Key for classifying research inference

- Descriptive
- Exploratory
- Explanatory
- Emancipatory
- Influence
- Predictive
3.1 Defining the chapter

A frequent topic in human resources for health (HRH) literature is the design and implementation of training and supervision programmes. Beyond their connection to capacity-building, the two concepts are not easy to define. Both are described in the literature as multidimensional and cover a range of activities. For training, some studies focus on the skills development of newly recruited health workers; other studies look at maintaining skills through, for example, the introduction of job aids, or efforts to expand and upgrade skills of existing health workers (Dieleman et al., 2009). For supervision, some studies examine supervisor–provider interactions specifically (Frimpong et al., 2011; Tavrow et al., 2002), while others investigate health worker supports more broadly, including, for example, changes to management structures and organizational environments (Bradley et al., 2013; Callaghan-Koru et al., 2013).

In selecting articles for this reader, we took a wide view of training and supervision that included routine activities or add-on initiatives to improve health worker skills, knowledge or attitudes, and activities related to capacity-building, support and oversight of health workers by other health system staff or community actors. We included papers that sought to (i) characterize how training or supervision are implemented; (ii) measure the quantity or quality of training or supervision; (iii) understand stakeholder perspectives and felt experiences of training or supervision; (iv) identify barriers and facilitators to effective training or supervision; (v) examine the influence of training or supervision on health worker performance; and (vi) situate training or supervision as a part of a larger development strategy within health systems or healthcare organizations. While most of the papers in this chapter concern facility-based workers, other studies examine training and supervision of informal providers, lay health workers and community-based volunteers (Daniels et al., 2010; Das et al., 2016; Singh et al., 2016; Suh et al., 2007). Despite substantial contributions from the private sector to training and service provision in certain contexts, the studies in this chapter mostly concern health workers in the public sector. Little research has been conducted on processes or effects of training or supervision in the private sector.
3.2 Background on training and supervision

The literature on training and supervision draws upon the wider body of knowledge on human resources from management and organizational sciences (Salas and Cannon-Bowers, 2001; Simmonds, 1989). The disciplinary underpinnings of such research are in educational psychology (adult learning, workplace learning, learning organizations), sociology (goal-setting and performance in organizations), organizational and management sciences (high-commitment management, organizational commitment and culture), and social learning and emancipatory approaches such as participatory action research (Buchan, 2004; Chávez et al., 2006; Marchal et al., 2014; Nel, 2014; Salas et al., 2012). Human resource management literature across disciplines has contributed analytical frameworks that researchers have extended to health care, such as the Kirkpatrick framework on the evaluation of training programmes (Kirkpatrick and Kirkpatrick, 1998).

With regard to the health sector, training, supervision and other supports appear prominently in literature on health worker performance (e.g. Callaghan-Koru et al., 2013; Scott and Shanker, 2010). One of the first attempts to understand what works, for whom and under what conditions with respect to interventions to improve health worker performance is the realist review by Dieleman et al. (2009), which highlighted many studies on training and supervision. Research papers describing and evaluating capacity-building programmes within health systems in low- and middle-income countries have provided useful frameworks and emphasized the context-dependent nature of training and supervision programmes (LaFond et al., 2002; O’Malley et al., 2013; Prashanth et al., 2012; Strasser and Neusy, 2010). The multidimensionality of capacity-building in health is captured by the framework proposed by Potter and Brough (2004).

Building on this strategic, contextualized and multidimensional understanding of capacity-building in the health sector, the Lancet Commission on the education of health professionals argued that training must move beyond information (transfer of information and skills) and formation (socialization into professional norms). It prioritized transformation with an emphasis on leadership and critical thinking to support the interdependence and teamwork across health cadres needed to solve the complex health problems of the future (Frenk et al., 2010).

Despite this broader framing, many studies continue to approach training in a more instrumentalist way, wherein training programmes are seen as delivery structures for knowledge, skills or attitude transfer (especially the literature on in-service training). These studies on training are in niche journals, often with limited system-wide application or reflection, for example in disease control programmes (such as HIV/AIDS or tuberculosis literature) or in other related literature (such as quality improvement or leadership training, e.g. Mery et al., 2017). Literature on reorienting health workforce pre-service education towards more people-centred approaches and competencies (Milen, 2001), including those related to gender equality (Allotey et al., 2011; Fonn, 2003), is limited mainly to niche medical and nursing education literature (e.g. Bratt et al., 2014; Burns and Poster, 2008; Cockerham et al., 2011). Further attention to the broader aims of training and capacity-building in the health sector is needed.

With regard to supervision, the first major review of “supervision in clinical practice settings” was by Kilminster and Jolly (2000), who sought to define supervision and lay out a hypothesis for its effect on health worker performance. The review mostly included studies from high-income countries and defined supervision as “the provision of monitoring, guidance and feedback on matters of personal, professional and educational development in the context of the doctor’s care of patients” (p. 829). A later review by Moran et al. (2014) addressed supervision in “rural and remote contexts” and included studies from low- and middle-income countries.
Recently, several specific models of supervision have come to the fore and been the focus of interventions and research. One model, known as “supportive supervision”, has achieved prominence as a type of supervision that emphasizes the human interactions involved in supervision, with supervisors working in partnership with health workers to solve problems and overcome challenges. This term was described in detail by Marquez and Kean (2002), who outlined a framework for supportive supervision and contrasted it with previous models of supervision. Other models of supervision involve community leaders as part of the supervision process. Although such models have not been articulated in any standalone articles, they have been explored in studies (Roberton et al., 2015; Suh et al., 2007).

Clements et al. (2007) challenged some dominant assumptions of the supervision literature, arguing that the supervision models espoused for low- and middle-income countries have not been successful, have fundamental flaws, and indeed do not exist in high-income countries in the same way. Whereas supervision in low- and middle-income countries typically involves an external supervisor from outside the health facility, the authors suggest that in high-income countries, “the ‘boss’ is in the same building as the employees carrying out the service ... thus there is a day-to-day, even moment-by-moment supervision where the boss is an integral part of the team” (p. 22). This divergent definition of supervision has implications for evaluation.

Bosch-Capblanch et al. (2011) offered the first Cochrane review of the effectiveness of supervision in improving the quality of primary health care in low- and middle-income countries. The review included only nine eligible studies, and the authors concluded that, due in part to the low quality of evidence, it was “uncertain whether supervision has a substantive, positive effect on the quality of primary health care in low- and middle-income countries” (p. 2). While acknowledging these findings, these types of systematic review are also not able to include the substantial body of qualitative literature on supervision and its felt effects. Furthermore, the diverse settings in which supervision is performed, the different tasks included in supervision packages, and the difficulty of measuring supervision quantitatively present significant challenges to generating conclusive, generalizable evidence.

3.3 Illustrative primary research articles

We selected nine articles to highlight diverse research on training and supervision from a health policy and systems perspective, highlighting different methodologies and country contexts. The selected articles include descriptive studies describing implementation and context, studies that measured the influence or effects of training and supervision, studies that explain training and supervision initiatives, and studies that give voice to the health managers and workers involved. These articles were selected from a pool collated from a doctoral seminar at the Johns Hopkins School of Public Health, a crowdsourcing exercise supported by Health Systems Global and subsequent searches using the bibliography of key articles and on relevant databases and search engines (PubMed, Google Scholar). The main criteria used to select the articles included diversity in region, cadre and methods, as well as the quality of the studies based on standard guidelines.

The first three articles provide an in-depth understanding of implementing training and supervision, whether in Zimbabwe (Tavrow et al., 2002), leading to success in Egypt (Ruck and Darwish, 1991) or rejection in an unnamed east African country (Gladwin et al., 2002). We then provide examples of testing the effects of training and supervision in Benin (Rowe et al., 2009) and in Ghana (Frimpong et al., 2011). Two health policy and systems approaches to understanding training and supervision are highlighted: a realist evaluation in India (Prashanth et al., 2014) and a participatory action intervention in multiple countries (Onyango-Ouma et al., 2001). We close with two studies that highlight the perspective of health workers and managers in Malawi and the United Republic of Tanzania (Bradley et al., 2013) and in Guatemala (Hernández et al. 2015).

<table>
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<tr>
<th>Health workers</th>
<th>Multiple public sector facility based health workers</th>
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<tr>
<td>Geographical area</td>
<td>Egypt</td>
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<tr>
<td>Research methods</td>
<td>Case study</td>
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<tr>
<td>Research inference</td>
<td>Explanatory/Emancipatory</td>
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This is a case study of a collaborative training project for establishing the roles of primary health centre staff in nutrition and training them to fulfil these roles. In the first phase, lasting three years, a pilot intervention identified roles for health workers in nutrition drawing from multiple stakeholder engagement, including health service managers, health workers and community representatives. In the second phase, lasting four years, the activities were extended in a wider geographical area after incorporating lessons from the pilot. The case study offers a detailed description of the intervention process, appreciating the role of local context, multiple stakeholder involvement, and the rigour of implementation needed to study the effects of training programmes. The study seeks to explain the various health services and population outcomes in relation to the training and other support offered. Role clarity and supervision in improving the motivation of health workers (and hence possibly improving health worker performance) is identified as the possible driver of the intervention. The involvement of multiple levels of the health system, starting from the federal level and moving downwards, was crucial to the outcomes. The study directly links health worker motivation and training and situates the possible change from training within a given health service context and its integration into health system management structures.


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<th>Health workers</th>
<th>Public sector primary health care information system designers and users</th>
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<tr>
<td>Geographical area</td>
<td>East African country</td>
</tr>
<tr>
<td>Research methods</td>
<td>Qualitative: ethnographic case study</td>
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<tr>
<td>Research inference</td>
<td>Explanatory</td>
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There are few published studies that systematically document and analyse failures (in terms of a programme or project objectives not being met). This study is an interesting example of analysing responses of systems to innovations drawing from a case where externally developed training materials were used to strengthen management of primary health centres by improving the informational basis for decision-making using management information system tools for primary health care managers, in an unnamed east African country setting. The case study analyses the reception of the innovation and describes the complex and decentralizing organizational setting that shapes the outcomes of the intervention. The designer/implementer perspective of the intervention as a management training package contrasts with that of several recipients of the intervention, who saw it primarily as an organizational change tool. Despite engaging various stakeholders working at different levels in the health system (as in many successful training programmes) and drawing from a good evidence base for the training materials in other settings, the authors describe and explain the possible reasons for rejection of the innovation by invoking explanations at the level of the alignments (or lack of) between the training programme strategy, the individuals and roles within the system where it was implemented, and existing management styles, organizational structures and processes.
Part B. How are health workers supported to deliver services effectively and equitably?


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<th>Health workers</th>
<th>Public sector primary health care facility managers</th>
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<tr>
<td>Geographical area</td>
<td>India</td>
</tr>
<tr>
<td>Research methods</td>
<td>Mixed: realist evaluation using qualitative data (interviews and observation notes) and quantitative measures of commitment, self-efficacy and supervision style</td>
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<tr>
<td>Research inference</td>
<td>Explanatory</td>
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This paper is an evaluation of a capacity-building programme for local health system managers in a southern Indian district. The acknowledgement of health workers’ agency in steering the change agenda introduced through training and capacity-building programmes is considered an important starting point for the evaluation. The authors also assess capacity across individuals, teams and local health systems in line with a systems approach (see other papers in the series on advancing the application of systems thinking in health, summarized in Adam (2014), and other papers acknowledging the need to apply multilevel analysis of capacity in health policy and systems research, e.g. Lê et al., 2014). The study uses the realist evaluation approach wherein the focus is on developing an explanation for why the capacity-building intervention seemed to have worked in some settings and not in others. The authors describe the different outcomes at the subdistrict level and use organizational frameworks to theorize on the mixed successes or failures in relation to the ambitious nature of outputs and outcomes of capacity-building programmes, which often seek change at the systemic level (beyond individuals and teams). By critically comparing cases (within their study) where the intervention worked and others where it did not, and analysing this in relation to the particular individual and organizational attributes in these cases, the authors develop an explanation of how training programmes could contribute to organizational change in the particular local health system context in southern India.


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<th>Health workers</th>
<th>Public sector primary health care health workers</th>
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<tr>
<td>Geographical area</td>
<td>Argentina, Nigeria, Ghana, United Republic of Tanzania, Kenya</td>
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<tr>
<td>Research methods</td>
<td>Mixed: pre &amp; post test, IDIs, group interviews, FGDs, time use, observation, records review</td>
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<tr>
<td>Research inference</td>
<td>Explanatory/Emancipatory/Influence</td>
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This paper is an evaluation of a health worker training (and other supports) programme from several settings (six settings in four African countries and one setting in Latin America). The training was delivered in a participatory workshop mode called Health Workers for Change. Given the diversity of country settings, the authors began with a common core protocol at a workshop to design a pre-test/post-test study, and then met again at the data analysis stage to learn from each other’s experiences, identify commonalities and disagreements, and consolidate their analysis. The Health Workers for Change study conceptualized change at three levels (community, facility, system) and used a range of data-collection tools (including quantitative survey tools and qualitative observational tools, interviews and focus groups) to
assess change. The authors triangulated and explored contradictions that arose from data generated by these different tools to improve confidence and deepen the results. The authors discuss how health facility staff likely experienced the ongoing data collection as part of the intervention itself, resulting in the research influencing the intervention’s outcomes. The study stands out for the reflexivity of the researchers in implementing a common protocol across diverse country settings in a participatory way and the discussion on the methodological challenges involved.

Other interesting papers that detail pedagogical and technological innovations on training health workers include those by Chávez et al. (2006), Greenhalgh et al. (2004) and Strasser and Neusy (2010). Additionally, Yousafzai et al. (2014) provide a synthesis of several studies of capacity development of health workers to build partnerships with families as a part of care provision. Another interesting paper is by Downing et al. (2011), which maps various studies, largely from Australian and other high-income settings, on cultural sensitivity training for health workers on indigenous health.


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<th>Health workers</th>
<th>Public sector facility based health workers</th>
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<tr>
<td>Geographical area</td>
<td>Benin</td>
</tr>
<tr>
<td>Research methods</td>
<td>Quantitative: observation and re-examination of consultations, structured interviews with health workers and caretakers, facility assessments</td>
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<tr>
<td>Research inference</td>
<td>Influence</td>
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This paper describes a pre-test/post-test study, with randomized intervention and control groups, to assess the impact of integrated management of childhood illness training and a package of supports (job aids, non-financial incentives, supervision) on facility-based health workers in Benin. The study is notable for its robust study design (randomized control trial with three study arms) and longitudinal data collection involving four health facility surveys over six years (1999–2004). Few studies have followed up over such a long period after initial training. The data collection methods to assess care quality were rigorous and diverse, including silent observation of consultations, gold standard re-examination, exit interviews with caretakers, health facility assessments and health worker interviews. The paper also stands out for its policy-relevant critique of the utility of training programmes when not accompanied by well-designed supports. The authors note issues brought about by initially weak implementation and the need for researchers to intervene and share findings with the programme implementers. The discussion of these real-world limitations adds to the paper’s value, and the study stands out as a robust example of implementation research.

A closely related study to this in both its approach and question is that by Huicho et al. (2008). For other examples of randomized control trials that assess the influence of training or supervision on health workforce outcomes, see Das et al. (2014), Djibuti et al. (2009) and Singh et al. (2016). An interesting application of this methodology to assess the role of training informal care providers in India is found in Das et al. (2016). Using mystery patients and blinding of trainers and informal providers, the authors found that a multi-topic medical training increased correct case management for three selected conditions but did not affect prescription practice.
This study was one of the earliest to describe and assess in detail what happens during supervision interactions. The study explores the supervision of nurses and midwives in primary health facilities in Zimbabwe, dissecting in detail the activities that supervisors are expected to undertake, and the extent to which they actually do. Given the lack of national supervisory guidelines in Zimbabwe, the authors worked with past district-level supervisors to develop their own tools to examine supervisor–provider interactions, identifying 11 categories of supervision practice. They collected data in multiple ways: by audiotaping supervisory visits, taking minute-by-minute notes on supervisors’ activities, conducting individual interviews with supervisors and supervisees, observing and ranking supervisor interactions with a structured guide, and reviewing supervisors’ checklists. The authors measured the time supervisors spent performing each practice, and created scores and rankings for the quality with which they undertook these practices. The results give a comprehensive scan of what supervisors do and how well they do it, offering insight into how to improve supervision and providing a baseline from which to measure future progress.

Like Tavrow et al.’s (2002) study, this study sought to characterize the nature and quality of supervision, although in this case from the perspective of supervisors. The authors undertook semistructured, in-depth interviews in Malawi and the United Republic of Tanzania with district health staff responsible for supervising mid-level nurses and midwives in health facilities. Five major thematic areas emerged: “the current supervision paradigm, why supervision is important, supervision in practice, assessing performance, and challenges to implementation”. As in Tavrow et al.’s (2002) study, Bradley et al. found that while supervisors articulated a need for supportive supervision involving meaningful personal interaction, the reality was often one of detached inspection and assessment.

The methodology used by Bradley et al. is not revolutionary but highlights the power of qualitative research to understand the attitudes and ethos of respondents charged with carrying out an activity, such as supervision. Hearing the views of supervisors revealed the challenges and barriers felt by supervisors, and highlighted ideas for change from the participants. The multiple study sites enabled comparison across countries. Similar methods were used in a study on training (Hawe et al., 1998), in which the authors use focus group discussions to synthesize health worker perspectives on capacity-building and adopt clear operational definitions for training-related terms, which in other studies can be jargon-laden and a cause for confusion.

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<tr>
<th>Health workers</th>
<th>Public sector regional and district managers, primary and secondary health care workers</th>
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<tr>
<td>Geographical area</td>
<td>Guatemala</td>
</tr>
<tr>
<td>Research methods</td>
<td>Concept mapping (mixed methods)</td>
</tr>
<tr>
<td>Research inference</td>
<td>Exploratory/Emancipatory</td>
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This study used another methodology to examine participants’ perspectives on health worker supports: concept mapping, a structured data collection and analytical technique designed to “integrate the input of multiple stakeholder groups, and produce maps that depict the composite thinking of organizations or systems” (p. 2). The goal of the study was to develop a normative model of supervision – not what is happening, but what should happen – and to use the results to identify future priorities. Regional and district managers (supervisors) and primary and secondary health-care workers (supervisees) in rural Guatemala were asked to name actions that “could be taken or are being taken” to support nursing staff, and were later asked to sort and rank the suggested actions. The rankings were analysed using statistical methods and represented in maps that were further interpreted with the participation of respondents. The study is remarkable for using an otherwise complex methodology to develop concrete, actionable results that represent a consensus of multiple stakeholders. Rarely do studies integrate the views of stakeholders at different levels of the health system, or examine the social dynamics between those stakeholders. Although concept-mapping can be resource-intensive and requires qualitative and quantitative expertise, it has great potential for extracting consensus idea for health system improvement.


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<th>Health workers</th>
<th>Public sector community midwives, nurses and extension workers</th>
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<tr>
<td>Geographical area</td>
<td>Ghana</td>
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<tr>
<td>Research methods</td>
<td>Quantitative: Time-use and provider survey</td>
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<td>Research inference</td>
<td>Influence</td>
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Many studies of supervision seek to characterize supervision itself, implicitly assuming that supervision improves health worker performance; few studies have quantitatively measured the effect of supervision on performance. This paper describes a time-use study in Ghana to investigate the relationship between supervision and the productivity of midwives, community health officers and health extension workers. Using direct observation to collect quantitative data, and a logistic regression model for statistical analysis, the authors concluded that “supportive supervision was associated with increased productivity” (p. 1225). The study highlights the challenges associated with measuring the influence of supervision. One challenge is how to obtain a meaningful measure of health worker performance that can be used for statistical analysis. This study takes “productivity” as its outcome measure and used direct observations of provider interaction to measure the time spent by health workers on patient care. Another challenge is how to quantify supervision itself. This study used two binary measures: first, whether the health worker was visited by a supervisor in the past month; and second, whether the health worker self-reported feeling “supported” by the supervisor. Other studies (such as those above) have used more nuanced measures for the quantity and quality of supervision,
although not, as in this case, to investigate the effect of supervision on performance. For other examples of studies that examine the influence of supervision on health worker performance, see Das et al. (2014), Singh et al. (2016), Stanback et al. (2007) and Uys et al. (2005).

3.4 Research challenges, gaps and future directions

Training and supervision are often components of a larger support package for health workers to improve their performance or motivation. Disentangling the specific effect of training and supervision on outcomes of interest is challenging both methodologically and operationally. A specific challenge for quantitative assessments of the effect of training or supervision is choosing which measures to use for training or supervision. Both the quantity and quality of training and supervision are potential factors, as are other factors, such as the cultural and hierarchical relationship of supervisors to health workers and the community and organizational environment. Isolating the effect of training or supervision, and measuring its various attributes, requires extensive data collection and analytical effort. Likewise, as explored in Chapter 4, the outcome of health worker performance is multifaceted and difficult to characterize as a dependent variable. Single indicators of performance are likely too simplistic, and more nuanced, multidimensional measures require resource-intensive methods such as observation and re-examination.

Another challenge is situating training and supervision within their health system context. Many articles that discuss training and supervision are beyond mainstream public health or health systems literature and are found in discipline-specific journals. They often do not have sufficient analysis beyond very specific contexts, and more importantly they lack a health systems lens in terms of the question asked or the context under consideration (for example, literature in nursing and medical education journals, and studies in experiential learning literature).

We must also acknowledge the difficulty in standardizing training and supervision approaches and tools, given the variety of settings where they are implemented. We need to move beyond generic or globally defined tools and approaches towards greater focus on context-specific approaches, and to more participatory approaches that improve health worker ownership over the change agenda. The authors of several of the papers in this chapter developed their own tools for assessment, with criteria and benchmarks specific to the programmes they studied. The increasing use of implementation research and participatory action research approaches may be able to address some of these challenges. We should encourage comparative work that builds on context specificity rather than seeing this as a limitation.

There is also a need to further understand the perspectives of trainers and supervisors, and those of the health workers they are training and supervising. The increasing focus on building capacity within the health researcher community to undertake more long-term participatory action research with health workers, and the increased focus of research funders to involve implementers in research, could help in addressing this gap.

To address any of the above gaps, we need methodological innovation: advances in information and communications technology to improve the accuracy and feasibility of measuring training and supervision; participatory action research to promote the ownership and views of implementers and health workers; and triangulation and synthesis of multiple data sources to ensure a system-wide understanding. Methodologies drawn from research in organizational sciences and psychology could help to improve our understanding of how training, supervision and other supports could achieve organizational change. The application of approaches and theories from these fields into HRH will require collaboration across researchers and interdisciplinary engagement.

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References


