Workplace Based Learning in district health leadership and management strengthening: A qualitative evidence synthesis

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PLAGARISM DECLARATION

I, **Grace Kiarie (KRXGRA001)**, hereby declare that the work on which this dissertation/thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

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Abstract

Effective leadership and management has been identified as a critical foundation to enable health systems to respond adequately to their population needs. The changing nature of low-and middle-income countries' health systems in the midst of resource scarcity and a high disease burden, has placed learning as a key factor for health system reform and transformation, with workplace based learning (WPBL) as contributing to this learning process. This qualitative evidence synthesis (QES) used the 'best fit' framework approach to synthesize evidence on WPBL, to identify and analyse how WPBL works to support and impact (or not) leadership and management development in the district health system. Findings from qualitative studies, mixed-methods and quantitative studies were synthesized and conclusions drawn from the data. The QES sought to answer the research question: 'What forms of workplace based learning support leadership and management development and how does it impact district health leadership and management strengthening?' Four electronic databases were used to search for empirical studies and published grey literature. Twenty-four articles were included in the synthesis. The findings reveal that over the last decade, WPBL has received consideration as an approach for leadership and management development. However, while the WPBL interventions differed in the type and nature of the intervention, as well as the length of delivery of each intervention, there was no evidence that pointed to which strategy had a greater influence than others on strengthening district health leadership and management. Furthermore, the synthesis demonstrates the need for a focus on sustainability and institutionalization of interventions, including the need to integrate WPBL interventions in health systems, and offering elements of WPBL through national or regional institutions while ensuring flexibility of WPBL design and delivery.

Acronyms and Abbreviations

AHPSR	Alliance for Health Policy and Systems Research
COVID-19	Coronavirus Disease 2019
DHMT(s)	District Health Management Team(s)
DHS	District Health System
DIALHS	District Innovation and Action Learning for Health Systems Development
HICs	High-Income Countries
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
HPSR	Health Policy and Systems Research
LMICs	Low-and Middle-Income Countries
MSH	Management Sciences for Health
MOH	Ministry of Health
NHS	National Health Service
PHC	Primary Healthcare
QES	Qualitative Evidence Synthesis
SDMT(s)	Sub-district Management Team(s)
UNZA	University of Zambia
WHO	World Health Organization
WPBL	Workplace Based Learning
ZMLA	Zambia Management and Leadership Academy

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PART A: STUDY PROTOCOL

Introduction

Effective leadership and management has been identified as a critical foundation to enable health systems to respond adequately to their population needs (Vriesendorp et al. 2010, Daire et al. 2014, Agyepong et al. 2018). For low-and middle-income countries (LMICs), leadership and governance challenges are particularly acute and are one of the stated reasons LMICs did not achieve the Millennium Development Goals, alongside an under-skilled health workforce and the socio-economic determinants of health (Willis-Shattuck et al. 2008, Agyepong et al. 2018). Strengthening leadership and management has been identified as important in supporting Universal Health Coverage and improving health outcomes (Doherty et al. 2018, Martineau et al. 2018).

National level experience confirms the importance of leadership. For example, assessment of the health system successes in Ethiopia, Thailand, Kyrgyzstan, Bangladesh, and the Indian state of Tamil Nadu highlight the vital role of good leadership and governance, and political will and administrations that preserved institutional memory despite resource constraints (Balabanova et al. 2013, Witter et al. 2019). The essential condition for institutional learning is that learning must be ongoing (Raelin 2008). Learning is crucial to strengthening LMIC health systems and helping these health systems be better prepared to face future challenges (Sheikh et al. 2020, Sheikh and Abimbola 2022). In high-income countries (HICs) learning has been a key factor for health system reform and transformation, with workplace based learning (WPBL) as vital to this process (Illeris 2003, Manley et al. 2009, Manuti et al. 2015, Edmonstone 2018)

In LMIC health systems conventional training programmes that focus on acquiring technical and operational skills through ad hoc and didactic educational methods, in centralized locations away from the workplace, have shown to have limitations in strengthening health systems and improving health outcomes (Matovu et al. 2013, Edmonstone 2018). While WPBL is not a magic bullet, it has the potential to contribute to changing health organizations by strengthening the capacity of health workers, improving productivity and users' experiences, and achieving continued transformation (Manley et al. 2009, Matovu et al. 2013). Workplace based learning offers potential or current leaders and managers faced with the unrelenting pace of change, an opportunity to learn and reflect in the midst of work practice (Raelin 2008, Raelin 2011).

Leadership and management are distinct yet related concepts and often overlap in practice. Management focuses on task oriented practices such as organizing resources and implementing activities to produce results, while leadership provides an enabling environment in which people can work together in a specific context (Aberese-Ako et al. 2014, Daire et al. 2014, Kwamie 2015, Gilson and Agyepong 2018). In reality a particular individual may concurrently exhibit management and leadership roles in the same position in an organization (Bradley et al. 2015). Leadership is the process that involves inspiring others to set and attain a shared goal (Banaszak-Holl et al. 2006). It revolves around rallying others to visualize and imagine a better future (Vriesendorp et al. 2010). Leadership brings people together resulting in combined action, based upon common values, to bring about change (Kumar et al. 2014). On the other hand, management is the process in which predetermined targets are achieved utilizing human, financial, and technical resources (Banaszak-Holl et al. 2006). It is about the efficient organization and utilization of resources to produce projected results (Vriesendorp et al. 2010).

Table 1 Difference between leadership and management (Vriesendorp et al. 2010)

Leadership	Management
Scan - Identify stakeholder needs and priorities	Plan - Set organizational goals and allocate resources
Focus - Communicate the organization's direction and strategy	Organize - Ensure systems and work processes are in place to support and implement the plan
Align/Mobilize - Rally crucial stakeholders around the vision	Implement - Direct work-flow and use data in decision-making
Inspire - Exhibit honesty in interactions that leads to trust and confidence from staff	Monitor and Evaluate - Reflect on progress and make changes where needed

Many leadership and management concepts were established in the commercial world and have only recently been applied to the public healthcare setting (Mathole et al. 2018). But public healthcare has different objectives and often these concepts do not take into account the complexities of health systems (Chunharas and Davies 2016, Mathole et al. 2018). Health systems are generally considered to be complex adaptive systems where multiple, nonlinear and unpredictable interactions are seen between people, processes and practices within the system (Kwamie 2015). In addition, leadership in health occurs on many levels and is assumed by many actors who can contribute to health system complexity in the way actors understand and implement policy and practice (Chunharas and Davies 2016, Nzinga et al. 2018). In LMIC healthcare systems, leadership often adopts a top-down approach driven by hierarchy and centralized planning, which has shown to have limited effect in strengthening health systems and improving population health (Kwamie 2015, Chunharas and Davies 2016, Nzinga et al. 2018). To achieve health goals and scale up health services, LMICs need better leadership and management of key resources at all levels of the health system (Egger 2007). Greater clarity on effective leadership and management strengthening programmes is also needed.

Literature review

An initial scoping of the literature was conducted to identify and map the available evidence on WPBL and district level leadership and management development. This helped determine the coverage and volume of available literature; clarify key concepts on WPBL; identify current gaps in knowledge as well as provide the groundwork for the subsequent review (Munn et al. 2018). Particular focus was given to peer-reviewed and grey literature in LMICs (see Methodology below for more details).

Leadership and management development at the meso level

National level health leadership sets policies and the overall strategic direction for the health system, and is influenced by the wider national and international environments (Gilson 2012). The organizational or meso level comprises of the local district, hospital and primary healthcare (PHC) managers and facility staff that convert national policies and any resources allocated to them into health services provided to the population (Daire et al. 2014, Bradley et al. 2015, Chunharas and Davies 2016). The district is a well-defined geographical area and subnational administrative level of local government (Tarimo 1991, Rockers and Bärnighausen 2013, Loveday 2018). The district health system (DHS) is commonly the key decentralized component and cornerstone of national health systems. It plays a crucial role in delivery of PHC services, engaging communities, facilitating intersectoral collaboration and training of healthcare workers (Tarimo 1991, Nzinga et al. 2021).

Current debates on leadership in health have centred on the most senior actors at the national levels, not on the other levels or actors in the health system (Chunharas and Davies 2016). As mentioned earlier leadership in health occurs on many levels and is assumed by many actors. It is therefore important to realize that leadership in healthcare cannot be seen merely as a top-down concept (Kwamie 2015, Nzinga et al. 2018). In LMIC health systems, meso level leaders and managers play the critical role in health systems of implementing policies and programmes. Yet many of these meso level actors feel unprepared for leadership and management roles as they have not received adequate training (Daire et al. 2014, Nzinga et al. 2018).

Over the past few years, in the global North and global South, research has been done on ways to strengthen health systems particularly in areas of leadership and management development (Doherty and Gilson 2015). Just as leadership and management are distinct yet related, so is their developments (Day 2001). Management development primarily focuses on acquiring specific skills and knowledge to perform tasks in management roles. Often this involves applying proven solutions to known problems (Day 2001). Differently, leadership development focuses on gaining skills to engage people to work together in meaningful ways in a particular context (Day 2001). It involves building relationship networks through interpersonal dialogue to enhance collaboration, team work and resource exchange within an organization (Day 2001, Edmonstone 2015, WHO 2016, Cleary et al. 2018).

The majority of health system meso level managers are professional healthcare workers, like clinicians and nurses, who get promoted to these positions due to clinical experience and not necessarily leadership or managerial training or experience (Vriesendorp et al. 2010, Daire et al. 2014, Belrhiti et al. 2016). If they do receive training it is provided for on an ad hoc basis focusing on the technical features of leadership and management and often within vertical disease programmes or by donors (Edmonstone 2018, Nzinga et al. 2021). While the managers' range of work is extensive, their decision space (the range of choice they have to make decisions) is narrow (Daire et al. 2014). They often follow directives from higher national or regional levels of the health system and are expected to convert resources like equipment, staff and finances into effective health services that meet the population needs. Delays in releasing funds from the national level makes it difficult to address district level issues in a timely manner (Daire et al. 2014, Heerdegen et al. 2020). The DHS functions as a complex adaptive system, embedded within a larger environment. The manifold interactions among individuals, system components, and the broader environment give rise to the recognition that management and leadership, traditionally regarded as individual attributes, also manifest as systemic phenomena (Kwamie 2015).

A detailed understanding of the context is vital to gain a greater appreciation of the realities of how decisions are made, how information and funds flow, and what are the limitations on individuals or teams (Potter and Brough 2004). Leadership development programmes need to be context specific, with different approaches dependent on the target individual or team (Cleary et al. 2018). The practice of leadership development must then facilitate learning in workplaces, and with teams in the workplace. This is particularly important for health care as it is interdisciplinary necessitating working in teams (Gilson and Agyepong, 2018).

Workplace based leadership and management learning

Despite what may seem as recent interest and trend in WPBL in health systems, it is not a novel idea; numerous forms of WPBL have been in existence for some time (Matthews 1999, Doherty and Gilson 2015, Doherty et al. 2018). Technological advancements in the twentieth century driving rapid change, competitiveness among organizations, and an apparent lack of skills among employees, led many organizations to realize that organizational growth can be generated through employees learning and acquiring new knowledge (Matthews 1999, Cunningham et al. 2004, Jacobs and Park 2009). The new challenges led many organizations to begin proactively supporting their employees to meet them through learning at the workplace (Matthews 1999, Illeris 2003, Manuti et al. 2015).

Some of the terms used for this type of learning have included: work-based learning; workplace learning; and workplace based learning (Illeris 2003, Raelin 2008, Doherty and Gilson, 2015). Consequently, WPBL can be a challenging concept to define and there is more than one definition (Matthews 1999, Manuti et al. 2015). In this study we use the term workplace based learning. The workplace can be a physical location and includes the shared values, ideas, actions and attitudes that define the working environment and network of relationships (Matthews 1999). One could work in another location, for example from home, but still consider themselves part of the workplace (Matthews 1999). The learning that happens in the workplace can be informal, responding to critical changes or problems initiated within the workplace that require resolution, or formal in nature, usually around more structured planned learning activities (Cunningham et al. 2004, Jacobs and Park 2009, Doherty and Gilson 2015, Manuti et al. 2015).

Workplace based learning is affected by characteristics and conditions found within the work environment (Matthews 1999). A study of the WPBL culture in the United Kingdom's National Health Service (NHS) found a health system lacking in cohesiveness with a disconnect between management and clinical and non-clinical staff (Gwane et al. 2020). Staff were resistant to WPBL due to time constraints, with educators (study participants) feeling undervalued in their role. There was low morale and lack of staff motivation to improve things. Meeting clinical targets was deemed more important than attending WPBL. Furthermore, the delivery of the learning programme was not well integrated into working practices (Gwane et al. 2020). The nature of the workplace, the level of cooperation among people, their level of contribution in making decisions, determines the kind of learning needed (Manley et al. 2009). A focus on leadership development, particularly leadership that focuses on building relationship networks and teamwork, has been suggested as important in turning around the WPBL culture within the NHS (Manley et al. 2009). Learning goals and outcomes also need to be clearly outlined for WPBL to be effective (Matthews 1999).

Within the field of higher education, WPBL is widely used, with a growing number of university programmes being entirely work-based (Illeris 2003, Brody and Irving 2007, Costley and Armsby 2007). For example, to align with the current trend of pharmacy practice moving away from only dispensing medications to a more patient-focused practice, pharmacy undergraduate curricula now includes numerous immersions in a practice setting (Van Huyssteen and Bheekie 2017). This WPBL is to merge theoretical knowledge with pharmacy practice, and realign with value-based approaches to pharmacy training that integrate beliefs, values, and behaviours of professional practice (Van Huyssteen and Bheekie 2017).

There are differing views and experiences on how to develop health system leaders and managers. Classroom programmes often do not support the translation of teaching into practical solutions for the workplace (Day 2001, Edmonstone 2015). In health systems it is difficult to apply generic training from off-site programmes to specific local context. Furthermore, the development of technical knowledge and skills in classroom programmes has been unable to solve the 'wicked' problems often observed. Such problems are complex with multiple and inter-dependent causes. They are found throughout sections of the health system and embedded in historical and social occurrences. Tackling them generates ripple effects within the system and they cannot be easily solved outside of their contexts (Grint 2005, Matovu et al. 2013, Edmonstone 2015, Doherty et al. 2018). This underscores the significance of workplace based leadership and management development programmes. WPBL takes into account context, and provides an environment that fosters creativity and innovative solutions for specific problems in a particular setting (Doherty and Gilson 2015, Edmonstone 2015). By immersing leaders and managers in their workplace contexts, WPBL equips them with the skills and insights needed to craft tailored solutions, recognizing that effective leadership and management within health systems require a deep understanding of local contexts.

There tends to be two major approaches to healthcare leadership and management development, either course based or practice based (Edmonstone 2015). Some leadership and management development programmes include a mix of both course and practice based approaches in a hybrid-model (Nakanjako et al. 2015, Doherty et al. 2018). The course-based approach is characterised by leadership and management being taught through formal educational training modules, delivered by management consultants or academicians and often resulting in an academic qualification like a diploma or master's degree (Daire et al. 2014, Doherty and Gilson 2015, Edmonstone 2015 Edmonstone 2018). Such training places an emphasis on technical and operational skills, like budgeting and resource planning, and does not fully address the intangible health system software features like trust, values or norms, known to shape the behaviours of those working in an organization, and thus how organizational policies and practices are implemented (Elloker et al. 2013, Daire et al. 2014, Edmonstone 2018). The practice-based approach is characterised by leadership and management development being facilitated through problem-solving and reflection. Academic qualifications are not the ultimate goal, but instead the focus is on participatory capacity building and collaborative team learning (Daire et al. 2014, Edmonstone 2015, Doherty et al. 2018). Formal training programmes that lead to academic qualifications have high costs, often meaning that funding is directed towards top level executives within an organization. Practice-based programmes have lower costs and ensure more people are trained (Day 2001, Edmonstone 2015, Doherty et al. 2018).

Workplace based learning combines theory with practice, knowledge with experience and should incorporate reflection on work practices (Raelin 2008). Workplace based learning uses various tools and approaches (see Table 2 below) that include: 360 degree feedback; coaching; mentoring; networking; job assignments or in-service action projects; action learning sets; reflection; journaling; flipped classrooms; e-learning or distance learning and training in the workplace to encourage dialogue that creates a safe and trusting environment (Day 2001, Cunningham et al. 2004, Raelin 2008, Doherty and Gilson 2015). Overall, there are three critical features to workplace based learning: firstly,

that learning is attained while working; secondly, it's a collective activity that involves everyone; and thirdly, it frees learners to question underlying norms of work practice (Raelin 2008).

Workplace based learning leads to knowledge arising from the interaction of a community of learners. Reflective practice creates knowledge that can improve work practices (Raelin 2016). It critiques the workplace as well as enhancing individuals' self-awareness and socio-political skills. Action learning, action projects and mentorship accelerates direct application of expertise to resolve problems as individuals and teams must learn to work themselves out of problems (Raelin 2016). Dialogues amongst teams going through work-based training creates a different kind of leadership, specifically one that is more collective (Raelin 2011).

Table 2 Workplace based learning tools and approaches (Day 2001, Cunningham et al. 2004, Raelin 2008, Doherty and Gilson 2015)

Tool	Description
360 Degree Feedback	A method of gathering insights on an individual's performance from their entire work circle including their peers, supervisors and subordinates.
Coaching	A peer relationship that consists of one on one learning between a coach and a client, around practical goal focused areas of personal development and behaviour modification that improves the client's performance.
Mentoring	A strategic relational approach within an organization that over a period of time supports people in their career development often as they interact with a more experienced person.
Networking	Expanding one's peer relationships outside of normal reporting lines within an organization. Exposes one to another's thinking and challenges one's assumption of what one thinks they know.
Action Projects	An assignment done over a period of time that has strategic value to an organization. The assignment often involves improving services at the workplace.
Reflection	The practice of stepping back from one's experience to ponder and think through what is happening to oneself and/or to others. Creating new meaning and expressing this new understanding is the product of reflective learning practices and often provides the foundation for future action.
Action Learning Sets	A series of activities where people who work together generate learning through engagement in solving a problem at work. Learning occurs as they address these problems, take actions to resolve them and reflect on the lessons acquired through putting the solutions into practice.
Journaling	The process of writing down one's reflections. It prompts one to analyze themselves and evaluate their belief system. And is often used as a powerful introspective technique for personal growth and cultivating self-awareness.
Flipped Classrooms	An approach where several experienced people come together in a classroom setting to have comprehensive discussions of case studies versus the traditional pedagogical method where classrooms are used to instruct on theory.
E-learning or Distance Learning	Learning through the internet or through provided written materials so that learning happens outside the classroom and requires learners to be self-directed learners.
Training in the Workplace	Providing custom-made courses in the workplace.

Workplace based learning in practice at the meso level

Given that management and leadership has been identified as critical in local health systems, there has been investments in management and leadership development programmes for meso level managers and District Health Management Teams (DHMTs) (Belrhiti et al. 2016). Traditional

leadership and management development programmes have focused on theoretical rather than practical aspects of leadership and management, often taking trainees away from their workplaces for training causing disruptions in health service delivery, and involved only a few individuals from a facility or district (Matovu et al. 2013, Doherty and Gilson 2015). This has led to the need to develop innovative context-specific leadership and management training that causes minimal disruption to the workplace and builds institutional capacity (Matovu et al. 2013, Belrhit et al. 2016).

As part of the wider partnership of DIALHS (District Innovation and Action Learning for Health Systems Development), a study in a low-income resource, constrained sub-district in the city of Cape Town in South Africa, was carried out. The study consisted of a five-year action learning and reflective practice engagement that served as a leadership development intervention which targeted members of the sub-district management team (SDMT) and managers from a number of PHC facilities (Cleary et al. 2018). The study found that the broader hierarchical health system governance context, and wider provincial and national accountability processes, limited and were a constraint to leadership development. However some gains were reported by SDMT members and facility managers (FMs), specifically in understanding the importance of relationships, which led to greater trust among the SDMT members and between FMs and their staff (Cleary et al. 2018). Similarly, a leadership development programme developed by Management Sciences for Health (MSH) for DHMTs in Ghana consisted of bimonthly two-day, face-to-face workshops and monthly coaching sessions for a period of six months. The programme was action based, built around problem solving and designed for teams to apply management and leadership skills to address problems within the health system (Kwamie et al. 2014). Initially the novelty of the leadership development programme was received with positivity as DHMTs did not have formalized leadership or management training. It helped them learn how to take initiative, prioritize and better manage their workload. However these gains were short lived. The leadership and management practices were not absorbed into routine practice (institutionalized) (Kwamie et al. 2014). The top-down manner in which the leadership programme was introduced reinforced the hierarchical, highly centralized, decision-making processes within the health system and this compromised institutionalization of the programme among DHMTs (Kwamie et al. 2014).

In the Eastern Cape Province of South Africa, a work-based district leadership development programme, formed through a partnership between Rhodes University, MSH and the Eastern Cape Department of Health, demonstrated the success of developing team members' ability to solve workplace problems through collaborative work-projects (Dovey 2002). The leadership programme was a two year hybrid-modelled (a mix of both classroom and practice-based learning approaches) consisting of multi-disciplinary teams of 12-20 people from each district. On completion, participants earned a certificate in District Health Management. The study demonstrated that leadership capacity within districts was built as a result of teams working together to solve service delivery problems. (Dovey 2002) Also reported was the teams' ability to apply and implement strategy in otherwise challenging contexts. The study identified that the main reason for the programme's success was due to the leadership coaching the teams received, as well as the use of a WPBL methodology. However, there was concern that the lack of leadership capacity at the provincial level could jeopardize the gains made at the district levels (Dovey 2002). A one year global health leadership fellowship administered in Uganda by the Afya Bora Consortium, a partnership of four African universities and four American universities, allowed for a nine month mentored field attachment with local governmental and non-

governmental health organizations, and three months of didactic classroom modules (Nakanjako et al. 2015). In the field fellows were able to enhance their knowledge and skills of leadership, communication, and responsible research conduct and implementation science by embarking on projects that tackled real-world problems at their attachment sites (Nakanjako et al. 2015). The programme revealed that coordinated mentorship and collaborative work activities, improved individual and organizational capacity in being able to critically evaluate gaps in the health system. This empowered fellows to take on leadership roles and use innovative approaches to solve health system problems (Nakanjako et al. 2015).

In Zambia, the Ministry of Health (MOH) recognized that most district health managers were newly qualified clinical health professionals and ill prepared for new managerial responsibilities. The MOH introduced an in-service leadership and management programme in line with its goal to improve health system governance (Mutale et al. 2017). The course resulted in a certificate that was accredited by the Zambian National Institute of Public Administration. The programme included both theory and practical sessions as well as mentoring; and was delivered through four workshops (Mutale et al. 2017). The study reported that managers felt more prepared and motivated for leadership and managerial responsibilities after receiving the training. The workplace environment improved as district teams learnt how to work together with a shared vision (Mutale et al. 2017). In addition, financial management and accountability processes in the districts improved. The study noted that a key limitation to the programme was its current funding. The programme was offered as a free donor-funded programme and would be unsustainable once donor funding ended (Mutale et al. 2017). A comparable team-based leadership development programme was implemented in Kenya over three years aimed at developing leadership and management capacity among healthcare teams to expand health service coverage in key districts (Seims et al. 2012). The programme centred on the MSH's Challenge Model whereby each team selected a health system problem within their district and developed a vision and plan on how best to address the problem. The intervention included stakeholder meetings with national and subnational policy makers; workshops on leadership training; on-site team meetings with team members; and team mentoring sessions (Seims et al. 2012). Seims et al. (2012) reported that developing leadership and management skills of health teams increased selected health service delivery outcomes within districts, and these outcomes were sustained for at least six months after the programme. This was mainly attributed to the cooperative participation of the MOH and other stakeholders (Seims et al. 2012).

Through these leadership and management interventions for DHMTs a variety of outcomes were achieved, and a variety of factors influenced these outcomes. Factors that led to the success of these interventions included: a) they were team based. b) They were hands on practical training. c) Participants received mentoring and/or coaching. However across the leadership and management development programmes, the wider hierarchical health system governance context was reported to be a key limitation in strengthening leadership and management capacity at the district level. These studies support the need to critically evaluate organizational context, prior to introducing leadership and management development programmes.

Study rationale

The district level especially in decentralized contexts has a key responsibility in health systems particularly in the delivery of PHC and so strengthening the district health system has long been recognised of critical importance (Tarimo 1991, Martineau et al. 2018). LMIC leadership and management development has to a large extent focused on course-based formal residential training programmes that build individual skills and capabilities for vertical disease programmes and/or lead to academic qualifications (Day 2001, Daire et al. 2014, Edmonstone 2018, Johnson et al. 2021). A recent scoping review of leadership development programmes in Sub-Saharan Africa showed programmes were diverse in their design, learning content and teaching method, and with no consistency in the conceptual approaches adopted or leadership frameworks used (Johnson et al. 2021). Also observed was that there was a lack of evidence about which format of leadership development programmes have more of an impact than others on health systems (Johnson et al. 2021).

While the need for strong effective leadership and management has been recognized as a critical foundation for health systems, an important task for health policy and systems research (HPSR) is, therefore, to build upon the current body of knowledge on workplace based leadership and management development approaches in LMIC health systems, by pooling together, appraising and synthesizing empirical evidence on WPBL to generate lessons and provide insights to inform practice on how to strengthen leadership and management in resource limited settings. Despite WPBL receiving growing consideration as an approach for leadership and management development in LMICs, no review to our knowledge has critically examined the available empirical work on WPBL and its contribution to strengthening leadership and management in LMICs at the district level (Matovu et al. 2013, Daire et al. 2014, Doherty and Gilson 2015, Edmonstone 2018, Johnson et al. 2021, Nzinga et al. 2021). The aim of this study was to address this gap through a secondary analysis and synthesis of the literature on workplace based approaches to leadership and management development and to identify whether they strengthened district health leadership and management.

Study objective

Specific Objectives

1. To explore and identify existing literature on workplace based leadership and management development and how these development programmes interact with district health system leadership and management.
2. To explore WPBL strategies already used and analyze the lessons learnt from these approaches for leadership and management development.

General Objective

To inform LMIC policymakers and organizations involved in workplace based leadership and management development programmes in under-resourced settings about the appropriate tools to use, constraints to avoid, and what influences their success and sustainability.

Research question

What forms of workplace based learning support leadership and management development and how does it impact district health leadership and management strengthening?

Methods

In this study the secondary analysis of empirical data will be done through a qualitative evidence synthesis (QES). The purpose of this study will be both exploratory and explanatory, as it is seeking to find out and explain what is happening in a particular situation, to deepen our understanding of the phenomenon of interest and generate new insights (Gilson 2012). For this study we will be looking at workplace based learning, understanding this to mean 'learning that is organized in the workplace.' We will also include hybrid models were some of the learning takes place in classrooms and includes activities that mimic the decision-making processes that occur in the workplace (Doherty and Gilson 2015).

Evidence synthesis has become an integral part of evidence informed decision-making, including within HPSR (Langlois et al. 2018). Qualitative synthesis is defined as 'as any methodology whereby study findings are systematically interpreted through a series of expert judgements to represent the meaning of the collected work' (Gilson 2014 p. iii1). Similar methodological steps used in conducting a systematic review are used for the qualitative synthesis process (Dixon-Woods et al. 2006, Gilson 2014). This includes findings from qualitative studies, but can also include findings from mixed-methods and quantitative studies, which are systematically identified and synthesized, and conclusions drawn from the synthesized data (Russo et al. 2021). This process (see Figure 1 below) will be done in an iterative manner with each step building upon the previous one. The question acts as a guide rather than the anchor of the study, which makes qualitative synthesis somewhat different from traditional systematic reviews (Dixon-Woods et al. 2006).

For this QES, we will use a framework synthesis approach and specifically a 'best fit' framework synthesis. Framework synthesis is one of the methodologies employed to synthesize qualitative data and provides a structured way to organize and analyse data (Caroll et al. 2011). 'Best fit' framework synthesis begins with choosing a possible ('best fit') conceptual model that may be suitable to answer the review question, and using it as the basis for initial coding and generating themes (Caroll et al. 2011, Dixon-Woods 2011). This framework is then adjusted in reaction to the review's included studies; so that the final item is a revised framework that may include concepts not in the original framework (Dixon-Woods 2011). The new concepts from the review's studies are generated through iterative interpretation using secondary thematic analysis (Caroll et al. 2011, Carroll et al. 2013). Thematic analysis involves identification of the key themes of a particular topic in the literature and grouping these themes from the different studies under specific thematic headings (Dixon-Woods et al. 2005, Mays et al. 2005). The 'best fit' framework thus combines the strengths of both thematic and framework synthesis (Carroll et al. 2013, Flemming and Noyes 2021). The potential benefit and value of the 'best fit' framework synthesis is that it allows questions and issues raised in advance, by numerous stakeholders, to be answered fairly quickly versus other synthesis approaches (Dixon-Woods 2011, Carroll et al. 2013).

While searching for a relevant framework or conceptual model for WPBL, a literature review of research articles on WPBL and district health leadership and management development programmes will also be conducted, using applicable keywords in the search strategy and choosing pertinent studies (see Figure 1 below) (Carroll et al. 2013). Finding every study in the literature review may not be as important as ensuring sufficient coverage that guarantees the understanding of context,

phenomenon of interest and key populations (Dixon-Woods et al. 2005, Thomas and Harden 2008). Step two will be to appraise the quality of the primary studies selected to determine which ones will be used in the synthesis. In addition this step will include selecting a WPBL model from the conceptual papers identified that best fits the topic under study. If more than one relevant model is identified then a revised conceptual framework can be generated with relevant themes from all the models (Caroll et al. 2011, Carroll et al. 2013).

Thirdly will be to purposively sample study articles to gain a deep understanding of the phenomenon of interest for comprehensive analysis (Dixon-Woods et al. 2006, Gilson 2014). Sampling is guided by what the aim of the review is, and whether the review is integrative or interpretive. Integrative reviews are concerned with merging and amalgamating data as is seen in traditional systematic reviews. Interpretive reviews, on the other hand, include the generation and interpretation of new insights (Dixon-Woods et al. 2005, Dixon-Woods et al. 2006, Gilson 2014). This study is an interpretive review as it will appraise and synthesize empirical evidence on WPBL to generate lessons and provide insights to inform practice on how to strengthen district health leadership and management in resource limited settings. In addition, the study aims to provide knowledge support to policymakers and organizations, by presenting analytic generalizations that can be considered in different settings (Mays et al. 2005, Gilson 2014).

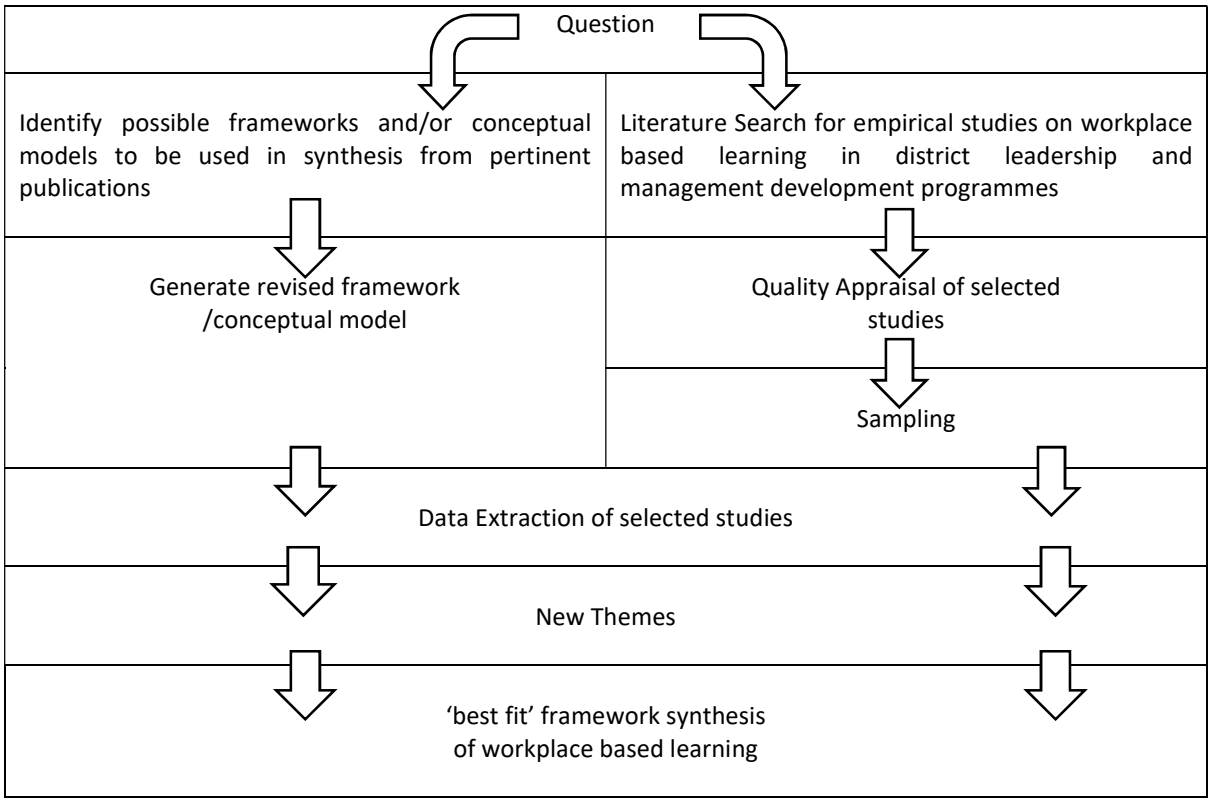

Figure 1 Research plan diagram (Carroll et al. 2013)

The fourth step is data extraction, which includes identifying which data to extract and how best to represent it. Finally, interpretation and synthesis of the data extracted is undertaken. Synthesis adds an extra step to traditional systematic reviews, as it is at this stage that judgements are made that generate new ideas and insights beyond the results and conclusions drawn from the individual studies

included in the synthesis (Gilson 2014). The judgements that are made may raise concerns of bias. Nonetheless, if the process to reach these judgements is systematically laid out, transparent, involves multiple reviewers of the data and leads to consensus, and rigorous interpretations are supported, then the synthesis findings would be appropriate to make generalizations (Thomas and Harden 2008, Carroll et al. 2013, Gilson 2014).

Conceptual framework

To guide the qualitative synthesis this study will draw on and adapt a model of WPBL developed by Matthews (1999). The ways in which the framework will be used in the synthesis approach are spelt out in later sections. The model was identified following iterative searches and discussions with the thesis supervisors, specifically aimed at identifying WPBL conceptual models and frameworks. The Matthews (1999) model was selected as it was systematic and integrated, incorporating a range of factors into its design, delivery, and assessment (Matthews 1999).

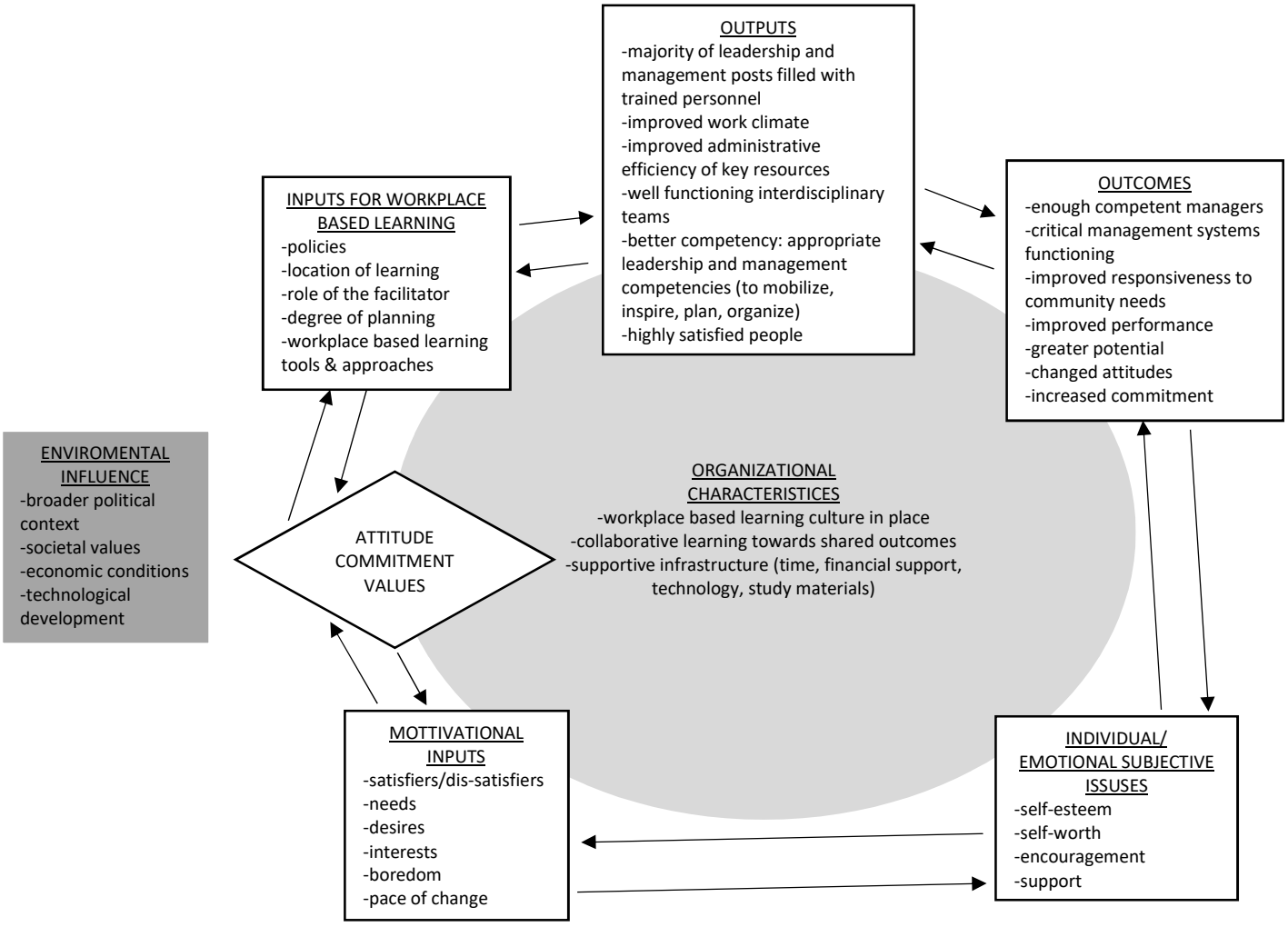

Figure 2 Adapted workplace based learning conceptual framework (Matthews 1999, WHO 2007, Jacobs and Park 2009, Manley et al. 2009, Vriesendorp et al. 2010)

It was linked to organizational outputs and outcomes, included such things as motivation, values, and attitudes that can have an impact on the success of WPBL. The model addresses the whole person and

not just the development of technical skills, and takes into account aspects internal and external to the organization that can influence WPBL (Matthews 1999).

As the Matthews (1999) model somewhat reflects a private sector focus, we will draw on additional concepts to reflect a public sector organizational context (see Figure 2 above). We thus include concepts from: the World Health Organization (WHO) framework for strengthening management at the district level; MSH's Leading, Managing, and Governing for Results Model; Jacobs and Park's proposed conceptual framework of workplace learning; Manley et al.'s framework for work-based learning; as well as the workplace based learning tools and approaches from Table 2 above (WHO 2007, Jacobs and Park 2009, Manley et al. 2009, Vriesendorp et al. 2010).

The WHO framework specifically looks at strategies for supporting leadership and management development at the operational levels in LMICs (Egger 2007, WHO 2007). As mentioned earlier it is at the operational level that district and PHC managers convert polices and resources to health for the population (Daire et al. 2014, Bradley et al. 2015, Chunharas and Davies, 2016). The MSH model summarizes the key skills that underpin successful leadership and management. These skills are crucial to how policy and practice will be implemented in the health system to improve its performance and impact (Vriesendorp et al. 2010). The Jacobs and Park's framework provides a set of integrated learning inputs and processes for WPBL that function together to achieve organizational goals (Jacobs and Park 2009). The Manley et al.'s framework identifies the attributes, enabling factors and consequences of WPBL in a contemporary healthcare setting (Manley et al. 2009).

Explaining the conceptual framework: While the WPBL conceptual framework reflected here is visually linear, it is understood that health systems are complex adaptive systems. Elements of the health system are not fixed and often interact and feedback into each other leading to emerging new realities (de Savigny and Adam 2009, McEvoy et al. 2016). Conceptualization of a linear framework has been developed to guide the study particularly in data extraction and meaning making. The framework will aid in exploring the forms of WPBL that support leadership and management development and how these strategies potentially strengthen district health management and leadership.

Organizational Characteristics: If organizations want to realize organizational growth by developing the capacity of their employees through learning and acquiring new knowledge then certain characteristics and activities need to be in place to support WPBL (Matthews 1999). The culture, learning environment, and supportive infrastructure should support the WPBL philosophy advocated by the organization (Matthews 1999, Manley et al. 2009). The learning environment should be one 'where reflexivity, reflection, critical thinking, creativity, risk-taking and freedom to experiment' are appreciated (Manley et al. 2009). The process of learning should promote working in collaboration with others, contributing to the attainment of common goals (Manley et al. 2009). Supportive infrastructure like: time for independent study; software; financial support to train managers; and time for facilitation and mentorship, aid in the successful implementation of WPBL (WHO 2007, Manley et al. 2009). Similar to the original framework, the adapted framework takes into account aspects internal and external to an organization (shown in a light grey circle in Figure 2 above) that can influence WPBL. Identified WPBL influences (Inputs; Individual and Motivational Issues; Outputs; and Outcomes) are shown to cut across the organization (see Figure 2 above) as well as the wider

external socio-cultural environment, to highlight that no organization functions in a vacuum (Matthews 1999).

Inputs: Workplace based learning should incorporate a variety of inputs into its design and delivery to ensure success. Inputs are the mechanisms utilized to facilitate learning. The location of learning determines if the learning occurs away from the work environment or in the actual workplace (Jacobs and Park 2009). The degree of planning refers to whether there is a systematic approach to develop the learning. Unstructured planning points to there being no or little indication that a systematic approach was used, while structured planning indicates a systematic approach was used (Jacobs and Park 2009). The role of the facilitator refers to the degree in which others are involved in the learning process. A passive role indicates the facilitator had a restricted role in the learning process, while an active role indicates the facilitator had a direct role in the learning process (Jacobs and Park 2009). Workplace based learning uses various tools and approaches (see Table 2 above) that can include: 360 degree feedback; coaching; mentoring; networking; job assignments or in-service action projects; reflection; action learning sets; journaling; flipped classrooms; e-learning or distance learning and training in the workplace to encourage dialogue that creates a safe and trusting environment (Day 2001, Cunningham et al. 2004, Raelin 2008, Doherty and Gilson, 2015).

Outputs: The outputs are the immediate tangible results that are observed in the workplace after WPBL (Matthews 1999). These include as highlighted in the conceptual framework: a) a sufficient number of trained leaders and managers, such that the majority of leadership and management posts are filled with trained personnel (WHO 2007). b) Managers and leaders having better competencies. Competencies referring to the skills, abilities and knowledge needed to meet current and new work challenges (Matthews 1999). Specifically in the public sector these are the skills (see Table 1 above) needed to lead and/or manage (Vriesendorp et al. 2010). c) Improved administrative efficiency of key resources such that managers and leaders are able to monitor service delivery performance and set better targets (WHO 2007). d) Improved work climate and team dynamics resulting in mutual trust and respect among teams members, role clarity and understanding others roles', and improvement in communication. This ultimately leading to highly satisfied employees (Matthews 1999, Manley et al. 2009).

Outcomes: The outcomes of WPBL should generate continued growth and development of the employee and the organization (Matthews 1999, Manley et al. 2009). While specifically for the public sector, strengthening of district health leadership and management, so as to promote advancement towards national health objectives of improved health services and better health outcomes for the population (WHO 2007). A disabler/enabler to implementing and applying any form of WPBL is employees' unwillingness/willingness to apply the new skills and knowledge they have been taught into the workplace (Matthews 1999). Thus a change in attitude among employees is needed and of great importance. This changed attitude facilitates an increased commitment to work and improves work performance (Matthews 1999). Ultimately the overarching goals and outcomes of workplace based leadership and management development are to ensure that: there is an adequate number of competent managers with appropriate skills and knowledge; satisfactory functioning of critical support systems (that can manage finances, human resources, supplies, et cetera); and the

development of administrations that are ready to take on new challenges and responsive and committed to community needs (WHO 2007).

Individual and Motivational Issues: Workplace based learning ought to address the whole person and not just focus on acquiring new skills and knowledge (Matthews 1999). Workplace based learning should provide some form of meaning to learners, provide encouragement and support, and be responsive to the needs of the learner (Matthews 1999, Manley et al. 2009). Employees will only be interested in learning if they find some value in it for themselves (Matthews 1999). For instance, that it will bring about positive feelings about themselves and a sense of personal empowerment. Thus individual subjective issues such as self-worth and self-esteem should to be included for WPBL to be successful (Matthews 1999). Learners should be encouraged to be innovative and detect the positive influences that transform their own personal development. Learners need to be active learners with the attitude, commitment and motivation to learn from others and their own experiences (Matthews 1999, Manley et al. 2009). Lack of motivation can potentially affect team cohesion and group learning. Self-reflection is necessary to identify needs, interests, desires and satisfiers or dis-satisfiers of learning (Matthews 1999, Manley et al. 2009).

External Environment: Organizations and their employees do not exist in a vacuum and as such a wide range of factors influence them. Frequently the external environment can have a substantial influence on WPBL (Matthews 1999). Technological advancements in the twentieth century have driven rapid change in the workplace. Government policies often direct workplace activities. For instance, not much authority is delegated to managers in the public sector to make decisions on WPBL for their organizations (Matthews 1999, WHO 2007). Wider political, societal, and economic realities limit managers' decision space (the range of choice they have to make decisions) in the public sector (Matthews 1999, WHO 2007).

Literature search strategy

A scoping of the literature will be conducted to explore WPBL as well as district level leadership and management development. Particular focus will be given to peer-reviewed and grey literature in LMICs. Articles will be selected using pre-determined inclusion and exclusion criteria listed below and shaped by the review question (Mays et al. 2005). The following electronic bibliographic databases were identified with the help of a reference librarian at the University of Cape Town, Health Sciences library and include: Medline via PubMed, Ebscohost (Academic Search Premier, Africa-Wide Information, Cumulative Index of Nursing and Allied Health Literature (CINAHL), Health Source: Nursing/Academic Edition, APA PsycInfo), Scopus and Web of Science. The search will be guided by the characteristics of each database using keywords, thesaurus terms, synonyms, free-text terms and search filters (Dixon-Woods et al. 2006). Institutional databases like WHO and the Alliance for Health Policy and Systems Research (AHPSR) will also be included. Multiple databases are included to ensure a thorough search that helps identify all pertinent study articles. This is of particular importance as poor indexing of qualitative research in databases remains a challenge (Mays et al. 2005, Dixon-Woods et al. 2006, Thomas and Harden 2008). Citation tracking using the reference lists of included articles will also be used to identify other pertinent studies. Additional inputs will be provided by Marsha Orgill and Professor Lucy Gilson (the thesis co-supervisors) who are knowledgeable health policy and systems researchers.

The search process will be done in an iterative manner combining the keywords and/or synonyms, thesaurus terms, and free-text terms using Boolean operators 'AND' and 'OR'. Combining terms using 'AND' allows articles using all terms to be retrieved; while using 'OR' allows articles using either of the terms used to be retrieved (Akobeng 2005, Gusenbauer and Haddaway 2020). The keywords will be derived from the research question and the conceptual framework and will include terms related to: a) the type of learning such as ('work-based learning'; 'workplace learning'; 'workplace based learning'; 'action learning'; 'mentoring'; 'coaching'). b) The type of intervention such as ('leadership'; 'management') and c) the sector in which the learning will take place ('health system'). EndNote reference manager will be used to identify and remove duplicates, organize, and store the references once the search is completed.

The initial scoping of the literature found a limited coverage of evidence on WPBL for district health leadership and management development. Most of the literature on WPBL in healthcare is geared towards clinical leadership. Clinical leadership being the leadership practices that health professionals engage in, to influence point-of-care innovations and improvements within healthcare organizations, to achieve better health outcomes for patients (Swanwick and McKimm 2011, Doherty 2013, Joseph and Huber 2015). Due to this limited coverage of evidence, the student researcher will also purposively search for articles on leadership and management development programmes in district health systems. As the DHS comprises of all the healthcare activities providing PHC within a district, including community-based, clinic, and first referral level hospital services (Tarimo 1991, GTZ 2004, Alperstein and Irlam 2005, Loveday 2018). Articles on both health facility and district level workplace based leadership and management development programmes will be included in the review.

The complete search strategy and process, including the number of articles retrieved from each of the databases is shown in Appendix 1. As this is an iterative process it will be unlikely to reproduce the exact search strategy as is characteristic of traditional systematic reviews. What the study will aim to do is provide a clear account of how the relevant literature was found (Dixon-Woods et al. 2006).

Quality appraisal

There is much contention not only on what defines good quality qualitative research and how it should be assessed, but also whether there should be criteria to judge the quality of qualitative research (Dixon-Woods et al. 2004, Thomas and Harden 2008). Some argue that establishing criteria stifles the interpretive and creative features of qualitative research (Dixon-Woods et al. 2004). While others contend that criteria and structured procedures act as a guide to good practice and promote rigour, not necessarily a rigid requirement to judge the quality of qualitative research (Dixon-Woods et al. 2004, Mays et al. 2005).

The challenge with developing appraisal criteria for qualitative research is that it groups 'qualitative research as a unified field', when it is not, either in terms of its methodological approaches or data collection methods (Dixon-Woods et al. 2004, Dixon-Woods et al. 2006). The diverse nature of qualitative research would result in appraisal criteria being applicable in some cases but not in others (Dixon-Woods et al. 2004, Dixon-Woods et al. 2006). This was found to be the case in Barasa et al.'s (2018) systematic review on organizational resilience when using the Critical Appraisal Skills Programme checklist tool for appraising qualitative research (Barasa et al. 2018). As is often seen in review studies using checklists, it led to seemingly weak articles being excluded. Some suggest that

whole articles should not be excluded but that sound findings in methodologically weak studies have 'nuggets of wisdom' that could be included (Dixon-Woods et al., 2006, Pawson 2006). In qualitative synthesis, successful syntheses have been known to include weak studies because the worth of a specific study may only become apparent during the synthesis process (Mays et al. 2005, Pawson 2006). For instance, in interpretive synthesis it is better to assess the quality of articles while in the process of building the synthesis, rather than excluding these articles at the beginning (Dixon-Woods et al. 2007). This study being an interpretive review will adopt this approach to avoid excluding any potentially beneficial studies on WPBL that may generate lessons and produce new insights on how to strengthen district health leadership and management in resource limited settings.

It therefore becomes necessary in qualitative synthesis to take a general view of a study, recognizing the importance of context, and making holistic judgements of quality to decide which studies to include in the synthesis (Dixon-Woods et al. 2004, Gilson 2014). A few universal features to all forms of research can be used as reminders on how to evaluate the quality of studies to be included (Dixon-Woods et al. 2004). One would be a detailed description of the phenomenon of interest such that the reader can clearly understand the experience being described. Another is that the research question of the reported study is clear and relevant to the synthesis. Then finally some basic explanation of the methods used (Dixon-Woods et al. 2004, Caroll et al. 2011, Gilson 2014). This broad approach to quality appraisal has been previously used in a systematic review of learning organization interventions (Laenen 2020). Ultimately the assessment of quality will be dependent on the reader's subjective judgement. Careful records of the appraisal process including strengths and weakness of individual studies will be maintained (Dixon-Woods et al. 2004, Mays et al. 2005). In this study the quality judgements will be reviewed by the thesis co-supervisors.

Sampling of articles

In general qualitative research tries to reflect the diversity there is in the phenomenon of interest and not necessarily aim for statistical generalizations as is seen in typical quantitative studies for systematic reviews. It is therefore not necessary to identify and include every single applicable study (Barbour 2001, Downe et al. 2019). As such an issue that often comes up in reviews is how many articles should be included in a study. One strategy often used in primary qualitative research is theoretical or purposive sampling and will be used in this QES. Papers will be selected as new concepts emerge and are developed. Sampling continues until no new data or insights emerge (the point of saturation) (Dixon-Woods et al. 2005, Mays et al. 2005). As mentioned earlier, sampling is guided by the aim of the review. Since this is an interpretive synthesis with the aim of generating and interpreting new insights, sampling will continue until the point of theoretical saturation (Dixon-Woods et al. 2005, Dixon-Woods et al. 2006, Gilson 2014). With purposive sampling, a heterogeneous set of articles might be deliberately included. This heterogeneous set of studies can provide relevance to concept development, as well as provide contrast and comparison to the study, thus deepening the scope of the synthesis (Barbour 2001, Gilson 2014)

This sampling approach has been previously used for selecting papers for inclusion in qualitative syntheses (Gilson 2014). However the sampling strategy will only be implemented once the set of empirical studies that fit the inclusion and exclusion criteria has been identified. If there are only a limited number of studies then all the studies will be included. However, if the number of studies that

fit the eligibility criteria is quite large, then purposive sampling will be used. In qualitative evidence syntheses, including too many studies can weaken the quality of the analysis (Glenton et al. 2019). All these considerations will made in consultation with the thesis co-supervisors. Once the articles to be included in this study have been selected, a summary will be provided using a summary of articles template.

Inclusion and exclusion criteria

The search process described above will be screened and articles carefully chosen based upon predetermined inclusion and exclusion criteria as indicated below. These criteria help to focus the scope of the QES and keep the study relevant to its objectives (Stern et al. 2014, Downe et al. 2019). If the inclusion criteria is too strictly defined it will limit the number of articles selected. On the other hand, if the inclusion criteria is too broad and not specific enough a large number of articles will be obtained. Thus every effort must be made to ensure the search strategy locates the greatest number of articles that help answer the research question (Bown and Sutton 2010, Downe et al. 2019). Articles whose titles and abstracts fit the inclusion and exclusion criteria will be selected. Those that are seen as pertinent to the review will be carefully considered, and their full texts retrieved for additional reading and assessment (Glenton et al. 2019). Additional insights on empirical studies to include in the review will be obtained from HPSR researchers.

This qualitative evidence synthesis will therefore include:

i. Studies relevant to the research question.
ii. Empirical studies on WPBL linked to leadership and/or management development.
iii. Studies that include qualitative, mixed-methods and quantitative methodology. A heterogeneous set of studies provides contrast and comparison deepening the scope of the synthesis (Barbour 2001, Gilson 2014).
iv. Studies published in English.
v. Grey literature published in English from credible sources like WHO or AHPSR.
vi. Studies carried out in LMICs as district health systems is a LMIC phenomenon.
vii. Studies carried out in PHC facilities as well as at the district level. The DHS comprises of all the healthcare activities providing PHC within a district (Tarimo 1991, GTZ 2004).
viii. Original or review articles whose titles and abstracts include one or more of the key search terms.
ix. Articles whose full text access can be obtained through the University of Cape Town libraries.
x. Studies published from the year 1990. It was in the 1990's that WPBL earned growing interest in HICs when Raelin's critical framework was published (Raelin 1997).

The synthesis will exclude:

i. Studies not linked to WPBL or applicable to the research question.
ii. Studies which are not based on empirical research.
iii. Studies not published in English due to difficulties in translation and time constraints.
iv. Studies not carried out in LMICs.
v. Articles without abstracts or full text accessibility through the University of Cape Town libraries.

vi. Studies published before the year 1990.

Data extraction

In qualitative review studies data extraction is often an iterative process whereby review authors go back and forth in several cycles, from the primary studies to data extraction and synthesis, as themes emerge (Noyes and Lewin, 2011, WHO 2021). This requires reviewers to immerse themselves in the data through carefully reading the selected articles to identify what data is relevant to the research question (Noyes and Lewin, 2011).

One of the greatest challenges in synthesizing qualitative data is that the findings in primary qualitative studies are hard to find; sometimes due to publication constraints imposed by academic journals of different disciplines (Sandelowski and Barroso 2002, Thomas and Harden 2008, Noyes and Lewin 2011). Findings can be presented as: verbatim quotes; authorial insights and interpretations of data; text; tables or diagrams of theory (Noyes and Lewin 2011, Carroll et al. 2013, Glenton et al. 2013, Gilson et al. 2014). As such findings can be found anywhere in an article or report, requiring synthesis authors to use qualitative data from all sections of a study and not just the findings section (Sandelowski and Barroso 2002, Noyes and Lewin 2011, Gilson 2014).

In this QES, we will use a conceptual framework and specifically the Adapted Workplace based learning Conceptual Framework (Figure 2 above) to guide data extraction from the included studies. The framework provides structure for organizing and analysing data (WHO 2021). Qualitative data from each study will be extracted from all sections of the study based on the categories (Organizational Characteristics, Inputs, Outputs, Outcomes, Individual and Motivational Issues, and Environmental Influences) in the framework to better understand WPBL that is linked to leadership and management development. Additional categories maybe added as data extraction continues and thus the framework can be further developed (Noyes and Lewin 2011, Carroll et al. 2013, WHO 2021). Other 'best fit' framework syntheses have used this data extraction approach (Caroll et al. 2011, Carroll et al. 2013). The strength of using a conceptual framework to guide data extraction is that it focuses data extraction to findings that are relevant to the research question (Noyes and Lewin 2011).

To ensure data extraction is done in a systematic and transparent way, a data extraction template will be developed and applied across all the included studies (Noyes and Lewin 2011). This will permit comparison and contrast of data from each study (Gilson 2014). Specific sections of the template will highlight the different categories of the Adapted Workplace based learning Conceptual Framework. The template will provide a visual depiction of the data for the subsequent analysis and synthesis. The student researcher will undertake the data extraction, but this process will be reviewed by the thesis co-supervisors.

Data analysis, synthesis and interpretation

This study will analyse and synthesize qualitative data using the framework synthesis approach. Framework synthesis is one of the methodologies employed to quickly synthesize qualitative data and provides a structured way to organize and analyse data since there are already pre-existing categories (and themes) in the framework (Caroll et al. 2011). Data for analysis will be extracted from either verbatim quotes, authorial insights and interpretations of data, text, tables or diagrams of theory from anywhere in the included studies (Noyes and Lewin 2011, Carroll et al. 2013, Glenton et al. 2013,

Gilson et al. 2014). This study will use the Adapted Workplace based learning Conceptual Framework (Figure 2) for analysis and synthesis. This framework will aid in exploring the forms of WPBL that support leadership and management development and how these strategies potentially strengthen district health management and leadership. The synthesis will take place in five stages which are:

1. Familiarization with the data by immersion in the included studies through reading the articles multiple times to assess and identify the data that is relevant to the research question and begin noting the key ideas and themes (Glenton et al. 2019, Shaw et al. 2021).
2. Extracting the data from each study and inserting the data into the data extraction template based on the Adapted Workplace based learning Conceptual Framework's categories/themes (Organizational Characteristics, Inputs, Outputs, Outcomes, Individual and Motivational Issues, and Environmental Influences). Also seeing how well the data fits into these themes and whether additional recurrent themes are identified across the included studies (Caroll et al. 2011, Carroll et al. 2013, Walt and Gilson 2014, Glenton et al. 2019).
3. If any relevant data from the included studies does not fit the pre-existing categories of the framework, secondary thematic analysis will be used to capture this data (Caroll et al. 2011). Thematic analysis is an interpretive inductive approach that involves the identification of recurrent themes arising in the included studies and summarising these themes under thematic headings (Dixon-Woods et al. 2005, Caroll et al. 2011). Each theme will be fully explored and described according to the features in the original studies (Carroll et al. 2013).
4. Revisiting the data where all the themes will be reviewed in an iterative manner (Carroll et al. 2013). Themes may change or be refined to reflect the data more accurately as well as capture any similarities or differences. A final combined list of themes with the data supporting each theme will then be compiled as well as any associations or patterns between themes (Carroll et al. 2013, Shaw et al. 2021).
5. Synthesis and interpretation will be the final stage, where we will go beyond the findings of the included studies, and judgements will be made to generate new ideas and insights (Thomas and Harden 2008, Gilson 2014). An interpretation of the relationships between themes will be offered, in light of the research question, to create and explain the main concepts that signify the core issues emerging from the data (Caroll et al. 2011, Shaw et al. 2021). These concepts will be mapped out and if they share similarities will be grouped under more abstract concepts (Carroll et al. 2013, Glenton et al. 2013). The abstract concepts will be contextualized with reference to the data from the included studies, to better understand their associations and as such address the research question (Carroll et al. 2013).

This process therefore moves analysis from merely merging and amalgamating data, to a greater level of abstraction, and generating and interpreting new insights, that is synthesis (Dixon-Woods et al. 2005, Dixon-Woods et al. 2006, Carroll et al 2013, Gilson 2014). In this QES we hope to generate lessons and provide insights to inform policy and practice on how to strengthen district health leadership and management in resource limited settings through WPBL. The resultant synthesis may possibly build upon the Adapted Workplace based learning Conceptual Framework (Figure 2) with additional concepts reflecting the data from the included studies (Carroll et al. 2013). As such the conceptual framework acts as a foundation for the synthesis, but can be expanded or condensed dependent upon any new data arising from the overall synthesis (Caroll et al. 2011).

Rigour

Qualitative evidence synthesis remains a new area of work and thus the judgements that are made during the synthesis process may raise concerns of bias and whether the findings would be appropriate to make any generalizations (Gilson 2014). Findings from qualitative evidence syntheses are richer and more beneficial than those from singular empirical studies since they gather data from numerous studies providing more astute ways of discerning phenomena (Dixon-Woods et al. 2006, Downe et al. 2019). The QES is able to detect patterns in the data and compare the data for possible similarities or differences irrespective of the contexts (Downe et al. 2019). The process to reach these judgements will be systematically laid out, transparent, and involve those knowledgeable in the field. This will help achieve rigour and as such the findings would be appropriate to offer analytic generalizations that can be used in other settings (Thomas and Harden 2008, Carroll et al. 2013, Gilson 2014).

To further achieve rigour the study will provide a rich description of the phenomenon of interest using context and theory, and also ensure judgements are developed through a reflexive approach (Thomas and Harden 2008, Gilson 2014). The literature review above, provides current theory and practices of WPBL. The clearly described study methodology will guarantee that article selection, quality appraisal, and data analysis, synthesis and interpretation is guided by theory. The advantage of the 'best fit' framework synthesis is that it is a theory-based QES. It identifies possible frameworks and/or conceptual models based upon prior knowledge or existing theory from pertinent publications (Carroll et al. 2013, Shaw et al. 2021). Theory is important because it provides a transparent and systematic process to understand and integrate qualitative data found in primary studies versus entirely interpretative methods of synthesis (Carroll et al. 2013, Shaw et al. 2021). Qualitative data is organized according to pre-existing theoretical categories, and the theory-based conceptual framework becomes the lens worn by the researcher to provide interpretations of the data (Malterud 2001). An additional advantage of the 'best fit' framework synthesis is that it allows for a two-phase consecutive process that provides an assessment of the themes emerging from both the framework synthesis and the subsequent thematic analysis adding to the study's rigour (Flemming and Noyes 2021). The student researcher will maintain a reflexive journal to write down their reflections of any personal or professional preconceptions and biases throughout the study, and share these reflections with the thesis co-supervisors to reduce the risk of skewing the data analysis or synthesis.

Arguments have been made that the studies included in a qualitative synthesis should have similar methodology because differing methods are different in their epistemological foundations and thus make it difficult to make sound judgements (Dixon-Woods et al. 2005, Mays et al. 2005). However, the goal of qualitative research is to provide a thorough examination of the research question from all angles. A heterogeneous set of studies provides contrast and comparison deepening the scope of the synthesis (Barbour 2001, Gilson 2014). The 'best fit' methodology allows the researcher to sort through data while engaging with theory and asking pertinent questions to see if different circumstances hold true to conventional theory (Carroll et al. 2013). Different studies can offer different yet valid depictions of the topic being studied. These different approaches to the same topic afford a greater appreciation of complex phenomena (Malterud 2001). Similar methodologies of synthesizing diverse forms of evidence show that for instance, qualitative data can provide insight on

why a policy or management process works, while quantitative data provide understanding of the general effectiveness of the specific process (Mays et al. 2005).

Owing to limited resources and time constraints, only the student researcher will perform the full data analysis and synthesis, however, the thesis co-supervisors will assist in verifying that the analysis and synthesis carried out, along with the interpretations made, are valid.

Ethical considerations

This study is a secondary analysis of already published and publicly available peer-reviewed and grey literature. The study poses no risks as no primary data will be collected and as such no formal ethical clearance or confidentiality requirements are needed.

COVID-19 considerations

The study is not dependent on COVID-19 restrictions as it is a desk-based review. The study poses no risk of anyone contracting or transmitting COVID-19.

Limitations

The study is limited in scope due to its exclusion of studies published in other languages. These studies could provide additional relevant insights on workplace based learning. This was unavoidable due to the limited resources and time constraints needed for interpretation of these studies.

Timeline

The study will be conducted from August 2021 to January 2023. Table 3 below provides a timeline of the main research activities.

Table 3 Timeline of main research activities

Component	Activity	Date
Protocol	Subject Formulation	August – September 2021
	Draft Protocol	March 2022
	Final Protocol	May 2022
Data Collection and Analysis	Scoping of literature and write-up of Literature Review	September – October 2021
	Data Collection	June-July 2022
	Data Analysis and Evidence Synthesis	August – November 2022
Journal Article	Draft Article	December 2022
	Final Article	January 2023
Thesis	Intention to Submit	January 2023
	Submission	February 2023

Budget

This is a self-funded study by the student researcher. Table 4 below outlines the minimal budget for the study in South African Rands.

Table 4 Study budget

Category	Item	Cost
Stationary	Research Notebooks	R100
	Pens and Pencils	R50

Printing and Photocopying	Paper	R100
	Printer Ink Cartridges	R400
Total		**R650**

Dissemination

As mentioned earlier the study is relevant to LMIC policymakers, organizations, as well as HPSR researchers involved in workplace based learning programmes in under-resourced settings that seek to strengthen district health leadership and management. The findings of the study will be disseminated through a thesis format and a journal manuscript intended for publication in a peer-reviewed journal. The thesis will be available in the University of Cape Town's open access repository. Additional efforts will be made to disseminate the results to the wider global South audience through HPSR forums and conferences.

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PART B: JOURNAL MANUSCRIPT

Workplace based learning in district health leadership and management strengthening: a qualitative evidence synthesis

Target Journal: Health Policy and Planning[1]

Grace Kiarie[2]

Abstract

Effective leadership and management has been identified as a critical foundation to enable health systems to respond adequately to their population needs. The changing nature of low-and middle-income countries' health systems in the midst of resource scarcity and a high disease burden, has placed learning as a key factor for health system reform and transformation, with workplace based learning (WPBL) as contributing to this learning process. This qualitative evidence synthesis (QES) used the 'best fit' framework approach to synthesize evidence on WPBL, to identify and analyse how WPBL works to support and impact (or not) leadership and management development in the district health system. Findings from qualitative studies, mixed-methods and quantitative studies were synthesized and conclusions drawn from the data. The QES sought to answer the research question: 'What forms of workplace based learning support leadership and management development and how does it impact district health leadership and management strengthening?' Four electronic databases were used to search for empirical studies and published grey literature. Twenty-four articles were included in the synthesis. The findings reveal that over the last decade, WPBL has received consideration as an approach for leadership and management development. However, while the WPBL interventions differed in the type and nature of the intervention, as well as the length of delivery of each intervention, there was no evidence that pointed to which strategy had a greater influence than others on strengthening district health leadership and management. Furthermore, the synthesis demonstrates the need for a focus on sustainability and institutionalization of interventions, including the need to integrate WPBL interventions in health systems, and offering elements of WPBL through national or regional institutions while ensuring flexibility of WPBL design and delivery.

Keywords: workplace based learning, leadership, management, district health system, qualitative evidence synthesis

Key Messages

- Workplace based learning (WPBL) has received growing consideration as an approach for leadership and management development in Africa.
- Context specific learning, peer learning, the use of reflective practices and team-based learning were key forms of WPBL that contributed to district health leadership and management strengthening.
- For WPBL to impact district health leadership and management strengthening over the long term, sustaining and institutionalizing WPBL are important features to be considered.

[1] See Appendix 5 for journal submission instructions for authors.

[2] For the purposes of thesis examination, the student is the first and sole author of this qualitative evidence synthesis.

Introduction

Effective leadership and management has been identified as a critical foundation to enable health systems to respond adequately to their population needs (Vriesendorp et al. 2010, Daire et al. 2014, Agyepong et al. 2018). For low-and middle-income countries (LMICs), leadership and governance challenges are particularly acute and are one of the stated reasons LMICs did not achieve the Millennium Development Goals, alongside an under-skilled health workforce and the socio-economic determinants of health (Willis-Shattuck et al. 2008, Agyepong et al. 2018). Strengthening leadership and management has been identified as important in supporting Universal Health Coverage and improving health outcomes (Doherty et al. 2018, Martineau et al. 2018).

The Covid-19 pandemic has highlighted the need for stronger LMIC health systems. It is during emergencies and crises, that the inability of health systems in poorer nations to deliver care and be resilient in the face of shocks, is pronounced (Sheikh and Abimbola 2022). Learning is crucial to strengthening LMIC health systems and helping these health systems be better prepared to face future challenges (Sheikh et al. 2020, Sheikh and Abimbola 2022). In high-income countries (HICs) learning has been a key factor for health system reform and transformation, with workplace based learning (WPBL) as vital to this process (Illeris 2003, Manley et al. 2009, Manuti et al. 2015, Edmonstone 2018). Some of the terms used for this type of learning in the workplace have included: work-based learning; workplace learning; and workplace based learning (Illeris 2003, Raelin 2008, Doherty and Gilson 2015). Consequently, WPBL can be a challenging concept to define and there is more than one definition (Matthews 1999, Manuti et al. 2015). In this paper we use the term workplace based learning to mean 'learning that is organized in the workplace' (Doherty and Gilson 2015). The workplace can be a physical location and includes the shared values, ideas, actions, and attitudes that define the working environment and network of relationships (Matthews 1999). One could work in another location, for example from home, but still consider themselves part of the workplace (Matthews 1999). The learning that happens in the workplace can be informal, responding to critical changes or problems initiated within the workplace that require resolution, or formal in nature, usually around more structured planned learning activities (Cunningham et al. 2004, Jacobs and Park 2009, Doherty and Gilson 2015, Manuti et al. 2015).

Conventional training programmes that focus on acquiring technical and operational skills through ad hoc and didactic educational methods, in centralized locations away from the workplace, have been shown to have limitations in strengthening health systems and improving health outcomes (Matovu et al. 2013, Edmonstone 2018). While WPBL is not a magic bullet, it has the potential to contribute to changing health organizations by strengthening the capacity of health workers, improving productivity and users' experiences, and achieving continued transformation (Manley et al. 2009, Matovu et al. 2013). Workplace based learning offers potential or current leaders and managers faced with the unrelenting pace of change, an opportunity to learn and reflect in the midst of work practice (Raelin 2008, Raelin 2011).

Leadership in health occurs on many levels and is assumed by many actors who can contribute to health system complexity in the way actors understand and implement policy and practice (Chunharas and Davies 2016, Nzinga et al. 2018). In LMIC healthcare systems, leadership often adopts a top-down approach driven by hierarchy and centralized planning, which has shown to have limited effect in

strengthening health systems and improving population health (Kwamie 2015, Chunharas and Davies 2016, Nzinga et al. 2018). Debates on leadership in health have often centred on the most senior actors at the national levels, not on the other levels or actors in the health system (Chunharas and Davies 2016). To achieve health goals and scale up health services, LMICs need better leadership and management of key resources at all levels of the health system (Egger 2007).

National level health leadership sets policies and the overall strategic direction for the health system, and is influenced by the wider national and international environments (Gilson 2012). The meso or organizational level comprises of the local district, hospital and primary healthcare (PHC) managers and facility staff who convert national policies and any resources allocated to them into health services for the population (Daire et al. 2014, Bradley et al. 2015, Chunharas and Davies 2016). The district health system (DHS) is commonly the key decentralized component and cornerstone of national health systems. It plays a crucial role in delivery of PHC services, engaging communities, facilitating intersectoral collaboration, and training of healthcare workers (Tarimo 1991, Nzinga et al. 2021). District level leaders and managers play a critical role in health systems of implementing policies and programmes. Yet many district level actors feel unprepared for leadership and management roles as they have not received adequate training (Chunharas and Davies 2016, Nzinga et al. 2018). Inadequate leadership and management capacities can hinder district managers from improving the efficiency, quality, and effectiveness of health services for population needs (Vriesendorp et al. 2010, Belrhiti et al. 2016).

LMIC leadership and management development has to a large extent focused on course-based formal residential training programmes that build individual skills and capabilities for vertical disease programmes and/or lead to academic qualifications (Day 2001, Daire et al. 2014, Edmonstone 2018, Johnson et al. 2021). Furthermore, leadership and management development programmes have often taken trainees away from their workplaces for training causing disruptions in health service delivery, and involved only a few individuals from a facility or district (Matovu et al. 2013, Doherty and Gilson 2015). A recent scoping review of leadership development programmes in Sub-Saharan Africa showed programmes were diverse in their design, learning content, and teaching method, with no consistency in the conceptual approaches adopted or leadership frameworks used (Johnson et al. 2021). Also observed was that there was a lack of evidence about which format of leadership development programmes had more of an impact than others on health systems (Johnson et al. 2021).

No review to our knowledge has critically examined the available empirical work on WPBL and its contribution to strengthening leadership and management in LMICs at the district level (Matovu et al. 2013, Daire et al. 2014, Doherty and Gilson 2015, Edmonstone 2018, Johnson et al. 2021, Nzinga et al. 2021). The aim of this study was to address this gap through a secondary analysis and synthesis of the literature on workplace based approaches to leadership and management development and to identify whether they strengthened district health leadership and management. The review had a specific objective of exploring WPBL strategies already in use, and identifying and analyzing the lessons learnt from these approaches for leadership and management development.

Methods

Study design

This paper reports a qualitative evidence synthesis (QES) that sought to answer the research question: 'What forms of workplace based learning support leadership and management development and how does it impact district health leadership and management strengthening?' Evidence synthesis has become an integral part of evidence informed decision-making, including within health policy and systems research (HPSR) (Langlois et al. 2018). Qualitative synthesis is defined as 'as any methodology whereby study findings are systematically interpreted through a series of expert judgements to represent the meaning of the collected work' (Gilson 2014 p. iii1). The QES was done in an iterative manner with each step building upon the previous one. The question acted as a guide rather than the anchor of the study, which makes qualitative synthesis somewhat different from traditional systematic reviews (Dixon-Woods et al. 2006).

Review strategy

For this QES, we used a framework synthesis approach and specifically a 'best fit' framework synthesis. Framework synthesis is one of the methodologies employed to synthesize qualitative data and provides a structured way to organize and analyse data (Caroll et al. 2011). 'Best fit' framework synthesis begins with choosing a possible ('best fit') conceptual model that may be suitable to answer the review question, and using it as the basis for initial coding and generating themes (Caroll et al. 2011, Dixon-Woods 2011). This study draws on and adapts a model of workplace based learning developed by Matthews (1999). The Matthews (1999) model seeks to describe a 'holistic view of workplace learning.' Matthews (1999) writes that the model for WPBL may not answer questions on how to develop a WPBL environment, but rather provide some useful factors to be considered. We are not testing the model but rather using it as a way of understanding how WPBL can possibly lead to strengthening management and leadership in the DHS. Key factors in the Matthews model, as shown in Appendix 4 in blue, include inputs (for example policies) intersecting with individual and motivational issues which lead to outputs (for example better competency) and outcomes (for example improved performance.)

As the Matthews (1999) model somewhat reflects a private sector focus, additional concepts to reflect a public sector organizational context were added. These concepts are highlighted in red in Appendix 4. We thus included concepts from: the World Health Organization (WHO) framework for strengthening management at the district level; Management Sciences for Health (MSH) Leading, Managing, and Governing for Results Model; Jacobs and Park's proposed conceptual framework of workplace learning; Manley et al.'s framework for work-based learning; as well as WPBL tools and approaches from peer-reviewed literature and book chapters (see Appendix 4) (Day 2001, Cunningham et al. 2004, WHO 2007, Raelin 2008, Jacobs and Park 2009, Manley et al. 2009, Vriesendorp et al. 2010, Doherty and Gilson 2015). Given that we are trying to understand strengthening management and leadership in the DHS we believe that the outcomes shown in Appendix 4 reflect strengthened management and leadership.

The first step of the review process involved conducting a literature review of research articles on WPBL and district health leadership and management development programmes, using applicable keywords in the search strategy and choosing pertinent studies (Carroll et al. 2013). The keywords

were derived from the review question and the conceptual framework, and included terms related to: a) the type of learning such as ('work-based learning'; 'workplace learning'; 'workplace based learning'; 'action learning'; 'mentoring'; 'coaching'). b) The type of intervention such as ('leadership'; 'management') and c) the sector in which the learning took place ('health system'). Articles were carefully chosen using predetermined inclusion and exclusion criteria (see Table 1 below). EndNote reference manager was used to identify and remove duplicates, organize, and store the references once the search was completed.

The electronic bibliographic databases utilized for the search were: Medline via PubMed, Ebscohost (Academic Search Premier, Africa-Wide Information, Cumulative Index of Nursing and Allied Health Literature (CINAHL), Health Source: Nursing/Academic Edition, APA PsycInfo), Scopus and Web of Science. The database searches was limited to articles published after 1990.

Table 1 Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
• Studies relevant to the research question • Empirical studies on WPBL linked to leadership and/or management development • Studies that include qualitative, mixed-methods and quantitative methodology • Studies published in English • Grey literature published in English from credible sources like WHO or AHPSR • Studies carried out in LMICs • Studies carried out in PHC facilities as well as at the district level • Original or review articles whose titles and abstracts include one or more of the key search terms	• Studies not linked to WPBL or applicable to the research question • Studies which are not based on empirical research • Studies not published in English • Studies not carried out in LMICs • Studies published before the year 1990

It was in the 1990's that WPBL earned growing interest in HICs when Raelin's critical framework was published (Raelin 1997). Institutional databases like the World Health Organization (WHO) and the Alliance for Health Policy and Systems Research (AHPSR) were also included. Step two was to appraise the quality of the primary studies selected to determine which ones will be used in the synthesis (Caroll et al. 2011, Carroll et al. 2013). Thirdly we conducted data extraction, which was guided by the conceptual framework. Qualitative data were extracted into a data extraction table (see Appendix 3) which was itself based on the categories/themes of the framework (Inputs, Organizational Characteristics, Environmental Influences, Individual and Motivational Issues, Outputs, and Outcomes.) Finally, interpretation and synthesis of the extracted data was undertaken.

Quality appraisal

There is much contention not only on what defines good quality qualitative research and how it should be assessed, but also whether there should be criteria to judge the quality of qualitative research (Dixon-Woods et al. 2004, Thomas and Harden 2008). It therefore becomes necessary in qualitative synthesis to take a general view of a study, recognizing the importance of context, and making holistic judgements of quality to decide which studies to include in the synthesis (Dixon-Woods et al. 2004, Gilson 2014). A few universal features to all forms of research can be used as a reminder of how to

evaluate the quality of studies to be included. One would be a detailed description of the phenomenon of interest such that the reader can clearly understand the experience being described. Another is that the research question of the reported study is clear and relevant to the synthesis. Then finally some basic explanation of the methods used (Dixon-Woods et al. 2004, Caroll et al. 2011, Gilson 2014). In this review the primary author made the quality judgements and the secondary authors verified key appraisal points. No studies were excluded on quality grounds.

Synthesis

The QES analysed and synthesized qualitative data using the framework synthesis approach. The conceptual framework provided a structured way to organize and analyse extracted data since there were already pre-existing categories (and themes) in the framework (Matthews 1999, Carroll et al. 2013). If any relevant data from the included studies did not fit the pre-existing categories/themes of the framework, secondary thematic analysis was used to capture this data (Caroll et al. 2011). Each theme, and any associations or patterns between themes, was fully explored and described according to the data in the original studies (Carroll et al. 2013, Shaw et al. 2021). An interpretation of the relationships between themes was offered, in light of the research question, to create and explain the main concepts that signified the core issues emerging from the data (Caroll et al. 2011, Shaw et al. 2021). This process therefore moved analysis from merely merging and amalgamating data, to a greater level of abstraction, generating new ideas and insights, that is synthesis (Dixon-Woods et al. 2005, Dixon-Woods et al. 2006, Carroll et al. 2013, Gilson 2014).

We use the framework by Matthews (1999), including our public sector additions, to understand how inputs for WPBL interact with individual and motivational issues to achieve proximal outputs. And finally, whether WPBL leads to outcomes – while also acknowledging the effect of environmental influences and organisational characteristics on the process.

Results

The literature search found four hundred and thirty-five articles. Of these articles three hundred and eighty-two articles were excluded as they were not related to WPBL for leadership and/or management development. Fifty-three articles were found to be potentially relevant. After the removal of duplicates, twenty articles remained. The titles and abstracts of these articles were screened against the predetermined inclusion and exclusion criteria. After full text reading, only nine articles met the full inclusion criteria. Due to the limited evidence on WPBL for district health leadership and management development, a purposive search for articles on leadership and management development programmes in district health systems was conducted. This search identified ten relevant articles. Citation tracking using the reference lists of included articles identified other pertinent studies. Additional insights on empirical studies to include in the review were obtained from experienced HPSR researchers. In total, twenty-four articles were included in the QES. Figure 1 below outlines the number of articles included at each stage of the search process.

Characteristics of the included studies

Of the 24 articles, 20 were published between 2011 and 2021, with none published before 2002, although the literature search strategy included articles published from the year 1990.

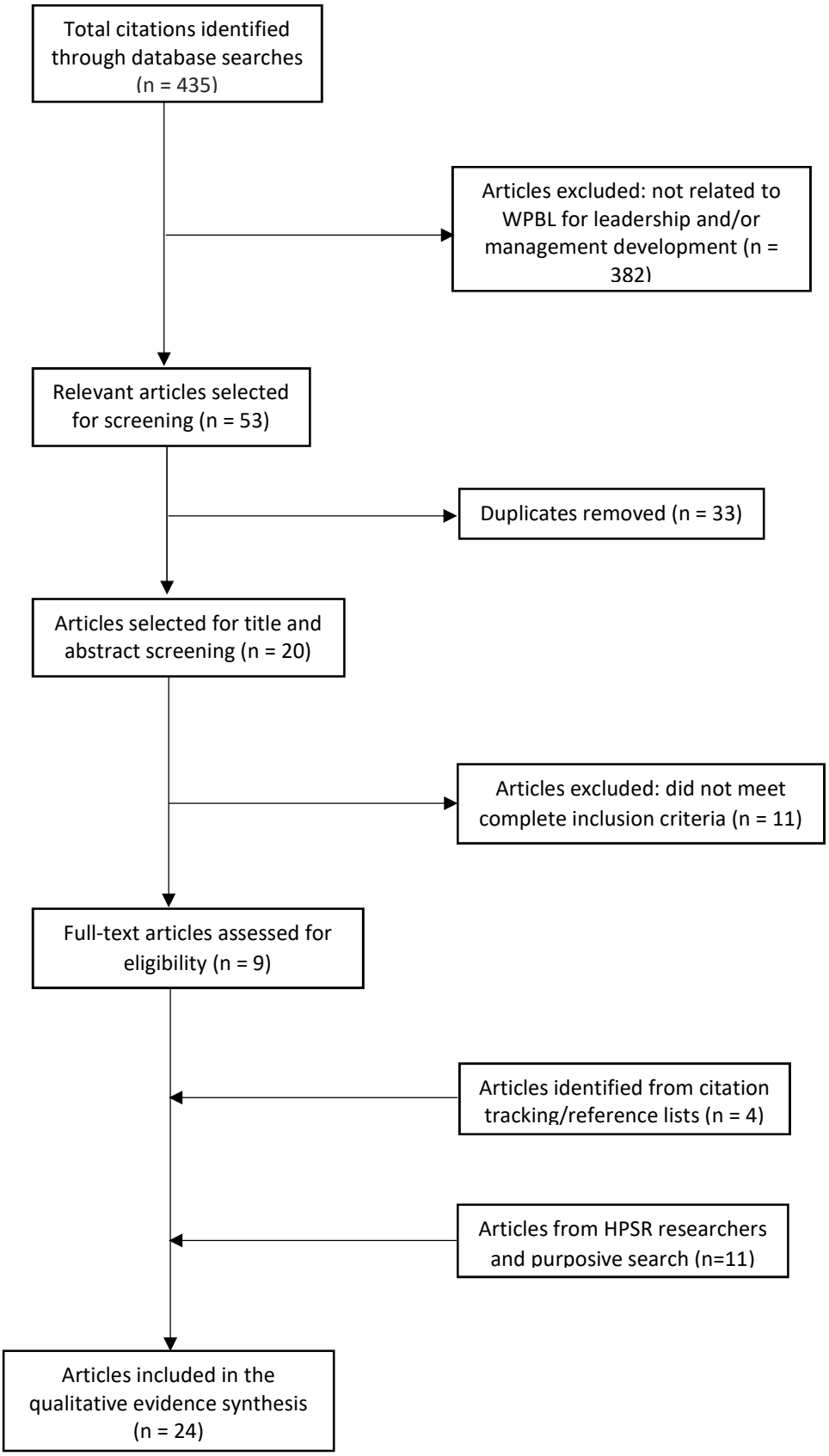

Figure 1 Flow diagram of articles included in the search process

The included articles covered both research studies that had a WPBL focus and articles that reported on WPBL interventions in eleven countries (see Table 2 below). The majority of the included studies were conducted in Africa. Four of the articles from Kenya covered the same WPBL intervention as did the two articles from India, and all these articles had the same first author across Kenya and India. One article covered a multi-country study in Ghana, Tanzania and Uganda (Martineau et al. 2018). It was notable that there were no papers from the LMIC regions of Eastern Europe, South America, Central Africa and South East Asia.

Table 2 Number of articles from each country

Country	Number of articles
Kenya	6
South Africa	4
Uganda	4
Mozambique	2
Zambia	2
India	2
Ghana	2
Liberia	1
Tanzania	1
Egypt	1
Ethiopia	1

The papers utilizing qualitative methods only (n = 13) were generally more robust, and provided thick descriptions of the intervention and context, such that we were able to draw more from the experiences being described (see Table 3 below). One of the qualitative studies was not based on an explicit WPBL intervention, however WPBL was observed while conducting research on district financial management, and these findings documented by the author (Choonara et al. 2017).

Table 3 Types of methodologies utilized in the included studies

Study Methodology	Number of Studies
Qualitative study[3]	13
Mixed-methods study	3
Quasi-experimental study	4
Quantitative study	4

A table containing the summary overview of the included articles is provided in Appendix 2. This table describes the type and nature of the WPBL intervention in each paper, including the length of delivery of each intervention, and whether an official qualification was conferred upon successful completion. In addition, the table in Appendix 2 provides information on the aim of each paper; the stakeholders driving the interventions; the methodology used; the WPBL participants and intervention setting; and summarizes the findings from each paper.

[3] In this review a qualitative study was a study that only employed qualitative methods and data was collected through interviews, participant and non-participant observations, focus groups and document reviews (Tolley, et al., 2005).

Characteristics of the workplace based learning interventions

All the included articles offer insights on workplace based leadership and management development programmes being carried out at the district level in LMICs. All the papers, except Choonara et al.'s (2017) study, reported a structured systematic approach to the design and delivery of the WPBL intervention, though with considerable diversity in the approaches utilized. Most of the WPBL interventions were practice-based (n = 15), while the rest were a hybrid-model (n = 9) that included a mixture of both course and practice based approaches. The course-based approach is characterised by leadership and management being taught through formal educational training modules, delivered by management consultants or academicians and often resulting in an academic qualification like a diploma or master's degree (Daire et al. 2014, Doherty and Gilson 2015, Edmonstone 2015, Edmonstone 2018). The practice-based approach is characterised by leadership and management development being facilitated through problem-solving and reflection in the work place. Academic qualifications were not the ultimate goal, but instead the focus is on, participatory capacity building and collaborative team learning (Daire et al. 2014, Edmonstone 2015, Doherty et al. 2018).

The majority of the interventions (n = 17) were driven by country level stakeholders[4] (see Table 4 below), but three were led by external actors[5] (Desta et al. 2020, Edwards et al. 2015, Sherr et al. 2013). Where there were collaborations among stakeholders, especially between country and external actors (n = 6), it was difficult to determine which stakeholder(s) was (were) driving the WBPL interventions, as this information was not always explicitly stated in each article.

Table 4 Stakeholders driving WPBL interventions

Stakeholders driving WPBL	Number of interventions
Country level higher education institutions	10
Country level research institutions	2
Other country level actors	5
External actors and/donors	3
Collaborations between country level actors and external actors/donors	6

Twelve of the WPBL interventions were between six months and two years in length. Longer interventions were embedded in research projects or other types of capacity development programmes. For example, Sherr et al. (2013) describes a WPBL intervention embedded in the seven year Mozambique Population Health Implementation and Training partnership project. The interventions described by Cleary et al. (2018) in South Africa, Martineau et al. (2018) in Ghana, Tanzania and Uganda, and Tetui et al. (2017) in Uganda, were between two and five years in length and embedded in broader action research projects. In three other interventions, WBPL formed part of formal educational programmes accredited by higher education institutions. These programmes ranged from one to two years in length, and an official qualification was conferred upon successful completion (Dovey 2002, Doherty et al. 2018, Foster et al. 2018). As mentioned previously, one of

[4] For this review, country level stakeholders included the national organizations and institutions, and/or government agencies within a country that were involved in the interventions e.g. Ministries of Health (Gilson, et al., 2012).

[5] For this review, external actors included the international individuals, organizations and/or institutions that were involved in the interventions e.g. the Clinton Foundation HIV/AIDS Initiative (Szlezak, et al., 2010).

papers was not based on an explicit WPBL intervention, but WPBL was observed while the research on district financial management was taking place (Choonara et al. 2017).

The majority of the interventions (n = 13) included district health managers or members of District Health Management Teams (DHMTs) (see Table 5 below). Some interventions included facility managers (FMs) (n = 12); members of Sub-District Management Teams (SDMTs) (n = 4); and health workers (n = 4). The intervention in India also included politicians (Prashanth et al. 2014, Prashanth et al. 2014).

Table 5 Participants involved in WPBL interventions

WPBL Participants	Number of interventions
District Managers or DHMT(s)	13
Facility Managers	12
Sub-District Management Team(s)	4
Health Workers	4
Elected members of local government	1
Interdisciplinary participants involved in district financial management	1
District Human Resources for Health teams	1
District Hospital Management Team	1
Other Staff in PHC facilities	1
Provincial (Governorate) Managers	1

Workplace based learning supporting leadership and management development

The following section summarizes and analyses the evidence, in relation to the research question and study objective, to provide an understanding of WPBL leadership and management development programmes in the DHS and its impact on leadership and management strengthening. The findings are presented according to the key topic headings in the conceptual framework as shown in Appendix 4 (for example inputs, outputs, et cetera.) None of the included studies applied the adapted WPBL framework, therefore it was not always easy to fit data neatly into the pre-existing categories. Hence a flexible approach was used when extracting data and the process of analysis focused more on gaining insights on whether and how WPBL strengthened district health leadership and management. Each category will be considered individually and a summary of the pertinent findings will be provided. Relationships between themes will be offered to explain the main concepts emerging from the evidence.

Inputs

Inputs are the variety of mechanisms (see Table 6 below) incorporated into the design and delivery of WPBL interventions that facilitated learning (Matthews 1999). Matthews (1999) did identify the need for strategies and activities as important inputs for WPBL. The inputs identified in this synthesis as shown in Table 6, are supported by the broader literature on WPBL (Day 2001, Cunningham et al. 2004, Raelin 2008, Doherty and Gilson 2015).

Table 6 Inputs of WPBL interventions utilized for leadership and management development

WPBL Inputs	Number of Interventions
Facilitators	18
Action Projects	10
Mentoring	9

Coaching	8
Peer-learning	7
Acton Learning	6
Reflection	6
Case studies	3

Facilitators: In principle facilitators can assist participants in the process of transforming themselves, their teams, their workplaces, and communities (Manley et al. 2009). All the interventions, except two, reported using facilitators. Choonara et al.'s (2017) study in South Africa was not an explicit WPBL intervention, while Edwards et al.'s (2015) study in Mozambique was a mentoring initiative. Facilitators were actively involved during workshops, classroom modules, meetings, coaching sessions, reflection sessions, and during the coordination and implementation of action projects. Several studies encouraged former participants to take on these roles for future iterations of the WPBL intervention (Mansour et al. 2010, Rowe et al. 2010, Matovu et al. 2013, Chelagat et al. 2019, Johnson et al. 2021).

Action projects: Action projects are specific work assignments, created and implemented by participants of training programmes, that have strategic value to an organization. The assignments often involve improving services at the workplace over a period of time (Cunningham et al. 2004, Raelin 2008, Doherty and Gilson 2015). Key to the success of WPBL interventions was matching participants to action projects that were equally valuable to both the participant and the health institutions (Nakanjako et al. 2015). Four studies explored action projects linked to maternal and neonatal or child health issues (Mansour et al. 2010, Kwamie et al. 2014, Tetui et al. 2017, Desta et al. 2020). While the action projects in two of the studies looked at issues around HIV/AIDS (Nakanjako et al. 2015, Foster et al. 2018). The rest of the action projects in the included studies were varied in the issues they tackled.

Action learning: Closely linked to action projects was the use of action learning to facilitate WPBL. Action learning is a series of activities where people who work together generate learning through engagement in solving a problem at work. Learning occurs as they address these problems, take actions to resolve them and put the solutions into practice (Day 2001, Cunningham et al. 2004, Raelin 2008, Doherty and Gilson 2015). Unlike action projects, action learning does not require the creation of new projects to solve workplace challenges. The DIALHS (District Innovation and Action Learning for Health Systems Development) project, found that the project's action learning strategy facilitated a strengthening of distributed and relational leadership, across two different layers of the health system, within a comparatively resource poor sub-district in South Africa (Cleary et al. 2018). The idea of distributed and relational leadership refers to leadership that is non-hierarchal, collaborative, engages people, and is associated with building trust and empowerment (Cleary et al. 2018). Though time intensive, the strengths of action learning as a WPBL approach is that, like action projects, it is action oriented and tied to organizational priorities (Day 2001).

Mentoring: Mentoring is a strategic relational approach within an organization that over a period of time supports people in their career development as they interact with a more experienced person (Day 2001, Cunningham et al. 2004, Doherty and Gilson 2015). Mentorship played a crucial part in the WPBL interventions in India and Zambia, with participants being assigned mentors to follow

them throughout the duration of the intervention, helping them problem solve and apply lessons learnt to their workplaces (Prashanth et al. 2014, Mutale et al. 2017). In Mozambique, a health management mentoring initiative supported mentors to spend time with managers in their workplaces, and to support them with their day-to-day challenges around supply chain management, accounting, Human Resources for Health, and transportation (Edwards et al. 2015).

Coaching: Coaching is a peer relationship that consists of one on one learning between a coach and a client, around practical goal focused areas of personal development and behaviour modification that improves the client's performance (Day 2001, Cunningham et al. 2004, Doherty and Gilson 2015). While a mentor is a more experienced person who provides technical advice to a mentee, a coach may not have the technical skill, but rather someone who's skilled at listening to a client and helping them explore the issues they face in greater depth (Doherty and Gilson 2015). Through a series of engagements over a period of time between a research team (the coaches) and PHC facility managers together with a sub-district management team (the clients), coaching emerged as an approach for a WPBL intervention in South Africa (Cleary et al. 2018). Coaching was focused on 'creating a community of practice' that incorporated developing 'relational leadership skills' (Cleary et al. 2018). District and facility managers reported a greater appreciation for relational leadership which led to better cohesion among workplace teams (Cleary et al. 2018).

Peer leaning: Studies in South Africa, Zambia, Ghana, Tanzania and Uganda, reported that peer learning provided support, allowed the sharing of ideas and best practices, enabled skills transfer, and ensured relevance to the solutions selected for health system challenges (Cleary et al. 2018, Doherty et al. 2018, Foster et al. 2018, Martineau et al. 2018). Peer learning strengthened a community of practice among FMs and enabled them to gain confidence in their own ability as leaders through the support they received from one another (Foster et al. 2018).

Reflection: Reflection is the practice of stepping back from one's experience to ponder and think through what is happening to oneself and/or to others. Creating new meaning and expressing this new understanding is the product of reflective learning practices and often provides the foundation for future action (Cunningham et al. 2004, Raelin 2008, Doherty and Gilson 2015). Collaborative reflective practices between WPBL implementing teams and participants in Kenya and South Africa focused on personal values and relationships at the workplace (Cleary et al. 2018, Nzinga et al. 2021). Reflection was vital for learning from experience and refining knowledge learnt prior to further action (Dovey 2002, Cleary et al. 2018, Martineau et al. 2018).

Case studies: During classroom modules, real world case studies on understanding and navigating complex health systems, were sometimes used as a teaching aid to connect theory to practice, to facilitate the development of leadership skills needed to address health system challenges (McLean 2016, Doherty et al. 2018, Nzinga et al. 2021). In Kenya and South Africa, in-depth discussions of cases among health managers was crucial to reinforce contextual relevance of new leadership and management knowledge to the managers' workplaces (Doherty et al. 2018, Chelagat et al. 2019, Nzinga et al. 2021).

Organizational characteristics

In this review, organizational context refers to the culture, learning environment, and supportive infrastructure within the organization that would support the WPBL (Matthews 1999, Manley et al. 2009).

Opportunities: Health managers in Ghana, Tanzania and Uganda appreciated the organizations' commitment to support the managers' WPBL by providing the managers time for the learning process. Workshops, inter-district meetings, and protected time gave managers the opportunities to work through learning activities and complete action projects (Nakanjako et al. 2015, Martineau et al. 2018). Across several studies in South Africa, Uganda, Zambia and Mozambique, organizational engagement with key stakeholders during the WPBL intervention, for example engagement with health worker unions, was an additional health system enabler that supported WPBL (Dovey 2002, Gormley and McCaffery 2013, Sherr et al. 2013, Edwards et al. 2015, Nakanjako et al. 2015, Foster et al. 2018). This facilitated trust among multiple stakeholders and the acceptance of the intervention by health system actors (Cleary et al. 2018). Similarly, meaningful partnerships built over time, for example between universities and the health system were fruitful in enabling successful implementation of WPBL (Lehmann and Gilson 2015, Cleary et al. 2018).

Challenges: Several of the studies in Zambia, Ghana, Uganda and Liberia reported that district level health system managers were often professional healthcare workers, such as clinicians and nurses, who were promoted to management positions due to clinical experience and not necessarily leadership or managerial training or experience. This meant they were also still drawn on for clinical work while also trying to attend to leadership training and development (Rowe et al. 2010, Kwamie 2015, Nakanjako et al. 2015, Mutale et al. 2017, Foster et al. 2018). As a result, many of the managers had heavy workloads, performing clinical duties as well as administrative tasks, which meant participation was affected (Sherr et al. 2013, Tetui et al. 2017, Doherty et al. 2018, Foster et al. 2018). In South Africa, managers' workloads proved to be a constraint for some in completing the leadership training programme. Furthermore, heavy workloads made networking and mentorship difficult to achieve (Doherty et al. 2018).

Structural constraints, such as centralization of bureaucratic processes and lengthy bureaucratic mechanisms to ensure accountability, led to difficulty in accessing financial resources and delayed procurement of needed resources such as IT equipment and internet connectivity, which impeded implementation of WPBL interventions, despite health system managers' intentions to actively participate in the learning (Choonara et al. 2017, Cleary et al. 2018). Similarly, across the WPBL interventions in Zambia, India, Uganda, Kenya, Ghana and Mozambique, budget constraints, under-staffed facilities, limited access to technology, high turnover of health managers and healthcare workers, recurrent stock-out of medicines and supplies, and poor infrastructure, were factors that negatively influenced the workplace learning process (Gormley and McCaffery 2013, Sherr et al. 2013, Kwamie et al. 2014, Prashanth et al. 2014, Edwards et al. 2015, Tetui et al. 2017, Foster et al. 2018, Chelagat et al. 2020).

Several studies found that organizational culture limited the gains that could be realized by WPBL interventions. In South Africa, resistance to change from managers and staff who had not undergone

the leadership training programme were constraints on WPBL (Doherty et al. 2018). Difficult workplace dynamics due to power imbalances and a silo mentality among staff in different departments, meanwhile, limited action learning processes. In addition, workplace line managers were not always supportive of participants' needs to practice new skills acquired or allowed flexibility for participants to make mistakes (Doherty et al. 2018). In Kenya, poor management support, as well as deeply rooted cultures of not questioning authority on what needs to be given precedence in the health system, was a hindrance to the transfer of learned leadership knowledge to the workplace (Chelagat et al. 2019, Nzinga et al. 2021).

Individual and Motivational Issues

General motivation in the workplace - strongly linked to a reflection on organizational culture: Across the included studies low health worker motivation was a common theme that negatively impacted the implementation of WPBL. Studies in Uganda, Ghana, Egypt and Mozambique reported poor staff attitudes and low morale among health workers and managers (Mansour et al. 2010, Kwamie et al. 2014, Edwards et al. 2015, Tetui et al. 2017). FMs were not always trusted by senior level management to make decisions based on their local context and felt powerless to impact their environment (Cleary et al. 2018, Dovey 2002). Frontline health workers and district health managers had become increasingly apathetic and lacked the desire to change things (Prashanth et al. 2014, Nzinga et al. 2021). Health workers were rarely at their work stations and had a low commitment to health service quality (Tetui et al. 2017).

Motivation directly linked to WPBL activities: However, the structure, delivery and perceived benefit of workplace based learning was a key motivator for health managers. Participants appreciated leadership development programmes that were short, focusing on a few vital skills with practical tools; fitted in with work schedules; involved different health system stakeholders; and allowed for peer-learning (Rowe et al. 2010, Tetui et al. 2017, Martineau et al. 2018). In South Africa, participants in the broader DIALHS collaboration appreciated the balance of both theoretical and practical activities geared towards solving workplace challenges (Doherty et al. 2018). In Egypt and Uganda, the WPBL hands-on approach promoted participants' ownership of local health systems and provided practical tools to address everyday health system challenges (Mansour et al. 2010, Tetui et al. 2017). In Zambia, facility nurse managers were motivated to pursue WPBL to earn Continuous Professional Development points needed to fulfil relicensure requirements, and earn the title of 'head nurse in charge' on completion of training (Foster et al. 2018).

Environmental influences

The wider political, societal and economic environment influenced organizational context and consequently WPBL.

Opportunities: Government policies and strategic initiatives were a factor that enabled the adoption of WPBL. In Zambia, the Ministry of Health (MOH) developed a Governance and Management Capacity Building Strategic Plan whose primary goal was to improve health system governance (Mutale et al. 2017). This led to the implementation of a WPBL intervention known as the Zambia Management and Leadership Academy (ZMLA) (Mutale et al. 2017). Additional studies in Uganda, Zambia, Liberia and Ethiopia reported that a key driver for the implementation of leadership and management

development programmes were if they were introduced, led or endorsed by the MOH, or complimented MOH guidelines and existing trainings (Rowe et al. 2010, Gormley and McCaffery 2013, Foster et al. 2018, Desta et al. 2020).

Challenges: Several studies reported that the broader hierarchical governance structure restricted the impact of WPBL interventions. In India, health managers expressed frustration at the 'lack of power to make changes at the taluka and district level', despite the decentralized planning brought about by the National Rural Health Mission policy initiative (Prashanth et al. 2014). In Mozambique, decentralization had been slow and uneven, and it was unclear which health system activities were considered under the scope of the district, province or national level. As such it was difficult to define the role and thus strengthen the capacity of district managers (Sherr et al. 2013, Edwards et al. 2015). Furthermore, political interference negatively influenced WPBL interventions. In Kenya and South Africa, managers reported that constant political interference undermined health system innovation and threatened managers' job security, such that decentralization had minimal impact on increasing local authority, planning and decision-making (Doherty et al. 2018, Nzinga et al. 2021). Finally, it is important to take into account the impact of wider economic conditions and technological development on the delivery of WPBL in LMICs. Studies in India, Egypt, Mozambique, and Uganda reported that in poor rural areas, resource constraints made it difficult to implement WPBL interventions (Mansour et al. 2010, Sherr et al. 2013, Prashanth et al. 2014, Edwards et al. 2015, Tetui et al. 2017).

Outputs

Outputs are the immediate tangible results that are observed in the workplace after WPBL (Matthews 1999).

Positive experiences: Several studies reported that as a result of WPBL there was improvement in team dynamics resulting in mutual trust and respect among teams members. Team dynamics was an output identified as part of our adaptation to the original Matthews (1999) framework as shown in Appendix 4. The four studies in South Africa reported that after the WPBL interventions there was improvement in teamwork that lead to the formation of cohesive teams (Dovey 2002, Choonara et al. 2017, Cleary et al. 2018, Doherty et al. 2018). Better trust and harmony among the SDMT as well as within relationships between FMs and staff was observed in the Mitchell's Plain sub-district. This trust led to FMs being given more discretionary decision space (Cleary et al. 2018). Additionally, managers understood their roles and personal strengths and weaknesses, and were, thus, able to transform interpersonal relationships with staff, supervisors, and stakeholders (Cleary et al. 2018). In Zambia, joint participation of facility heads and district managers improved their relationships, and the oversight and accountability for community health (Foster et al. 2018). With a shared vision, teamwork and coordination of work activities improved (Mutale et al. 2017).

The multi-country study in Ghana, Uganda and Tanzania and a study in Mozambique reported an improvement in work climate with a transformation in the way DHMTs functioned, as they began taking ownership of health system challenges and taking the initiative to solve these problems (Sherr et al. 2013, Martineau et al. 2018). Through applying leadership and management practices, DHMTs in Egypt, Uganda, Mozambique and Zambia learnt to work together, and were empowered to actively

engage and mobilize community stakeholders to address public health problems (Mansour et al. 2010, Sherr et al. 2013, Tetui et al. 2017, Foster et al. 2018). Stakeholder collaborations increased managers' awareness of and adaptability to community needs. With improved trust among stakeholders, partnership and commitment towards new ideas of leadership and management practices, was initiated and sustained (Tetui et al. 2017).

Negative experiences: In India, poor teamwork persisted among interdisciplinary district team members because of prevailing socio-cultural values where doctors were automatically viewed as team leaders (Prashanth et al. 2014). Team power dynamics determined whether non-medical members' contributions to improving organizational performance were considered (Prashanth et al. 2014). In Ghana, meanwhile, initial appreciation of the WPBL intervention due to its novelty wore off over time, as it was resource intensive and exacerbated managers' time and resource constraints (Kwamie et al. 2014). For instance, trying to involve additional staff to help in WPBL intervention activities, in particularly under staffed districts, without disrupting service delivery proved difficult (Kwamie et al. 2014).

Outcomes

In principle, outcomes refer to the end results or consequences of WPBL and should nurture the continued growth and development of an employee and the organization (Matthews 1999, Manley et al. 2009). In this section we show the outcomes as reflected in the different studies. Not all papers refer to these as outcomes, but we have imposed the adapted framework on the data.

Positive: A stated outcome for many of the WPBL interventions was improved health service delivery or health system performance. In Kenya, health managers made positive impacts on health system performance and efficiency indicators including increase in skilled birth attendance; full child immunizations; utilization of in- and out-patient services; and reduced out-patient turnaround times (Chelagat et al. 2020, Chelagat et al. 2021). In Egypt, there was an increase in: prenatal care utilization; number of new family planning visits; and use of contraceptives which reduced fertility rates (Mansour et al. 2010). A reduction in the maternal mortality rate was also reported, two years after all the PHC facilities had gone through the leadership development programme for health workers (Mansour et al. 2010). While in Uganda, there was an improvement in HIV/AIDS health service delivery, construction of needed health facility infrastructure, and ambulances for health facilities were acquired (Nakanjako et al. 2015, Tetui et al. 2017).

Two studies in South Africa reported that wider organizational learning was realized because of workplace leadership development interventions, which we also understood to reflect strengthened leadership and management (Dovey 2002, Choonara et al. 2017). As a result of a district financial management team developing agency to address DHS constraints, it motivated the broader district staff to become solution-driven (Choonara et al. 2017). Additionally, team members were able to generate and share new knowledge to enhance the collective knowledge within the district (Choonara et al. 2017). In Mozambique, meanwhile, there was improvement in forecasting for health system needs, with overall progress in coordination and planning within the province, and greater transparency of accounting practices (Sherr et al. 2013, Edwards et al. 2015). This was greatly

influenced by the historical partnerships among stakeholders which had established trust and taking ownership of health system challenges (Sherr et al. 2013).

In South Africa and Zambia, managers remained committed to their roles in the public health system, and within the same provinces after the health leadership training (Mutale et al. 2017, Doherty et al. 2018). This continuity in their positions had the capability to positively impact the health system by using their new leadership skills towards solving health system problems (Mutale et al. 2017, Doherty et al. 2018). Similarly in Uganda, all programme graduates stayed in health leadership positions within the country (Nakanjako et al. 2015). As a result of WPBL interventions, fellows were able to make recommendations to inform HIV policy formation and review procedures, and health worker training for the national HIV/AIDS programme (Nakanjako et al. 2015).

Negative: Three studies reported that some participants did not complete the workplace based leadership and management development programmes. In Kenya, only eight out of the thirty participants went through the full training (Nzinga et al. 2021). In Uganda, one fellow did not complete the Afya Bora fellowship programme due to personal reasons (Nakanjako et al. 2015). While in Zambia, two FMs did not complete the leadership and management programme (Foster et al. 2018). Another study in Zambia, reported that many trainees did not implement the solutions they generated to solve workplace problems, as graduation from ZMLA did not depend on this (Mutale et al. 2017).

Several studies reported that the hierarchical governance structure found in the health system remained unchanged. In South Africa, the broader hierarchical governance context put DHMTs capacity gains at risk as senior/higher level managers had not undergone the workplace based leadership and management development programme themselves (Dovey 2002). In Ghana, the top-down manner in which the leadership development programme was introduced reinforced hierarchical, highly centralized, decision-making processes. There was no change in relationships between district and regional levels (Kwamie et al. 2014). In Kenya, providing feedback to superiors continued to be a problem as it was not appreciated (Nzinga et al. 2021).

Sustainability and institutionalization

Inductively, we also identified two additional topics we feel could be included in the adapted framework for WPBL. The importance of the sustainability and institutionalization of WPBL interventions were the two new and recurring themes that emerged during data extraction.

Sustainability: Sustainability refers to the continued use of interventions, after they have been adopted and implemented within an organization (Novotná et al. 2012). Long-term partnerships between health system managers and key stakeholders in Mozambique, Kenya and South Africa, was reported to be beneficial in sustaining WPBL (Sherr et al. 2013, Cleary et al. 2018, Nzinga et al. 2021). These partnerships improved trust, and commitment towards new ideas was initiated and sustained. Another study in South Africa also reported that sustainability of workplace projects was maintained, and these projects continued in successive cycles of strategic action, as a new member of the DHMT enrolled in the district health leadership programme in each successive cycle (Dovey 2002). Teams completing projects demonstrated a sustained culture of collaborative action, with improvement in strategic thinking and how to manage power dynamics in the workplace (Dovey 2002).

However, questions about the sustainability of WPBL interventions arose as a number of the reported interventions were donor funded. Donor funding tends to be an unpredictable source of long term funding (Johnson et al. 2021). Several WPBL interventions had to make adjustments to the design and delivery of WPBL due to changes in donor funds and priorities, while in some countries there were no additional iterations of the intervention once donor funded ended (Sherr et al. 2013, Edwards et al. 2015, Kwamie et al. 2014). In contrast, the multi-country study (Ghana, Uganda and Tanzania) reported that external funding for the implementation of WPBL interventions was deliberately not provided, to instil an entrepreneurial approach to resource mobilization and not jeopardize sustainability, commonly seen once externally funded projects end (Martineau et al. 2018). This was seen as a risk. But DHMTs were informed of the lack of funding prior to them agreeing to be involved in the WPBL interventions. Some DHMTs saw this as part of the learning process on how to better utilize available resources (Martineau et al. 2018).

To ensure sustainability, several programmes remained flexible during the design and delivery of WPBL. Shifts in national programmes and available funding in Mozambique required adaptations (flexibility) to the management training in Sofala Province. This led to more of a focus on mentoring managers (on formulating data-driven decisions), over managers attending in-service training courses (Sherr et al. 2013). Furthermore, to build sustainability into WPBL, it was important to ensure the learning content was specific to the local contexts to foster creativity and innovative solutions for specific problems in a particular setting (Doherty and Gilson 2015, Edmonstone 2015, Johnson et al. 2021, Matovu et al. 2013, Cleary et al. 2018). In Egypt, the WPBL intervention was taught in Arabic and the MOH facilitators reviewed the intervention exercises to ensure they were context-specific (Mansour et al. 2010).

Institutionalization: Institutionalization can be defined as 'staying power' or endurance of change that becomes integrated in the regular routines and daily practices within an organization (Novotná et al. 2012). As such institutionalization is seen as a social phenomenon that is cultivated through shared experiences (Koon et al. 2020). When institutionalised, organizational practices become deeply engrained within their environments to bring about significant change in the approach organizations use to deliver services (Novotná et al. 2012, Johnson et al. 2021). Embedding interventions within the health system ensured institutionalization of WPBL (Cleary et al. 2018, Johnson et al. 2021). In Mozambique this led to the WPBL intervention being deeply integrated within the Sofala provincial health department and its eleven district health systems. Focus on the entire province ensured longevity of district capacity gains as well as what would be suitable for national scale-up (Sherr et al. 2013). Closely linked to embeddedness in the health system was the idea of country ownership. As WPBL met country needs it was embraced by relevant health system actors in Zambia (Foster et al. 2018). With this in mind, alignment with national and sub-national goals, or wider health system administrative and governance processes was important to institutionalizing WPBL interventions (Johnson et al. 2021, Dovey 2002, Foster et al. 2018, Prashanth et al. 2014, Mutale et al. 2017, Nakanjako et al. 2015, Desta et al. 2020, Chelagat et al. 2021).

Offering workplace learning through national or regional institutions ensures WPBL is institutionalized within the health system (Johnson et al. 2021). Engagement with the University of Zambia (UNZA) and

the Zambian Union of Nurses Organization in a WPBL intervention for nurses leading PHC teams, led to UNZA's School of Nursing beginning to include the leadership and management elements of the WPBL in the nursing pre-service training curriculum (Foster et al. 2018). While accreditation of WPBL provided incentive for health system actors to participate in WPBL (Mutale et al. 2017, Johnson et al. 2021). After ZMLA received the National Institute for Public Administration certification, training became popular among busy health workers in Zambia. Managers could not only use the skills gained towards solving current health system challenges, but also use their diplomas to apply for promotions or other employment within the health system (Mutale et al. 2017).

Discussion

This review used the 'best fit' framework approach to synthesize evidence on WPBL, specifically to identify different forms of WPBL, derive lessons from these forms of WPBL for leadership and management development in the context of a DHS, to understand outputs achieved as well as how WPBL impacts (or not) leadership and management development in the DHS. The review highlights the increasing attention directed towards leadership and management within health systems in Africa. The majority of WPBL interventions were practice-based, with a structured systematic approach to the design and delivery of the intervention, though with considerable diversity in the approaches utilized. Moreover, the review demonstrates the need of focusing on the sustainability and institutionalization of such interventions.

In this review we followed the quality appraisal guidelines established by Dixon-Woods et al. (2004), Caroll et al. (2011), and Gilson (2014). The quality appraisal process was structured to include all potentially beneficial studies on WPBL for leadership and/or management development, aiming to extract lessons and generate new insights on how to strengthen district health leadership and management in resource limited settings. By actively incorporating these potentially beneficial studies, we intentionally broadened our research scope to encompass a wide array of insights and lessons concerning WPBL. This approach allowed us to maintain a comprehensive view of the available evidence and acknowledge the importance of context.

Synthesis and a modified conceptual framework

We employed the adapted framework (Appendix 4) to organise and analyse these issues. Based on our findings from this synthesis we found that the adapted framework does represent a key set of factors associated with WPBL and identifies factors associated with strengthening management and leadership. However, we did not find that WPBL interventions resulted in a majority of leadership and management posts filled with trained personnel (highlighted in grey in the output category) (see Figure 2 below). In addition, Matthews (1999) suggests a key factor for WPBL is the need for policies (highlighted in grey in the input category), however, in this synthesis we did not find that organizations had specific policies in place to facilitate WPBL. We also did not identify that WPBL interventions resulted in there being enough competent managers within the DHS (highlighted in grey in the outcome category.) The outcomes in this review are not perfectly matched to the outcomes in Figure 2 below, but we found improved health service delivery or health system performance to mean critical management systems were functioning and managers had improved in their responsiveness to

community needs through improved service delivery. While, wider organizational learning to mean changed attitudes, increased commitment and greater potential.

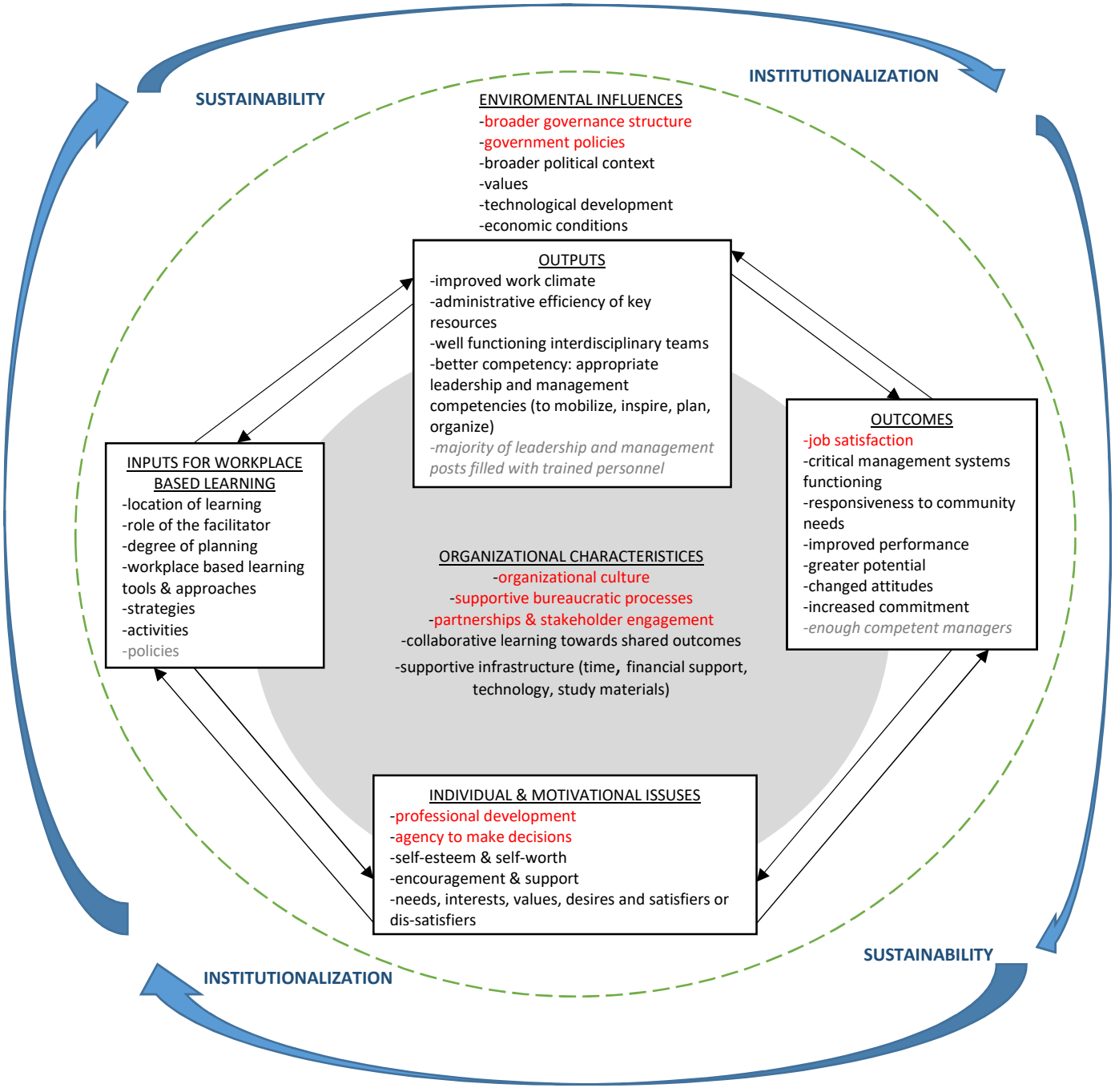

Figure 2 Modified conceptual framework of workplace based learning (Matthews 1999, WHO 2007, Jacobs and Park 2009, Manley et al. 2009, Vriesendorp et al. 2010). *Greyed out words show concepts from the original framework that were not raised in the papers. Red highlighted words show additional concepts we added. Blue arrows around the framework show sustainability and institutionalization which influence all aspects of WPBL.*

We also found some additional factors (highlighted in red above in Figure 2), based on our synthesis findings that were found to be important for WPBL, and its impact on strengthening management and

leadership. We made some modifications to the framework to reflect the evidence from the included papers in this study (see Figure 2 above). First, given that the papers in this study did not explicitly apply the adapted framework (Appendix 4), we could not easily see a differentiation between individual and motivational issues as reported in the papers. We observed that these factors worked in concert, therefore, for our purposes, we merged the categories of individual and motivational issues as shown in the diagram above. Furthermore, we found in our papers, the concepts of professional development and agency to make decisions as important factors that seemed to motivate individuals to engage with WPBL. We find that these concepts add useful specificity to the concepts of needs, interests, desires and satisfiers or dis-satisfiers of learning, as noted in the adapted framework (Appendix 4.)

Second, organizational culture, supportive bureaucratic processes, and partnerships and stakeholder engagement were added as organizational characteristics needed to support WPBL. Third, job satisfaction was added as an outcome of WPBL. Fourth, government policies and the broader governance structure were further environmental determinants of workplace activities. Fifth, an additional category of sustainability and institutionalization was incorporated. These concepts of sustainability and institutionalization build and further develop the conceptual framework to better understand the longevity of efforts to strengthen district health leadership and management in resource limited settings through WPBL.

Similar to the adapted framework (Appendix 4), the modified framework above, takes into account aspects internal and external to an organization to highlight that no organization functions in a vacuum (Matthews, 1999). Furthermore, the elements of WPBL (Inputs, Individual and Motivational Issues, Outputs, and Outcomes) are shown to cut across (see Figure 2 above) the organization and external environment to reflect that organizational and environmental characteristics impact WPBL.

Lessons for policy makers and those implementing workplace based learning

Based on the evidence from the included studies, there were numerous ways in which WPBL was successfully carried out. While the WPBL interventions differed in the type and nature of the intervention, as well as the length of delivery of each intervention, the reported studies did not provide conclusive evidence about which approach had a greater influence than others on strengthening district health leadership and management. There, were, however some common lessons about the design and delivery of WPBL interventions that can enable their delivery in the future.

Team based learning across different layers of the health system promoted distributed and relational leadership and minimized the existing hierarchical structures (Cleary et al. 2018, Foster et al. 2018). Peer learning allowed for dialogue among learners where wisdom and knowledge was shared through the interaction of a community of peers (Doherty et al. 2018). This enabled health managers to gain confidence in their own ability as leaders through the support they received from others (Foster, et al., 2018). Reflective practices enhanced critical thinking and nurtured the soft skills needed for interpersonal relationships (Dovey 2002, Cleary et al. 2018, Martineau et al. 2018, Nzinga et al. 2021). Though time intensive, action learning and implementing action projects ensured learning was geared

towards locally identified organizational needs or gaps (Day 2001, Matovu et al. 2013). It was not only important to support WPBL participants implement their learning in the workplace, but also to ensure that there were positions available for WPBL graduates (Gormley and McCaffery 2013, Edwards et al. 2015, Johnson et al. 2021). This requires engagement and support from employers and senior organizational management (Prashanth et al. 2014, Doherty et al 2018, Chelagat et al. 2019, Chelagat et al. 2021, Nzinga et al. 2021).

In analysing whether workplace based learning had an impact on strengthening district health leadership and management, the evidence suggested that this depended on the context in which each WPBL intervnetion was being implemented (Doherty et al. 2018). All the WPBL interventions encountered organizational and broader socio-political difficulties during implementation. Despite these constraints, WPBL allowed for a much deeper analysis of district problems and led to the development of better strategies to address them (Doherty et al. 2018, Martineau et al. 2018). DHMTs learnt the importance of selecting strategies which were feasible, effective, and affordable given available resources; and in-line with other district interventions (Martineau et al. 2018). Training key health system managers/leaders on leadership and management was crucial in adopting and implementing principles learnt, as well as improving health system accountability and achieving continued transformation (Matovu et al. 2013, Mutale et al. 2017). Furthermore, for WPBL to achieve its true potential in impacting district health leadership and management strengthening, sustaining and institutionalizing WPBL are important features to be considered. The evidence reviewed indicates sustainability retains new practices in organizations, and includes ensuring that there is committed funding for WPBL; WPBL design and delivery is flexible; and implementing partners have long-term partnerships with health system actors (Sherr et al. 2013, Cleary et al. 2018, Martineau et al. 2018, Nzinga et al. 2021). Institutionalization provides an additional level of consistency and pervasiveness that underscores stability and resilience (Novotná et al. 2012, Koon et al. 2020). This involved ensuring WPBL was embedded in health systems; country owned; and offered through national or regional institutions (Mutale et al. 2017, Cleary et al. 2018, Doherty et al. 2018, Foster et al. 2018, Desta et al. 2020).

Consistency in learning within health systems is essential, as health systems that fail to learn from their own or others' experiences risk repeating mistakes. This failure to learn has frequently led to the failure of well-intentioned policies and programmes (Sheikh et al. 2020). Therefore, prioritizing learning is critical for strengthening LMIC health systems, ensuring their resilience, and equipping them to tackle future challenges more effectively (Sheikh et al. 2020, Sheikh and Abimbola 2022).

Study limitations

As this synthesis included a heterogeneous set of studies with diverse methodologies which did not apply the framework used in the study, it was not always easy to compare data across publications and fit the data into the precise categories of the framework. Furthermore, we acknowledge that important evidence from other LMIC regions such as Eastern Europe, South America, Central Africa and South East Asia was not identified during the literature search process. This could possibly be due to the poor indexing of research in databases. These studies could provide additional relevant insights on WPBL. We have endeavoured to make the modified WPBL framework reflect a public sector organizational context but given the currently limited evidence, further work will be needed to

continue to test and refine the framework. Additionally, some of the evaluations of the WPBL interventions were reported by those involved in the funding of the interventions, we did not however exclude these evaluations.

Conclusion

This synthesis used a 'best-fit' framework approach to synthesize evidence on workplace based learning for leadership and management development, and the impact this learning had on district health leadership and management strengthening. The synthesis reveals that over the last decade, WPBL has received consideration as an approach for leadership and management development. Furthermore, the synthesis provides key lessons for the delivery of WPBL for leadership and management development in the DHS. The modified workplace based learning framework can be a useful tool for LMIC policymakers, organizations as well as HPSR researchers to build on to facilitate WPBL in under-resourced settings to strengthen district health leadership and management.

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PART C: APPENDICES

Appendix 1 Summary of literature search strategy

Key Term (s) or Filters	Variations
work-based learning, workplace learning, workplace based learning, action learning, mentoring, coaching	"work-based learning" OR "workplace learning" OR "workplace based learning" OR "action learning" OR "mentor s" OR "mentored" OR "mentoring"[MeSH Terms] OR "mentoring" OR "mentors"[MeSH Terms] OR "mentors" OR "mentor" OR "coach" OR "coach s" OR "coached" OR "coaches" OR "mentoring"[MeSH Terms] OR "mentoring" OR "coaching"
Leadership, management	"leadership"[MeSH Terms] OR "leadership" OR "leadership s" OR "leaderships" OR "manage" OR "managed" OR "management s" OR "managements" OR "manager" OR "manager s" OR "managers" OR "manages" OR "managing" OR "management" OR "organization and administration"[MeSH Terms] OR "organization" AND "administration" OR "organization and administration" OR "management" OR "disease management"[MeSH Terms] OR "disease" AND "management" OR "disease management"
health system	"health system"
LMIC search filters	"Deprived Country" OR "Deprived Countries" OR "Deprived Population" OR "Deprived Populations" OR "Developing Countries" OR "Developing Country" OR "Developing Economies" OR "Developing Economy" OR "Developing Nation" OR "Developing Nations" OR "Developing Population" OR "Developing Populations" OR "Developing World" OR "LAMI Countries" OR "LAMI Country" OR "Less Developed Countries" OR "Less Developed Country" OR "Less Developed Economies" OR "Less Developed Nation" OR "Less Developed Nations" OR "Less Developed World" OR "Lesser Developed Countries" OR "Lesser Developed Nations" OR LMIC OR LMICS OR "Low GDP" OR "Low GNP" OR "Low Gross Domestic" OR "Low Gross National" OR "Low Income Countries" OR "Low Income Country" OR "Low Income Economies" OR "Low Income Economy" OR "Low Income Nations" OR "Low Income Population" OR "Low Income Populations" OR "Lower GDP" OR "Lower Gross Domestic" OR "Lower Income Countries" OR "Lower Income Country" OR "Lower Income Nations" OR "Lower Income Population" OR "Lower Income Populations" OR "Middle Income Countries" OR "Middle Income Country" OR "Middle Income Economies" OR "Middle Income Nation" OR "Middle Income Nations" OR "Middle Income Population" OR "Middle Income Populations" OR "Poor Countries" OR "Poor Country" OR "Poor Economies" OR "Poor Economy" OR "Poor Nation" OR "Poor Nations" OR "Poor Population" OR "Poor Populations" OR "Poor World" OR "Poorer Countries" OR "Poorer Economies" OR "Poorer Economy" OR "Poorer Nations" OR "Poorer Population" OR "Poorer Populations" OR "Third World" OR "Transitional Countries" OR "Transitional Country" OR "Transitional Economies" OR "Transitional Economy" OR "Under Developed Countries" OR "Under Developed Country" OR "Under Developed Nations" OR "Under Developed World" OR "Under Served Population" OR "Under Served Populations" OR "Underdeveloped Countries" OR "Underdeveloped Country" OR "Underdeveloped Economies" OR "Underdeveloped Nations" OR "Underdeveloped Population" OR "Underdeveloped World" OR "Underserved Countries" OR "Underserved Nations" OR "Underserved Population" OR "Underserved Populations" OR Afghanistan OR Albania OR Algeria OR "American Samoa" OR Angola OR Armenia OR Azerbaijan OR Bangladesh OR Belarus OR Byelarus OR Belorussia OR Belize OR Benin OR Bhutan OR Bolivia OR Bosnia OR Botswana OR Brazil OR Bulgaria OR Burma OR "Burkina Faso" OR Burundi OR "Cabo Verde" OR "Cape Verde" OR Cambodia OR Cameroon OR "Central African Republic" OR Chad OR China OR Colombia OR Comoros OR Comores OR Comoro OR Congo OR "Costa Rica" OR "Côte d'Ivoire" OR Cuba OR "Democratic People's Republic of Korea" OR Djibouti OR Dominica OR "Dominican Republic" OR Ecuador OR Egypt OR "El Salvador" OR Eritrea OR Ethiopia OR "Equatorial Guinea" OR Fiji OR Gabon OR Gambia OR Gaza OR "Georgia Republic" OR Georgia OR Ghana OR Grenada OR Grenadines OR Guatemala OR Guinea OR "Guinea Bissau" OR Guyana OR Haiti OR Herzegovina OR Hercegovina OR Honduras OR India OR Indonesia OR Iran OR Iraq OR "Ivory Coast" OR Jamaica OR Jordan OR Kazakhstan OR Kenya OR Kiribati OR Korea OR Kosovo OR Kyrgyz OR Kirghizia OR Kirghiz OR Kyrgyzstan OR "Lao PDR" OR Laos OR Lebanon OR Lesotho OR Liberia OR Libya OR Macedonia OR Madagascar OR Malawi OR Malay OR Malaya OR Malaysia OR Maldives OR Mali OR "Marshall Islands" OR Mauritania OR Mauritius OR Mexico OR Micronesia OR Moldova OR Mongolia OR Montenegro OR Morocco OR Mozambique OR Myanmar OR Namibia OR Nepal OR Nicaragua OR Niger OR Nigeria OR Pakistan OR Palau OR "Papua New Guinea" OR Paraguay OR Peru OR Philippines OR Principe OR Romania OR Rwanda OR Ruanda OR Samoa OR "Sao Tome" OR Senegal OR Serbia OR "Sierra Leone" OR "Solomon Islands" OR Somalia OR "South Africa" OR "South Sudan" OR "Sri Lanka" OR "St Lucia" OR "St Vincent" OR Sudan OR Surinam OR Suriname OR Swaziland OR Syria OR "Syrian Arab Republic" OR Tajikistan OR Tadzhikistan OR Tajikistan OR Tadzhik OR Tanzania OR Thailand OR Timor OR Togo OR Tonga OR Tunisia OR Turkey OR Turkmen OR Turkmenistan OR Tuvalu OR Uganda OR Ukraine OR Uzbek OR Uzbekistan OR Vanuatu OR Venezuela OR Vietnam OR "West Bank" OR Yemen OR Zambia OR Zimbabwe
Publication type	Journal Article; Full text; Abstract included
Publication date	1/1/1990 to 18/3/2022
Language	English

Databases	Date of Search	Results							
		Total Search	Relevant Articles Retrieved	Number of articles in Combined Databases	After removal of Duplicates (n=33)	After Title and Abstract Screening	Identified from Citation tracking/ Reference Lists (n=4)	Additional Articles from HPSR researchers/ Purposive search (n=11)	Articles Eligible for the Study
PubMed	14/3/22	118	12			9			
Scopus	18/3/22	117	18						
Ebscohost (Academic Search Premier, AfricaWide Information, CINHAL, HealthSource Nursing, APA PsycInfo)	18/3/22	116	11						
Web of Science	18/3/22	84	12						
Total		435	53	53	20	9	13	24	24

Appendix 2 Summary of articles table

Author(s) & Year of Publication	Country	Aim of article	Type of WPBL	Stakeholders	Methodology	WPBL Participants & Setting	Findings
Chelagat et al. 2019	Kenya	To investigate the factors influencing knowledge transfer of leadership skills during the implementation of action projects in health care settings, and provide recommendations on strategies or policies to improve knowledge transfer.	Hybrid 9 month LD programme (LeHHO). Strathmore University confers a certificate of achievement on completion.	Driven by country level higher education institution in collaboration with country level actor, and external actor and donor. (Co-created in 2010 by Strathmore University Business School, MSH and MOH, with funding from USAID for 5 years.)	Qualitative study using in-depth semi-structured interviews.	Participants: 39 FMs from public and private (profit and not-for-profit) health facilities Setting: 19 counties Study covered a period of 7 years	Timely completion of action projects was dependent on: context specific need-based training; workplace environment; trainee's motivation and leadership positions; team-based coaching; and the ability to leverage contextual opportunities. Barriers to the transfer of learned leadership knowledge to the workplace included: poor management support; insufficient team or staff support; high staff turnover; misalignment of priorities between managers and senior leadership; lack of technical capacity needed to implement projects; endemic strikes (public sector facilities); lack of political goodwill and/or political interference; and poor communication among key stakeholders. To improve leadership knowledge transfer, programme alumni proposed: effective financial and human resource allocation and utilization; action projects to be in alignment with organizational priorities; effective communication among key stakeholders to ensure ample buy-in; workplace teams to undergo leadership training together to ensure sustainability of institutional improvements.

Chelagat et al. 2020	Kenya	To evaluate the impact of project-based experiential learning on health service delivery.	Hybrid 9 month LD programme (LeHHO). Strathmore University confers a certificate of achievement on completion.	Driven by country level higher education institution in collaboration with country level actor, and external actor and donor. (Co-created in 2010 by Strathmore University Business School, MSH and MOH, with funding from USAID for 5 years.)	Quasi-experimental time-series study with non-random sampling using quantitative data (close-ended questionnaires and HMIS service delivery indicators data) and qualitative data (Challenge Model documents and programme reports)	Participants: 15 FMs from public and private (profit and not-for-profit) facilities Setting: 13 counties (Nairobi, Elgeyo Marakwet, Kisumu, Samburu, Nakuru, Busia, Kisii, Siaya, Uasin-Gishu, Kakamega, Kajiado, Kiambu and Mandera) Study covered a period of 7 years	Participation in the LD programme contributed to a significant increase in health service delivery through achieving action project goals. The action projects generated immediate application of knowledge learned to the workplace. This was observed across different health sectors both public and private. Additionally, improved health service indicators were sustained for 60 months after training. Participants attributed the success of the action projects to the team-based coaching sessions built around institutional priorities.
Chelagat et al. 2021	Kenya	To assess the effectiveness and impact of LD training on health system performance during the implementation of action projects.	Hybrid 9 month LD programme (LeHHO). Strathmore University confers a certificate of achievement on completion.	Driven by country level higher education institution in collaboration with country level actor, and external actor and donor. (Co-created in 2010 by Strathmore University Business School, MSH and MOH, with funding from USAID for 5 years.)	Quasi-experimental time-series study with non-random sampling using quantitative data (close-ended questionnaires) and qualitative data (Challenge Model documents and in-depth interview guide)	Participants: 31 health managers from public and private (profit and not-for-profit) institutions Study covered a period of 6 years	The LD training had a positive impact on health system performance and efficiency indicators as reflected by the action projects. Training (compared to no training) had positive impacts on the health system pillars of service delivery, HIS, leadership and governance, health workforce, financing, and access to essential medicines. Projects focusing on HRH were the least successfully implemented. Some projects were unsustainable due to team members leaving institutions.
Chelagat et al. 2021	Kenya	To investigate the drivers and inhibitors of sustainability of action projects; to inform Kenya's healthcare sector on strategies or policies for sustainability of project results.	Hybrid 9 month LD programme (LeHHO). Strathmore University confers a certificate of achievement on completion.	Driven by country level higher education institution in collaboration with country level actor, and external actor and donor. (Co-created in 2010 by Strathmore University Business School, MSH and MOH, with funding from USAID for 5 years.)	Qualitative study using in-depth semi-structured interviews	Participants: 33 managers from public and private (profit and not-for-profit) health facilities Setting: 19 counties Study covered a period of 6 years	33 out of 39 action projects were successfully sustained 2-5 years after the LD training. Key drivers of sustainability were: programme design (workplace team recruitment, use of the Challenge Model and team coaching); stakeholder buy-in; improved communication skills; inclusion of senior organizational leadership; continued presence of the change champion (trained manager); and devolution and political good-will.

							Inhibitors of sustainability included: inadequate HRH (public and faith-based facilities); misalignment of priorities between managers and senior leadership; managers' workloads (most were practicing clinicians); and devolution and political interference.
Choonara et al. 2017	South Africa	To demonstrate the importance of informal learning strategies in nurturing the development of leadership skills.	Practice based (Not an explicit WPBL intervention; however WPBL was observed and these findings documented while the researcher was conducting research on district financial management.)	Driven by country level higher education and country level research institution. (University of the Witwatersrand – Centre for Health Policy, MRC Health Policy Research Group.)	Qualitative case study design using in-depth interviews and non-participant and participant observations	Participants: 18 interdisciplinary (finance, HR, IT, HIS and procurement) district and sub-district participants involved in district financial management Setting: 'Isikhala' district in Gauteng Province	Despite a decentralized health system, decision-making assigned in theory but not in practice. Structural constraints such as centralization of bureaucratic processes led to: difficulty in accessing financial resources; delayed procurement; lack of IT equipment and slow internet connectivity. Regardless of these constraints, on the job learning was observed (learning from others, communication, delegation between staff and team-based learning) which developed a group of leaders able to problem solve and motivate staff.
Cleary et al. 2018	South Africa	To explore whether and how an action learning LD intervention has enabled relational leadership in a resource limited setting.	Practice based 5 years of WPBL embedded in the broader DIALHS action-research project.	Driven by country level actors and country level higher education institution. (Collaboration between the Provincial Government of the Western Cape health department, City of Cape Town health department, School of Public Health University of the Western Cape, and School of Public Health and Family Medicine UCT.)	Qualitative evaluation study using document reviews, in-depth interviews, group discussions, observations of practice and of LD interventions, and notes from reflection sessions	Participants: FMs from 9 PHC clinics and 6 members of the SDMT Setting: Mitchell's Plain sub-district within the City of Cape Town in the Western Cape Province	Group-based LD interventions across two different layers of the health system promoted distributed and relational leadership. But the broader hierarchical governance context with its central accountability processes limited the impact of relational LD within the sub-district.

Desta et al. 2020	Ethiopia	To assess the capacities and performances of districts receiving training in leadership, management and governance compared to the districts that did not receiving the training.	Practice based WPBL embedded in the 5 year USAID Transform Primary Health Care Project	Driven by external actor(s) and donor Collaboration of MOH, project consortium (Pathfinder International, JSI Research & Training Institute Inc., Abt Associates, EnCompass LLC, and the Ethiopian Midwives Association), and local NGOs, with funding from USAID	Quantitative cross sectional study using USAID Transform Primary Health Care supervision questionnaires over a period of 1 year	Participants: district managers and staff from PHC facilities Setting: 284 districts Study covered 1 fiscal year (2019)	The leadership, management and governance training taught critical skills of leadership and management together with problem solving skills through the management improvement projects and coaching. This brought about: improved district management practices and structure; district capacity; and quality of care.
Doherty et al. 2018	South Africa	To assess the health leadership training programme at UCT between the period of 2008 and 2014, to generate lessons that inform others involved in LD programmes in LMICs, on the techniques used, challenges faced, and what influences programme success.	Hybrid 18 month health leadership training programme. WPBL embedded as part of its format. UCT confers a PG Dip. on completion.	Driven by country level higher education institution. (Division of Health Policy and Systems, School of Public Health and Family Medicine, UCT.)	Descriptive study using mixed methods techniques which included a document review of programme materials, brief alumni survey questionnaires, and semi-structured telephonic interviews	Participants: District and Facility Managers (91 participants from across South Africa over a period of 6 years)	Managers' workloads proved to be a constraint to some completing the programme. Difficult workplace dynamics due to power imbalances limited action learning processes. Workplace line managers were not always cooperative to students' study needs between modules. Poor public sector leadership capacity and poor human resource development processes also limited monitoring the impact of the programme among trainees. Resource constraints make it difficult to gain a critical mass of well-trained public sector leaders to bring about change in organizational culture.
Dovey 2002	South Africa	To describe the outcomes of a module of WPBL in developing leadership skills.	Hybrid 2 year district health leadership course. WPBL embedded as part of its format. Rhodes University confers a Certificate in District Health Management on completion.	Driven by country level higher education institution, in collaboration with country level actors, and external actors and donors. (Collaboration of grassroots community organizations, Rhodes University J&J Leadership	Case study (no description on how data was collected)	Participants: DHMTs (12-20 per team) Setting: Eastern Cape Province	Committed coaching (by Rhodes staff) was a key factor in developing DHMTs capacity to successfully manage the politics of implementation of work-based projects. The focus of the programme was on the nature of learning gained and not whether the work-based projects succeeded or failed. Teams completing projects demonstrate a sustained culture of collaborative action, with the

				Development Institute, MSH contracted by USAID, and Eastern Cape Department of Health)			development of strategic thinking capacity and power management strategies. Poor provincial leadership put DHMTs capacity gains at risk.
Edwards et al. 2015	Mozambique	To evaluate the impact of a health management mentorship programme on health system strengthening.	Practice based Pilot done over 1 year (2013)	Driven by external actor (FGH, Vanderbilt Institute for Global Health, MOH, CDC and funded by PEPFAR)	Quantitative study using metrics of 63 Indicators of health system strength focusing on accounting, human resources, monitoring and evaluation capacity, and transportation management over a period of 1year	Participants: District health managers and administrators Setting: 10 districts in Zambézia province	The site-based health management mentoring intervention led to: improvements in accounting; human resources (though not in the completion of staff performance evaluations); monitoring and evaluation capacity (specifically in improvement in stock availability of administrative forms); and transportation management. Accounting displayed the greatest and most sustained improvements. Despite a limited health workforce, receiving salaries on time and opportunities for professional development proved crucial for health worker motivation and retention. Challenges to the programme included: constant changes to donor and MOH priorities; an incomplete decentralization process that led to unpredictable decision making; an increasing demand for health services adding an extra strain to ensure quality; and different planning and fiscal years between MOH and FGH (like staff away for mandatory national trainings and meetings.)
Foster et al. 2018	Zambia	To describe the design, development and outcomes of a LD programme for nurse managers in a low-resource setting at the subnational level and the key factors for	Practice based 12 month leadership and management programme for nurses. WPBL embedded as part of its format. UNZA confers a Certificate in Leadership and	Driven by country level actor in collaboration with country level higher education institution, and external actors/donors. (Collaboration of MOH, UNZA, IntraHealth International, J&J,	Mixed-methods study using evaluation of health project presentations, interviews with key stakeholders (nurses, clinical officers, environmental health technicians and CHAs.) FGDs with	Participants: 18 nurse facility heads and 5 district nurse supervisors Setting: 18 rural facilities across 5 districts.	Joint participation of facility heads and district managers improved their relationships and the oversight and accountability for community health. Facility heads strengthened their leadership and management skills with proven progress in the quality and accessibility of health services. They increased their ability to lead frontline

		improving programme success.	Management Practice on completion.	mPowering Frontline Health Workers, ZUNO, General Nursing Council and Health Professionals Council of Zambia)	neighbourhood health committee members and community volunteers		teams as well as enhance their skills and confidence in using technology. Key factors for programme success include: country ownership; community engagement; key stakeholder participation; and making the best use of resources to ensure programme remained financial viable.
Gormley and McCaffery 2013	Uganda	To describe the factors that lead to a successful LD programme for HRH managers at the district level and offer lessons that can be used in other countries for HRH development programmes at regional levels.	Practice based 6 month short course; part of the CapacityPlus Project (USAID's global project dedicated to health workforce.)	Collaboration of country level actors and external actor and donor (Collaboration between MOH, USAID, and IntraHealth International)	Desk review of relevant programme materials, interviews with key stakeholders (district health leaders, programme designers, managers and instructors.) FGDs with HRH teams who went through the programme	Participants: District HRH teams (63 participants) Setting: 14 districts	Change in individual and organizational performance requires supportive organizational changes. Effective district HRH development programmes need: key stakeholders that are involved in the design and delivery of the programme; learning delivered through practical, participant-focused adult learning methods; individuals selected based on HRH work responsibilities and attended as a team; on-the-job coaching to assist in implementing changes in the work environment; and quality maintained throughout the programme. HRH development programmes need to align with national and sub-national goals.
Kwamie et al. 2014	Ghana	To explore the results, contexts, and tools of a management and leadership intervention for district health managers and whether the intervention supported systems thinking among the managers.	Practice based 6 month (February to August 2012) once off course. (No new LD programme cycle afterwards and no funds set aside for it.)	Driven by country level actor. (Developed by MSH and implemented by the GHS)	Realist evaluation using document reviews (team meetings' minutes, training workshop materials, teams' presentations and action plans, reports from previous LD programme cycles, and national, regional and district policies), participant observations (district and regional health team meetings,	Participants: 5 teams (4-7 members) of District managers (the DHMT; 3 SDMTs and members of the district hospital management team) Setting: Rural district of Dangme West	Initially the novelty of the leadership development programme was received with positivity as district managers did not have formalized leadership or management training. But implementation of the programme was resource intensive and required staff to leave work to attend trainings. In addition the top-down manner in which the leadership programme was introduced reinforced the hierarchical, highly centralized, decision-making processes within the health system and this compromised institutionalization of

					workshops, LD programme activities, coaching sessions, and day-to-day district activities) and semi-structured interviews (district managers and programme facilitators)		the programme among district managers. As a result, district manager decision space remained narrow.
Mansour et al. 2010	Egypt	To describe the outcomes of a LD programme for health workers to improve service delivery challenges and explore the success in scaling up the programme.	Practice based Several Months (not specific in article). Took 4 years to cover all of Aswan Governorate. Initially a 1 year donor funded pilot by USAID. Then taken over by a local team for scale up.	Driven by country level actor. (Initially funded by USAID and co-led by MOH and MSH. Then taken over by a local Aswan Governorate team for scale up)	None given. More of a report of the LD Programme scale-up	Participants: 1000 health workers (in teams) from 184 PHC facilities and governorate managers Setting: Rural and mostly impoverished Aswan Governorate	Through applying leadership and management practices, teams learned to work together and mobilize other stakeholders to address public health problems. Through increased commitment and ownership of problems, teams were able to scale up the LD programme using local resources, once donor funded ended. Some challenges of the LD programme included: advocating its benefit to higher MOH management; finding additional facilitators when core facilitators got busy; and addressing health worker turnover during programme. Due to sustainability and scale-up in Aswan, the LD programme has been implemented in other governorates in Egypt and in 35 countries in the global South.
Martineau et al. 2018	Ghana, Tanzania and Uganda	To explore ways to strengthen decentralized health management to improve health worker performance in sub-Saharan Africa.	Practice based 2 years of WPBL embedded within the PERFORM action research project.	Driven by country level higher education institutions, in collaboration with external higher education institutions and donor. [(The PERFORM consortium: Liverpool School of Tropical Medicine, University of Leeds, University of	Qualitative Evaluation study using a document review (workshop reports, work plans and progress reports, reflective diaries and follow-up visit reports), 50 in-depth interviews and 6 FGDs	Participants: DHMTs Setting: 9 districts (mix of rural, urban or semi-urban) across 3 countries (3 districts from each country)	The root cause of health worker performance problems was due to poor human resource management systems. Going through the programme allowed for a much deeper analysis of district problems and therefore better strategies to address them. DHMTs learnt the importance of selecting strategies which were feasible, effective, and affordable given available resources; and in-line with other district interventions. Funding for action

				Ghana, Swiss Tropical and Public Health Institute, Institute of Development Studies, University of Dar-es-Salaam, School of Public Health, Makerere University), and funded by the European Commission's Seventh Framework programme]			learning projects needs to be addressed to ensure suitability and sustainability of the programme. Several intervention cycles in the same DHMTs are needed to begin to see significant impact on organizational culture. As such stakeholder expectations need to be managed regarding outcomes.
Mutale et al. 2017	Zambia	To evaluate the impact of a leadership and management training programme as a facilitator to health system strengthening in resource limited settings	Practice based 6-12 months in-service leadership and management course called ZMLA	Driven by country level actor (Course development supported by MOH, Ministry of Community Development, Mother and Child Health, BroadReach Institute for Training and Education and the Zambia Integrated Health Systems Strengthening Project)	Cross-sectional mixed method study using 444 trainee survey questionnaires, 70 key informant interviews (trainees, course implementers, mentors, selected stakeholders, and provincial, district and health facility managers), trainee knowledge quizzes, trainee feedback forms, and trainee case studies	Participants: 767 health workers (health system managers who came as teams from the same district or facility) Setting: Designated districts across Zambia covering a period of 4 years	Training key institutional health system managers/leaders was crucial in adopting and implementing principles learnt, as well as improving health system accountability. Certification by NIPA and obtaining diplomas made the training very popular among busy health workers. Many trainees did not implement the solutions generated to solve workplace problems as graduation did not depend on this. Questions of sustainability arose as the programme was a free donor funded course. Offering it through a local institution could mitigate this issue.
Nakanjako et al. 2015	Uganda	To describe lessons learned from an experiential leadership training programme to guide further leadership development programmes for nurses and doctors in LMICs	Hybrid 1 year Afya Bora Global Health Leadership Fellowship (4 fellows per year)	Driven by country level higher education (Makerere University, College of Health Sciences, MOH, PEPFAR and NGOs - not specified which ones)	Document review of weekly mentor-fellow meetings and monthly team meeting reports	Participants: 15 healthcare workers (nurses and doctors) Study covered a period of 4 years	The programme demonstrated that it is possible to strengthen individual and organizational capacity (to address health system challenges) through WPBL. Key to the success of the programme was: matching fellows to projects that were equally valuable to both the fellow and organization; mentorship; and allocating protected time for fellows to address problems. To ensure sustainability: the programme was co-led by both US and Ugandan trainers; and programme alumni were invited to take part in future programme activities.

Nzinga et al. 2021	Kenya	To explore the design and development of an innovative LD intervention, to provide insights and lessons to other LMIC health settings, on how leadership skills can support in building resilient health system actors.	Practice based 9 months of WPBL embedded in broader governance research of the RESYST Consortium in Kilifi county	Driven by country level research institution (Health policy and systems researchers of the RESYST Consortium in Kenya and health system managers of Kilifi County)	Qualitative study using participant observations of meetings and managers' interactions, 9 in-depth interviews with participating managers, document reviews (meeting notes, participant diaries and reflective assignments, pre- and post-activity evaluations, and workshop planning and meeting notes)	Participants: 30 sub-county health managers and FMs (in teams) Setting: Kilifi County	WPBL created safe spaces for team sharing and reflection, and nurtured the soft skills needed for interpersonal relationships. Managers gained a greater appreciation for health system software, improved their self-awareness and communication skills, and role-modelled positive behaviour to teams. Collaborative decision-making helped strengthen teams. New skills led to job satisfaction and increased work commitment. Managers who had supportive networks and passionate about their roles were able to consistently attend the training. To sustain new skills and see transformation in organizational climate, managers stated more time was needed to implement changes as well as the need for senior management involvement and support. Hindrances to seeing sustained improvement in the health system included: hierarchical governance structure within the health system; political interference; distrust among health system actors and the need to balance managers' heavy workloads.
Prashanth et al. 2014 (2)	India	To explore how a capacity building intervention for health managers evolved over time and how the intervention translates into improved performance of managers' planning and supervision tasks.	Hybrid 30 month capacity-building intervention (5 days for medical officers and a single discussion day for PRI representatives)	Driven by country level actors [Swasthya Karnataka (a consortium of five NGOs: Institute of Public Health, Bangalore; Centre for Global Health Research, Bangalore; Centre for Leadership and Management in Public Services, Bangalore;	Realist evaluation using qualitative data (27 in-depth interviews, participant observations of monthly and annual district review meetings, government documents, and relevant training materials, reports notes), and quantitative data (surveys, questionnaires, and	Participants: Teams of health managers, 162 PHC medical officers, and PRI representatives Setting: Tumkur district in the Karnataka state of southern India	Managers who fully participated in the training and expressed intentions to make changes in the workplace did not always realize those changes. This was often due to the context of the sub-system in which proposed changes were to be implemented in. These sub-system contexts determined how the same intervention worked in one setting but not in another. Hindrances included: poorer resourced parts of the district; increasing interference from

				Institute of Health Management and Research, Bangalore; and Karuna Trust) and the Karnataka state government]	annual district data reports)		elected local government officials; and lack of senior management support to improve health system performance. However improved organizational performance could be achieved by decreasing the power gap between doctors and the rest of the health management team, and cultivating teamwork among interdisciplinary team members.
Rowe et al. 2010	Liberia	To describe the transfer of a health management programme from a north to south institution and offer key factors needed for programme sustainability, scale up and replication.	Hybrid 6 month short course	Driven by both country level and external higher education institution (Collaboration between Mother Patern College of Health Sciences, Stella Maris Polytechnic, Yale University School of Public Health, and CHAI)	Quantitative study using self-administered participant surveys	Participants: 93 managers from County Health Teams, MOH, health facilities and NGOs (2-3 members from each institution attended) Setting: All 15 counties of the country Study covered a period of about 1 and ½ years (2017-2019)	The programme demonstrated a successful transfer of a training programme from a northern to southern institution. Participants continually reported a significant improvement in management skills during the transfer of the programme. Key elements for an effective management training programme include: use of a short course format focusing on a few vital skill areas with practical tools for application; including a mix of classroom modules, action projects, and on-site mentoring; collaborating with key stakeholders (like MOH and Mother Patern College) to enable sustainability and scalability; and ensuring facilitators/mentors are well trained.
Seims et al. 2012	Kenya	To assess if strengthening leadership and management skills of district and facility health teams results in increased health service delivery and coverage.	Practice based 6 months short course	Not really explicitly stated (except MOH) but from authors information – MSH, MOH and USAID	Non-randomized quasi-experimental study with comparison groups using quantitative data of health service indicators from the Kenyan HMIS, and qualitative data from either in-person or telephonic interviews	Participants: 67 teams of DHMTs and FMs Setting: from 6 provinces (Rift Valley, Nyanza, Central, Nairobi, Eastern and North Eastern) Study covered a period of 3 years	Strengthening team-based leadership and management contributes to improvements in health service delivery and these positive outcomes can be sustained for 6 months after the LD programme. Significant increases were seen in: district health service coverage of children under 1 year vaccinations; skilled birth attendant deliveries; and number of facility antenatal visits. Staff, medicine and vaccine shortages, and

							drought and insecurity were the key factors that led to some teams being unable to sustain improvements.
Sherr et al. 2013	Mozambique	To assess the impact of building district management capacity through data-driven decision making on under-5 mortality.	Practice based WPBL embedded in the 7 year Mozambique PHIT partnership project	Driven by external actor [PHIT partners/ consortium (Sofala Provincial Health Directorate, MOH Beira Operations Research Center, HAI, University of Washington Global Health and Industrial and Systems Engineering departments, and Eduardo Mondlane University School of Medicine)]	Quasi-experimental controlled time-series study using quantitative data (national demographic and health surveys, national multi-indicator cluster surveys, patient satisfaction questionnaires, and facility and district surveys) and qualitative data (participant observations)	Participants: FMs from 146 facilities and district managers Setting: All 13 districts in Sofala Province	It was difficult to define the role and thus strengthen the capacity of district managers due to the slow and uneven decentralization process. The extreme human resource constraint made it difficult to have personnel solely take on management positions. Despite these challenges, adaptations were made to the management and leadership training that led to more of a focus on mentoring participants towards implementing data-driven decision making.
Tetui et al. 2017	Uganda	To explore the impacts of a participatory action research approach to strengthen health managers' capacity in LMICs	Practice based 4 years of WPBL embedded in the participatory action research of the MANIFEST Project to improve maternal and neonatal health outcomes. The PAR cycle was repeated 4 times a year refining issues or tackling new ones.	Driven by country level higher education institution. School of Public Health, Makerere University	Qualitative study using 16 key informant interviews, 18 document reviews of meetings' minutes, and participant observations of project activities and meetings	Participants: 42 health managers consisting of district level managers and FMs Setting: Kamuli, Pallisa and Kibuku districts of eastern Uganda	Initially the desire to maintain the status quo was at odds with the need for innovation and change. With improved trust among stakeholders, partnership and commitment towards new ideas, was initiated and sustained. The participatory action research approach: improved managers' capacity to collaborate with different stakeholders; nurtured creativity in meeting community needs; and provided skills in planning, coordinating and achieving goals in the midst of different levels of authority and power within the health system. Additionally the managers developed analytical reflection skills and a process review culture. Despite these improvements there was still a dependency on the WPBL external implementing partners for project coordination supervision.

Key: ; CDC – United States Centers for Disease Control and Prevention; CHAs – Community Health Assistants; CHAI - Clinton Foundation HIV/AIDS Initiative; DHMTs – District Health Management Teams; DIALHS – District Innovation and Action Learning for Health Systems Development; FGDs – Focus Group Discussions; FGH - Friends in Global Health; FMs – facility managers; GHS – Ghana Health Services; HAI – Health Alliance International; HIS – health information systems; HMIS – Health Management Information System; HR – human resources; HRH – Human Resources for Health; IT – information technology; J&J – Johnson and Johnson; LD – leadership development; LeHHO – Leading High-performing Healthcare Organizations; LMICs – Low-and Middle-Income Countries; MANIFEST – Maternal and Neonatal Implementation for Equitable Systems; MSH – Management Sciences for Health; MOH – Ministry of Health; MRC – Medical Research Group; NGOs – Non-governmental organisations; NIPA – National Institute for Public Administration; PAR – Participatory Action Research; PEPFAR – President's Emergency Plan for AIDS Relief; PG Dip – Postgraduate Diploma; PHC – primary healthcare; PHIT – Population Health Implementation and Training; PRI – Panchayati Raj Institution (elected members of local government); RESYST – Resilient and Responsive Health Systems; SDMT – sub-district management team; UCT – University of Cape Town; US – United States; USAID – United States Agency for International Development; UNZA – University of Zambia; WPBL – Workplace based learning; ZMLA – Zambia Management and Leadership Academy; ZUNO – Zambian Union of Nurses Organization

Appendix 3 Data extraction table

Author(s) & Year of Publication	Inputs for WPBL	Organizational Characteristics	Individual & Motivational Issues	Environment Influences	Outputs	Outcomes	Sustainability/ Institutionalization
Chelagat et al. 2019, 2020, 2021 (2)	➢ 4 team coaching sessions (1-2 hours each) ➢ 5 workshop modules (4 classroom days each) ➢ 1 cross-learning site visit ➢ Peer/group learning ➢ Flipped classrooms using cases studies ➢ Systematic approach to leadership training (training structured around MSH's integrated Leadership Management and Governance results Framework) ➢ Action Project (institutional improvement project using MSH's Challenge Model)	<u>Challenges</u> ➢ Poor improvement in health indicators and health system performance post-devolution ➢ In public institutions • prevalent health worker strikes • poor working conditions • staff shortage • low salaries • limited resources ➢ In faith-based and public institution • high staff turnover • poor staff retention • lack of job security • scarce medical supplies <u>Opportunities</u> ➢ Power and position - Those participants in senior positions were able to expedite implementation of action projects	<u>Motivation directly linked to WPBL</u> ➢ Participants increased in their self-awareness ➢ Participants highly appreciated team coaching ➢ Coaches motivated managers to achieve project goals	<u>Challenges</u> ➢ Devolution reforms challenging to implement <u>Opportunities</u> ➢ Health management and service delivery transferred to 47 semi-autonomous counties ➢ Political goodwill - Facilities with county government political support had action projects implemented on time	<u>Positive</u> ➢ Participants learnt to communicate effectively and listen to team members ➢ 93% of action projects attained desirable results ➢ Teamwork was cultivated and team meetings promoted shared vision ➢ Positive work climate throughout the action project	<u>Positive</u> ➢ Improvement in health service delivery ➢ 85% of action projects were sustained for a period of 2–5 years after LD training ➢ Managers' attitudes changed to being more positive ➢ Positive impact on health system performance and efficiency indicators: increase in skilled birth attendance; full child immunizations; utilization of in- and out-patient services; patient satisfaction; and reduced out-patient turnaround time <u>Negative</u> ➢ Teams prioritized action projects within their sphere of influence and control. As such	➢ Implementation of action projects during and after the LD programme depended upon on how well participants could creatively use existing resources to produce positive change within their institutions ➢ Key drivers of sustainability were: programme design (workplace team recruitment, use of the Challenge Model and team coaching); stakeholder buy-in; improved communication skills; inclusion of senior organizational leadership; continued presence of the change champion (trained manager); and devolution and political good-will. ➢ Inhibitors of sustainability included: lack of technical capacity needed to implement projects;

						HRH and health financing challenges were rarely selected (despite HRH being a major challenge in both public and faith-based facilities)	endemic strikes (public sector facilities); misalignment of priorities between managers and senior leadership; poor management support; managers' workloads (most were practicing clinicians); devolution; lack of political goodwill and/or political interference; and poor communication among key stakeholders
Choonara et al. 2017	➢ Learning from other leaders/superiors through communication and delegation ➢ Team-based learning • Peer-learning – staff worked together on different tasks • Each staff member trained on every finance-related task	<u>Challenges</u> ➢ Lack of agency prevented district staff from implementing solutions for problems ➢ Structural constraints • centralization of bureaucratic processes leading to: difficulty in accessing financial resources; delayed procurement; lack of IT equipment and slow internet connectivity • inadequate delegation or authority • lack of administrative	<u>Motivation directly linked to WPBL</u> ➢ Delegation of tasks to lower level staff motivated and empowered them, and reduced managers' workloads ➢ Good work was acknowledged ➢ District annual awards for hard work, punctuality and innovation ➢ Continuous learning environment	<u>Challenges</u> ➢ Despite decentralized health system, decision-making assigned in theory but not in practice ➢ Budgets and requests had to be approved by Provincial Treasury Department (not the Provincial Department of Health) ➢ Lose of institutional memory (with exodus of healthcare workers) post 1994	<u>Positive</u> ➢ Improved teamwork in the finance department ➢ Participants able to express agency when dealing with complex district constraints ➢ Participants able to analyse and resolve existing and anticipated problems ➢ Participants able to manage and empower staff ➢ Participants able to inspire staff to	<u>Positive</u> ➢ Participants able to generate and share new knowledge and learning to enhance collective knowledge within the district ➢ Participants developed agency to address DHS constraints ➢ Broader district staff became solution-driven and motivated <u>Negative</u> ➢ At the sub-district level (due to structural	(Not an explicit WPBL intervention, however WPBL was observed and these findings documented while the researcher was conducting research on district financial management)

		capacity at sub-district levels Opportunities ➢ Positive learning environment ➢ District manager put emphasis on having good relationships with staff (through communication)			achieve district goals	constraints and a lack of administrative capacity), it was more difficult to be creative and innovative at solving health system challenges.	
Cleary et al. 2018	➢ Action learning ➢ Group reflection practices ➢ Group coaching ➢ 5-day health management short course ➢ Several day-long workshops ➢ Peer support meetings ➢ Active facilitation of relational leadership workshop; reflection sessions; peer support meetings and coaching sessions ➢ Structured programme planning (around the "Thinking Environment" principles)	Challenges Centralized accountability processes. Lengthy bureaucratic mechanisms to ensure accountability to city, provincial and national levels; as such support and mentoring of staff driven by a compliance-focused approach i.e. a detailed audit report. Opportunities Willingness by the sub-district to engage in what would be considered a very non-traditional form of work placed based learning in the public sector.	General motivation in the workplace ➢ FMs feel victims of the system ➢ FMs not always trusted by management to make decisions based on their local context ➢ Accountability mechanisms demotivating to FMs Motivation directly linked to WPBL ➢ Verbalized appreciation was highly valued and motivated managers		Positive ➢ Better trust and cohesion among the SDMT as well as within relationships between FMs and staff ➢ FMs given more discretionary decision space ➢ Improvements in engagements with accountability processes and supervisory meetings	Positive ➢ Shift in the organizational culture whereby FMs became more engaged and assertive especially in meetings and expressed concern if new initiatives were unrealistic to implement ➢ SDMT and FMs understood benefits of relational leadership Negative ➢ Hierarchical governance structure persisted as senior/higher level managers did not undergone the LD intervention	➢ Prolonged engagement of LD implementing team/researchers with participants. (The LD intervention emerged through several engagements over a period of time between the research team and district/facility managers.)
Desta et al. 2020	➢ Leadership, management and governance trainings			Opportunities ➢ MOH introduced in-service training on	Positive ➢ Improved management		➢ USAID funded ➢ Project supports government

	➢ Health service management improvement project linked to MCH ➢ On-site coaching ➢ Learning sessions during performance review meetings			Leadership, Management and Governance in 2017	practices and structure ➢ Teams strengthened ➢ Improved availability of functional equipment ➢ Improved availability of health workers	<u>Positive</u> ➢ Improved quality of services at facility level ➢ Established multisector collaboration	initiatives (leadership, management and governance trainings) and thus integrates LD as part of its activities.
Doherty et al. 2018	➢ Mentorship ➢ Networking ➢ Reflective practice ➢ 4 (5-8 day) classroom modules ➢ Health system intervention project ➢ Active facilitation (of classroom modules) ➢ Structured programme planning (to ensure learning objectives were known by participants) ➢ Peer-learning with discussions of case studies ➢ Problem-based learning ➢ Practice-linked assignments geared towards workplace challenges (action learning) ➢ Diploma in Health Management	<u>Challenges</u> ➢ Managers' workloads proved to be a constraint to some completing the programme ➢ Workplace line managers not always cooperative to students study needs between modules ➢ Heavy workloads made networking and mentorship difficult to achieve ➢ Misaligned expectations between work-based mentors and students ➢ Lack of active support at work for students to practice skills acquired nor flexibility to make mistakes ➢ Mismatched students selected for the programme ➢ Budget constraints ➢ Staff shortage ➢ Poor senior leadership capacity	<u>Motivation directly linked to WPBL</u> ➢ Enthusiasm for the programme - Satisfaction with structure, content and teaching style of programme including the workplace strengthening • unleashed potential as participants realized that their characteristics and experiences were worthwhile; and change was possible	<u>Challenges</u> ➢ Political interference	<u>Positive</u> ➢ Managers improved their presentation skills for meetings ➢ Managers able to identify and analyse root causes of problems in the workplace, and strategize on how to improve ➢ Managers able to engage positively with staff and stakeholders ➢ Managers understood their roles and personal strengths and weaknesses, thus able to transform interpersonal relationships	<u>Positive</u> ➢ An alumni network for on-going support ➢ Developed high level and good quality managers in the public health sector ➢ Managers remained in the public health sector and in the same province ➢ Development of teams able to effectively solve workplace problems ➢ Managers able to make headway towards context-specific change ➢ Some positive changes in health system performance (improved district HIS; improved	➢ Inability of public sector health/human resource departments to find a place for participants or graduates

		➢ Silo mentality among staff in different departments ➢ Centralized bureaucratic authority and processes ➢ Lack of a culture of excellence ➢ Resistance to change from mangers and staff who had not undergone the training <u>Opportunities</u> ➢ Willingness by the city, provincial and national departments of health to nominate students to the programme			with staff, supervisors and stakeholders ➢ Managers learnt to communicate more effectively and involve others in decision-making	support services from sub-districts to FMs and improved resourcing of PHC clinics) <u>Negative</u> ➢ Resistance to change from other public sector managers/staff who had not gone through the programme ➢ Mentorship relationships difficult to initiate or maintain	
Dovey 2002	➢ Collaborative work-based projects ➢ Coaching ➢ 4 one week classroom lectures ➢ 1 day Workshops ➢ Reflection practices ➢ District Health Management Certificate	<u>Challenges</u> ➢ Poor strategic organizational plans ➢ Province underdeveloped and impoverished ➢ Poor infrastructure within the province ➢ Mismanagement, power struggles and corruption amongst senior management ➢ organizational culture of entitlement within the Eastern Cape Department of Health <u>Opportunities</u> ➢ Buy in across partners and the provincial government. All	<u>General motivation in the workplace</u> ➢ Perceive themselves powerless to impact their environment <u>Motivation directly linked to WPBL</u> ➢ Establishment of core values/code of conduct critical factor to implementation of work-based projects ➢ Achievement of goals garnered enthusiasm, commitment and confidence among DHMT members	<u>Challenges</u> ➢ Limited collaboration amongst public institutions due to history of apartheid ➢ Poor preparation of leaders in public and private sector institutions	<u>Positive</u> ➢ Establishment of DHMT mission ➢ Establishment of DHMT code of conduct ➢ Setting realistic goals and action plans ➢ Development of cohesive teams ➢ Service delivery problems addressed through work-based projects e.g. supply of STI drugs to isolated clinics	<u>Positive</u> ➢ DHMTs focused on achieving organizational goals ➢ Development of procedural and strategic knowledge to solve complex workplace problems ➢ Development of strategic thinking for goal setting ➢ Development of social agency ➢ Realization that workplace problems require shared positive collaboration, and	➢ Work-based projects continued in successive cycles of strategic action as a new member of the DHMT enrolled in the programme. (Programme goal was to capacitate DHMT staff across the province each year.)

		stakeholders were involved in designing, implementing and managing the intervention	➢ Working collaboratively around shared mission and values, reduced mistrust and individual competiveness, thus becoming a source of motivation		➢ Presentation of projects to senior managers	sustained collaboration ➢ Development of power management strategies ➢ Built distributed leadership capacity in DHMTs <u>Negative</u> ➢ Poor provincial leadership will put DHMTs capacity gains at risk ➢ The focus of the programme was on the nature of learning gained (project report) and not whether the work-based projects succeeded or failed	
Edwards et al. 2015	➢ Week long onsite mentoring every 4-8 weeks	<u>Challenges</u> ➢ Dearth health workforce ➢ Poor district compliance with MOH accounting procedures (therefore delays in receiving funds) ➢ High staff turnover ➢ Poor resource allocation ➢ Poor working conditions ➢ Delays in and low pay ➢ Staff away from work due to mandatory trainings and meetings ➢ Lack of accountability ➢ Frequent stock-outs of administrative forms	<u>General motivation in the workplace</u> ➢ Demotivated employees due to limited professional development	<u>Challenges</u> ➢ One of the poorest nations in the world ➢ Poor road conditions <u>Opportunities</u> ➢ Decentralized health system	<u>Positive</u> ➢ High-quality financial reports were prepared ➢ Improvement in budget preparation to cover expenses like salaries ➢ Payments were appropriately documented ➢ Improvement in professional development for staff	<u>Positive</u> ➢ Improved overall coordination and planning within the province ➢ Greater transparency of accounting practices ➢ Better district health financial resource allocation to meet community needs	➢ Management mentoring programme is within a vertically (HIV) financed intervention trying to achieve horizontal system-wide effect. ➢ FGH gave sub-grants to each district to support programme ➢ FGH directly hired healthcare workers for MOH. These workers were to be absorbed into MOH

		➢ Limited or non-functioning transportation services ➢ Poor documentation of status of district vehicles <u>Opportunities</u> ➢ Willingness by provincial and district leaders to collaborate with partners			➢ Improvement in stock availability of administrative forms ➢ Improved documentation of district vehicle usage ➢ Improved scheduling of district vehicle maintenance	➢ Increase in the number of health workers ➢ Improved forecasting of health system needs <u>Negative</u> ➢ Increasing demand for health services adding an extra strain to ensure quality	payroll in the subsequent fiscal year. Programme targeted accounting processes to ensure health workers were absorbed. ➢ High human capital investment (mentors) needed which was time consuming and expensive. ➢ Different planning and fiscal years between MOH and FGH (like staff away on mandatory national trainings and meetings thus not available during mentoring visits) ➢ Constant changes to donor and MOH priorities.
Foster et al. 2018	➢ Community health improvement project ➢ Peer learning ➢ Distance learning using a mobile application ➢ In-person trainings ➢ Support from supervisors who check-in monthly to facilitate discussions and review workbook exercises ➢ Majority of the learning in the	<u>Challenges</u> ➢ Under-staffed facilities ➢ Heavy workloads ➢ Limited access to technology ➢ Nurses have no pre-service training in leadership and management ➢ Difficulty assimilating and integrating CHAs into the community health team	<u>Motivation directly linked to WPBL</u> ➢ Motivated to pursue training to earn CPD points for relicensure requirements ➢ Facility heads gained the title of head nurse in charge on completion of training		<u>Positive</u> ➢ Facility heads strengthened their leadership and management skills ➢ Improved relationships between facility heads and district managers ➢ Nurses were able to build	<u>Positive</u> ➢ Proven progress in delivery, quality and accessibility of health services ➢ Improved oversight and accountability of community health (due to joint participation of facility heads and district managers) ➢ Built a network of support among nurse colleagues	➢ Approved as a national CPD programme and required for all nurses leading PHC rural facilities. ➢ Country owned and community aligned (met priorities identified by the local health authority and ensured responsiveness to community needs.)

	workplace engaging staff and community members with exercises integrated into service delivery activities ➢ Certificate in Leadership and Management Practice	<u>Opportunities</u> ➢ Key stakeholders engaged (UNZA, ZUNO, General Nursing Council and Health Professionals Council of Zambia.)			collaboration across different cadres like CHAs to address community needs ➢ Improved communication between facility providers and the community ➢ Participants gained experience and confidence in using technology like MS Office applications	➢ Facility heads gained efficiency in delegation and task shifting to reduce heavy workloads ➢ Health projects ensured responsiveness to community needs and requests ➢ Programme built capacity across several members of the frontline PHC team (not just nurses) while implementing the health improvement projects ➢ UNZA's School of Nursing beginning to include elements of programme in the nursing pre-service training curriculum <u>Negative</u> ➢ 2 FM's did not complete the programme	➢ Programme complimented MOH guidelines and other MOH trainings ➢ Made best use of resources (training design, delivery and tools) to ensure programme remained financial viable so that when external funding ended the programme would not end. ➢ Programme development remained flexible to learn from previous cycles.
Gormley and McCaffery 2013	➢ 3 one week workshops ➢ Coaching ➢ Action learning based on solving a specific problem at work ➢ Systematic approach to programme	<u>Challenges</u> ➢ High health worker absenteeism ➢ Inadequate number and skills mix of health workforce	<u>Motivation directly linked to WPBL</u> ➢ High commitment and buy-in to the programme		<u>Positive</u> ➢ Performance of staff on provisional status improved ➢ Staff in acting positions promoted faster	<u>Positive</u> ➢ Health workers responsive to community needs ➢ Participants had positive attitudes towards the possibility of	➢ The resultant collaboration Ministry of Public Works and Health Services Commission ensured the taught management skills and practices would

	planning (course structured around the six thematic action fields of the HRH Action Framework) ➢ Facilitator actively involved in the learning process	<u>Opportunities</u> ➢ Key stakeholders across districts and ministries involved in the design and delivery of the HRH development programme ➢ HRH specialists attended programme as a team			➢ HRH team able to identify root causes of high staff absenteeism ➢ Teams able to collaborate together to solve HRH challenges	solving work challenges	be maintained and sustained operationally; as well as guaranteeing that any organizational hindrances were resolved ➢ Local country based facilitators were often those who had worked in district-level health facilities and therefore acquainted with district contexts and environments ➢ LD intervention aligned with national and sub-national goals
Kwamie et al. 2014	➢ Active role of facilitators (in workshops and coaching) ➢ 2 day face-to-face workshops held in the capital city Accra 3 times bi-monthly ➢ Monthly team coaching ➢ Action projects around an identified MNH problem	<u>Challenges</u> ➢ Resources (human, diagnostic or financial) are constrained ➢ District managers have time constraints due to managing both district and donor vertical programmes ➢ Formalized management training is limited ➢ District managers have more discretion in decision-making within donor vertical programmes	<u>General motivation in the workplace</u> ➢ Poor staff attitude <u>Motivation directly linked to WPBL</u> ➢ Initially the novelty of the leadership development programme was received with positivity ➢ Having regional health administration facilitate coaching enthused teams ➢ Managers found the resource intensiveness of	<u>Challenges</u> ➢ GHS has a hierarchical structure where decision-making is highly centralized	<u>Positive</u> ➢ Managers better able to prioritize workload and concurrently manage vertical donor programmes ➢ Managers able to support teamwork through inspiration and acknowledgment ➢ Managers able on a small scale to build initiative towards solving problems	<u>Positive</u> ➢ Short-term service delivery outcomes included: Increased skilled birth delivery; reduced still births; and increased focused antenatal care <u>Negative</u> ➢ The top-down manner in which the LD programme was introduced reinforced hierarchical, highly centralized, decision-making processes	➢ Lack of LD programme institutionalisation due to routine district year end commitments and changes in regional and district leadership (dividing the district into two separate districts in October 2012 necessitated new administrative structures and a reorganization of relationships within the new districts.) ➢ Managers never took ownership of the LD

			programme to be burdensome		Negative ➢ Implementation of the programme exacerbated staff's time and resource constraints	➢ No change in relationships between district and regional levels ➢ No on-going coaching or mentorship post LD ➢ Running external interventions that require planning, money and time (especially if not included in the planning cycles) exacerbated workloads and resource constraints	programme as they viewed it as a once off regional project (with no on-going follow through) versus a continuing district programme
Mansour et al. 2010	➢ 4 one or two day workshops ➢ service delivery improvement projects using MSH's Challenge Model ➢ Monthly support meetings led by MOH managers ➢ Active role of facilitators (in workshops and meetings) ➢ Some degree of structured planning to the programme (structured around MSH's Leading and Managing Framework; led in Arabic by MOH facilitators; and programme exercises		General motivation in the workplace ➢ Low morale among health workers and managers ➢ Lack of commitment from front line health workers Motivation directly linked to WPBL ➢ Participants enthusiastic of programme (enabled front line health workers to actively participate in design and implementation of their own improvement projects; and in the	Challenges ➢ Aswan Governorate mostly rural and improvised ➢ Gaps in access to and quality of health services in lower resourced parts of the country	Positive ➢ Teams stopped complaining about problems; to identifying ones they could address ➢ Teams able to analyse problems and use existing resources to address them ➢ Teams learned to work together and mobilize other stakeholders to address public health problems	Positive ➢ All PHC facilities in Aswan have gone through the LD programme ➢ 20 LD programme facilitators and participants have taken up senior health management positions in Aswan ➢ Service providers have improved commitment and love for their jobs ➢ Improved clients' perceptions of health facilities and workers ➢ Increased number of new family	➢ LD programme was taught in Arabic and led by MOH facilitators ➢ Programme exercises reviewed by the MOH facilitators to ensure they were context-specific ➢ Local managers taught the shorter workshop sessions as well as led district meetings between sessions to strengthen learning. ➢ Due to sustainability and scale-up in Aswan, the LD programme has been implemented in other governorates

	reviewed by the facilitators to ensure they were context-specific)		scale-up of the programme) ➢ Programme's hands-on approach promoted participants' ownership of local health system.			planning visits and use of contraceptives which reduced fertility rates ➢ Increased prenatal care utilization ➢ Reduced maternal mortality rate in Aswan 2 years after all PHC facilities had gone through the programme	in Egypt and in 35 countries in the global South
Martineau et al. 2018	➢ 2 Workshops (1-2.5 days each) ➢ Active role of facilitator throughout the MSI ➢ Action learning sets ➢ Reflection ➢ Peer-learning through inter-district meetings ➢ Systematic approach to programme planning (course structured around the action research cycle of: plan, act, observe and reflect)	<u>Challenges</u> ➢ Numerous changes in the leadership of one team in Tanzania led to a lack of continuity and undermined the development of management skills <u>Opportunities</u> ➢ Workshops and inter-district meetings gave participants protected time to work through the action learning process ➢ Willingness of DHMTs to participate in the MSI	<u>Motivation directly linked to WPBL</u> ➢ Fitted in with work schedule as workshops and meetings were short ➢ Facilitation process encouraged and guided participants ➢ Bringing districts together for workshops enabled peer-learning which participants appreciated	<u>Opportunities</u> ➢ Decentralized health system	<u>Positive</u> ➢ DHMTs able to design and implement integrated strategies to address district problems ➢ DHMTS better able to allocate funds for district activities ➢ Transformation in the way DHMTs functioned; such as ownership of problems; taking initiative; empowered to solve problems; and team work. ➢ Improvement in management competencies of planning due to the deeper	<u>Positive</u> ➢ Demonstrated improvements in service delivery (vaccine programme in Ghana) ➢ Greater interaction between DHMTs and FMs (positive unintended consequence.) <u>Negative</u> ➢ Unintended consequence of shortage of HIV drugs and equipment when demand for HIV services increased ➢ Unintended consequence of neglect on service	➢ Funds for implementation of work plans were deliberately not provided to instil an entrepreneurial approach to resource mobilization thus not jeopardize sustainability commonly seen once externally funded projects' end. (This is a risk. Whether it actually works depends on each specific context.) Only successive MSI cycles can tell us if it works.

					analysis of district problems and therefore better strategies to address them ➢ Improved quality of supervision of front-line health workers	areas not targeted by the MSI	
Mutale et al. 2017	➢ Mentoring during and after training ➢ 4 workshops (2-2.5 days each) ➢ Action learning through working on solving problems in the workplace ➢ Systematic approach to programme planning (logic model informed design of the ZMLA Programme)	<u>Challenges</u> ➢ Little time allocated for trainees to go through course work and participate in peer-learning ➢ DHMTs run by recently qualified medical doctors with nominal leadership and management training	<u>Motivation directly linked to WPBL</u> ➢ Certified by NIPA ➢ Training popular because it provided practical tools to address everyday health system challenges ➢ Due to training trainees felt empowered and confident to be health system managers	<u>Opportunities</u> ➢ MOH developed a Governance and Management Capacity Building Strategic Plan (which led to adoption of in-service leadership and management training)	<u>Positive</u> ➢ Shared vision as teamwork and coordination improved ➢ Improvements in attending meetings with a greater appreciation of their importance ➢ Improved workplace climate particularly around human resource management ➢ Trainees had greater role clarity and understanding of others roles' and how this supported organizational goals ➢ Trainees improved in financial literacy and thus	<u>Positive</u> ➢ Trainees remained in public health service ➢ Trainees felt more prepared and motivated to lead and manage <u>Negative</u> ➢ Many trainees did not implement the solutions generated to solve workplace problems as graduation did not depend on this	➢ After ZMLA received NIPA certification training became popular among busy health workers ➢ Shortening programme length from 12 to 6 months (to reduce health service delivery disruptions); increased course workload but reduced attrition. ➢ Questions of sustainability arose as the programme was a free donor funded course. (Offering it through a local institution could mitigate this issue.)

					improved in financial management		
Nakanjako et al. 2015	➢ 2 months didactic classroom modules ➢ 9 months field attachment ➢ Mentorship (during field attachment) ➢ 4 online learning modules ➢ Action projects	<u>Challenges</u> ➢ Many FMs do not have needed leadership or management training <u>Opportunities</u> ➢ Institutions willing to allocate time for fellowship activities. (Action projects did not require funding but protected time to complete.) ➢ Dedicated office space for fellows ➢ Available projects for WPBL at attachment sites ➢ Availability of organizational mentors	<u>Motivation directly linked to WPBL</u> ➢ Fellows empowered to assume more leadership responsibilities		<u>Positive</u> ➢ Improved competencies in leading and inspiring teams to generate results ➢ Improved use of data to inform health service delivery	<u>Positive</u> ➢ All programme graduates stayed in health leadership positions within the country ➢ New responsibilities given to fellows ➢ Improved HIV/AIDS health service delivery ➢ Overhaul of policy formation and review procedures; and health worker training in the national HIV/AIDS programme ➢ Scale-up of some successfully implemented action projects ➢ Joint structured mentorship (from Makerere and attachment sites) for a period of 10 months formed a foundation of trust and on-going support for development of action projects and leadership skills	➢ Cost of programme was $40,000 to train 1 fellow each year (for fellow stipend, curriculum development, and travel to residential module trainings)

						Negative ➢ 1 fellow did not complete the programme	
Nzinga et al. 2021	➢ 5 day taught course on complex health systems ➢ Course on emotional competence and communication skills ➢ 3 day skill building course ➢ Reflective practices ➢ Systematic approach to leadership training (researchers and health system managers engagement cycles of planning, implementation and reflection of activities) ➢ Action learning (addressing a health system problem using MSH's Challenge Model) ➢ Flipped classroom (using Kenyan case studies) ➢ 2 and ½ day follow-up workshop	Challenges ➢ Deeply rooted cultures of not questioning authority (or their decisions on what needs to be given precedence in the health system) ➢ Mistrust between meso-level managers and senior-level leaders ➢ Lack of organizational practices to provide emotional support to employees Opportunities ➢ Learning site (long-term partnership between health system managers and researchers to address heath system challenges)	General motivation in the workplace ➢ Frontline health workers apathetic to change Motivation directly linked to WPBL ➢ Participants more confident at dealing with work problems and providing solutions ➢ Managers found the LD programme valuable with learning useful to everyday work	Challenges ➢ Rapid devolution led to: unclear communication channels; reporting; and accountability ➢ Political interference	Positive ➢ Better communication skills (brought about by learning to listen without interruption) ➢ Managers able to engage and build their teams to collective address work problems ➢ Managers began recognizing the importance of team members ➢ Managers developed a growing ability to show respect and empathy and give constructive feedback	Positive ➢ Collaborative decision-making among teams ➢ Better relationships with co-workers and subordinates ➢ Resource mobilization during a nationwide nurses strike by engaging technical partners and senior leaders ➢ Acquired new skills led to job satisfaction and increased work commitment Negative ➢ Only 8 out of 30 participants went through the full training. ➢ Providing feedback to superiors continued to be a problem as it was not appreciated ➢ Lack of supportive networks prevented a number of managers from consistently	➢ The broader embedded nature of the RESYST LD team together with the participatory nature of co-developing the intervention with managers inspired learning, ownership of the LD intervention, as well as motivation to use skills learned in practice

						attending the training	
Prashanth et al. 2014 (2)	➢ 2-5 contact classes/classroom teaching per month ➢ Peer/group learning during classes ➢ 5 on-site mentoring visits ➢ Systematic approach to programme planning (course designed by a consortium of 5 NGOs with input from state government); and programme evaluated to assess whether learning outcomes were achieved	<u>Challenges</u> ➢ DHS or DHMTs concept not well defined/ established despite decentralization of health services being implemented for about a decade ➢ High turnover of health managers ➢ Under-staffed districts ➢ Uncoordinated district health services with separate reporting lines to the state ➢ Team power distance (dynamics) and prevailing socio-cultural values. (Doctors automatically viewed as team leaders despite the existence of non-medical management professionals/cadre.) <u>Opportunities</u> ➢ District/State/Central levels' openness to agree to change	<u>General motivation in the workplace</u> ➢ Frustration with decentralization planning as managers had no power to make changes ➢ District health managers were apathetic and lacked desire to change things <u>Motivation directly linked to WPBL</u> ➢ Some managers saw training as a way to achieve personal and organizational goals (seen by the differing outputs and outcomes of the LD programme within the same district)	<u>Challenges</u> ➢ Increasing political interference (district health services now accountable to PRI representatives) ➢ Remote areas not a favoured posting preference by doctors <u>Opportunities</u> ➢ Health system undergoing decentralization to district levels ➢ NRHM implementation	<u>Positive</u> ➢ Marginal increase in financial resources being better utilized <u>Negative</u> ➢ Poor teamwork	<u>Positive</u> ➢ Variable decreases in still birth rates across the district <u>Negative</u> ➢ Managers were not able to always implement changes in the workplace often due to structural and resource constraints ➢ Power distance between doctors and other team members remained ➢ Health managers working in poorly resourced areas got frustrated by the lack of enabling action from higher levels of the health system	➢ Depended on whether workplace change suggestions were in line with central vision like NRHM implementation and local community needs.
Rowe et al. 2010	➢ 3 classroom sessions (10 days each) ➢ On-site mentoring ➢ Active role of the facilitator (taught and mentored) ➢ Action projects (around MCH, reproductive and	<u>Challenges</u> ➢ DHMTs had limited management training or experience. <u>Opportunities</u> ➢ Started in 2007 on request from Mother Patern College		<u>Challenges</u> ➢ 14 years post-civil war <u>Opportunities</u> ➢ Liberia transitioning from a time of needing relief and crisis management	<u>Positive</u> ➢ Improvement in management skills		➢ Over several cycles training responsibility was transferred to local facilitators while ensuring these facilitators/mentors were well trained.

	adolescent health, controlling communicable disease, mental health, and emergency care) ➢ Systematic approach to learning (programme structured around health systems management-problem solving, strategic thinking, HRH, and LD)			to one of growth and expansion ➢ Decentralized health system ➢ Endorsed by MOH; and as such MOH was a driving force in programme implementation.			➢ Programme flexible to changes in course content and delivery methods while transferring to local facilitators ensuring programme ownership. ➢ Use of a short course format to reduce work disruptions; focusing on a few vital skill areas with practical tools for application. ➢ Limited turnover of Mother Patern College, Yale University and CHAI staff during transfer
Seims et al. 2012	➢ Action learning (addressing a health system problem using MSH's Challenge Model) ➢ 4 LD workshops ➢ Stakeholder alignment meetings with national and sub-national decision makers ➢ Team coaching/ mentoring ➢ Systematic approach to leadership training (training structured around MSH's Leading and Managing Framework)	<u>Challenges</u> ➢ Staff shortages ➢ Limited supply of medications and vaccines <u>Opportunities</u> ➢ Willingness of DHMTs to participate in the LD intervention		<u>Challenges</u> ➢ Drought (some districts) ➢ Insecurity (some districts)	<u>Positive</u> ➢ Improved work climate due to better staff training/ supervision; and repairing staff housing ➢ Timely and accurate reporting of institutional service delivery data	<u>Positive</u> ➢ Significant increases in district health service coverage and number of facility client visits due to: • Increased community mobilization and health education • Increased outreach centres and increased service hours thus increasing	➢ Positive health service delivery outcomes sustained for 6 months after the LD programme

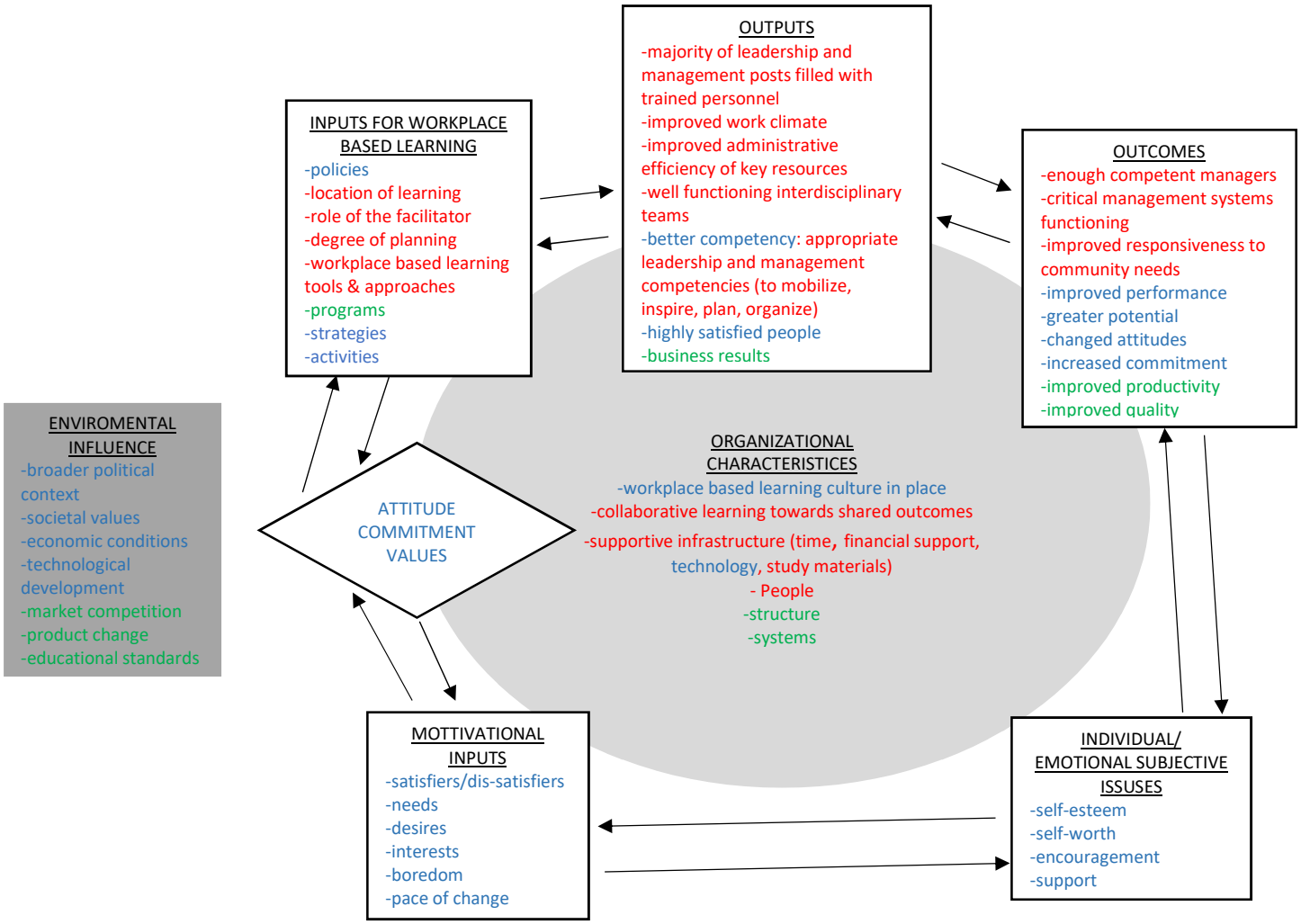
						access to health	
Sherr et al. 2013	➢ In-service training courses based on MOH curriculum on data-driven decision making ➢ Quarterly post-training coaching from MOH supervisors ➢ Mentorship from PHIT partnership teams embedded in the MOH at provincial level ➢ Routine district meetings	Challenges ➢ Poor health service and quality ➢ Underfunded district health systems ➢ Extreme health worker shortage ➢ Weak HIS ➢ Heavy DHMTs workload ➢ Chronic resource shortages Opportunities ➢ PHIT institutions had more than 25 years collaborative experience in the country leading to a deep understanding of context		Challenges ➢ Sofala province poorest in the country ➢ High disease burden Opportunities ➢ High use of NHS ➢ Health sector decentralization reforms ongoing	Positive ➢ Managers improved in collaborating with key stakeholders (PHIT partners) ➢ Ownership of health system interventions (PHIT activities) by district and provincial leaders	Positive ➢ Better cooperation and engagement within the province to resolve health system challenges Negative ➢ The extreme human resource constraint made it difficult to have personnel solely take on management positions ➢ Difficult to define role and thus strengthen capacity of district managers due to slow and uneven decentralization process ➢ Frequent turnover of district and provincial managers	➢ Shifts in national programmes and available funding required adaptations (flexibility) to the management and leadership training resulting in a focus on mentoring managers on formulating data driven decisions ➢ Integrated into MOH provincial management structure to ensure sustainability and scalability. ➢ Embedded nature of technical and financial assistance fostered ownership of management and leadership activities by health system leaders. ➢ Focus on entire province to ensure sustainability of district capacity gains and what would be suitable for national scale-up.

Tetui et al. 2017	➢ Systematic approach to management capacity building (structured around the PAR approach of problem identification, finding possible solutions, taking action and reflection) ➢ Mentoring ➢ Action project through MANIFEST ➢ Quarterly review meetings for reflection and learning ➢ Active role of facilitators in review meetings; and coordination and implementation of project	<u>Challenges</u> ➢ Staff shortages ➢ Recurrent stock-out of medicines and supplies ➢ Unsupportive work environment ➢ FMs have heavy workloads ➢ Laissez faire and working in isolation organizational culture ➢ Excessive reliance on external organizations to carry out project implementation <u>Opportunities</u> ➢ Willingness of district, sub-district and community level stakeholders to participate in the MANIFEST project activities	<u>General motivation in the workplace</u> ➢ Low health worker motivation ➢ Low commitment to quality ➢ Health workers rarely at work stations <u>Motivation directly linked to WPBL</u> ➢ Involvement of different stakeholders led to motivation and a sense of ownership towards solving health system challenges	<u>Challenges</u> ➢ Poorly resourced local governments ➢ Poor health outcomes in rural areas ➢ Poor cooperation among government agencies and different administrative levels <u>Opportunities</u> ➢ Decentralized health system	<u>Positive</u> ➢ Improved teamwork and collaboration with stakeholders ➢ Empowered and actively engaged community stakeholders ➢ Free and open dialogue which led to trust amongst district teams and stakeholders ➢ Better utilization of existing resources ➢ Improved allocation of financial resources ➢ Managers increased their confidence in decision-making; planning and coordinating district activities; and reporting and utilizing health data	<u>Positive</u> ➢ Free and open dialogue (reducing power dynamics) led to trust amongst district teams and stakeholders; leading to commitment towards project goals to improve maternal and neonatal health outcomes ➢ Stakeholder collaborations increased managers' awareness of and adaptability to community needs despite the desire to maintain the status quo ➢ Construction of health facility infrastructure projects ➢ Ambulances bought and/or donated ➢ Improved health workers attitude ➢ Reduced health workers absenteeism	➢ Intervention implemented using existing district structure and resources to increase chances of institutionalization and sustainability ➢ There was district level commitment that enabled and undergirded cooperation among stakeholders with differing power. ➢ Flexibility and wide stakeholder engagement enhanced local creativity and innovation to meet community needs.

						<u>Negative</u> ➢ Excessive reliance on external organizations (local partner) to carry out project implementation	

Key: CHAs – Community Health Assistants; CPD – Continuous Professional Development; DHMTs – District Health Management Teams; DHS – District Health System; FGH - Friends in Global Health; FMs – facility managers; GHS – Ghana Health Service; HIS – health information systems; HIV/AIDS – Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome; HMIS – Health Management Information System; HRH – Human Resources for Health; LD – leadership development; MANIFEST – Maternal and Neonatal Implementation for Equitable Systems; MCH – Maternal and Child Health; MNH – Maternal and New-born Health; MOH – Ministry of Health; MSH – Management Sciences for Health; MSI – Management Strengthening Intervention; NGOs – Non-governmental organisations; NHS – National Health Service; NIPA – National Institute for Public Administration; NRHM – National Rural Health Mission (healthcare reforms to improve financing, planning and supervision of health); PAR – Participatory Action Research; PHC – primary healthcare; PHIT – Population Health Implementation and Training; PRI – Panchayati Raj Institution (elected members of local government); RESYST – Resilient and Responsive health systems; SDMT – sub-district management team; STI – Sexual Transmitted Infections; UNZA – University of Zambia; USAID – United States Agency for International Development; WPBL – Workplace based learning; ZMLA – Zambia Management and Leadership Academy; ZUNO – Zambian Union of Nurses Organization

Appendix 4 Adapted workplace based learning conceptual framework (Day 2001, Cunningham et al. 2004, WHO 2007, Raelin 2008, Jacobs and Park 2009, Manley et al. 2009, Vriesendorp et al. 2010, Doherty and Gilson 2015).



Key:

1. Green highlighted words show concepts from the original Matthews (1999) framework that were removed for this review.
2. Blue highlighted words show concepts from the original Matthews (1999) framework that remained and were applicable for this review.
3. Red highlighted words show concepts that were added. The framework, peer-reviewed literature or book from which these concepts were derived from is shown in the table below.

Framework/Peer-reviewed literature/ book	Inputs for WPBL	Organizational Characteristics	Outputs	Outcomes
Cunningham et al. 2004	Workplace based learning tools & approaches			
Day 2001	Workplace based learning tools & approaches			

Doherty and Gilson 2015	Workplace based learning tools & approaches			
Jacobs and Park 2009	➢ Location of learning ➢ Role of the facilitator ➢ Degree of planning			
Manley et al. 2009		➢ Collaborative learning towards shared outcomes ➢ Supportive infrastructure (time, financial support, study materials)	Well-functioning interdisciplinary teams	
Raelin 2008	Workplace based learning tools & approaches			
Vriesendorp et al. 2010			Appropriate leadership and management competencies (to mobilize, inspire, plan, organize)	
WHO 2007			➢ Improved administrative efficiency of key resources ➢ Majority of leadership and management posts filled with trained personnel ➢ Improved work climate	➢ Enough competent managers ➢ Critical management systems functioning ➢ Improved responsiveness to community needs

Appendix 5 Health Policy and Planning instructions for authors

Health Policy and Planning will be published online-only from May 2020. All print editions will be discontinued.

Health Policy and Planning improves the design, implementation and evaluation of health policies in low- and middle-income countries through providing a forum for publishing high quality research and original ideas, for an audience of policy and public health researchers and practitioners. HPP is published 10 times a year.

Health Policy and Planning has received transformative journal (TJ) status by cOAlition S. HPP is committed to transitioning to a fully open access journal by gradually increasing its open access content in line with growth targets set by cOAlition S.

For authors funded by groups who have now implemented the principles of Plan S, such as UK Research and Innovation (UKRI) and Wellcome, this means that you can publish open access in HPP, receive funding for your Article Publishing Charges (APCs), and meet the requirements laid down by Plan S.

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HPP has a double-anonymised peer-review policy. This means the identity of the authors is anonymous to the reviewers and vice-versa. All types of papers are peer reviewed and all article abstracts from each issue are translated into French, Spanish and Chinese.

Before you submit please make sure you have followed all the relevant instructions. A checklist for authors is available on the HPP webpage.

Please submit your paper to the most appropriate section. Read our Section Summaries.

Please note that submission of a paper implies that it reports unpublished work and that it is not under consideration for publication elsewhere. Plagiarism, including duplicate publication of the author's own work, in whole or in part without proper citation is not tolerated by HPP. Submitted manuscripts are screened with iThenticate software, as part of the CrossCheck initiative to detect and prevent plagiarism.

Guidance

Improving chances of publication

As well as the high overall quality required for publication in an international journal, authors should take into consideration:

- Addressing HPP's readership: national and international policy makers, practitioners, academics and general readers with a particular interest in health policy issues and debates.

- Manuscripts that fail to set out the international debates to which the paper contributes, and to draw out policy lessons and conclusions, are more likely to be rejected, returned to the authors for redrafting prior to being reviewed, or undergo a slower acceptance process.
- Economists should note that papers accepted for publication in HPP will consider the broad policy implications of an economic analysis rather than focusing primarily on the methodological or theoretical aspects of the study.
- Public health specialists writing about a specific health problem or service should discuss the relevance of the analysis for the broader health system. Those submitting health policy analyses should draw on relevant bodies of theory in their analysis, or justify why they have not, rather than only presenting a narrative based on empirical data.
- Primarily focus on one or more low- or middle-income countries.

The editors cannot enter into correspondence about papers considered unsuitable for publication and their decision is final. Neither the editors nor the publishers accept responsibility for the views of authors expressed in their contributions. The editors reserve the right to make amendments to the papers submitted although, whenever possible, they will seek the authors' consent to any significant changes made. The manuscript will not be returned to authors following submission unless specifically requested.

Should you require any assistance in submitting your article or have any queries, please do not hesitate to contact the editorial office at hpp.editorialoffice@oup.com.

Should your manuscript require any English language editing, we recommend contacting AuthorAid, a free network which provides free mentoring and English-language editing for researchers in low-and middle-income countries.

Manuscript format and style for all articles

Only articles in English are considered for publication.

The journal follows Oxford SCIMED style. Please refer to these requirements when preparing your manuscript. More information on preparing your manuscript is available. Oxford English spelling style should be used consistently throughout your manuscript. (-ize/-ization), except in quotations and in references.

Prepare your manuscript, including tables, using a word processing program and save it as a *.doc, .rtf* or *.ps* file. Use a minimum font size of 11, double-spaced and paginated throughout including references and tables, with margins of at least 2.5 cm. The text should be left justified and not hyphenated.

Authorship: Please note there should be a LMIC (lower-middle-income) named author from the region of the paper included in the paper. If all named authors are from HICs' (high-income countries) please clarify the reason for this on the Title Page. In addition, a contributorship statement is required - please note as follows on the Title Page:

Please clarify how each author has contributed to the paper. You need to create a list assigning a person's name against the following roles or tasks:

- Conception or design of the work
- Data collection
- Data analysis and interpretation
- Drafting the article
- Critical revision of the article
- Final approval of the version to be submitted - all named authors should approve the paper prior to submission.

Reflexivity Statement:

At *Health Policy and Planning*, we believe in reducing inequities in global health research. We invite you to reflect on the inclusivity within the authors' group for this paper. You may want to consider inclusivity and balance in dimensions such as gender, seniority, regional location, etc. when writing this statement.

The Title Page should be uploaded as a separate file type "Title Page" and contain the following information:

1. Title
2. Corresponding authors name, address, country, e-mail address, ORCID details
3. Each authors affiliation and qualification (BSc, MA, PhD...)
4. Keywords and an abbreviated running title
5. 2-4 Key messages, detailing the main points made in the paper
6. Reflexivity Statement
7. A word count of the full article: Word Limits do not include Abstract, References, Figure/Table legends.
8. Ethical Approval
    - if no ethical approval was required for the research, please note the reason:
        - Example A: Ethical approval for this type of study is not required by our institute.
        - Example B: Ethical approval for this research was waived by the authors institute/s IRB.
    - Ethical Approval Received-Please note the institute/s which approved the research with reference number.

Original Articles-word limit 6000
Review Articles- word limit 10000
Commentaries: Word limit 1200
How to do...or not to do - word limit 3000
Methodological Musings-word limit 3000
Innovation and practice reports: word limit 2000

Funding/Acknowledgements/Conflicts of interest/Ethical approval should be noted on the title page.

In the acknowledgements, all contributors who do not meet the criteria for authorship should be listed. Sources of funding for research must be explicitly stated, including grant numbers if appropriate. Other financial and material support, specifying the nature of the support, should be acknowledged as well.

Figures should be designed using a well-known software package for standard personal computers. If a figure has been published earlier, acknowledge the original source and submit written permission from the copyright holder to reproduce the material.

Please be aware that the requirements for online submission and for reproduction in the journal are different: (i) for online submission and peer review, please upload your figures separately as low-resolution images (.jpg, .tif, .gif or. eps); (ii) for reproduction in the journal, you will be required after acceptance to supply high-resolution .tif files. Minimum resolutions are 300 d.p.i. for colour or tone images, and 600 d.p.i. for line drawings. We advise that you create your high-resolution images first as these can be easily converted into low-resolution images for online submission.

Figures will not be relettered by the publisher. The journal reserves the right to reduce the size of illustrative material. Any photomicrographs, electron micrographs or radiographs must be of high quality. Wherever possible, photographs should fit within the print area or within a column width. Photomicrographs should provide details of staining technique and a scale bar. Patients shown in photographs should have their identity concealed or should have given their written consent to publication. When creating figures, please make sure any embedded text is large enough to read. Many figures contain miniscule characters such as numbers on a chart or graph. If these characters are not easily readable, they will most likely be illegible in the final version.

Certain image formats such as .jpg and .gif do not have high resolutions, so you may elect to save your figures and insert them as .tif instead.

For useful information on preparing your figures for publication, go to the Digital Art Support page.

All measures should be reported in SI units, followed (where necessary) by the traditional units in parentheses. There are two exceptions: blood pressure should be expressed in mmHg and haemoglobin in g/dl. For general guidance on the International System of Units, and some useful conversion factors, see 'The SI for the Health Professions' (WHO 1977).

Manuscript file must include text body. Title Page, Figures and Tables should be uploaded separately.

Prior Publication Policy

[Based on a statement developed by a group of editors of journals that publish articles on health, health services, and health policy. Journals currently using this statement include: Health Affairs, Health Services Research, Inquiry, Journal of Health Politics, Policy and Law, Journal of Health Services Research & Policy, Medical Care, and the Milbank Quarterly.]

Background

The policy of the journals subscribing to this statement is to consider for publication only original work that has not previously been published. Questions about what constitutes previous publication are arising with increasing frequency because of the growth of electronic publishing and the increasing number of reports and papers being produced by organizations and agencies. This statement provides guidance on this issue.

There are legitimate reasons why research may be disseminated before submission to a journal. Active communication among researchers about preliminary findings or the circulation of draft reports for discussion and critique contributes to the eventual quality of published work. In addition, organizations that support or carry our research have an understandable interest in disseminating their work. From the perspective of journals, these reasons for dissemination must be balanced against two considerations. The first is the value of the peer review process. The rules against prior publication are intended to add some assurance of the credibility of published research.

Papers are often improved during the peer review process, with findings, conclusions, and recommendations sometimes changed in response to reviewers' comments. The public and policymakers might be confused or misled if there were multiple versions of a paper in the public domain. Second, from a more parochial viewpoint, journal space is limited, and much time and expense are involved in the evaluation, publication, and distribution of journal articles. Journals must make difficult choices about what to include; there is less value in publishing papers that have already been disseminated to their target audiences.

We discuss here several types of dissemination and provide guidelines with respect to the prior publication question. This discussion is essentially an elaboration of two rules, the first emphasizing previous dissemination of the material, the second stressing disclosure.

Rule One: If the material in a paper has already been disseminated to a journal's audience, particularly in a format that appears to be a final product, then it is unlikely that a second version will be worth publishing in the journal.

Rule Two: It is the responsibility of authors to let editors know at the time of submission whether a paper's contents have been previously disseminated in any manner so that the editors can determine whether to proceed with the review process.

Previous Presentations at Meetings

Presentation of a paper at conferences or seminars usually does not jeopardize the possibility of publication.

Working Papers

Dissemination of "working papers" to a limited audience will not ordinarily jeopardize publication. Working paper series are used by many organizations as a means of enabling researchers to obtain critiques from fellow researchers. Working papers covered by this policy are those that are released by the author or an organization rather than by a publisher, are not advertised to the public, and are marked as drafts that are subject to future revision. HPP will not publish papers for which a similar working paper is already available in the public domain.

Internet Postings

Release via the Internet may jeopardize journal publication under some circumstances. Presentation of the work as a final report is a marker of an attempt to reach a wide audience, particularly when combined with efforts to direct traffic to the work (e.g., via links on other sites) and efforts to attract attention (e.g., press releases). In contrast, if a document is posted on the Internet only to facilitate communication among colleagues with the aim of getting feedback, and if there has been no attempt to otherwise attract the attention of journalists, the public, or the broader research community to the document, then this is unlikely to preclude journal publication. In general, when posting on the Internet serves similar functions as presentation at professional meetings - facilitating the development of papers and the improvement of the research, influencing future revisions, and not constituting a "finished" product - it would not be considered prior publication. On the other hand, when the Web site posting functions as a virtual version of a conventional publication, which may even be copyrighted by the posting organization, the benefit of an additional publication in the journal will be scrutinized carefully.

In cases where there has been little to no exposure at the time that a paper has been submitted to the journal, but the circumstances surrounding the posting make it likely that a high level of exposure (press coverage, etc.) might occur, then the author should remove a posting as a condition for further consideration of the manuscript. Authors who post papers on a Web site and do not want it to constitute prior publication should also post a disclosure statement such as: "This draft paper is intended for review and comments only. It is not intended for citation, quotation, or other use in any form." This statement should be kept on the Web site throughout the review process and until the paper is actually accepted for publication in a journal. Once accepted, authors should post a message to the effect that: "A revised final version of this paper will appear in (Journal Name), volume, issue." Authors also should include this statement as a header or footer on every page of the paper.

Formal Reports from Foundations, Academic Institutions, Institutes, Trade Associations, and Government Agencies

The dissemination efforts of foundations, government agencies, research institutes, and other organizations that support or carry out research can complement publication in peer-reviewed journals. If publication in one of our peer-reviewed journals is desired, organizational publications should be timed to coincide with or follow journal publication, with appropriate copyright permissions having been obtained. This sequence ensures that the peer-review process will have an opportunity to correct deficiencies of method or presentation. Formal, published reports that have gone through an editorial process, that have been intended to reach a wide audience, and that are publicized and available to any interested party (whether free or not) usually will not be considered for journal publication. A paper that is based on such a report might be considered for publication if it were sufficiently different in emphasis or intent. In such instances, the author should explain at the time of submission (or before) how the paper differs from the previously released report and why its publication would represent a distinct and important contribution beyond that version.

Policy Briefs

If the findings of a piece of research have been published locally (i.e. in a specific country) with the aim of influencing policy debates in that country then even if the brief is available on the web we may consider publishing an article so long as (i) the brief has not had wide circulation outside the country and (ii) the brief is clearly targeted at policy-making audiences, and hence does not include the detailed discussion of methods and perhaps findings that one might expect in a journal article.

Media Publicity

If results reported in a working paper have become widely known as a result of media exposure (or even if the potential for widespread exposure remains during review), and that working paper is readily available to interested readers (e.g., through a Web site), an editorial judgment will be made whether journal publication would be appropriate. Authors can help protect their work from unwanted media exposure by making clear on working drafts, copies presented at conferences, and other versions that it is a draft that has not yet undergone peer review for publication and that findings and conclusions are subject to change. Authors also should request that any "stories" derived from interviews with the media be embargoed until the work is published or released by the publisher (see, for example, Fontanarosa, P.B., and C.D. DeAngelis. 2002. The Importance of the Journal Embargo. Journal of the American Medical Association 288: 748-750). Any accepted manuscript released to the media should contain the statement: "A revised final version of this paper will appear in (Journal Name), volume, issue." Journal policies involving author contact with members of the media may vary, depending on the issue or journal. Thus, authors should check with the editor before speaking with or distributing papers to members of the media.

Importance of Disclosure

In contrast to the editors' decision whether a certain paper has been disseminated too widely to warrant journal publication, there is very little judgment involved in whether an author should disclose previous dissemination. Prior to, or at the time of, submission of a paper that has been disseminated in any of the ways discussed previously, authors should bring this to the attention of the editor so that a determination can be made before the paper goes into the peer-review process. In so doing, authors should describe in what form and how the work was previously disseminated and how the submitted manuscript differs from previously disseminated versions. Editors might be receptive to a modified version of a paper that has been widely disseminated if the submitted version has a different focus (e.g., more emphasis on methods, more sophisticated analytic approach, or discussion of developments that have transpired since the initial dissemination). The key point is to let editors know about any dissemination that will have, or is likely to have, occurred before the journal article is published rather than have it discovered during or after the review or editorial process. As part of the submittal, authors should include copies of other related papers that might be seen as covering the same material.

Failure to disclose could preclude publication in the journal or, if already published, could result in a notice in the journal about the failure and may result in a retraction of the article.

Manuscript Preparation

Page 1: *Title Page* – as above.

Page 2: *Abstract.* The abstract should be prepared in one paragraph, no headings are required. It should describe the purpose, materials and methods, results, and conclusion in a single paragraph no longer than 300 words without line feeds.

Page 3: *Introduction.* The Introduction should state the purpose of the investigation and give a short review of the pertinent literature, and be followed by:

Materials and methods. The Materials and methods section should follow the Introduction and should provide enough information to permit repetition of the experimental work. For particular chemicals or equipment, the

name and location of the supplier should be given in parentheses.

Results. The Results section should describe the outcome of the study. Data should be presented as concisely as possible, if appropriate in the form of tables or figures, although very large tables should be avoided.

Discussion. The Discussion should be an interpretation of the results and their significance with reference to work by other authors.

Abbreviations. Non-standard abbreviations should be defined at the first occurrence and introduced only where multiple use is made. Authors should not use abbreviations in headings.

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