed between May and July 2014. The GHS Posting Policy draft, including guidelines and procedures, was obtained from GHS HR Development Directorate. The obtained document was confirmed relevant in 2018.

Data analysis

Health worker data were summarized by means, standard deviations and ranges for continuous variables, and as frequencies and percentages for categorical variables by using Stata (Stata 14; StataCorp LP, College Station, TX, USA). The interviews were transcribed and subsequently coded in the qualitative research software NVivo 11 by using a general inductive approach (Thomas, 2006). In order to analyze the different perspectives and potential discrepancies between practices and policy, we applied a data triangulation approach, as described by Flick, combining the information gathered from administrators, health workers and PT policy (Flick, 2004) .

Ethical considerations

This study was carried out under the project PERFORM aimed at strengthening health workforce performance (Martineau et al., 2018) under the lead of the Liverpool School of Tropical Medicine (LSTM). Ethical clearance was obtained from the Research Ethics Committee of LSTM (ID No.: 12.09), the GHS Ethical Review Committee (ID No.: GHS-ERC: 13/05/12) and the Eastern Regional Health Administration. Written informed consent was obtained from all study participants and personal data were anonymized prior to analysis.

7.4. Results

Overall an estimated number of 59 frontline health workers met the eligibility criteria for study inclusion. Among those, 44 (74.6%) agreed to participate (Table 21). Non-respondents included health workers who were 1) absent at the day of our visit (n=12) or 2) refused to participate (n=3). A total of 21 health administrative staff members involved in PT processes participated in the study, including eight males. None of the invited administrators rejected participation (Table 22).

Less than one third of the health workers (27.3%) had initiated their transfer themselves (Table 23).The DHA had initiated 65.9% of the transfers, whereas RHA had initiated 6.8% (Table 23). The majority of transfers had taken place intra-district (79.6%). The DHA had initiated most of these (82.9%), whereas inter-district transfers (13.6%) were mostly initiated by the health workers (66.7%) or by the RHA (33.3%). Inter-regional transfers (6.8%) had only been initiated by the health workers (Table 23).

Table 21 Study district characteristics & socio-demographic information on transferees (n=44)

	Akwapim North (n=24)	Kwahu West (n=8)	Upper Manya Krobo (n=12)	n (%)
Age				
Mean (SD)	40.8 (13)	32.4 (9.1)	31.6 (9.3)	36.9 (12.1)
Range	25-59	26-53	23-53	23-59
Sex				
Female	21 (87.5)	4 (50)	7 (58.3)	32 (72.7)
Male	3 (12.5)	4 (50)	5 (41.2)	12 (27.3)
Marital status				
Married	16 (66.8)	4 (50)	5 (41.3)	25 (56.8)
Unmarried	5 (20.8)	4 (50)	7 (58.3)	16 (36.4)
Other	3 (12.5)	0	0	3 (6.8)
Profession				
Doctor	0	2 (25)	0	2 (4.6)
Nurse	2 (8.3)	1 (12.5)	0	3 (6.8)
Community Health Nurse	12 (50)	4 (50)	9 (75)	25 (56.8)
Midwife	6 (25)	1 (12.5)	0	7 (15.9)
Physician Assistant	2 (8.3)	0	1 (8.3)	3 (6.8)
Public Health Nurse	0	0	1 (8.3)	1 (2.3)
Disease Control Officer	0	0	1 (8.3)	1 (2.3)
Accountant	2 (8.3)	0	0	2 (4.6)
Educational Background				
Certificate	18 (79.2)	5 (62.5)	9 (75)	33 (75)
Diploma	4 (16.7)	1 (12.5)	3 (25)	8(18.2)
Bachelor	1 (4.2)	1 (12.5)	0	2 (4.6)
Master	0	1 (12.5)	0	1 (2.3)
Years in profession				
Mean (range)	10.2 (2-30)	6.5 (1-23)	5.3 (1.5-10)	8.3 (1-30)
Current facility type				
Health Centre	14 (58.3)	3 (37.5)	4 (33.3)	21 (47.7)
CHPS*	6 (25)	1 (12.5)	3 (25)	10 (22.7)
Hospital	4 (16.7)	4 (50)	2 (16.7)	10 (22.7)
District Health Administration	0	0	2 (16.7)	2 (4.5)
RHC**	0	0	1 (8.3)	1 (2.3)
Years at current health facility				
Mean (range)	1.3 (0-3)	0.9 (0-2.5)	1.4 (0-3)	1.3 (0-3)
Years at previous health facility				
Mean (range)	4.6 (0.5-20)	3.2 (1-6)	2.8 (0.5-9)	3.9 (0.5-20)

***CHPS: Community-based Health Planning Services;; **RCH: Reproductive and Child Health*

Table 22 Interviewed administrators at the central, regional and district Level (n=21)

Level of Employment	*n*
Central Level	**1**
Deputy Director of Human Resources in the Ghana Health System HR Directorate	*1*
Regional Level	**3**
RHA Human Resource Manager	*1*
RHA Deputy Director of Clinical Care	*1*
RHA Deputy Director of Nursing Services	*1*
District Level	**9**
District Director of Health Services [1,2,3]	*3*
Human Resource Officer [1, 2*, 3**]	*3*
Public Health Nurse [1, 2, 3]	*3*
District Hospital	**7**
Matron Deputy [1, 3]	*2*
Human Resource Officer [1, 3]	*2*
Administrator [1,3]	*2*
Medical Superintendent [3]	*1*
Total	**21**

*[1)] Akwapim North; [2)] Kwahu West; [3)] Upper Manya Krobo; *Double function as HR and Health Information Officer; **Interim*

Table 23 Type of transfer versus transfer initiated by (n=44)

Type of transfer	**Transfer initiated by**			
	District Health Administration	Health Worker	Regional Health Administration	***Total***
Intra-district	**29 (82.9)**	**5 (14.3)**	**1 (2.9)**	**35 (79.6)**
Community-Health Nurse	21	1	0	22
Midwife	5	2	0	7
Physician Assistant	2	1	0	3
Nurse	1	1	0	2
Accountant (RHA)	0	0	1	1
Inter-district	**0**	**4 (66.7)**	**2 (33.3)**	**6 (13.6)**
Community-Health Nurse	2	0	0	2
Accountant (DHA)	0	0	1	1
Public Health Nurse (DHA)	0	0	1	1
Inter-regional	**0**	**3 (100)**	**0**	**3 (6.8)**
Doctor	0	2	0	2
Disease Control Officer (DHA)	0	1	0	1
Total	**29 (65.9)**	**12 (27.3)**	**3 (6.8)**	**44 (100)**

DHA: District Health Administration; RHA: Regional Health Administration

The rationale behind transfer decisions

The most frequently reported reasons for health workers to initiate transfer from rural to urban areas were marital reasons (i.e. wanting to be closer to their spouse or lack of opportunities for their spouse) followed by a need for easier access to basic services. Rationales behind transfers from urban to rural areas included needs for changed environment and health-related issues. Transfers between rural areas were due to desired vacancies at other facilities, whereas transfers between urban areas were attributed to preferred locations, disagreements with supervisors or marital reasons (Table 24).

Regional and district administrators' rationale for initiating transfers of health workers, as demonstrated by the quote below, were based on equal distribution of staff and skills mix according to national HR requirements.

"… this facility has more staff than this other.... and because of the staff mix (…) it is more endowed than the other. So if we move one [health worker] *from Facility B to Facility A, Facility A will also come up a bit."* (District Director of Health Services)

This practice aligns with the policy guidelines, which states that staff with adequate skills shall be distributed equitable to health facilities based on vacancies and needed skill. Moreover, administrators initiated transfers based on health worker performance, which is assessed via structured annual appraisals. This practice is not explicitly supported by the GHS posting policy or procedures.

Table 24 Geographical direction of health worker transfers versus initiation of transfer (n=44)

Direction of Transfer	**Transfer initiated by**			
	District Health Administration	Health Worker	Regional Health Administration	***Total***
Transfer from rural areas	**17 (73.9)**	**6 (26.1)**	**0**	**23 (52.3)**
From Rural to Rural	10	2	0	12 (27.3)
From Rural to Urban	7	4	0	11 (25.0)
Transfer from urban areas	**12 (57.1)**	**6 (28.6)**	**3 (14.3)**	**21 (47.8)**
From Urban to Urban	7	4	2	13 (29.5)
From Urban to Rural	5	2	1	8 (18.2)
Total	**29 (65.9)**	**12 (27.3)**	**3 (6.8)**	**44 (100)**

Management of transfers

The management of transfers differed according to the type of transfer (inter-district, intra-district or inter-regional) and whether the transfer was initiated by the health worker (Figure 14) or by an administrator (Figure 15). In order to reflect practice, the figures were derived from information provided by study participants. The figures in general align with the GHS posting procedures, yet takes on a health worker-centered approach compared with the procedures' rigorous focus on bureaucratic measures.

Transfers initiated by health workers

As shown in Figure 14, all transfer types initiated by a health worker relied on consent from the health workers' immediate supervisor and the District Director of Health Services (DDHS) or the Hospital Medical Superintendent for transfers involving hospital staff. This consent partially depended on the health workers' ability to convince administrators why a transfer should be granted, cf. quote below.

*"All they need to do is give us good reasons, just maybe in an informal discussion (…) why they want to be moved and if the reasons sound good enough we give the approval…" (*District Health Administrator)

The policy does not provide input on what qualifies as a "good reason", yet generically states that transfers can be granted if approved by the Division/Regional Director, if there is a vacancy and if the health worker is not needed elsewhere.

Endorsed intra-district requests for transfer could be effectuated immediately if there was a vacancy at the requested facility. However, inter-district – and inter-regional requests had to be passed on from the DDHS to the Regional Director(s) of the involved regions. The Regional Directors had to give their consent and confirm vacancy at the receiving district/region as well as availability of a replacement to fill the void created by the transfer. Our data revealed that inter-district and inter-regional transfers initiated by health workers often were delayed due to ineffective and inefficient means of communication between the districts and the regions, cf. quote below concerning an inter-district transfer.

"Depending on how long RHA will need to write to the [other] *district to confirm a vacancy, they* [the other district] *reply, the RHA asks us to release the person, we also reply … (…) Some people when they really want to leave (…) will make sure that he or she brings the letter himself, will sit, pick the response, go back to RHA, sit there, take the response. But if it goes through the normal process … Because when they* [RHA] *write, they will just put it in a pigeon hole for us (…). So if(…)we've not gone to RHA to pick letters that means(…)the process will be delayed.* (District HR Officer)

The posting policy does not include input to guide efficient communication nor state timeframes within which a transfer should be processed.

Transfers rejected by transferors

A health workers' request to transfer could be rejected based on the following: 1) weak reasoning for transfer according to the decision-makers' discretion; 2) having served insufficient time at current post; 3) recently having received training or professional development beneficial to current post; or 4) having poor performance, cf. quote below. The policy supports the second and third point, but not the first and fourth.

"…sometimes there are staffs whose output is not too good. So she [the District Director] *will know that if that staff goes to her colleague* [another District Director] *in another place* [district], *the person will be, let's say, a sort of nuisance. So she* [the District Director] *will not prefer someone leaves this place to go somewhere else and gives her a bad name."* (District HR Officer)

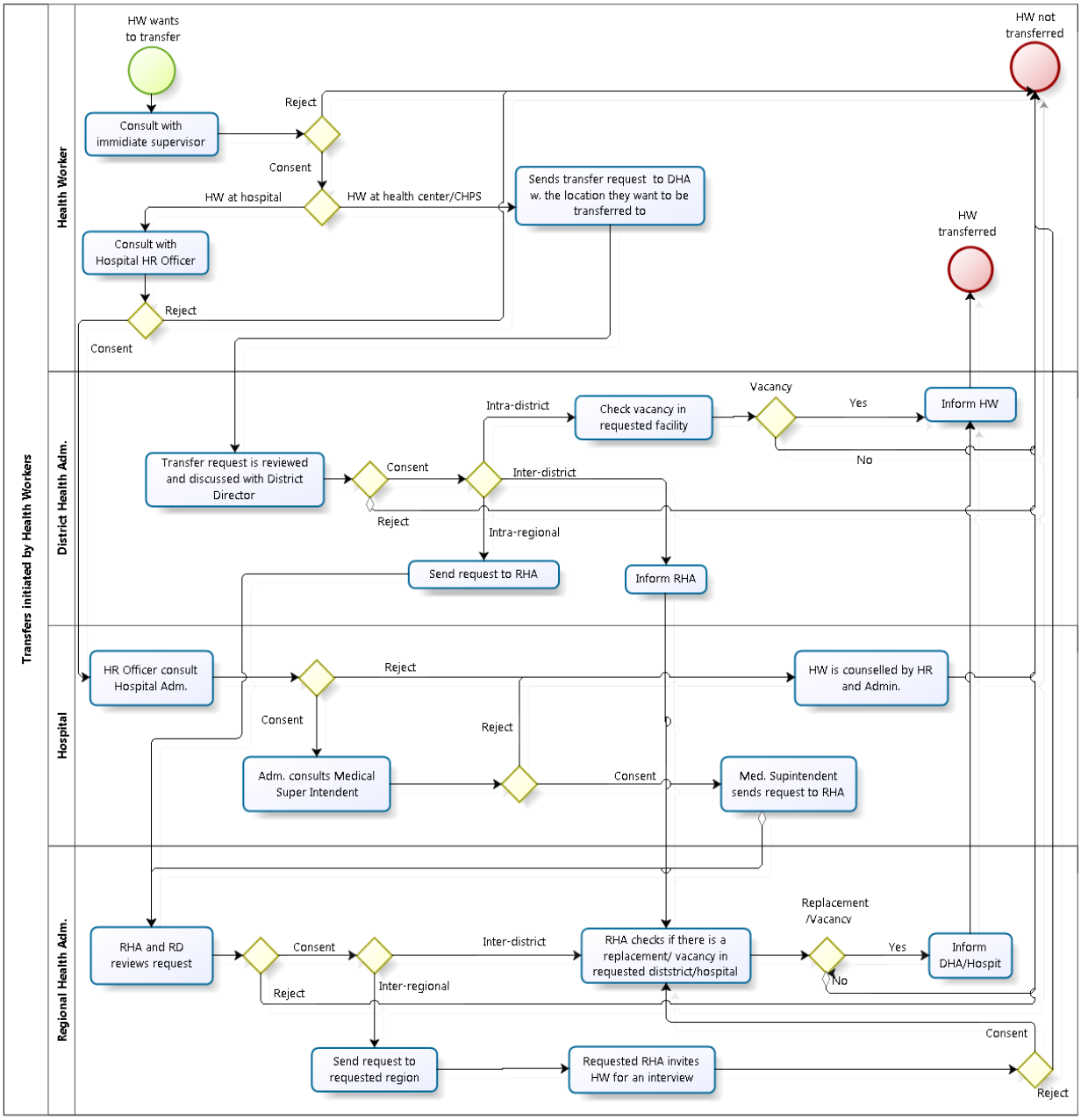
Furthermore, and as indicated previously, transfers could be rejected if there were 5) no vacancies at the requested facility/district or 6) no replacements to fill the health workers' current position.

A lack of vacancies was not identified as a main cause preventing transfers from happening. However, study participants reported that staff in high supply, such as CHNs, were less likely to be transferred to their preferred location compared with doctors and more senior staff cadres.

A shortage of replacements frequently caused delayed or rejected transfers - especially for health workers in scarce supply, such as midwives, and for health workers placed in rural districts, such as Upper Manya Krobo, where few want to be transferred to. A District Public Health Nurse indicated that a transfer application only would be considered if a replacement had been identified,

unless the transfer was "*very, very critical*", such as the transferee having a fatally ill family member. The GHS procedures do not define "critical transfers" and do not provide inputs that guide situations where replacements are lacking.

Figure 14 Transfers initiated by Health Workers



Transfers initiated by health administrators

The RHA can initiate transfers of frontline staff at district hospitals, while the DHA has authority to transfer frontline health workers between health facilities (except hospitals) within their district.

When a transfer is initiated by the DHA or RHA (Figure 15), they send a request to the health workers' current facility informing them that the health worker has to transfer to a new facility on a given date. The vast majority of health workers reported that neither they nor their facility had been involved in the transfer decision, other than receiving a letter informing them about their transfer. The policy does not state to what extent the health worker and the facilities must be involved. It was reported that health workers could be transferred at any time after having served their required time. Thus, the transfer often came as a surprise to the health worker as well as the facility management, as demonstrated by the quotes below

"*When it comes like that, you, the staff or the administrator, you have no idea. You have no objection (…). The letters will come* [from the RHA]: *"Fine you need to release them before July."* (Hospital HR Officer)

"She came back to me: "Why, what have I done? Have I done anything wrong"? So I had to explain things to her that: "We need your service there. That's why we are transferring you. Not that you've done something wrong". She was here crying." (Health Information Officer)

The latter quote further demonstrates a lack of transparency in the transfer decision process, leaving health workers without an understanding of why they were being transferred.

Transfers rejected by the transferee

The posting policy does not provide input for situations where transfers are rejected by a health worker. In practice, it appeared to be difficult for health workers to alter transfer decisions made by DHA or RHA

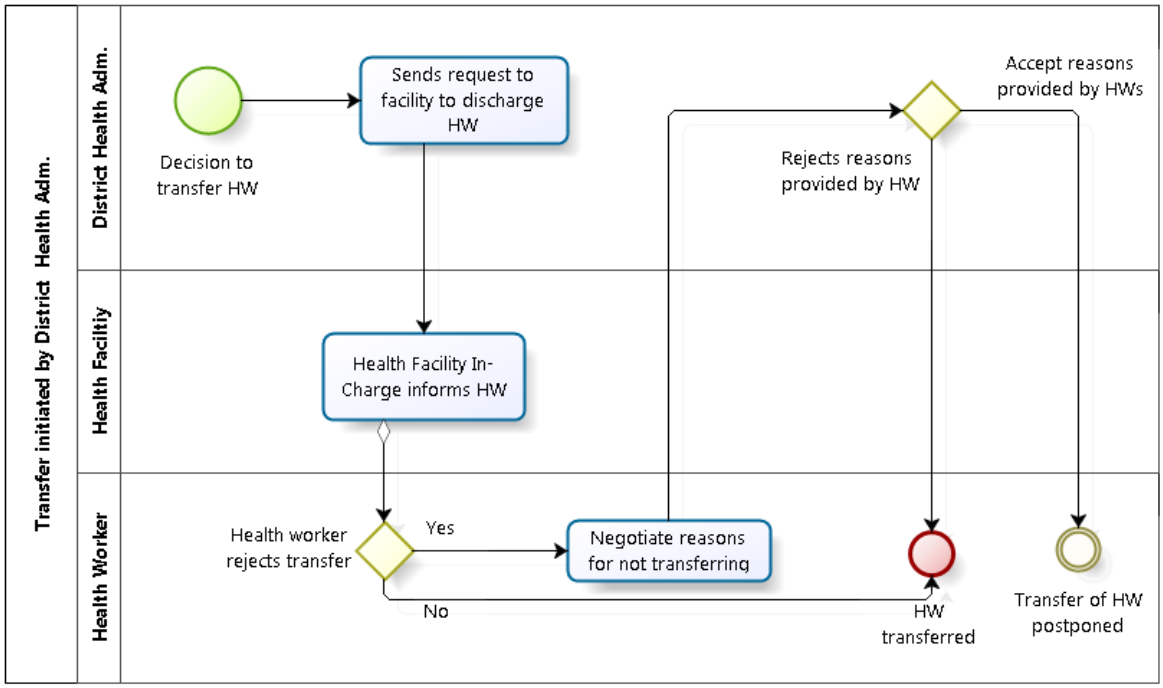
"*…once we have come to the conclusion that this person must go, we will employ all negotiating skills (…) some will initially resist, but we employ all skills. We talk to the person, give me time, give me this. So we will all sit and …Ok, they have accepted coldheartedly, but there is no choice.*" (DDHS)

According to the interviewed administrators, transfers are rarely rejected by health workers; most health workers are happy to move, especially those who are being transferred from a rural to urban area. This diverged from the health workers' responses, where some reported not being happy with the transition, largely because they not were involved in the decision-making process. A few health workers reported a desire to leave their new location or resign earlier for retirement due to their dissatisfaction, while others reported feeling happier after having adjusted to their new environment.

"I am alright with the decision since I can't do anything about it. However, the workload in this facility is so high so I am thinking about resigning to go on early retirement." (Transferred health worker)

Health administrators reported that transfer decisions, on rare occasions, could be postponed if the transferee were able to provide valid reasons for why he or she should stay at their current facility (e.g. health care needs, family obligations, having been placed in a deprived area for a prolonged period) (Figure 15). Consequences of refusing transfer for hospital staff could be RHA writing a vacation of post and blocking the health workers' salary.

Figure 15 Transfer initiated by District Health Administrations



7.5. Discussion

Rationales behind transfer decisions

The first objective of this study was to identify rationales behind transfer decisions. The rationales differed according to whether the transfers had been initiated by the health administrators or by the health workers.

Transfers initiated by health workers

Transfers initiated by the health workers primarily concerned their family and living conditions; postings in urban areas were generally preferred compared with postings in rural areas. These findings are consistent with other studies in Ghana (Kwamie et al., 2017, Andersen, 2004, Kwansah et al., 2012).

The exploration of the rationales behind health workers' decision to transfer is important, as it provides an insight into why health workers' seek to leave their facility. Poor retention of health workers' is a significant problem in rural and remote areas, with negative consequences for the delivery of high quality health services (Buykx et al., 2010, Macaia and Lapão, 2017).

Literature suggest, in concordance with our findings, that health workers in rural and deprived areas face higher workloads, professional isolation, unsustainable work environments, lack of opportunities for professional advancement, lack of clear contract terms, poor housing, dearth of opportunities and good schools for spouses and children (World Health Organization, 2010, Snow et al., 2011, Kruk et al., 2010, Kwansah et al., 2012, Andersen, 2004). This firstly makes it challenging to attract health workers to rural areas, as observed in Upper Manya Krobo (Table 20). Secondly, it negatively influences current health workers' motivation and job satisfaction, which causes them to seek more satisfactory conditions in urban areas, the private sector or abroad (Andersen, 2004, Bonenberger et al., 2014, World Health Organization, 2010, Lehmann et al., 2008). Bonenberger et al found that health workers in rural Upper Manya Krobo were five times more likely to leave their current facilities compared with health workers in Akwapim North (Bonenberger et al., 2014). Our findings demonstrate that conducive work and living environments, especially in rural areas, play an important role in terms of retaining health workers.

Transfers initiated by health administrators

We found that transfers initiated by the DHAs or RHA were based on HR requirements as well as on health workers' performance. Studies from other LMICs confirm that high-performing health workers frequently are transferred to improve health service performance, while low-performing health workers are likely to stay at their current facility until their output has improved (Abimbola et al., 2017, Schaaf and Freedman, 2013). This practice does not align with the posting principle stated in the GHS policy, namely that staff shall be distributed solely based on vacancies. The lack of explicitly stated transfer procedures, allows administrators to initiate transfers based on their own discretion (Kwamie et al., 2017, Kadam et al., 2016, Schaaf and Freedman, 2013, Abimbola et al., 2017). This may lead to practices that disregard the underlying principle of postings being done under fairness and transparency (Ghana Health Service, 2015, Schaaf and Freedman, 2013); low-performing health workers may for example be prevented from improving their output in their existing environment, while being transferred as a result of performing well can be perceived as a punishment rather than a reward (Kwamie et al., 2017).

Furthermore, transfers may be initiated as an effort to strengthen local political constituencies, health workers, global health agencies and community health committees (Abimbola et al., 2017, Schaaf and Freedman, 2013). Studies in LMICs, including Ghana, points out that corruption, including bribery, collusive or personal networks, including nepotism, can underlie transfer practices (Sheikh et al., 2015, Schaaf and Freedman, 2013, Aitken, 1994, Abimbola et al., 2017, Kwamie et al., 2017, Blunt et al., 2012, Collins et al., 2000, Kadam et al., 2016, Martineau et al., 2018). These patterns were not identified in this study. Our applied data collection method, including recorded face-to-face interviews may have prohibited study participants from sharing such sensitive information.

Management of transfers

The second objective of this study was to examine how transfers were managed in practice versus policy. The latter did not provide explicit guidance on several matters, i.e. reasons upon which transfers could be initiated or rejected; to what extent facilities and health workers should be involved in transfer decisions; and timeframes within which transfers should be processed. In practice, transfer decisions appeared to depend on the discretion of the decision-makers, confirmed by other PT studies in Ghana, Uganda and Nigeria (Kwamie et al., 2017, Kadam et al., 2016, Schaaf and Freedman, 2013, Abimbola et al., 2017). Moreover, we identified that transfer decisions frequently were made without involving health workers, which led to staff perceptions of an unpredictable and non-

transparent PT system, converging with previous findings (Abimbola et al., 2017, Kwamie et al., 2017, Collins et al., 2000, Kwansah et al., 2012).

As demonstrated in current study, there are multiple points of negotiation between transferors and transferees. The lack of explicit procedures to guide the negotiations, results in transfer decisions that are negotiated outcomes of different preferences and objectives; the administrators' objectives relating to the needs of GHS versus the health workers' objectives relating to their individual needs (Abimbola et al., 2017). Due to power dynamics, the administrators are likely to prevail, leaving health workers with unmet needs (Kwamie et al., 2017). The unmet needs facilitates dissatisfaction among health workers, which negatively affects health service delivery, for example by increasing absenteeism (Schaaf and Freedman, 2013, Buchan, 2004, Abimbola et al., 2017, Garimella and Sheikh, 2016, Aitken, 1994, Kwamie et al., 2017).

A main challenge in HR management is to integrate the needs of the organization with the individual needs of its members (McGregor, 1989). Nevertheless, successful attempts have been made, for example in Zambia, where financial incentives have been successfully applied to motivate health worker transfers to rural areas (Macaia and Lapão, 2017, Lehmann et al., 2008). The potential of non-monetary incentives has also been demonstrated, i.e. career development, appropriate accommodation, clear terms of appointment with a reliable endpoint, provisions for the schooling of children (Kruk et al., 2010, Snow et al., 2011, Bhattacharyya et al., 2016, Mbemba et al., 2013, World Health Organization, 2010, Rigoli and Dussault, 2003). To our knowledge, such incentives are yet to be implemented in Ghana, despite the skewed distribution of health staff, with less human resources for health in deprived areas (Ghana Health Service, 2015).

Proposed recommendations towards a more fair and transparent transfer system

Procedures guiding transfer decisions should be better specified to avoid decisions that are based on the discretion of the individual decisions-maker. The procedures should address how the health worker should be involved; guidance on when transfers can be obtained or rejected; as well as maximum timeframes for transfer processes to reduce communication deficiencies. Further efforts can be considered to ensure fair and transparent transfer processes, such as the ones described by Schaaf and Freedman suggesting that transfer practices become subject to local committee reviews, strengthening outside watch bodies, and creating shared ethical standards (Schaaf and Freedman,

2013). This is supported by Abimbola et al. who suggest having PT decisions reviewed periodically to ensure they are not partial, unfair or corrupt (Abimbola et al., 2017).

Strengths and limitations of the current Study

Strengths of this study include having gathered information and perspectives from both transferred frontline health workers as well as from national, regional and district level decision-makers. This allowed a more nuanced understanding of PT mechanisms, and served as a source of validation of the information on practices collected across the different stakeholders. Limitations of the study include the data collection approach (face-to-face interviews) that may have prohibited attaining sensitive information on informal malpractices. Further exploration of informal practices in regards to PT is called for. Studies exploring PT practices, where informal lobbying and managerial discretion play an important role, may benefit from complementing in-depth interviews and structured interviews with observations to gain an understanding of social networks and informal practices.

Future research may consider a more gender sensitive approach that differentiates between male and female health workers rationales behind transfer and their experiences of transfer. Moreover, additional perspectives of transfer management could be explored by including health workers whose transfer had been rejected, compared with this study that only included transferred health workers.

7.6. Conclusion

We identified a discrepancy in administrators' and health workers' rationale and motivation behind transfer decisions. Most health workers desired to be in close proximity to family, professional advancement opportunities and basic services and did thus not prefer to be transferred to rural deprived areas. However, decision-makers have to distribute health personnel in a way that ensures geographical equity in access to quality healthcare. It is imperative that initiatives are taken to improve rural posts to attract and retain health workers.

Furthermore, this study found that transfer decisions to a high extent relied on the discretion of decision-makers, rather than on formal and explicit procedures. Health workers were often not involved in transfers, and frequently perceived the PT system as unfair and non-transparent. Our policy improvement recommendations aims at making PT policies and procedures in Ghana, and other LMICs, more health worker-centered as health workers essentially are the core of the PT system.

Efforts must be made to develop transparent procedures and systems that effectively guide and monitor transfer practices to ensure that these are carried out in a timely, fair and transparent way.

Declarations

Ethics Approval and consent to participate: Ethical clearance was obtained from the Research Ethics Committee of Liverpool School of Tropical Medicine (ID No.: 12.09), Ghana Health Service Ethical Review Committee (ID No.: GHS-ERC: 13/05/12) and the Eastern Regional Health Administration. Written informed consent obtained from all study participants and personal data were anonymized prior to analysis.

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Authors' contributions: MB, KW, MA, PS and PA conceptualized the study. MB collected the data. ACS analyzed and interpreted the data, and drafted the manuscript. All authors critically reviewed and approved the final manuscript.

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CHAPTER 8

Transforming capacity-strengthening in an era of Sustainable Development

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8. Transforming capacity-strengthening in an era of sustainable development

District health managers (DHMs) operate and manage most public health care facilities in the health systems of many low- and middle-income countries (LMICs). They must turn national health policies and human, material, and financial resources into accessible high-quality health services (Heerdegen et al., 2020a). To improve district health services in many LMICs, the capacity of DHMs must be strengthened (Dovlo, 2016).

Capacity-strengthening is multi-dimensional and includes “efforts towards strengthening the ability of individuals, organizations, or institutions to perform appropriate functions effectively, efficiently, and sustainably” (Bates et al., 2011). Many district management strengthening interventions focus on strengthening the DHMs’ individual competency through formal learning, e.g., classroom training (Martineau et al., 2018). Improving the skills, knowledge, and attitudes of DHMs increases their ability to carry out their job, but their performance also depends on the environment in which they operate (Heerdegen et al., 2020b). In Ghana, for example, DHMs face resource uncertainty (human, material and financial), have limited decision-making authority, and operate under budgetary restrictions in challenging working conditions (Heerdegen et al., 2020b). No matter how competent the DHMs are, these factors affect their ability to carry out responsibilities and limits their opportunity to be innovative and agile in responding to district health needs (Heerdegen et al., 2020b).

Capacity should be viewed systemically because it is a product of a complex combination of factors (i.e. individual competencies, resources, policies) in a specific context (Aragón and Giles Macedo, 2010). Efforts to strengthen capacity must be based on a comprehensive understanding of the context in which DHMs are embedded. Gaining this understanding requires actively involving local stakeholders, including DHMs, who can identify bottlenecks and inefficiencies in organizational processes, policies, or individual competencies (de Savigny and Adam, 2009). They can provide expert knowledge about management capacity gaps, and suggest ways to fill these sustainably, in ways appropriate to their culture and context.

Actively involving local stakeholders in a participatory approach to capacity-strengthening is made easier by the use of tools that encourage users to think thematically, like social network analyses, causal loop diagrams, problem trees, and process mapping (de Savigny and Adam, 2009). Process mapping has for example helped in effectively identifying inefficiencies in health workforce managerial practices in Ghana (Heerdegen et al., 2019). Actively involving local stakeholders can also

make it easier for implementers of management strengthening efforts to identify existing national, regional, and local strategies, policies, and plans that contribute to strengthen management capacity. Enhancing “international support for implementing effective and targeted capacity-building in developing countries to support national plans to achieve the SDGs” is a Sustainable Development Goal (SDG 17: ’Partnerships for Sustainable Development’), but bilateral development partners who are responsible for capacity-building initiatives in LMICs often disregard country policies and plans (United Nations, 2019). This is problematic as capacity-building efforts are less sustainable when not integrated into the national health system (Bates et al., 2011) and may become perpetually dependent on development partners (Brinkerhoff, 2007). Development partners may bypass national plans to strengthen capacity because they are unaware of them - a situation that underscores the importance of collaborating closely with local stakeholders.

A systemic and participatory approach to strengthening management capacity may be more time-consuming than traditional competency development interventions, as it requires building relationships and a level of trust that facilitates effective partnerships with local stakeholders. Moreover, contextual and organizational factors like policies, structures, and resource availability that undermine a DHM’s ability and willingness to carry out their duties are more complex to address compared with individual competencies (Brinkerhoff, 2007). Nonetheless, without collaborating with local stakeholders, interventions are unlikely to be sustainable, and if the system in which the DHM is embedded does not change, many competent DHMs will still have limited capacity to carry out their responsibilities effectively and efficiently. In turn, this may limit the public’s access to essential and responsive health services at the district level.

Targeting competencies alone is insufficient to develop sustained improvements in management capacity. Since DHMs’ capacity is determined by a complex interaction of individual, organizational, and contextual factors, future capacity-strengthening initiatives should take a systemic approach that utilizes tools to encourage systemic thinking, and encourages close collaboration with relevant local stakeholders (Heerdegen et al., 2020b).

CHAPTER 9

General discussion and conclusion

A District Health Administration office building in the Eastern Region of Ghana

9. General discussion and conclusion

The empirical data upon which this thesis is founded contributes to a better understanding of district health management, and its association with district health system performance. This chapter includes an overview of the main findings, and a discussion on how these can contribute to strengthen management at district level. Moreover, it discusses the methodological considerations that needs to be taken into account before concluding with recommendations and ideas for future research.

Overview of main findings

The overall aim of current research was to analyze health management at district level and its association with health system performance in the Eastern Region of Ghana. Four specific research objectives were posed, namely 1) to analyze how contextual, organizational and individual aspects affect district health managers in carrying out their function (Chapter 4); 2) to assess managerial capacity at district level in Ghana, Uganda and Malawi (Chapter 5 and 6); to analyze the association between district health management and health system performance in Ghana (Chapter 6); and 4) to analyze managerial practices related to health worker transfers (Chapter 7).

Chapter 4 explored district health management as being part of a wider dynamic system. It demonstrated that positive team dynamics within district health management teams; good working relationships between DHMTs, district health partners (i.e. NGOs and local governments) and the regional level; a well-functioning performance management system; supervision; and management and leadership competencies among district health managers' (DHMs) played an important role in enabling DHMs to achieve national health objectives. Nevertheless, the study also emphasized that the DHMs overall ability and willingness to carry out their function were restrained by the context and organizational structures in which they were embedded, namely ones dominated by resource scarcity (human, material and financial) and centralized decision-making. **Chapter 5** analyzed district health management in Ghana, Malawi and Uganda, in terms of the DHMs' qualifications, self-rated competencies, and the availability of functioning support systems. It depicted Ghanaian health managers as having higher self-efficacy and holding more managerial qualifications compared with managers in the two other countries. **Chapter 6** validated the importance of team dynamics within DHMTs and competencies among DHMs, which was identified in Chapter 4. It portrayed that DHMs in higher performing districts rated their team dynamics, communication within teams, organizational

commitment, and management and leadership competencies significantly better compared with DHMTs in lower performing districts. Further, it confirmed contextual and organizational shortfalls, including inadequate funds and logistics, DHA staff shortages and managers' with limited qualifications. Meanwhile, **Chapter 7** focused specifically on one of the core functions of DHMs in Ghana, namely staffing of health facilities. It mapped health worker transfer processes, and emphasized that DHMs due to ambiguous guidelines and insufficient accountability structures, tend to make transfer decisions with limited involvement of health workers. The limited transparency in transfer decisions, combined with inadequate incentives for postings in deprived areas, were identified as contributing to dissatisfaction and intentions to leave among health workers. The result section is concluded in **Chapter 8,** which provides an opinion piece that states that management strengthening efforts in order to be sustainable should be transformed to take on more systemic and participatory approaches.

9.1. Contributing insights on district health management, and implications hereof

This thesis has established new insights into district health management in Ghana using empirical data. These insights and their possible implications for Ghana and other countries with similarly decentralized health systems are discussed in the following sections.

9.1.1. Aspects affecting how district health management emerge (Objective 1)

There is an abundance of organizational development literature looking into how managerial behaviors are affected by contextual and organizational structures, and ways in which these can be altered to result in more effective and efficient management practices. However, this literature mostly apply to the private sector and high income settings, meanwhile the research on management within public health systems, particularly in LMICs, remains limited (Ranson et al., 2010, Marchal and Kegels, 2008). Realist evaluations of management strengthening interventions (MSIs) in LMICs, including Ghana, have provided insights into how MSI outcomes are affected by the context, as well as by organizational mechanisms and processes (Kwamie et al., 2014, Prashanth et al., 2014b, Blaise and Kegels, 2004). Yet, few studies have assessed how the context and organizational mechanisms affect the DHMs general ability and willingness to carry out their functions (Sheikh et al., 2011).

As stated in the previous section, our research identified a number of organizational aspects that enabled the DHMs in Ghana to carry out their functions effectively. These included trusting

relationships between DHMs, regional health managers and other district health partners; a well-functioning performance management system that ensures regular appraisals and supportive supervision; positive dynamics and frequent knowledge sharing within DHMTs; well-qualified District Directors holding both a Masters' degree in Public Health, as well as a certificate in Health Administration and Management. In addition, compared with DHMs in Malawi and Uganda, the DHMs in Ghana reported a generally stronger sense of self-efficacy and organizational commitment (Chapter 5). It is important to highlight and reinforce these existing positive mechanisms to avoid the one-dimensional image presented in numerous studies that portrays district health management in LMICs as weak. Such a perception may take part in creating and maintaining organizational structures that undermine the available capacity at district level, such as centralized decision-making, fixed funding schemes, and prescriptive guidelines (Chapter 4).

Contributing to a growing body of literature on the limitations of district-level authority, we found that DHMs in Ghana – despite Ghana's' strong commitment to decentralization - are embedded within a hierarchical system, in which their work processes are somewhat controlled by higher hierarchical levels (Bonenberger et al., 2016, Kwamie et al., 2015, Agyepong et al., 2018, Adjei et al., 2010, Van Belle and Mayhew, 2016, Bulthuis et al., 2020a). Their work processes tend to be guided by prescriptive national standards and rigid reporting requirements. Moreover, the majority of district funds are earmarked for specific activities. Thus, the DHMs have little flexibility in making decisions on how resources should be spent to achieve and sustain national health priorities. Not to mention, little flexibility in terms of addressing emerging health issues that are not listed as national priorities. This may result in district health systems that are less responsive to the health needs of local communities (Swanson et al., 2015, Uhl-Bien et al., 2007, Paina and Peters, 2012). Thus, our findings, supported by literature, suggest that there is a need for systemic changes that will enable DHMs to carry out their functions in ways that are more responsive to the community needs.

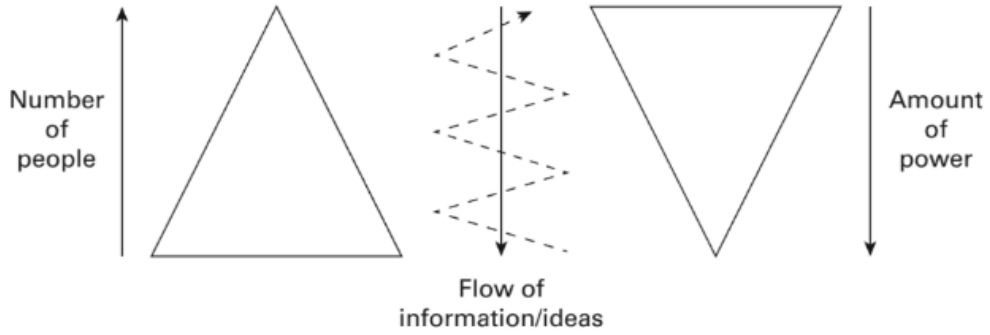
To ensure more responsive and agile district health systems, DHMs may be granted higher levels of autonomy and flexibility in terms of making decisions on how resources should be spent. In times of crisis, such as the ongoing one caused by COVID-19, there is not room for lack of organizational agility (Dale et al., 2020). Consequently, health systems globally have observed how emergencies such as COVID-19 or Ebola have flattened hierarchies and empowered lower-levels to craft creative responses to the posed challenges (Dale et al., 2020, Nyenswah et al., 2016, Hancock, 2020). As such, the current COVID-19 crisis may, despite the tragedy hereof, be an opportunity for

countries to realize the potential of leaders at lower levels, and build on the momentum by enhancing levels of autonomy and flexibility at district level.

Furthermore, national decision-making and priority-setting may benefit from involving the DHMs more actively. Typically within hierarchical systems, such as the health system in Ghana and elsewhere, information is transmitted easily from the decision-makers at the top downwards (Figure 16). Meanwhile, the flow of information upwards towards where the decision-making takes place is impeded by administrative levels of clearance (Swann, 2018). Channels and mechanisms that allow timely and unfiltered information to flow easily between the DHMTs and the decision-makers could enhance DHMTs involvement in decision-making processes. However, this would also require that decision-makers are held accountable to adapt and develop policies and priorities through collaboration with the DHMTs, and that an environment is created where DHMs feel confident and safe in speaking up. Currently, strategic planning for the districts is conducted every five years, combined with annual reviews (Van Belle and Mayhew, 2016, Ghana Ministry of Health, 2014a, Ghana Ministry of Health, 2014b). It is primarily a top-down process, with some bottom up priority setting as the planning is consolidated by the DHMTs. Nonetheless, DHMT members in Ghana have described themselves as implementers, meanwhile the national level ultimately has the power to decide on implementation of health interventions, without much say by the DHMTs (Bulthuis et al., 2020a)

By applying a participatory decision-making approach where DHMs are more involved in national planning, the system can tap into the DHMs critical insights on health needs, and organizational and contextual factors that need to be targeted to improve district health outcomes. Greater involvement of DHMs are also likely to enhance their commitment and willingness to exert and maintain an effort towards reaching organizational goals (Herzberg, 2003, Aragón and Giles Macedo, 2010, Gilson et al., 2017a). Moreover, it may contribute to building a more data-driven organizational culture within the DHMTs, and enhance evidence-based decision-making on district health needs and emerging challenges (Loewenson et al., 2011, Schleiff et al., 2020). Further, this could encourage more interaction between the DHMTs and district health stakeholders (i.e. communities, health workers, NGOs, district assemblies).

Figure 16 Organizations with restricted information flows (Swann, 2018)



9.1.2. District health managers' self-rated competencies and its association with health system performance (Objective 2 and 3)

Methods on how to measure management and leadership practices and competencies are inherently challenging, particularly within complex health systems. Consequently, there is little empirical evidence that demonstrate DHMs competencies, including their knowledge, skills and attitudes (Powell-Jackson et al., 2019, Fetene et al., 2019). This is problematic as it hinders management development needs from being properly identified and addressed.

This thesis introduced a tool to measure competencies among health managers at district level in Ghana (Chapter 5 and 6). The tool was developed as a self-administered survey where managers rate their own management and leadership competencies. This approach has previously been applied to determine management and leadership competencies, due to it being a relatively rapid and inexpensive method. Self-administered surveys have for example been applied to measure management competencies in hospital settings in Iran, Nepal and South Africa (Dargahi and Shaham, 2012, Khadka et al., 2013, Pillay).The self-assessment approach is grounded upon the theory of self-efficacy, developed by Albert Bandura, a psychologist at Stanford University. Bandura defines self-efficacy as "*the conviction that one can successfully execute the behavior required to produce the outcomes"* (Bandura, 1994). Bandura suggests that individuals' with a strong belief in their own abilities are more likely to accomplish set objectives, which have been supported by other studies (Bandura, 1994, Eva and Regehr, 2005, Franco et al., 2002, Prashanth et al., 2014a, Adjei et al., 2010, Choi et al., 2016). This implies that it may be important to assess DHMs self-efficacy.

In agreement with Banduras self-efficacy theory and the cited studies, we found that DHMs in high-performing districts had significantly higher self-efficacy in terms of their overall management and

leadership competencies compared with DHMs in lower performing districts. Causation between self-rated competencies and health system performance was not demonstrated in our study, yet our findings that are supported by literature, indicate that self-efficacy among DHMs may be an important mechanism to ensure district health system performance.

Adjei et al. found that confidence among DHMs in the Eastern Region of Ghana was promoted through transformational leadership executed by District Directors (Adjei et al., 2010). Transformational leadership applies participatory methods and encourages bottom-up communication to solve problems (Choi et al., 2016). Building competencies in applying participatory Action Research, as done in the PERFORM2Scale MSI, is an effective way to promote such mechanisms within the DHMTs (Martineau et al., 2018). However, systemic changes that allow and encourage DHMs to take on participatory practices, which may be time-intensive, are also needed to ensure the sustainability hereof (Tetui et al., 2017).

Moreover, it is important to note that measuring DHMs self-rated competencies and self-efficacy is one approach to identify management development needs at district level. Other approaches may include assessments of the DHMs competencies by their superiors, peers and subordinates (Eva et al., 2004, Burke and Collins, 2001, Eva and Regehr, 2005, Robertson and Golnaz, 1993). To develop comprehensive capacity strengthening strategies, a holistic assessment of DHMs competencies is needed. This may include information on managers' qualifications (i.e. training and experience), as well as competency assessments from the DHMs themselves, their superiors (regions) and their subordinates (sub-districts). Moreover, management practices may be held up against management standards if such have been defined (Fetene et al., 2019).

The research performed in this thesis (Chapter 4) indicates that the Eastern Region of Ghana has a well-established Performance Management System. A holistic assessment of DHMs – as described in previous paragraph - may be integrated into this. The existing employee performance appraisal forms may for example be expanded to include sections that collect 1) updated information about managers' qualifications (i.e. training and experience), and 2) assessments of competencies from the DHMs themselves, their superiors and their subordinates. Such expansion of the current appraisal form may not only apply to the DHMs, but also to managers' at the sub-district and regional level, who also are appraised as part of the Performance Management System.

An institutionalized approach to assess management competencies at all levels may in addition to provide inputs for management development strategies, allow decision-makers at higher

levels to gain insight into the extent of capacity at sub-national levels. In turn, this may enhance their trust in the DHMs' abilities and incentivize them to rethink the traditional top-down approaches to decision-making (de Sardan, 2013).

9.1.3. Understanding the complexities of health worker transfers (Objective 4)

The research presented in Chapter 7 demonstrates the complexity of health worker transfers between healthcare facilities in resource constrained settings. The national level provides DHMs with staffing norms that indicate the optimal number and mix of health workers at facility level. These norms aim to ensure that all community members have access to health services provided by skilled health workers. However, the DHMs are challenged in meeting the staffing norms due to human resource shortages, and their lack of authority to hire new frontline health workers. Thus, the DHMs rely on transferring health workers between facilities. Health workers that have been transferred to deprived areas are often dissatisfied and demotivated due to generally poor working and living conditions. However, the health workers' dissatisfaction and low morale are also linked to how transfer decisions are made, namely without their involvement.

The underlying principle of postings and transfers stated in the GHS policy is that it should be done under fairness and transparency. However, there appears to be a lack of established accountability mechanisms to ensure whether this is achieved. 'People-centered' policy reforms that emphasize "system software" (i.e. the norms, values, practices and relationships that underpin health services) and not only "system hardware" (i.e. quantifiable levels and types of human resources), may encourage DHMs to manage transfers in a more transparent, transformational, and participatory way (Sheikh et al., 2011, Marchal and Kegels, 2008). To enforce a more people centered management approach, health systems in for example Netherlands, Afghanistan, and Zambia have introduced human resource related performance indicators and incentives (Mutale et al., 2013b, Peters et al., 2007, Edward et al., 2011, ten Asbroek et al., 2004). These include metrics such as health worker satisfaction, absenteeism, and turnover rates. Such performance metrics, as well as metrics on whether health workers' perceive the system they are working within as fair and transparent, are likely to affect managerial behaviors, operations and processes (Kaplan and Norton, 1993).The current metrics based on whether the DHMs achieve indicators relating to for example staff mix and staff numbers per facility, may not incentivize DHMs to involve health workers in transfer decision-making processes (Lukas et al., 2007).

In addition, our findings indicate that there is a dire need of improving the conditions for health workers posted in deprived areas, which is supported by numerous studies (Bonenberger et al., 2014, Kwansah et al., 2012, World Health Organization, 2010). As mentioned earlier, health workers that are transferred to deprived areas are oftentimes dissatisfied and demotivated due to generally poor working and living conditions. Bettering work and living conditions for health workers in deprived areas in a sustainable way requires a multi-sectorial approach, which may include enhancing road networks, access to electricity grids and internet, schools for the health workers' children, appropriate accommodation etc. (World Health Organization, 2010). Moreover, work conditions may be improved by for example providing clear terms of appointments for rural practices with fixed end points and by easing transfer restrictions (Appiah-Denkyira et al., 2012). In this regard, anecdotal evidence and other studies on posting and transfer mechanisms suggest that authorities' adherence to the terms of appointment may be compromised by politics and personal relationships (Diop et al., 2019, Bulthuis et al., 2020a). The influence of such practices was not emphasized in our study (Chapter 7), and requires further research. Nonetheless, it is important to take into consideration when developing strategies to ensure fair and transparent processes. Strategies, such as setting up local committee reviews or outside watch bodies to review transfer decisions, have been suggested in other studies (Schaaf and Freedman, 2013, Abimbola et al., 2017, Schaaf et al., 2016). Moreover, in alignment with findings in current thesis (Chapter 7), these studies underscore that transfer decisions should be made more impartial by developing explicit policies and procedures (Abimbola et al., 2017, Schaaf and Freedman, 2013, Sheikh et al., 2015).

9.2. Methodological considerations

In order to analyze health management at district level and its association with health system performance in Ghana, qualitative and quantitative methodological approaches were applied. Chapter 4 was strictly based on qualitative findings (i.e. semi-structured in-depth interviews), meanwhile Chapter 5 and 6 were based on quantitative findings (i.e. DHM survey). Lastly, Chapter 7 was based on a mixed-methods approach combining both in-depth interviews, policies and a structured face-to-face survey.

By applying a multi-methodological approach that combines both quantitative, qualitative and mixed-methods studies, this thesis provides a better understanding of the complexity of district health

management. The quantitative data provides a scaled picture of the factors related to district health management (i.e. competencies, available support systems, managerial practices) (Chapter 5, 6 and 7). Meanwhile, the qualitative data provides the context by investigating the "how" and "why" mechanisms as done in Chapter 4 and 7. Given the relatively limited number of eligible study participants (i.e. district health managers and transferred health workers within the PERFORM2Scale setting), the mixed methods approach further allowed us to verify quantitative findings through the qualitative insights, and vice versa.

Methodological limitations and strengths have been stated within the respective chapters, yet main considerations concerning the validity of our findings are elaborated below for the quantitative and qualitative findings, respectively.

9.2.1. Quantitative findings

Cross-sectional surveys were applied to assess the DHMs self-assessed management competencies (Chapter 5 and 6), as well as to assess frontline health workers experiences regarding transfers (Chapter 7). The validity of survey findings is discussed below, in terms of how they pertain to the target populations in Ghana (*internal validity*), and how they pertain to individuals' outside that population (*external validity* or *generalizability).*

Internal validity: Three types of bias have been identified as potential threats towards the internal validity of the quantitative surveys applied in current thesis, namely 1) selection bias, 2) response bias and 3) confounding.

Selection bias occurs when the study population available for analysis is not representative of the cohort of eligible participants (Choi et al., 2016). The study on health worker transfer processes (Chapter 7) aimed to examine both transfers initiated by administrators, as well as transfers initiated by health workers. Nonetheless, only health workers who had been transferred were included in the study, due to it being difficult to trace health workers' whose transfer had been rejected. Insights relating to rejected health worker transfers were instead obtained from health administrators through the applied data triangulation approach. However, it should be taken into consideration that health workers' who had been rejected a transfer may hold different views on transfer decision-making processes.

Selection bias was less relevant for the DHM survey as more than 90% of the eligible study participants responded to the survey both in Ghana and Uganda (Chapter 5 and 6). Meanwhile, the response rate was lower in Malawi (~60%).

Response bias are likely to occur in self-reported surveys (Althubaiti, 2016). Biased self-reported measures may be caused by respondents not understanding the survey correctly. For the DHM survey, this bias was reduced by ensuring its face and content validity through developing it based on a literature synthesis on district health management and insights from in-depth interviews with relevant stakeholders in Ghana, which were carried out under a PERFORM2Scale situational analysis. Moreover, by having experts in district health systems review and evaluate the readability, clarity, and relevance of each item. Lastly, the survey was pre-tested through cognitive interviews with district health managers in non-study districts in the Eastern Region of Ghana. For the health worker survey, response bias was reduced by using a face-to-face survey approach.

Survey response bias may further occur due to respondents' desire to 'look good' or due to them fearing negative repercussions (Althubaiti, 2016). Bias relating to the latter was mitigated in both surveys by underlining the respondents' confidentiality and anonymity. Meanwhile, the social desirability bias mostly apply to the DHM survey (Chapter 5 and 6), where positive ratings of management and leadership competencies generally were observed. The survey tool managed to identify variance between the different performing districts on a number of items. However, the ceiling effect tendency indicates a limitation in the applied surveys sensitivity, which may have affected its ability to reflect other actual variations.

Lastly, the study participants' responses may have been impacted by their current situation. For example, health workers who are posted to a preferred position may recall their experiences regarding the transfer decision-making process differently if they had been transferred to a non-preferred location. Meanwhile the DHMs' knowledge about them being posted in a high or poor performing district may affect how they rate their competencies. The DHMs in poor performing districts may feel less confident in assessing their competencies positively.

Despite the threats of selection and response bias, the high response rates within the eligible study populations, and the ways in which both surveys were developed and carried out, strengthens the internal validity of survey findings. To enhance the internal validity further, the self-reported responses could be combined with more objective measures of managerial competencies and

practices related to health worker transfers. Decision-making and practices relating to health worker transfers could potentially also be examined via a prospective cohort study design.

C*onfounding* is an essential issue that must be underlined in regard to the study presented in Chapter 6 that found an association between self-assessed management competencies and health system performance. Health system performance may be confounded by sociodemographic and economic factors within the districts, which could not be adjusted for in our statistical analyses. The districts included in the study were somewhat similar in terms of geographic location, regional supervisors, availability of resources and functional support systems (Chapter 6). However, future studies may reduce the risk of confounding factors by comparing districts that are even more similar than those included in current thesis, for example, in terms of total population, population density, proportion of population in urban areas, poverty rate, number of health facilities and health workers etc. (Rothman et al., 2008).

External validity: Health worker transfers within all districts in Ghana are guided by similar national staffing norms and posting policies. However, the actual practices may vary. The survey findings relating to how health workers' experience their transfers were based on a relatively small sample (n=44), which constitute a threat against its generalizability. Nonetheless, as stated in Chapter 7, our findings align with previous studies on posting and transfer mechanisms, and health workers experiences hereof, conducted in other settings within and beyond Ghana (Kwamie et al., 2017, Abimbola et al., 2017, Garimella and Sheikh, 2016, Schaaf and Freedman, 2013). This argues that our findings relating to health worker transfers are generalizable.

In regard to the DHM survey, the study sample represented managers from various type of districts within the Eastern region (i.e. urban, rural, varying degrees of performance). Thus, the findings are likely to apply to the remaining districts within the Eastern Region where similar contextual, socio-cultural, and political settings prevail. Given the fact that all DHMs in Ghana serve under the same agency, namely GHS, and are regulated by the same policies and structures, findings may also apply to other regions in Ghana. However, given the relatively small sample it is recommended to replicate the survey before generalizing findings to other regions or countries. There are wide variations between regions in Ghana. The Northern and Central Regions are for example generally more deprived compared with the Eastern Region, both in terms of resources (human, material and financial), opportunities for professional training, as well as tougher physical conditions

(i.e. extremely hot temperatures, poor road networks, higher poverty rates etc.). We found that all District Directors in the Eastern Region held required managerial qualifications, however this may be due to their proximity to the capital Accra and training opportunities at for example the Ghana Institute of Management, Planning and Administration (GIMPA). Their qualifications may have impacted the generally positive ratings of DHMT dynamics and DHMs self-efficacy. Moreover, it is important to note that the survey was completed by DHMs who currently were or had been involved in either the PERFORM or PERFORM2Scale project. Data collection took place at an early stage of PERFORM2Scale before any workshops had been held providing the DHMTs with in-depth knowledge on management strengthening approaches. However, all DHMs had been briefed about the aim of the project and the participatory approach that this would apply. This may have inferred a study population that have reflected more on for example good management practices than the general DHM population.

The association between health system performance and district health management (i.e. management and leadership competencies, organizational commitment, communication within teams and teamwork) is likely to be present in other sub-Saharan African countries, where DHMs are placed at the forefront of the operation of health service delivery. However, we recommend that findings are confirmed in other settings, preferably through studies with larger study populations and with a reduced risk of confounding. The DHM survey was developed based on literature on district health management in LMICs and may thus be applied with some contextual adaptations to examine district health management in other settings, as done in for example Uganda and Malawi.

9.2.2. Qualitative findings

Qualitative interviews in current thesis were used to explore 1) how DHMs functions are affected by individual, organizational and contextual aspects (Chapter 4) and 2) how transfer decisions and processes are managed. The general *credibility* and *transferability* of the qualitative findings are considered below.

Credibility: According to Gilson, prolonged engagement with the subjects of inquiry is needed to ensure rigor in qualitative data collection and analysis (Gilson et al., 2011). Moreover, it is an important element to ensure credibility, which is equivalent to internal validity in quantitative studies. The

researcher should be in the field long enough to become familiar with the context; to build a trusting relation with study participants; and to be able to detect distortions that may occur in the data.

The author spent four months in Ghana with multiple visits to the Eastern region, study districts and NGOs. This created a rich insight into the daily operations of DHMs, as well as the context in which they are embedded. Moreover, the multiple visits to the districts allowed the author to become familiar with the study participants, at least the district health managers within the PERFORM2Scale districts, and create relationships that may have enhanced the depth of information provided through the interviews. However, it should be noted that the author still presented as a foreigner from Switzerland, which may have impacted the interactions (Patton, 1999). In this regard, it was advantageous to enter the field with local researchers, and as part of the School of Public Health, University of Ghana, which all study participants had positive associations and experiences with. This was reflected in their willingness to participate in the studies. Further, it should be noted that the author and local researchers entered the field as part of a management development project, namely PERFORM2Scale. For the interviews described in Chapter 4, it was underscored that the PERFORM2Scale approach not contributed with additional resources to avoid respondents' focusing on facilities, equipment, and other essential items that are lacking because of resource constraints.

All interviews were conducted face-to-face and recorded, which may have prohibited sensitive information from being shared. Moreover, the information provided by study participants may have been impacted by a desire to look good or to avoid repercussions from supervisors. This bias was mitigated by conducting the interviews in private rooms, executing a non-judgmental stance and by emphasizing the study participants' anonymity and confidentiality.

To enhance the credibility of our findings, a data triangulation approach was applied in both qualitative studies (Chapter 4 and 7) (Patton, 1999). By gathering data on the same phenomenon from various sources (i.e. health workers, DHMs, regional and national administrators) we gained a deeper and more credible understanding of managerial practices related to health worker transfers (Chapter 7), and how district health management emerge (Chapter 4) (Patton, 1999). The credibility of our findings could however have been further enhanced if the interviews had been combined with structured observations, for example by following the DHMs daily operations for a period of time, or by observing how transfer decisions are made and executed. This however proved to be challenging for the author as the spoken language between stakeholders typically was local, despite English being the official language in Ghana.

The number of respondents were relatively small in both qualitative studies (Chapter 4 and 7), yet the purposive sampling strategies allowed us to gain rich information. Interviews were held until data saturation was reached in terms of no new insights emerging through data collection. In Chapter 4, certain district health managers, mainly those in operational roles, were underrepresented due to their participation in the implementation of a concurrent program. However, given the close knit teamwork within the DHMTs, their alternating roles, and the triangulation approach, in which their superiors' and peers' perspective (i.e. district director of health services, regional health administrators, NGOs) were included, we are confident that essential insights relating to district health management have been obtained adequately.

Transcripts and field notes were not returned to participants for comment and corrections, which serve as a limitation of current study (Tong et al., 2007). However, the interpretation of qualitative findings was done by the author in close collaboration with a researcher from the Ghana Health Service who previously had served as a DHM within the Eastern Region (Chapter 7), as well as with researchers from the Ghana School of Public Health (Chapter 4 and 7). Their extensive contextual understanding ensured accuracy and credibility in data interpretation (Patton, 1999).

Transferability: Transferability refers to the extent to which findings can be transferred to other settings, and is thus equivalent to external validity in quantitative studies. Our qualitative studies provide a thick description of both the settings and the individuals who participated in the study. This may allow other researchers, managers or decision-makers to judge whether findings can be transferred to their specific context (Creswell and Miller, 2000). Findings on how district health management emerge, as well as the identified challenges related to staffing of health facilities in a resource constrained context, may be transferrable to other geographical settings with health system structures that are similar to Ghana, in terms of the DHMs position within the health system, the organizational structures and broader contextual environment dominated by human, material and financial resource constraints.

9.3. Recommendations for strengthening district health management

Ghana has undergone tremendous economic development since the 1990s. The economic development, which resulted in Ghana changing status to a lower middle income country, has among other things led to great improvements in health outcomes and reducing poverty. In fact, Ghana rank among the highest in health outcomes within West Africa, and is in many ways a model country in West Africa for health measures (Adua et al., 2017).

The economic progress has however led to a decrease in development aid, which may be further affected by the ongoing COVID-19 pandemic. Donor-countries may decide to prioritize the weaknesses that have been revealed within their own health systems. Moreover, with social, political, and economic progress, citizens tend to increase their expectations of their government and its institutions, including the health sector. The reduction in funds and increased expectations underline the importance of strong management and leadership that can ensure efficient and effective utilization of available resources. The research within this thesis suggests that district health management in Ghana may be advanced compared to district health management in other African countries (Chapter 5). However, it also demonstrates that there is room for improvement, and potential to enhance health system performance by strengthening district health management (Chapter 4, 6 and 7). As demonstrated by Brinkerhoff's capacity development model in Chapter 1, strengthening management capacity in a sustainable way requires comprehensive and holistic changes to policies, regulations, and organizational structures (Chee et al., 2013, Witter et al., 2019, Brinkerhoff, 2007, Potter and Brough, 2004). Based on the insights brought on by current thesis (Section 9.1), the following policy implications are suggested.

9.3.1. Policy implications

The recommendations below are principally of relevance to decision-makers in Ghana. However, they may also apply to other countries with similarly decentralized health systems, in which DHMs play a pivotal role in the operation of district health systems.

Strengthen information channels and policies that ensure involvement of DHMs in district decision-making and priority setting: In concordance with other studies, this thesis demonstrates that DHMs are embedded within a system where they have limited decision-space on how resources should be allocated (Sumah and Baatiema, 2019, Kwamie et al., 2015, Bulthuis et al., 2020a). This is primarily decided by decision-makers at the national level, despite the DHMs being the administrative level closest to the communities that the health systems serve. By not tapping more into the insights of the DHMs, the system firstly risks being non-responsive to community needs. Secondly, it risks having managers at the lower administrative levels with little sense of ownership and commitment to achieve organizational goals. Thirdly, it risks not allocating the limited financial resources to the areas that need them most.

Thus, it is recommended that district health planning and priority setting are developed in closer collaboration between the decision-makers and the DHMs. Moreover, that DHMTs are provided with more flexibility in terms of resource allocation. This naturally requires that DHMs have the ability to use district health-related information, and demonstrate to the national level that their decisions about district priorities and interventions are more appropriate than those set at national level (Bossert et al., 1991). In this regard, interventions such as PERFORM2Scale may be fruitful as they strengthen DHMTs ability to critically analyze information and root causes of health system challenges within their district. However, DHMs ability to negotiate and persuade top level decision makers should also be targeted.

Currently, the District Health Information Management System allows hard data to flow upwards from districts to the national level, yet soft data and critical insights among DHMT members are likely to remain at the lower level. To enhance dynamic bottom-up communication and knowledge sharing, there is a need for strengthening policies, guidelines and incentives that encourage and support such practices. This thesis (Chapter 4) demonstrates that there are good interpersonal relations between the DHMs and their supervisors at the regional level. This is fundamental for upwards communication, however, how information is passed on from the regions to higher levels where decision-making primarily takes place was not explored. Ideally the communication between the bottom - and top level should function with as few filters as possible to avoid information being edited, garbled or eliminated (Harriman, 1974). Cost-effective and innovative communication mechanisms that allow unfiltered knowledge sharing between the bottom and top levels may be considered.

Enhanced participatory decision-making, where DHMs are more involved in planning, priority setting and deciding how resources should be allocated, may result in more agile district health systems, and an enhanced sense of ownership and commitment among DHMs, which proved to be positively associated with health system performance in Chapter 6. Moreover, participatory decision-making may encourage a more data-driven culture at the district level, and serve as an accountability mechanism in terms of ensuring timely disbursement of district health funds (Van Belle and Mayhew, 2016, Schleiff et al., 2020).

Integrate and prioritize 'system software' in health policies and strategies: As mentioned in the introductory chapter, health system governance in Ghana is, as in many other countries, rooted in classical management theories and practices. These suggest that bureaucratic and hierarchical control ensures efficiency and cost effectiveness (Sakyi et al., 2011). The bureaucratic and hierarchical approach assumes that the health system are comprised of clear and ordered components that work efficiently and reliably together – as was it a machine (Blaauw et al., 2003). People are regarded as part of the "machine", and are expected to be rational and comply with orders given from the top level (Blaauw et al., 2003). However, as demonstrated in current thesis (Chapter 4 and 7), individuals' behavior are largely shaped by factors such as social relations and trust, which align to findings of others (Gilson, 2003). This thesis for example identified relationships within DHMTs, supportive supervision, and involvement in decision-making as affecting both DHMs (Chapter 4) and frontline health workers' (Chapter 7) ability and willingness to carry out their job. Thus, in order to ensure an efficient and effective system, the *human dimension* needs to be taken more explicitly into account by decision-makers. This requires people-centered policies and strategies, as well as accountability mechanisms to ensure proper implementation hereof. Transparency and fairness is for example the underlying principle of the posting and transparency policy. However, we found that frontline health workers in practice tend to perceive the system as being not sufficiently transparent.

As demonstrated in Chapter 6, health management performance is currently tied to efficiency and productivity indicators, such as the ones in the Ghana League Table of District Performance. However, the author suggests that health management performance also should be assessed according to human resource key performance indicators, such as employee satisfaction, absenteeism, motivation, commitment, engagement and turnover rates among their sub-ordinates. In order to perform well on such metrics, fundamental changes in existing district management structures and practices would

inherently take place, for example through enhanced participatory decision-making, improved working conditions, supportive supervision etc.

Institutionalize management and leadership qualifications at district level: At the time current study took place, all 26 DDHS within the Eastern Region held a Masters of Public Health, as well as a certificate in Health Administration and Management. This was a result of formally institutionalized requirements and recommendations. However, institutionalized requirements were insufficiently defined for the remaining DHMT members, despite them having significant managerial and supervision responsibilities. Consequently, 41.8% of the DHMs had not received formal managerial training, and more than one third held less than 1 year of managerial experience before being posted to their position (Chapter 6).

Management, and in particular leadership competencies among DHMs, such as them being able to communicate, inspire and align people, were emphasized by study participants as being important for all DHMs to navigate within the resource constrained and complex context (Chapter 4). This has been confirmed in other studies (Gilson and Daire, 2011, Daire et al., 2014, Adjei et al., 2010, Agyepong et al., 2018, Kwamie et al., 2014, Bonenberger et al., 2016).

To ensure appropriate skills among district health managers, different strategies can be taken. The recruitment process of core DHMT members may for example be enhanced to ensure that core DHMs' with supervisory responsibilities possess the appropriate competencies. This may be demonstrated by candidates having to fulfill certain requirements, such as management and leadership experience with demonstrated results, case interviews or certain educational qualifications.

However, in settings with scarce human resources it may be disadvantageous to sharpen the entry requirements. Other strategies to ensure appropriate competencies may be to provide effective and short-term certified trainings to all DHMs as part of their orientation, potentially through cost-effective e-learning (Buchan et al., 2017, Appiah-Denkyira et al., 2012). The collaboration with GIMPA, which the DDHS' described as providing a highly effective course in health administration and management, may be extended to all DHMs, and may take on new formats to ensure accessibility. Moreover, other educational collaborations with academic institutes or the private sector may be established.

By institutionalizing qualifications for all managers', either at the recruitment phase or while they are in their position, management and leadership will be engrained within the system, which is

commendable in a system with high staff turnover. Moreover, enhanced management and leadership competencies may empower the DHMs to influence decision-making and resource allocation to a higher extent, as well as build donors and decision-makers' trust in capacities at the lower levels (Bossert et al., 1991). This may take part in dismantling the top-down control, which was identified in current thesis as restraining DHMs from carrying out their functions effectively and efficiently.

Institutionalize continuous district-to-district learning to strengthen health systems: This thesis demonstrates differences in health system performance between districts, and that these may be partially attributed to management processes related to building positive team dynamics, organizational commitment and effective communication. Thus, our findings indicate that DHMTs can learn and benefit from one another. District-to-district learning takes place to some extent within the Eastern Region, however it has to the authors' knowledge not been institutionalized.

As stated in Chapter 1, most management strengthening initiatives in LMICs are implemented by external actors, including international aid agencies, NGOs or other development partners. These MSIs often take place in selected districts, and few have been scaled-up vertically or horizontally. The inter-district learning approach may be applied for horizontal scale-up of MSIs that have been implemented in selected districts, such as the PERFORM2Scale MSI. In that way more districts would benefit from the Action Research MSI, which promotes teamwork and commendable competencies in participatory problem-solving.

Management strengthening initiatives implemented by external actors have been criticized for creating dependency, which reduces the chances of sustainability once the external actors withdraw their support (Brinkerhoff, 2007). District-to-district learning may prove as a sustainable solution to management strengthening. It is a cost-effective method that taps into the expertise and capacity that already exist within the organization. Moreover, when learning from peers the dynamics of hierarchy disappear. This may enable a higher degree of learning compared to for example vertical management trainings, as candid conversations can be held about areas in need of development (Palmer and Blake, 2018).

The district-to-district learning should be ongoing and driven by the DHAs themselves, but may be initiated by the GHS Regional Health Administrations (RHA). The RHA can via its access to the Performance Management System or knowledge on which district that have undergone MSIs, match districts that may benefit from interacting with one another. As mentioned, district-to-district learning

should be institutionalized through policies and guidelines to ensure effective and efficient learning. Inter-district learning could take many forms, such as online platforms, in-person coaching sessions or scheduled interactive visits. The most effective ways to learn among peers must be looked further into.

Enhance information on the managerial workforce: The WHO Global Strategy on Human Resources for Health (HRH): Workforce 2030 states the importance of having data on the health workforce in order to develop and plan human resource strategies (World Health Organization, 2016). As stated in Chapter 1, there is limited information available on the managerial health workforce at the district level in Ghana, as well as in other LMICs (World Health Organization, 2009, Appiah-Denkyira et al., 2012).

The 2030 workforce strategy suggest a registry containing essential information on the health workforce, including information about their geographical posting, educational background, sociodemographic information etc. (World Health Organization, 2016, World Health Organization, 2015). Such registry should include information on the managerial staff cadres – not only at the district level, but also managers at the regional and sub-district level – which play a critical role in health system functioning.

The HRH strategy developed by the Ghana MoH includes a wealth of information on the clinical health workforce (i.e. geographical distribution, attrition, age and gender distribution etc.), meanwhile little attention is paid to the managerial cadres (Ghana Ministry of Health, 2007). A first step in strategic planning and development of district health management is to identify the numbers, deployment and qualifications among DHMs (i.e. formal and informal management/leadership education and training) (World Health Organization, 2009). A further step could be to apply a "big data" approach to gain a better understanding of the managerial workforce. Big data approaches that are compliant with national norms and legislative frameworks regulating the collection and use of personal data that will guarantee confidentially and anonymity on individual health workers have been mentioned in the 2030 Workforce Strategy (World Health Organization, 2016). This thesis highlights the existing and well-functioning Performance Management System that regularly appraises managers at all levels. This would be an ideal source to gain more comprehensive information on management performance. Eventually the current appraisals may be expanded to include information on for example the managers' competencies and strengths as assessed by themselves, their superiors and their subordinates. To the authors' knowledge the information contained in the appraisal forms

currently remain in paper-format, which implies that it may be difficult to access by national decision-makers. It may be beneficial to make such information electronically available – potentially by integrating it into one of the existing information systems. A regularly updated electronic platform would 1) allow decisions-makers to gain insight into the managerial capacity at lower levels, which may enhance their impetus to prioritize management and leadership development; 2) create transparency in terms of managerial development needs, which may be beneficial in terms of advocating for financial and political support; 3) make it easier to monitor the effectiveness of management strengthening strategies; and lastly 4) generate knowledge about the DHMs' competencies and qualifications, which may enhance trust in their abilities among decision-makers at national level, and take part in expanding decision-making authority at the lower levels (Appiah-Denkyira et al., 2012).

9.4. Opportunities for future research

While carrying out research related to current thesis, a number of ideas for future research related to district health management and systems stood out. These include:

- Methods on how to measure competencies among DHMs are lacking, despite such measurements being necessary for identifying development needs and formulating effective strategies on how to strengthen management. Recent studies measuring district health management capacity in India and Ethiopia have been published, yet there is still no standardized, validated and universal method for assessing public health system management practices and competencies (Fetene et al., 2019, Powell-Jackson et al., 2019). A Global Competency Directory for health managers have recently been developed as a resource to define the skills, knowledge, and abilities needed for the healthcare management profession (Hahn and Gil Lapetra, 2019). This may lay the ground for developing a comprehensive competency assessment – that potentially could be embedded within the existing Performance Management System.
- Weak sub-district management structures were mentioned on numerous occasions by study participants, both at the district, regional and NGO level (Chapter 4). The sub-district health management teams play a significant role for effective district health management systems. The sub-district health managers are clinical health professionals, and were reported as indeed missing managerial and leadership skills. Very limited research have been conducted at the sub-

district management level, and this is thus called for. As a DHM described "*the system can only be weak because the pillars are not working"* (Chapter 4)

- Self-efficacy, team dynamics, and organizational commitment among DHMs were identified as mechanisms that may be associated with health system performance (Chapter 5). However, this thesis did not explore mechanisms that may lead to a strong sense of self-efficacy, organizational commitment and positive team dynamics among DHMs. A focus on leadership styles among District Directors may be of relevance. A transformational leadership style among District Directors has been positively linked to staff confidence and motivation in three districts in the Eastern Region of Ghana. In this regard, different styles of management and leadership across genders may be highlighted. Burke and Collins found that female leaders in USA are more likely to hold transformational leadership qualities (Burke and Collins, 2001). Similar findings relating to health system leaders in Ghana or in other LMICs may promote women as managers and leaders, which may contribute to closing the gender gap in health leadership roles (Dhatt et al., 2017).
- The core unit of research in current thesis was district health managers. Yet, Chapter 7 on health worker transfer processes emphasized frontline health workers' perspective on district health management processes. In order to identify ways to strengthen management, future research may look further into how management practices and processes affect sub-district health managers, as well as frontline health workers and health service delivery.

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Appendices

Appendix 1: Study instruments

1. Chapter 4: Semi-structured interview guide (District Health Managers)

DHMT VERSION

Semi-structured Interview Guide to Assess Management Capacity

Introduction

1. Please introduce yourself (*name, age, position, and how long you have been in your current position*)

District Health Managers' role and responsibilities

1. Please describe the roles and responsibilities you have as a District Director/Manager

    - Probe for responsibilities within the following management functions: (1) *HR management;* (2) *Financial management*; (3) *Resource management*; (4) *Information management;* (5) *Service delivery management;* (6) *Community involvement*

2. Please can you describe your/the DHMTs work relation with
    - National level (*MoH, GHS*)
    - Regional level (*RHA*)
    - Sub-district level (*CHPS/Health Centers/Sub-district health managers*)
    - External partners (NGOs, donors, academic institutions etc.) working on health issues within the district?

3. How were you prepared to take on the roles and responsibilities described in (1)?

    - Did you have to meet certain requirements in order to become a District Director/DHM (*e.g. Master in Public Health, certain number of years in GHS*)?

    - Initially, how were you introduced to the position?
        - Probe for whether there is orientation day/week/mentoring to get into the role with overlap of their precessor.

    - Have you been offered management and/or leadership training (*formal or informal? Which type of training?)*

    - Do you a have a specific job description and access to guidelines on how to carry out your specific management functions

- Probe for whether the District Director/DHM take on additional roles besides what is mentioned in their job description. How are they prepared for that?

Managerial Skills

4. In your view, which skills and competencies are needed in order for you to effectively carry out the roles and responsibilities that you have as a District Director/DHM?

    - Probe for *Technical Skills* – knowledge and understanding of the mechanics of a specific job (ability to plan and organize, to implement, to monitor and evaluate)
    - Probe for *Human Skills* (soft skills) – ability to work effectively with people (ability to work in a team, to communicate/advocate, to listen, to engage in dialogue)
    - Probe for *Conceptual Skills* – ability to see the big picture (being visionary, ability to create new relations, to motivate/inspire other)

5. Is your competencies assessed and evaluated? If so how, and by who?

6. Based on this, how do perceive your own skills and competencies in terms of carrying out your role?

    - What do you excel in?
    - Which type of tasks do you find most challenging/difficult to carry out?
    - Which of your competency areas are in need improvement?

Organizational structures

7. What affects (positively and negatively) your ability to carry out your responsibilities? Why?

    - Are there tools and systems in place to help you with carrying out tasks? I.e. *planning and budgeting, infrastructure and logistics, data management, HR management, information and monitoring systems*

    - Have you been properly introduced and trained in applying these?

    - How does the environment surrounding you affect your ability to carry out your responsibilities?

        - Probe for factors such as: *the team they work within, the availability of resources (monetary and non-monetary) to carry out activities, information sharing (are there regular, spontaneous meetings, is documentation available, are documents shared), supportive supervision and mentoring*, *their level of motivation, their decision space*

8. Of your knowledge, what is being done to improve the management capacity in DHMTs

    - Probe for Performance Management Strategies, such as *Incentives and Rewards, Training and Development, Continuous Feedback*

What Matters to you?

9. To sum up, what are weaknesses to address as soon as possible in order for you to carry out your role more effectively and efficiently?

10. To sum up, what are strengths that can be built on in order for you to carry out your role more effectively and efficiently?

11. What do you hope to get out of the PERFORM2Scale Management Strengthening Intervention

    - On an individual (District Health Manager) level
    - On a DHMT level

2. Chapter 4: Semi-structured interview guide (Regional Health Administrators)

RHA VERSION

Semi-structured Interview Guide to Assess Management Capacity

Introduction

1. Please introduce yourself (name, age, position, role and responsibilities, and how long you have been in your current position)

2. Please describe briefly your work connection/relation to District Health Management Teams

District Health Managers' role and responsibilities

3. Please describe the roles and responsibilities of District Health Management Teams

   - Probe for responsibilities within the following management functions:
     (1) HR management; (2) Financial management; (3) Resource management; (4) Information management; (5) Service delivery management; (6) Community involvement

   - What is DHMTs relation with the
     - national level?
     - regional level?
     - sub-district level?
     - with external partners (NGOs, donors, academic institutions etc.) working on health issues within the district?

4. How are DHMs prepared to take on the roles and responsibilities?

   a. Are there certain requirements that must be fulfilled in order to become DHM (e.g. Master in Public Health, certain number of years in GHS)?
   b. Are all DHMs offered management and/or leadership training (formal or informal)
   c. Do DHMs receive specific job descriptions and guidelines on how to carry out specific management functions
      i. Probe for the additional roles that DHMs takes on besides what is mentioned in their job description. How are they prepared for that?
   d. How are DHMs introduced to the position - is there orientation day/week/mentoring to get into the role with overlap of their precessor.

Managerial Skills

5. In your view, which skills and competencies are needed in order to effectively carry out the discussed roles and responsibilities that DHMs may have?

   a. Probe for *Technical Skills* – knowledge and understanding of the mechanics of a specific job (ability to plan and organize, to implement, to monitor and evaluate)
   b. Probe for *Human Skills* (soft skills) – ability to work effectively with people (ability to work in a team, to communicate, to listen, to engage in dialogue)
   c. Probe for *Conceptual Skills* – ability to see the big picture (being visionary, ability to create new relations, to motivate/inspire other)

6. Are District Health Managers performance, and whether they possess these skills/competencies, monitored and evaluated? How?

   a. According to this, which areas are in need of improvement?

Organizational structures

7. Besides the competencies we just discussed, in your view, what affects (positively and negatively) DHMs ability to carry out their responsibilities? Why?

   - Are there any tools and systems in place to help DHMTs with carrying out tasks? I.e. *planning and budgeting, infrastructure and logistics, data management, HR management, information and monitoring systems*

   - Have DHMTs been properly introduced and trained in applying these?

8. Of your knowledge, what is being done to improve the management capacity at district level

   - Probe for Performance Management Strategies, such as *Incentives and Rewards, Training and Development, Continuous Feedback*

PERFORM2Scale MSI

9. In your view, what are weaknesses to address as soon as possible in order for DHMs to carry out their role more effectively and efficiently?

10. In your view, what are strengths that can be built on in order for DHMs to carry out their role more effectively and efficiently?

3. Chapter 4: Semi-structured interview guide (Non-governmental organizations)

NGO VERSION

Semi-structured Interview Guide to Assess Management Capacity

This interview focuses on the NGOs experiences on working/collaborating with DHMTs

Introduction

1. Please introduce yourself (name, age, position, role and responsibilities, and how long you have been in your current position)

2. Please describe what experiences and work relations you have with District Health Management Teams

District Health Managers' role and responsibilities

3. Please describe the roles and responsibilities DHMs may have when working together with this organization

    a. Probe for *examples*
        i. (1) HR management; (2) Financial management; (3) Resource management; (4) Information management; (5) Service delivery management; (6) Community involvement

Managerial Skills

4. In your view, which skills and competencies are needed in order for DHMs to effectively carry out the discussed roles and responsibilities?

    a. Probe for *Technical Skills* – knowledge and understanding of the mechanics of a specific job (ability to plan and organize, to implement, to monitor and evaluate)
    b. Probe for *Human Skills* (soft skills) – ability to work effectively with people (ability to work in a team, to communicate, to listen, to engage in dialogue)
    c. Probe for *Conceptual Skills* – ability to see the big picture (being visionary, ability to create new relations, to motivate/inspire other)

5. In your view, how do DHMs perform in regards to taking on the mentioned roles and responsibilities?

Organizational structures

6. Besides the competencies we just discussed, what affects (positively and negatively) DHMs ability to carry out their responsibilities? Why?

    - Are there any tools and systems in place to help DHMTs with carrying out tasks?
        - i.e. *planning and budgeting, infrastructure and logistics, data management, HR management, information and monitoring systems*

7. Of your knowledge, what is being done to improve the management capacity in DHMTs?

    - Probe for whether the NGO provide any trainings/development workshops
    - Performance Management Strategies, such as *Incentives and Rewards, Continuous Feedback*

PERFORM2Scale MSI

8. In your view, what are weaknesses to address as soon as possible in order for DHMs to carry out their role more effectively and efficiently?

9. In your view, what are strengths that can be built on in order for DHMs to carry out your role more effectively and efficiently?

4. *Chapter 5 & 6: Management Capacity Survey I (Uganda and Ghana)*

Questionnaire

District Health Managers' Self-Assessed Management Capacity

Dear Respondent,

We greatly appreciate that you are taking the time to complete this questionnaire that is part of the PERFORM2Scale project "Improving Health Workforce Performance to Achieve Universal Health Coverage". The project is carried out in collaboration with the *School of Public Health, University of Ghana.*

PERFORM2Scale aims at strengthening District Health Management to improve the workforce performance through a Management Strengthening Intervention using an Action Research approach (*Plan-Act-Study-Reflect*). This questionnaire investigates health managers' perceived management capacity at District level at baseline, before implementation of the Management Strengthening Intervention, and will be repeated at the end of the project in 2020.

The survey is divided into 7 parts, and will take maximum 30-45 minutes to complete.

1) *Socio-demographic Information*
2) *Previous Management Experience/Training*
3) *Functioning Support Systems*
4) *General Management Skills and Competencies*
5) *Specific Health System Management Skills and Competencies*
6) *Overall Management Competency*
7) *Being part of the District Health Management Team*

Your responses are voluntary and all information obtained via this study will remain **confidential**. In any written reports or publications, all responses will be compiled together and analyzed and reported as a group. You are free to withdraw your participation at any time.

We greatly appreciate your valuable contribution. Thank you!

To be filled in by CRT

ID Questionnaire:
District :
Date (DD/MM/YY):
Informed consent Yes :___ No:____

Part 1. Socio-demographic Information

1.	Name of District		
2.	Sex	☐ Male *(1)*	☐ Female *(2)*
3.	How old are you?	_____ years	
4.	Current position	☐ Accountant *(1)*	
		☐ Administrator *(2)*	
		☐ Deputy Director of Nursing Services (3)	
		☐ Disease Control Officer (4)	
		☐ District Director of Health Services *(5)*	
		☐ Health Information Officer *(6)*	
		☐ Health Promotion Officer *(7)*	
		☐ Human Resource Officer *(8)*	
		☐ Nutrition Officer *(9)*	
		☐ Pharmacist *(10)*	
		☐ Principal Nursing Officer *(11)*	
		☐ Public Health Nurse *(12)*	
		☐ Other, *please specify* *(13)*	
5.	What is your employment status?	☐ Full time *(1)*	☐ Part-time *(2)*
6.	Do you have a supervisory role?	☐ Yes *(1)*	☐ No *(2)*
7.	What is your educational background? *(multiple answers allowed)*	☐ Public Health *(1)*	☐ Medical Doctor *(2)*
		☐ Nursing *(3)*	☐ Midwifery *(4)*
		☐ Accounting /Finance *(5)*	☐ HR Management *(6)*
		☐ Nutrition *(7)*	☐ Other, *please specify* *(8)*
8.	What is your highest qualification?	☐ Certificate *(1)*	☐ Diploma *(2)*
		☐ 1st degree (Bachelor) *(3)*	☐ 2nd degree (Master) *(4)*
		☐ PhD *(5)*	☐ Other, *please specify* *(6)*

Part 2. Previous Management Experience and Training

9.	How long have you been in your current position	____years
10.	How did you get into your current position?	☐ I applied for my position *(1)* ☐ I was assigned to my position without applying *(2)*
11.	Prior to your current position in the DHMT, did you have any professional experience of being in a management position?	☐ No experience *(1)* ☐ Less than 1 year of experience *(2)* ☐ 1-5 years of experience *(3)* ☐ 5+ years of experience *(4)*
12.	Prior to your current position, did you work in another DHMT?	☐ Yes *(1)* ☐ No, *please go to question 14* *(2)*
13.	*If yes to question 12*, please specify where and which position you held	District: Region: Position:
14.	Have you received any formal training in management and/or leadership *(i.e. certificate, diploma or degree)*	☐ Yes, *please specify the type of training* *(1)* …….. ☐ No *(2)*
15.	Have you received any informal training aimed at strengthening your management and/or leadership skills within the last 12 months? (*i.e. mentoring, in-service training, non-certified programs)*	☐ Yes *(1)* ☐ No *(please go to question 18)* *(2)*
16.	*If yes to question 15*, how many days of training did you undertake over the past 12 months	☐ 1 day (or less) *(1)* ☐ 2-5 days *(2)* ☐ 6-10 days *(3)* ☐ More than 10 days *(4)*
17.	Who initiated/required the training? *(multiple answers allowed)*	☐ Ministry of Health*(1)* ☐ Ghana Health Service *(2)* ☐ NGOs *(3)* ☐ Academic Institutions *(4)* ☐ Other, *please specify* *(5)*

Part 3: Functional Support Systems

18. Have you been provided with a job description?	☐	Yes *(1)*	☐	No, *please go to question 21* *(2)*		
19. Is your job description up-to date and accurate in terms of your roles and responsibilities?	☐	Yes *(1)*	☐	No *(2)*		
20. Do you take on any additional roles and responsibilities beside what is stated in your job description?	☐	No, not at all *(1)*	☐	Yes, to a moderate extent *(2)*	☐	Yes, to a large extent *(3)*

Is the following available to help you in carrying out your role and responsibilities?
If you do not have a need for the following items please tick ☑NA

	Not at all *(1)*	***To a small extent*** *(2)*	***To a moderate extent*** *(3)*	***To a large extent*** *(4)*	***N/A*** *(5)*
21. Access to relevant national and/or regional guidelines within your work area	☐	☐	☐	☐	☐
22. Regular team meetings	☐	☐	☐	☐	☐
23. Records of team meetings available (i.e. minutes)	☐	☐	☐	☐	☐
24. Adequate funds to carry out planned activities	☐	☐	☐	☐	☐
25. Adequate logistics and infrastructure to carry out planned activities	☐	☐	☐	☐	☐
26. Supportive supervision, feedback and mentoring from your supervisor	☐	☐	☐	☐	☐
In case you need help with completing an assignment, is there a system in place to support you within the following areas?					
27. Planning and budgeting	☐	☐	☐	☐	☐
28. Procurement of drugs and other commodities	☐	☐	☐	☐	☐
29. Data management	☐	☐	☐	☐	☐
30. HR management	☐	☐	☐	☐	☐
31. Community-level structures or groups that enable community involvement	☐	☐	☐	☐	☐

Part 4. General Management Skills and Competencies

Please indicate your management competencies by ticking ☑ the appropriate box, not leaving any blank.

	Strongly disagree *(1)*	***Disagree*** *(2)*	***Neutral*** *(3)*	***Agree*** *(4)*	***Strongly Agree*** *(5)*	***N/A*** *(6)*
Interpersonal skills						
32. I have a clear understanding of the roles and responsibilities of members within the DHMT	☐	☐	☐	☐	☐	☐
33. I ensure that staff under my supervision feel their contributions are valued and appreciated	☐	☐	☐	☐	☐	☐
Leadership skills						
34. I set clear and measurable targets for myself and staff under my supervision	☐	☐	☐	☐	☐	☐
35. I encourage feedback on my performance and reflect and act on received suggestions	☐	☐	☐	☐	☐	☐
36. I actively seek opportunities to learn and develop	☐	☐	☐	☐	☐	☐
37. I am confident in my abilities to direct and motivate people I work with	☐	☐	☐	☐	☐	☐
38. I delegate work appropriately to staff, and provide them with the necessary support to meet their objectives	☐	☐	☐	☐	☐	☐
Conflict Handling skills						
39. I feel confident in managing and resolving conflicts when they arise	☐	☐	☐	☐	☐	☐
Time Planning Skills						
40. I plan my workload by setting up daily/weekly/monthly to-do-lists	☐	☐	☐	☐	☐	☐
41. I always deliver my commitments to high standards (on time, complete)	☐	☐	☐	☐	☐	☐
42. When unplanned/adhoc events arise from the regional/national level, I am able to fit it into my plans	☐	☐	☐	☐	☐	☐

Part 5. Specific Health System Management Skills and Competencies

1. Oversight & Coordination

Please indicate <u>your</u> level of involvement in the following activities
If you are not involved in the following activities please tick ☑ "Not at all"

	Not at all *(1)*	***To a small extent*** *(2)*	***To a moderate extent*** *(3)*	***To a large extent*** *(4)*
43. Identifying health service delivery gaps within your work area	☐	☐	☐	☐
44. Planning activities to address gaps within your work area	☐	☐	☐	☐
45. Mobilizing resources to address gaps within your work area	☐	☐	☐	☐
46. Supervising health facilities at sub-district level	☐	☐	☐	☐
47. Monitoring stakeholder activities within the district	☐	☐	☐	☐
48. Providing feedback to stakeholders, health facilities and communities	☐	☐	☐	☐
49. Attending coordinating meetings and workshops	☐	☐	☐	☐

If you indicated a level of involvement in the above statements, please assess your management competencies below by selecting whether you agree or disagree with the listed statements.
If you do not have authority or responsibilities within certain areas in the following please tick ☑ NA

	Strongly disagree *(1)*	***Disagree*** *(2)*	***Neutral*** *(3)*	***Agree*** *(4)*	***Strongly Agree*** *(5)*	***N/A*** *(6)*
Situation Analysis						
50. I have a good understanding of national guidelines, strategies and policies relating to my work area	☐	☐	☐	☐	☐	☐
51. I am well informed about health-related activities and strategies of a wide number of stakeholders within my work area	☐	☐	☐	☐	☐	☐
52. I know how to collect and review data on health priorities within my work area from a range of sources	☐	☐	☐	☐	☐	☐
53. I am confident in carrying out a situational analysis	☐	☐	☐	☐	☐	☐
Problem Analysis & Problem Statement						
54. I am confident in identifying areas in need of improvement within my work area	☐	☐	☐	☐	☐	☐
55. I am able to identify the root causes of problems	☐	☐	☐	☐	☐	☐
56. I am able to prioritize which of the identified areas are most important to address	☐	☐	☐	☐	☐	☐
57. When analysing problems I take the different needs of males and females into account	☐	☐	☐	☐	☐	☐

58. I am able to state a clear and specific problem statement	☐	☐	☐	☐	☐	☐
59. I am confident in my abilities to develop effective strategies to address an identified problem	☐	☐	☐	☐	☐	☐
Planning						
60. I am able to translate the district plan into action plans	☐	☐	☐	☐	☐	☐
61. I am able to translate action plans into weekly/monthly activities	☐	☐	☐	☐	☐	☐
62. When planning, I engage with and involve stakeholders in implementing health-related activities in the district	☐	☐	☐	☐	☐	☐
63. When planning, I assess benefits and risks of available options	☐	☐	☐	☐	☐	☐
64. When planning, I always pay special attention to the health needs of vulnerable population groups	☐	☐	☐	☐	☐	☐
65. I consider how a strategy affect males and females differently	☐	☐	☐	☐	☐	☐
66. I develop indicators to track the effects that strategies have	☐	☐	☐	☐	☐	☐
Implementation and Monitoring						
67. I try out new and innovative strategies to address identified priorities	☐	☐	☐	☐	☐	☐
68. I use information from a range of sources to monitor progress of agreed plans	☐	☐	☐	☐	☐	☐
69. I am able to adapt strategies and add new strategies if they don't achieve the intended results	☐	☐	☐	☐	☐	☐
Reporting						
70. I feel confident in using data to produce and deliver credible and understandable reports	☐	☐	☐	☐	☐	☐
71. I ensure that reporting is done to a high standard (complete, on time)	☐	☐	☐	☐	☐	☐

2. Human Resource Management

Please indicate <u>your</u> level of involvement in the following activities *If you are not involved in the following activities please tick ☑"Not at all"*				
	Not at all *(1)*	***To a small extent*** *(2)*	***To a moderate extent*** *(3)*	***To a large extent*** *(4)*
72. Identifying human resource needs (management and clinical)	☐	☐	☐	☐
73. Posting and reposting human resources within the district	☐	☐	☐	☐
74. Monitoring of personnel performance	☐	☐	☐	☐

If you indicated a level of involvement in the above statements, please assess your management competencies below by selecting whether you agree or disagree with the listed statements. *If you do not have authority or responsibilities within certain areas in the following please tick ☑NA*						
	Strongly disagree *(1)*	***Disagree*** *(2)*	***Neutral*** *(3)*	***Agree*** *(4)*	***Strongly Agree*** *(5)*	***N/A*** *(6)*
75. I am confident in my ability to identify human resource needs in my district	☐	☐	☐	☐	☐	☐
76. I am able to effectively lobby for new staff to the District Director/MoH/Local Government/Partners	☐	☐	☐	☐	☐	☐
77. I am confident in my abilities to deploy staff in response to changing work requirements	☐	☐	☐	☐	☐	☐
78. I avoid staff at facility level getting fatigued by making sure they all have regular time off	☐	☐	☐	☐	☐	☐
79. I ensure that the health workforce have signed contracts/appointment letters	☐	☐	☐	☐	☐	☐
80. I ensure that the health workforce have written job descriptions	☐	☐	☐	☐	☐	☐
81. I ensure that the health workforce have clearly assigned supervisors	☐	☐	☐	☐	☐	☐
82. I ensure that annual appraisal talks are carried out at facility level	☐	☐	☐	☐	☐	☐
83. I ensure that the staff I supervise are supervised in a supportive way every quarter	☐	☐	☐	☐	☐	☐
84. I make sure all staff receive timely and specific feedback from supervision visits	☐	☐	☐	☐	☐	☐
85. I allocate resources to further training/in-service training of the health workforce	☐	☐	☐	☐	☐	☐

3. Resource Management

Please indicate <u>your</u> level of involvement in the following activities *If you are not involved in the following activities please tick ☑"Not at all"*				
	Not at all *(1)*	***To a small extent*** *(2)*	***To a moderate extent*** *(3)*	***To a large extent*** *(4)*
86. Managing regular supply of drugs at facilities (i.e. monitoring stocks, procurement distribution to facilities)	☐	☐	☐	☐
87. Managing regular supply of medical and nonmedical supplies at facilities (i.e. monitoring stocks, procurement, maintenance, distribution to facilities)	☐	☐	☐	☐

If you indicated a level of involvement in the above statements, please assess your management competencies below by selecting whether you agree or disagree with the listed statements. *If you do not have authority or responsibilities within certain areas in the following please tick ☑NA*						
	Strongly disagree *(1)*	***Disagree*** *(2)*	***Neutral*** *(3)*	***Agree*** *(4)*	***Strongly Agree*** *(5)*	***N/A*** *(6)*
88. I closely follow up on the availability of medical and/or non-medical supplies to avoid stock outs	☐	☐	☐	☐	☐	☐

89. I closely follow up on the availability of drugs to avoid stock outs	☐	☐	☐	☐	☐	☐
90. I ensure key equipment is available at facilities	☐	☐	☐	☐	☐	☐
91. I ensure that preventive maintenance of equipment is taking place regularly	☐	☐	☐	☐	☐	☐

4. Financial Management

Please indicate <u>your</u> level of involvement in the following activities within your work area
If you are not involved in the following activities please tick ☑"Not at all"

	Not at all *(1)*	***To a small extent*** *(2)*	***To a moderate extent*** *(3)*	***To a large extent*** *(4)*
92. Developing and managing budgets	☐	☐	☐	☐
93. Mobilizing financial resources	☐	☐	☐	☐
94. Financial reporting	☐	☐	☐	☐

If you indicated a level of involvement in the above statements, please assess your management competencies below by selecting whether you agree or disagree with the listed statements.
If you do not have authority or responsibilities within certain areas in the following please tick ☑NA

	Strongly disagree *(1)*	***Disagree*** *(2)*	***Neutral*** *(3)*	***Agree*** *(4)*	***Strongly Agree*** *(5)*	***N/A*** *(6)*
95. I am confident in my own abilities to prepare and manage budgets effectively	☐	☐	☐	☐	☐	☐
96. I am confident in my own abilities to mobilize financial resources to tackle priority problems	☐	☐	☐	☐	☐	☐
97. I ensure that financial reporting is done to a high standard (complete, on time)	☐	☐	☐	☐	☐	☐

5. Information Management

Please indicate <u>your</u> level of involvement in the following activities within your work area
If you are not involved in the following activities please tick ☑"Not at all"

	Not at all *(1)*	***To a small extent*** *(2)*	***To a moderate extent*** *(3)*	***To a large extent*** *(4)*
98. Gathering, analysing and reporting information from facilities, stakeholders and communities to improve health services	☐	☐	☐	☐

If you indicated a level of involvement in the above statements, please assess your management competencies below by selecting whether you agree or disagree with the listed statements.
If you do not have authority or responsibilities within certain areas in the following please tick ☑NA

	Strongly disagree *(1)*	***Disagree*** *(2)*	***Neutral*** *(3)*	***Agree*** *(4)*	***Strongly Agree*** *(5)*	***N/A*** *(6)*
99. I ensure that relevant, complete and high quality data is collected and submitted on time	☐	☐	☐	☐	☐	☐
100. I am able to manage collected data (i.e. safe storage, clean raw data, data analysis)	☐	☐	☐	☐	☐	☐

101. I am able to use data to inform health planning in the district	☐	☐	☐	☐	☐	☐

6. Service Delivery and Community Involvement

Please indicate <u>your</u> level of involvement in the following activities within your work area
If you are not involved in the following activities please tick ☑ "Not at all"

	Not at all *(1)*	***To a small extent*** *(2)*	***To a moderate extent*** *(3)*	***To a large extent*** *(4)*
102. Involving the community in decisions about health activities and seeking their feedback on quality of health services	☐	☐	☐	☐

If you indicated a level of involvement in the above statements, please assess your management competencies below by selecting whether you agree or disagree with the listed statements.
If you do not have authority or responsibilities within certain areas in the following please tick ☑ NA

	Strongly disagree *(1)*	***Disagree*** *(2)*	***Neutral*** *(3)*	***Agree*** *(4)*	***Strongly Agree*** *(5)*	***N/A*** *(6)*
103. I ensure that sub-district staff have access to and are familiar with guidelines and policies	☐	☐	☐	☐	☐	☐
104. I ensure to involve and seek feedback from communities on the services that are provided	☐	☐	☐	☐	☐	☐
105. I always take immediate action when I notice shortfalls in service delivery	☐	☐	☐	☐	☐	☐

Part 6: Overall Management Performance

106. Did you reach all your set annual objectives by the end of 2017?	☐	Yes	☐	No
107. Do you feel like your management and leadership competencies within certain areas could be improved?	☐	Yes	☐	No
108. *If yes to question 107*, please specify which competencies you would like to improve				

	Very poor *(1)*	***Poor*** *(2)*	***Fair*** *(3)*	***Good*** *(4)*	***Excellent*** *(5)*
109. Overall, how would you rate your management and leadership skills and competencies?	☐	☐	☐	☐	☐

Part 7: Being part of the District Health Management Team

Teamwork & Communication

	Strongly disagree *(1)*	***Disagree*** *(2)*	***Neutral*** *(3)*	***Agree*** *(4)*	***Strongly agree*** *(5)*
110. I really feel that I belong to a team	☐	☐	☐	☐	☐
111. I look forward to being with the members of the DHMT each day	☐	☐	☐	☐	☐
112. There is a lot of support and encouragement within the DHMT	☐	☐	☐	☐	☐
113. It is very difficult to settle problems in the DHMT	☐	☐	☐	☐	☐
114. The people I work with cooperate to get the job done	☐	☐	☐	☐	☐
115. Team members keep their thoughts to themselves, rather than risk speaking out	☐	☐	☐	☐	☐
116. I often work in groups as part of my job	☐	☐	☐	☐	☐
117. There is frequent communication within the team	☐	☐	☐	☐	☐
118. Team members communicate often through various channels (i.e spontaneous meetings, email, phone etc.)	☐	☐	☐	☐	☐
119. Relevant information is shared openly by all team members	☐	☐	☐	☐	☐
120. There has been conflict within our team regarding the openness of the information flow	☐	☐	☐	☐	☐

Job motivation, Job satisfaction & Organizational Commitment

	Strongly disagree *(1)*	***Disagree*** *(2)*	***Neutral*** *(3)*	***Agree*** *(4)*	***Strongly agree*** *(5)*
121. These days, I feel motivated to work as hard as I can	☐	☐	☐	☐	☐
122. I only do this job so that I get paid at the end of the month	☐	☐	☐	☐	☐
123. I do this job as it provides long term security for me	☐	☐	☐	☐	☐
124. In general, I am satisfied with my job	☐	☐	☐	☐	☐
125. I think there are many other jobs which are more interesting than mine	☐	☐	☐	☐	☐
126. My current job fulfils the expectations I had before I started it	☐	☐	☐	☐	☐
127. I would like to get another job because I am not satisfied	☐	☐	☐	☐	☐
128. My current job is pleasant	☐	☐	☐	☐	☐
129. I think my current job is interesting and fascinating	☐	☐	☐	☐	☐

130. I am considering leaving this DHMT	☐	☐	☐	☐	☐
131. Deciding to work for this DHMT was a definite mistake on my part	☐	☐	☐	☐	☐
132. There is not too much to be gained by sticking with this DHMT indefinitely	☐	☐	☐	☐	☐

Thank you very much for your valuable contribution!

5. Chapter 5: Management Capacity Survey II (Malawi)

Tool 12: Management Competency Measurement for DHMT

Coversheet
Date:
Code: *ID, country/district-national level*
Sign consent form
Inclusion criteria: In order to participate in the survey two requirements must be met: the respondent must be

1) member of the DHMT, and
2) have a role that includes directing activities of other persons either in the DHMT or at facility and/or community level.

Explanation: The majority of questions of the self-assessed tool require a rating from to not at all, to a small extend, to a moderate extend, to a large extend and n/a. Please rate your experience according to your current situation.

The survey covers the following

1. Socio-demographic information
2. Management experience
3. MSI managemement competencies
    a. Planning and implemenation
    b. General management and people leadership skills
    c. Human resource management
    d. Health systems management
    e. Functioning support systems

1. Socio-demographic information

Sex	Female
	Male
Age	Years
Educational background (please identify all that apply)	Public Health
	Medicine
	Nursing
	Business and Management
	Other: _____
	Other: _____
When did you graduate?	YY
Please list the starting date of your employment in the current DHMT	MM/YY
Did you work previously in	Years

other DHMTs? If Yes, how long?						
How did you become part of your current DHMT?	I applied for my current position					
	I was assigned for my role without applying					
What is your current role in the DHMT?	District Health Officer					
	Public Health Nurse					
	Technical Officer					
	Other: _____					
How many employees do you currently supervise?	1-5					
	5-10					
	10-50					
	>50					
	N/A					
Do you combine your work as a manager with clinical work?	Yes					
	No					
	N/A					
Please indicate the extent of your responsibilities within the DHMT		Not at all	To a small extent	To a moderate extent	To a large extent	N/A
	Planning and Organizing					
	Monitoring & Data Management					
	Human Resource Management					
	Drug and Supply Management					
	Supervision & Training of Staff					
	Administration					
	Financial Management /budgeting					
Is the following available to help you in carrying out your role and responsibilities	National or regional standards, procedures and guidelines					
	Regular meetings					
	Supportive supervision or mentoring					
	Access to relevant information and experiences					

2. Management Experience

Prior to your first appointment as a DHMT member, did you have any professional experience of being in a management position	No experience
	Less than 1 year of experience
	2-5 years of experience
	More than 5 years of experience
During your time as a DHMT member, have you received training in management	Yes, I have attended multiple management strengthening trainings
	Yes, I have attended one management strengthening training
	No, I have not received any training
If yes, how effective was the training(s) in improving your management skills overall?	Not effective
	Slightly effective
	Fairly effective
	Very effective
	Poor
	Fair

How would you rate your current management skills overall?	Good
	Excellent

3. MSI: Please indicate your management competencies with the following:

A Planning and implementation (ref. MSI, DHMT manual)		Not at all	To a small extent	To a moderate extent	To a large extent	N/A
Situation Analysis	I have an understanding of national guidelines, strategies and policies					
	I am well informed about the activities of a wide number of stakeholders in the district					
	I am familiar with, and know how to use data on health priorities from a range of sources					
	I am confident in carrying out a situational analysis					
Problem analysis	I am able to analyse the root causes of problems occurring in the district					
	When analysing problems I take the differing needs of women, men and boys and girls into account					
	Based on this analysis I can identify areas in need of improvement					
	I am able to prioritize which of the identified aspects are most important to address					
Priority setting and planning/strategy development	I am able to develop packages of human resource/health system strategies (bundles) to address an agreed priority problem					
	When developing the district health plan, I am able to integrate national priorities					
	I am confident about translating the district plan into an operational work plan					
	When planning, I pay special attention to the health needs of vulnerable population groups in the district					
	When planning I consider how a strategy will affect women, girls, men and boys differently					
	I am able to develop indicators that track the effect that strategies have					
Implementation and Monitoring	I am trying out new and innovative strategies to address identified priorities					
	I am able to handle/overcome foreseen/unexpected barriers					
	I am confident of my abilities to monitor progress against agreed plans					

	I hold people accountable for their assigned responsibilities in the operational work plan					
	I am able to adapt my strategies and add new strategies if they don't achieve the intended results					
Reporting	I ensure that reporting is done to a high standard (complete, on time)					
B General Management and People Leadership Skills		Not at all	To a small extent	To a moderate extent	To a large extent	N/A
Stakeholder engagement and coordination	I am confident about engaging with and involving stakeholders in planning and implementation in the district					
Time Planning/Self-management	I set aside time for planning and scheduling my week and month					
	The tasks I work on are the ones with the highest priority					
	I never complete tasks at the last minute but rather ahead of time					
	I set time aside for unexpected events/situations					
	I know how much time I spend on the various tasks I do					
	I set targets for myself/ my staff					
	I am able to delegate tasks to others effectively					
Crisis/conflict handling skills management	I am able to manage and resolve conflicts when they arise					
	I speak out when I see that ethics and values are compromised					
Resource mobilisation/ Financial management	When planning I always keep the potential costs in mind					
	I am able to mobilize resources to tackle priority problems					
	I am able to prepare budgets effectively					
	I am able to manage budgets effectively					
People Leadership	I have a clear understanding of the roles and responsibilities of members within the DHMT					
	I am able to direct and motivate the people I work with					
	I am able to create ownership and commitment to the assigned tasks among staff					
	I demonstrate trust in the people I work with					
	I give my staff timely and specific feedback					
	I ensure that staff feel their contributions are valued and appreciated					
	I take time to reflect and review my own performance					
	As a DHMT we take time to reflect and review our performance as a team					

	I am able to recognize my staffs' strengths and match individual strengths with the needs of the job					
	I encourage my staff to give feedback on my performance and act on their suggestions					
	I am appreciated by colleagues for creating a supportive and constructive work atmosphere					
	I am able to moderate effective meetings					
	I am transparent in communication with my staff and execute an open door policy					
C Human Resources management		Not at all	To a small extent	To a moderate extent	To a large extent	N/A
	I am confident about identifying human resource needs in my district					
	I am confident about my abilities to lobby with MOH/Local Government/ partners for new staff					
	I ensure clear division of labour between team members					
	I avoid staff at facility level getting burnt out by making sure they all have regular time off					
	I advise on job descriptions to ensure that they reflect the roles and responsibilities required for the post and ensure that my workers are aware of them					
	I make sure that all staff are supervised at least 4 times a year					
	I make sure that supervision is carried out in a supportive constructive manner					
	I make sure all staff receive feedback from supervision visits					
	I ensure that expert/more experienced staff provide less highly trained/less experienced staff with on the job training					
	I am confident about my abilities to handle staff rewards in a fair and transparent manner					
	I effectively sanction staff for poor performance					
D Health Systems Management		Not at all	To a small extent	To a moderate extent	To a large extent	N/A
Technology, supplies and drugs	I ensure planned preventive maintenance of equipment is carried out regularly					
	I closely follow up the availability of drugs to avoid stock outs					

	I closely follow up the availability of general supplies to avoid stock outs					
	I ensure key equipment is available and functioning at facilities					
Health Information Systems	I ensure that facilities in my district collect and submit their data on time					
	I ensure that the data they submit is complete and of high quality					
	I ensure that the data is inserted into the HMIS on a regular basis					
Service delivery	I ensure that clinical guidelines are in place and staff are familiar with their content					
	I encourage staff to act in the best interests of the patients at all times					
	I actively seek feedback from communities on the services that are provided					
	I analyse and discuss mistakes with staff to reduce the likelihood that they happen again					
	I ensure that special efforts are made to reach the most marginalized in the district					
Financing	I lobby that national budgets are released on time to the district					
	I ensure that budgets are fully executed					
	I am limited by financial constraints to carry out planned activities					
Health Workforce	I ensure that the health workers have signed contracts					
	I ensure that the health workers have written job description with clearly assigned supervisors					
	I ensure that annual appraisal meetings are carried out at facility level					
	I allocate resources to further training/in-service training of the health workers					
E Functioning support systems		Not at all	To a small extent	To a moderate extent	To a large extent	N/A
In case you need help with completing an assignment, are there systems in place to support you within the following areas?						
	Planning and Budgeting					
	Infrastructure management					
	Maintenance					
	Procurement and distribution of drugs					
	Procurement and distribution of supplies and other commodities					
	Data Management					
	Human Resources Management					

6. Chapter 7: Semi-structured interview guide (District Health Managers)

DHA Questionnaire

Workflow pattern in the management of transfers

1. Could you please describe your (own) role in the management of staff transfers in the DHA (probe for working relations with other departments in the DHA)?
2. Could you please describe the working relations of the DHA with other levels within the GHS (HR Directorate, RHA, hospitals, other), especially with regard to HR issues?
3. When it comes to intra-district transfers, on which grounds does the DHA decide on whom to transfer and to which health facility?
    - What are the decision criteria and do these decision criteria vary along different health cadres (e.g. CHN, mid-wives, etc)?
    - Which categories of health workers do you normally transfer, and which you cannot transfer yourself?
4. To which extent do staffing norms and vacancies play a role in the decision to transfer? If so how is this handled (ask specifically for vacancy lists)?
5. By which measures do you establish equitable distribution of health staff, especially to the deprived areas of the district?
6. For which reasons do you normally conduct reshuffles in the district?
7. Could you please describe the management procedures conducted at the DHA for the transfer of health staffs within the district and in and out of the district – before, during and after transfers (probe for interviews, contact with other government bodies, are existing guidelines taken into account)?

Role of the health worker

8. What are common reasons why HWs usually apply for transfers?
9. What are time gaps between requests for transfer and the effective transfer?
10. What is the role of the concerning health workers with regard to transfers? How are they involved in the transfer process (probe especially for internal reshuffling, when the process may not be initiated by health workers, how do they convince persons to change the workplace, are they invited for an interview, if there are also situations, where decision of transfers is made without involving the concerned HWs)?
11. When you think back to your own transfer to this district, how have you been involved in the transfer process (ask who transferred, RHA or HR directorate)?
12. When health workers do not initiate the transfer process, for instance during internal reshuffling, can staffs suggest a preferred location? And how are these suggestions usually considered before the transfer of staffs?
13. Can staffs also reject postings to certain locations?
14. What happens when HWs reject postings?
15. What are common reasons why HWs reject postings?

Decision space of DHA

[Only ask certain questions if not already answered]

16. Could you please describe the authority/power of the DHA with regard to hiring, firing and transferring of health personnel? What can you do and what can you not do? Are there differences between guidelines and practices (also probe for different staff categories)?
17. To which extent is the DHA involved in the decision to transfer staff in- or out of the district?

18. In terms of intra-district transfers, do you inform the RHA on these decisions? And if yes, how does this information look like?
19. Can the RHA interfere in these decisions? If yes, how does such interference usually look like?

Retention measures

20. What kinds of incentives (such as free staff housing, hire purchase cars, rural allowances, etc.) HWs receive in the district (probe for different staff categories, implemented in every district)?
21. Do you have the authority/power to develop and implement own incentive packages for health workers in your district? If yes, what are these?
22. Besides incentives, which other retention measures has the district implemented in order to retain health personnel (such as bonding)?

7. Chapter 7: Semi-structured interview guide (Regional Health Administrators)

RHA Questionnaire

Workflow pattern in the management of transfers

1. Could you please describe your role in the management of staff transfers in the RHA (probe for working relations with other departments within the RHA)?
2. Could you please describe the working relations of the RHA with other levels within the GHS (HR Directorate, DHAs, hospitals, other) and with the CHAG, especially with regard to HR issues?
3. On which ground does the RHA decide on whom to transfer, to which district and to which health facility? What are the decision criteria and do these decision criteria vary along different health cadres (e.g. doctors, mid-wives, etc)?
4. To which extent do staffing norms and vacancies play a role in the decision for transfers? If so how is this handled?
5. By which measures do you establish equitable distribution of health staff, especially to the deprived areas of the region (probe for the 70% policy)?
6. Could you please describe the management procedures conducted at the RHA for the transfer of health staffs in and out of districts within the region and in and out of the region – before, during and after transfers (probe for interviews, IPPD, contact with other government bodies, especially when transferred out of the region, are existing guidelines taken into account)?
7. How do you involve the districts and district hospitals in the transfer processes?

Role of the health worker

8. What are common reasons why HWs usually apply for transfers?
9. What are time gaps between requests for transfer and the effective transfer?
10. What is the role of the concerning health workers with regard to transfers? How are they involved in the transfer process (probe especially for internal reshuffling, when the process may not be initiated by health workers, how do they convince persons to change the workplace, are they invited for an interview, if there are also situations, where decision of transfers is made without involving the concerned HWs)?
11. When health workers do not initiate the transfer process, for instance during internal reshuffling, can staffs suggest a preferred location? And how are these suggestions usually considered before the transfer of staffs?
12. Can staffs also reject postings to certain locations?
13. What happens when HWs reject postings?
14. What are common reasons why HWs reject postings?

Decision space of RHA, DHAs and district hospitals

[only ask certain questions if not already answered]

15. Could you please describe the decision power of the RHA with regard to hiring, firing, and transferring of health personnel? What can you do and what can you not do? Are there differences between guidelines and practices (also probe for different staff categories)?
16. To which extent are the DHAs and hospitals involved in the decision to transfer staff in- or out of their district (probe if recommendations are considered)?

Retention measures

17. What kinds of incentives (such as free staff housing, hire purchase cars, rural allowances, etc.) HWs receive in districts of the Eastern Region (probe for different staff categories, implemented in every district)?
18. Are there special incentives for deprived areas in place? If yes, what type of incentives are these?
19. Do you have the authority/power to develop and implement own incentive packages for health workers in your region? If yes, what are these (probe if the national level must be informed on such decisions?
20. Besides incentives, which other retention measures has the RHA implemented in districts of the Eastern Region in order to retain health personnel (such as bonding)?

Personal files

21. Let us come to our last question, in which we refer to the personal file study, we are currently conducting: Could you please outline, how a complete personal file should look like under ideal conditions? What information should be stored in a complete personal file? Who should administer these files and how shall confidentiality be respected?

8. Chapter 7: Semi-structured interview guide (National Health Administrators)

GHS HR Directorate Questionnaire

Workflow pattern in the management of transfers

1. Could you please describe your role in the management of staff transfers in the HR directorate (probe for working relations with other departments within the HR directorate)?
2. Could you please describe the working relations of the HR directorate with other levels within the GHS (RHAs, DHAs, hospitals, other) and with the CHAG, especially with regard to HR issues?
3. Which categories of health workers does the HR directorate usually handle when it comes to staff transfers?
4. As most of the transfers are usually organised by and between the regions, under which conditions does the HR directorate comes in with regard to transfer processes?
5. On which ground does the HR directorate decide on whom to transfer, to which district and to which health facility? What are the decision criteria and do these decision criteria vary along different health cadres (e.g. doctors, mid-wives, etc, probe under which conditions the HR directorate is involved in transfers)?
6. To which extent do staffing norms and vacancies play a role in the decision for transfers? If so how is this handled (probe for the new staffing norms that are currently developed; does the HR directorate also advertise vacant positions, if yes, under which conditions)?
7. By which measures do you establish equitable distribution of health staff, especially to the deprived regions (probe for the 70% policy)?
8. Could you please describe the management procedures conducted at the HR Directorate for the transfer of health staffs – before, during and after transfers (probe for interviews, IPPD, contact with other government bodies, are existing guidelines taken into account)?
9. How do you involve the regions (possibly also districts and district hospitals) in the transfer processes?

Role of the health worker

10. What are common reasons why HWs usually apply for transfers?
11. What are time gaps between requests for transfer and the effective transfer?
12. What is the role of the concerning health workers with regard to transfers? How are they involved in the transfer process (probe especially for internal reshuffling, when the process may not be initiated by health workers, how do they convince persons to change the workplace, are they invited for an interview, if there are also situations, where decision of transfers is made without involving the concerned HWs)?
13. Why are reshuffles normally conduced and which categories of health workers are usually involved?
14. When health workers do not initiate the transfer process, for instance during internal reshuffling, can staffs suggest a preferred location? And how are these suggestions usually considered before the transfer of staffs?
15. Can staffs also reject postings to certain locations?
16. What happens when HWs reject postings?
17. What are common reasons why HWs reject postings?

Decision space of RHA, DHAs and district hospitals

[only ask certain questions if not already answered]

18. Could you please describe the decision power of the HR directorate with regard to hiring, firing, and transferring of health personnel? What can you do and what can you not do? Are there differences between guidelines and practices (also probe for different staff categories)?
19. To which extent are the RHAs, DHAs and hospitals involved in the decision to transfer staff in- or out of their regions and districts (probe if recommendations are considered)?

Retention measures

20. What kinds of incentives (such as free staff housing, hire purchase cars, rural allowances, etc.) HWs receive in the GHS (probe for different staff categories, implemented in every region)?
21. Are there special incentives for deprived areas in place? If yes, what type of incentives are these?
22. Besides incentives, which other retention measures has the GHS implemented in order to retain health personnel (such as bonding)?

9. Chapter 7: Face-to-face survey (Health workers)

PERFORM
IMPROVING HEALTH WORKFORCE PERFORMANCE

PERFORM turnover study questionnaire for health workers

Demographic and Work Related Information

Respondent Number: ☐☐☐

1. Date: _____

2. Name of Health Facility: _____ 3. District: _____

4. Gender: Male ☐1 Female ☐2

5. How old are you ?: ☐☐ years

6. What is your faith? Christian ☐1 Muslim ☐2 Other ☐3 , specify: _____

7. What is your profession ?:

Doctor ☐1 Nurse ☐2 Community Health Nurse ☐3 Midwife ☐4

Other ☐5 , specify: _____

8. What is your highest qualification ?

Certificate ☐1 Diploma ☐2 1st degree (Bachelor) ☐3

2nd degree (Masters) ☐4 PhD ☐5 other ☐6 , specify: _____

9. Where did you obtain your qualification? Ghana ☐1 Abroad ☐2 If so, where? _____

10. What is you current marital status? Married ☐1 Unmarried ☐2 Co-habitation ☐3

Divorced/ separated ☐4 Widowed ☐5

11. Do you have people who report directly to you, who you manage as immediate supervisor? Yes ☐1 No ☐2

11.1. If yes, which type of supervisor are you? Head of department ☐1 Head of facility ☐2 Head of unit ☐3

Team leader ☐4 Other ☐5 , please specify: _____

12. How many years have you worked in your profession? ☐☐ years ☐☐ months

13. How many years have you worked in your current health facility ? ☐☐ years ☐☐ months

14. In which type of health facility do you work ? Hospital ☐1 Health Centre ☐2

CHPS ☐3 other ☐4 , specify: _____

15. Do you work in a public or private health facility ? Public (Governmental) ☐1 Private (CHAG) ☐2

16. In which region and district have you been working before your posting to your current health facility?

16.1. Region: _____ 16.2. District: _____

17. Was the facility located in a rural or urban area? rural ☐1 urban ☐2

18. Of which type was your previous health facility? Hospital ☐1 Health Centre ☐2

CHPS ☐3 other ☐4 , specify: _____

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19. Was your previous health facility a public, CHAG or private-for-profit facility?

Public ☐1 CHAG ☐2

Private-for-profit ☐3

20. What was your profession in your previous facility? _____

21. How many years did you serve in the previous facility? ☐☐ years ☐☐ months

22. Who initiated your previous transfer?

Myself ☐1

DHA ☐2

RHA ☐3

HR Directorate ☐4

Other ☐5 , specify: _____

23. What was the main reason that you left your previous health facility (only one)?

Was transferred without having any say ☐1

To earn a better income ☐2

Better career prospects ☐3

To further your education ☐4

Your child(ren)'s education ☐5

Relocation to/of partner (marital grounds) ☐6

Moving to a preferred location ☐7

Never intended to stay ☐8

Extended family commitments or obligations ☐9

other ☐10 , specify: _____

24. I am going to read to you a number of reasons that often cause health workers to leave their job. When you think of <u>your</u> situation at your previous health facility, how did the following statements affected you at your previous workplace? For each statement there are 5 choices, ranging from "do not agree entirely" to "agree entirely". Please indicate your level of agreement with each of the statements.

	Do not agree at all	disagree	undecided or neutral	agree	Agree entirely	N/A
24.1 My salary was too low.	☐1	☐2	☐3	☐4	☐5	☐0
24.2 I received inadequate benefits (for ex. staff housing, rural allowances, etc.).	☐1	☐2	☐3	☐4	☐5	☐0
24.3 My opportunities for career advancement were inadequate.	☐1	☐2	☐3	☐4	☐5	☐0
24.4 The workload at my workplace was too high (amount of work, overwhelmed or not).	☐1	☐2	☐3	☐4	☐5	☐0
24.5 My job security was insufficient (certainty or uncertainty to loose your job).	☐1	☐2	☐3	☐4	☐5	☐0
24.6 I was lacking a professional network (with colleagues from outside the health facility).	☐1	☐2	☐3	☐4	☐5	☐0
24.7 I was feeling professionally isolated	☐1	☐2	☐3	☐4	☐5	☐0
24.8 My colleagues did not appreciate the work I do.	☐1	☐2	☐3	☐4	☐5	☐0
24.9 My supervisor did not appreciate the work I do.	☐1	☐2	☐3	☐4	☐5	☐0
24.10 I had frequent conflicts with my colleagues.	☐1	☐2	☐3	☐4	☐5	☐0
24.11 I had poor relations with the management.	☐1	☐2	☐3	☐4	☐5	☐0
24.12 There was an undesirable impact on health or stress level at my work place	☐1	☐2	☐3	☐4	☐5	☐0
24.13 The medical equipment at my work place was inadequate and/or is in an unacceptable condition.	☐1	☐2	☐3	☐4	☐5	☐0
24.14 My work place was in an unacceptable condition.	☐1	☐2	☐3	☐4	☐5	☐0
24.15 The travel time to my work place was too long.	☐1	☐2	☐3	☐4	☐5	☐0

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24.16 There was no work opportunity for my spouse.	☐1	☐2	☐3	☐4	☐5	☐0
24.17 There were poor schooling opportunities for my children.	☐1	☐2	☐3	☐4	☐5	☐0
24.18 I had to travel long distances to basic service facilities (e.g. market, bank, school, post office) from where I live.	☐1	☐2	☐3	☐4	☐5	☐0
24.19 The infrastructure in the village/town where I lived was poor in general.	☐1	☐2	☐3	☐4	☐5	☐0
24.20 I was feeling personally isolated.	☐1	☐2	☐3	☐4	☐5	☐0
24.21 The community did not support me in regard to my job.	☐1	☐2	☐3	☐4	☐5	☐0
24.22 The community did not appreciate my work.	☐1	☐2	☐3	☐4	☐5	☐0

25. Are there other reasons not mentioned here that affected your decision to leave your previous job ? If yes,

please specify: _____

_____

PART 2: Management of turnover

26. With regard to your recent transfer, how have you been involved in the transfer process (by the DHA, RHA or HR directorate in Accra, probe if respondent invited for an interview, did respondent suggest a preferred location and how this was considered; if decision to transfers was made without involving respondent)?

27. Have you been counceled before your recent transfer? And if yes, who councelled you and how did this counceling look like (probe in which form

Appendix 2: PhD Candidate Curriculum Vitae

Curriculum Vitae

Anne Christine Stender Heerdegen, M.Sc.
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EDUCATION

2017-2020 Basel, Switzerland	**PhD in Epidemiology, Swiss Tropical & Public Health Institute**
2011-2014 CPH, Denmark	**Master of Science in Public Health, University of Copenhagen (GPA: 3.84)**
2013 Brisbane, Australia	**Master of Global Health (study abroad, non-degree), Uni. of Queensland (High Distinction)**
2008-2011 CPH, Denmark	**Bachelor of Science in Public Health, University of Copenhagen**

PROFESSIONAL EXPERIENCE

2017-2020 Basel, Switzerland	**PhD Candidate, International Center for International Health, Swiss TPH** • *Successfully completed coursework, including epidemiology, biostatistics, statistical modeling, research methods, health systems thinking and health economics* • *PhD student representative*
Jan- May 2018 Accra, Ghana	**Visiting Research Fellow, Department of Health Policy, Planning and Management, School of Public Health, University of Ghana** • *Primary data collection for PhD thesis via structured surveys and in-depth interviews with regional and district stakeholders*
2016 – 2017 CPH, Denmark	**Quality Consultant, Quality & Development, Herlev - & Gentofte Hospital Administration** • *Improving processes at different clinical departments at one of the largest hospitals in Denmark*
2015 – 2016 Boston, USA	**Global Health Corps Fellow, Boston Public Health Commission** • *Assisted leadership in obtaining National Public Health Accreditation (achieved 2017)* • *Successfully facilitated and mentored quality improvement projects at BPHC service centers (Woods Mullen Homeless Shelter, Healthy Mother, Healthy Child)* • *Co-developed BPHCs Performance Management framework, and trained >100 staff members in the framework and the Model for Improvement*
2014 – 2015 CPH, Denmark	**Health Science Consultant, The Danish Cancer Society** • *Developing questionnaire on patient reported experiences and outcomes* • *Data management, analysis and writing of scientific papers based on national registry data of young cancer patients in Denmark (n=822) and adult cancer patients (n=3681)* • *Policy advocacy for improving cancer patients' care trajectory*
2012 – 2014 CPH, Denmark	**Graduate Research Assistant, DIGNITY – Danish Institute against Torture** • *Epidemiological research on prevention and treatment of torture victims and access to mental health care*
Jan-Mar 2011 Kerala, India	**Intern at project "kNOw Diabetes", World Diabetes Foundation** • *Assisted in collection and analysis of data on prevalence of Type II Diabetes in rural South India*

TEACHING EXPERIENCE

2019 Basel, Switzerland	**Teaching Assistant, "Epidemiological Methods",** Swiss Tropical and Public Health Institute, Master & PhD Students, Autumn semester
2018-2019 Basel, Switzerland	**Lecturer, "The Sustainable Development Goals and Health",** Swiss Tropical and Public Health Institute, Master & PhD Students, Autumn semester

HONOR & ACHIEVEMENTS

- **ScienceFlashtalk Finalist,** Swiss School of Public Health ScienceFlashtalk Competition, Switzerland 2019
- **Antelope@Novartis,** selective mentorship program for qualified doctoral students, Switzerland 2019
- **McKinsey Academy,** Unlocking the potential of Women, USA 2018-19
- **Talent at UNLEASH Innovation Lab,** competitive program for young professionals to create solutions to achieve the Sustainable Development Goals by 2030, Singapore, 2018
- **Fellow at Global Health Corps,** competitive program receiving nearly 6000 applications annually for 140 positions (2% acceptance rate) for university graduates and early- to mid-career professionals with a passion for global health and health as a human right, New York, USA, 2015
- **Young Global Leaders Panellist,** selected to represent young leaders in global health at the *Global Health Landscape Symposium,* Washington, 2015
- **Commendation for High Achievements** placed in the top band of students in The University of Queensland's Study Abroad program. Academic record included on the Dean's List for Semester 1, 2012

LEADERSHIP AND SERVICE

2018- present	**Initial member, Diversity & Inclusion Network, Swiss TPH**
Basel, Switzerland	A network promoting inclusion and diversity at Swiss TPH, in particular at the leadership level
2017 – 2019	**PhD Student Representative, Swiss Tropical and Public Health Institute**
Basel, Switzerland	Representation of 160+ PhD students interest for the department of student affairs, administration and the directorate.
2016 – 2017	**Scholar, The Danish NCD Alliance**
CPH, Denmark	Collaboration with the Young Professionals Chronic Disease Network, and assisted in strengthening the Danish Chapter.
2014 – 2015	**Researcher, Society Against Female Genital Mutilation**
CPH, Denmark	Output included recognized report targeted policy-makers in Denmark
2014 – 2015	**Social Media Administrator, Global Health Next Generation Network**
	Promoting network by coordination of a Social Media team (Twitter, Facebook, Website)
2013 – 2014	**Mentor for International Students, Faculty of Health Sciences, University of Copenhagen**
CPH, Denmark	Welcoming and supporting international Public Health students during their study abroad

PEER-REVIEWED PUBLICATIONS *(*Publications part of PhD Dissertation)*

- ***Heerdegen, ACS.** Transforming capacity strengthening in an Era of Sustainable Development. International Journal of Public Health *(Submitted, Status in August 2020: minor revisions)*
- ***Heerdegen, ACS**, Gerold, J., Amon, S., Agyemong, Aikins, M.,Wyss, K. How does district health management emerge? Insights for capacity strengthening. Frontiers in Public Health, June 2020
- ***Heerdegen, ACS,** Aikins, M., Amon, S., Agyemong, Wyss, K. District Health Management and its association with health system performance. Plos ONE, January 2020
- Dietler, D., Leuenberger, Bempong, Campbell-Lendrum, Cramer, Eggen, Erismann, Ferazzi, Flahault, Helen A. Fletcher, Fuhrer, Fuhrimann, Greter, **Heerdegen, A.C**, Leach, Leissing, Lilje, Penny, Prytherch, Staudacher, Vounatsou, Weiss, Wiedemann, Winkler, Zhou, Jürg Utzinger. Health in the 2030 Agenda for Sustainable Development: from framework to action, transforming challenges into opportunities. Journal of Global Health, July 2019.
- ***Heerdegen, ACS,** Bonenberger, M. Aikins M, Schandorf, P, Akweongo P, Wyss K. Health worker transfer processes within the public health sector in Ghana: a study of three districts in the Eastern Region. Human Resources for Health, 2019
- **Heerdegen, ACS**., Petersen, GS., Jervelund, SS. Determinants of Patient Satisfaction with Cancer Care delivered by the Danish Healthcare System. American Journal of Cancer, 2017
- Sperling, C., Stentebjerg-Petersen, G., Knudsen, Hølge-Hazelton, B., Graugaard, C. Winther, J. F, Gudmundsdottir, T., Ahrensberg, J., Schmiegelow, K., Boisen, K. A., Olsen, P.R., **Heerdegen, ACS**., Sonnenschein, EM, Knudsen, JL., "Being Young and Getting Cancer: Development of a Questionnaire reflecting the Needs and Experiences of Adolescents and Young Adults with Cancer", Journal of Adolescent and Young Adult Oncology, 2016

POLICY ADVOCACY PUBLICATIONS

- Christoffersen, G., Engel, S. Neergaard, R. Bruhn, P. J, Lea, L., **Heerdegen, ACS,** Naeser, V.Report: Female Genital Mutilation (FGM) in Denmark and Governmental Prevention of FGM. May 2017. DOI: 10.13140/RG.2.2.24711.80805
- Sperling, C., Stentebjerg-Petersen, G., Knudsen, JL., **Heerdegen, ACS**. To be Young and be Diagnosed with Cancer. A Nationwide Questionnaire Survey of the Needs and Experiences of Young Cancer Patients. The Danish Cancer Society. Copenhagen, 2015 (Danish Publication). ISBN: 978-87-7064-289-7

PUBLIC SPEAKING ENGAGEMENTS

- **European Congress on Tropical Medicine & International Health, '**District health management and its association with district performance', Liverpool 2019
- **Swiss School of Public Health Annual Meeting,** 'Strengthening Management at District Level', Bern 2019
- **Swiss Tropical and Public Health Spring Symposium,** 'Innovations in Vocational Education and Training'**,** Basel, 2019
- **Swiss Network for International Studies,** 'Health in the 2030 Agenda for Sustainable Development', Basel 2018
- **National Association of County and City Health Officials Annual Conference, '**Finding Public Health: A Simple Game to Promote Quality Improvement as an Approach in Addressing Health Equity', Arizona, USA 2016
- **Harvard T. Chan School of Public Health Consulting and Research Fair,** Global Health Corps Representative**,** 2015
- **Global Health Landscape Symposium,** Panellist at "Young Global Leaders: How will I shape the SDGs?', Washington, 2015