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Capacity building and performance in local health systems

A realist evaluation of a local health system strengthening intervention in Tumkur, India

Thesis for doctoral degree in public health

by

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Dedicated to my late grandfather who helped me discover science through conversations and to my parents, whom I have never thanked enough for their love and support to my choices, often not immediately in line with their world view.

Jury

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Capacity, capacity, capacity…

By Prashanth Nuggehalli Srinivas

Why this effort at explaining the obvious,
Is it so difficult to understand performance?

If there be a *good* woman, with the *right* education,
A heart of gold, and a life of public-spirited vision.
And if she found the *right* supervisor, and a *good* job
With a cheerful team and not a nagging mob.

If she worked in a district hospital,
With a well-endowed team and an ambience tranquil,
With grateful patients and a plan to summarise
The community's health and their demands realise.

Then, she could lead a team,
That laid a vision healthy.
Mortality checked and indicators supreme
Keeping equity and wealthing society!

Such is the promise of performance,
And these *good* (wo)men!
Simple is it not, hence
To build a hospital with a few good (wo)men?

"Oh! No" cried the researcher,
"You think so", quipped the minister,
"Where be these good men, and where be these resources?" asked the doubtful manager
"Ah!" said the people surprised, "Is it possible at all at the hospital nearby?"
"Here's many policies. Why don't you make them work?" cried the policymaker.
"Yes. Why not?" cried the researcher.

Where be the *right* policy?
Where be the *right* implementer?

"Your policy designed in the sky", said the manager
"Not well implemented", said the evaluator.

What makes performance then?
The *good* man? the *right* job?
The *cheerful* workplace?
The *nice* district and the well-endowed hospital?

Is it the man who makes a good team
And the team that makes a good hospital?
Or the hospital instead that maketh the team cheerful, and the man nice?
Or the policy instead that brings about some respite
Or the capacity to improve that's not here, everything in spite?

Therein lies then the puzzle of performance
Therein lies the puzzle of capacity
Could the answer lie in our penance
To predict, nay, understand, or at least explain this complexity?

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List of abbreviations

ANM	Auxiliary nurse-midwife
BPM	Block programme manager
CMO	Context Mechanism Outcome
CN Halli	Chikkanayakana halli
DHO	District health officer
DHS	District health society
DPM	District programme manager
HCO/HO	Healthcare organisation
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome
HSO	Health support organisation
HRM	Human resource management
HSR	Health systems research
HPSR	Health Policy and Systems Research
IPH	Institute of Public Health, Bangalore, India
IPT	Initial programme theory
ITM	Institute of Tropical Medicine, Antwerp, Belgium
JSY	*Janani Suraksha Yojana*
KHSDRP	Karnataka Health Systems Development and Reforms Project
LMIC	Low- and middle-income country (ies)
MPF	Multipolar performance framework
NGO	Non-governmental organisation
NRHM	National Rural Health Mission
PHC	Primary health centre
PIP	Programme implementation plan
PRI	*Panchayati Raj* Institution
PT	Programme theory
SC/ST	Scheduled Caste/Scheduled Tribe
Su	Sub-unit
THO	*Taluka* health officer
UCL	Université Catholique de Louvain, Brussels, Belgium
UNICEF	United Nations' Children's Fund
VHSC	Village health and sanitation committee
WHO	World Health Organisation

Summary

Health systems are complex entities and are one of the important determinants of health status. In countries such as India, local health systems are are unable to utilise their resources optimally and deliver quality health services in an effective manner. While the reasons for these are many, poor health management capacity has been postulated to contribute to this problem. Strengthening local health systems through improved human resources management has been a focus of a variety of global, national and sub-national level efforts. One of the widely applied strategies for health systems strengthening is capacity building programmes. However, capacity building interventions are implemented within complex settings, where they are expected to improve health worker capacity and thus their performance.

Capacity building and performance has been the subject of studies at the global level, where various frameworks that describe the multi-dimensional nature of capacity and performance are available. However, within India, there are few studies or evaluation of public health programmes that investigate how such interventions work within local health systems (*Chapter 1*). We discuss the scope for the application of realist evaluation approach to public health programme evaluation in India. Realist evaluation is one of the context-sensitive approaches to evaluating policies or programmes; it begins by asking "what works, for whom, under what conditions, and why". It is hence well suited for understanding the nature of change in a complex setting, such as a local health system intervention.

On this basis, we developed a study protocol to understand how a capacity building programme could contribute to organisational change in Tumkur district, Karnataka state in southern India, based on the principles of realist evaluation (*Chapter 4*). The study design and methods are described along with the tools. We used both qualitative methods (in-depth interviews, observation and document reviews) as well as quantitative methods (survey of health managers to assess perceptions, organisational commitment, self-efficacy and supervision style) to understand how the capacity building programme could lead to organisational change. Based on the implementation data and interviews, review of literature and an analysis of the context, we elicited the programme theory of the intervention to better understand how the intervention could lead to organisational change in Tumkur (*Chapter 5.1*).

Various studies both within public health and in other disciplines have shown that organisational change can be conceptualised at various levels. Changes at the individual level or at the workplace need not necessarily translate into organisational change. Change could occur through a variety of mechanisms that are a product of dynamic interactions between various components within organisations, some of them more tangible (like

resources) and others intangible (organisational culture, values etc). We used the multipolar performance assessment framework to further improve our understanding of the possible ways in which the intervention could work (or not) in Tumkur, thus refining the programme theory. Based on this refined programme theory, we formulated possible change scenarios in the form of context-mechanism-outcome configurations that could be used to check if indeed the refined programme theory explains the change or not. Using data from a survey on perceptions of health managers towards planning, interview data on how they relate to organisational change, as well as data on perceived decision-space, we further improved our understanding of possible change scenarios in Tumkur. These possible change scenarios are explained using particular alignments of the multipolar performance assessment framework (*Chapter 5.2*).

Finally, we assessed relationships between the inputs of the intervention, its implementation, possible outcomes and the various mechanisms hypothesised in10 sub-districts of Tumkur. We purposively chose two cases presenting a mix of contexts and mechanisms and assessed these cases in relation to the insights from the refined programme theory and the change scenarios foreseen (*Chapter 6*). We applied the analytical lens provided by the refined programme theory to analyse the two cases, and hence further refined the programme theory based on the data. The resulting refined PTs (both listed below in italics) provide an insight into the nature of change that can be expected in Tumkur-like settings where there is a tension between the intervention-mediated push for locally actionable change and the rigidity of a decentralising health bureaucracy.

> *Committed health management teams could utilise new opportunities for organisational improvement presented by decentralising health systems wherever their change agenda aligns with the expectations of higher levels of the bureaucracy.*
>
> *Tapping commitment for organisational change could be frustrating in low-resource local health systems where health managers working in poorly resourced talukas, in spite of their improved management capacities and intentions to make change, could get frustrated by the lack of facilitating action from above.*

We found that the refined programme theory confirmed the dominance of contextual and operational alignments of the multipolar performance framework in countering the intervention's push to the local health system towards improving its allocation and strategic alignments.

The output of a realist evaluation is a programme theory or a middle-range theory (not a universal overarching theory), which provides a plausible explanation for the outcomes of the intervention; it cannot make irrefutable predictive statements about the intervention. However, such middle-range theories form the basis for improving our understanding of

complex interventions and help in improving design and implementation of such programmes in future.

The notion of building capacity of a local health system involves influencing decisions and choices made by health managers in such a way that their new choices could steer their organisational goals towards providing and improving their health services. If and whether such well-intentioned programmes result in improving health manager capacity, and thus result in positive organisational change depends on a variety of individual, institutional and local environmental alignments (not merely factors).

The question of contribution of the capacity building programme to organisational change in the district health system reflects our desire to make change through well-intentioned and possibly well-designed programmes. These intentions and the design seek to bring about lasting change in the way things are being done at present within the health system. However, for the evaluator trying to understand the contribution of the intervention in any of the changes observed, this recalls the age-old chicken and egg question on structure and agency.

Moving organisations towards change requires that people within local health systems make use of these knowledge and skills to effect changes that will move their organisations towards better performance. However, people are not passive recipients of knowledge and/or skills or even the change agenda. One of the ways capacity building programmes could do this is to harness the feeling of unhappiness with the current state of things especially in the top management. This could provide the premise for making changes that may be necessary to move organisations closer to better performance. Capacity building programmes could then provide the *context* to trigger latent *mechanisms* within health managers, such that norms and practices in these organisations change.

Chapter navigation

Many of the chapters (Chapters 2-6) in the dissertation can be read independently as they are drawn from published papers. However, in view of this, some sections may be repetitive. For the benefit of readers going through the entire dissertation, repeating portions of text are placed over a grey background and readers proceeding from the first chapter may skip these portions while reading the entire dissertation.

Background

Chapter 1 introduces the concept of a local health system. An overview of capacity building in health and its relationship with performance is presented. Various frameworks to assess capacity building within a health system are discussed. The chapter ends with a brief discussion on the complexity of capacity building of health systems.

Chapter 2 discusses evaluation of public health programmes in India with a focus on the type of evaluation questions being asked and the methods being used to evaluate public health interventions in India. A discussion on the scope for health systems research methods, particularly focusing on the potential for realist evaluation follows.

Chapter 3 introduces the multi-polar performance assessment framework. This framework was developed from the earlier framework for assessing performance of healthcare organisations by Sicotte and colleagues. The Sicotte framework was adapted to be able to assess performance of local health systems (as opposed to hospitals or healthcare organisations). The various adaptations and the reasons for these are discussed. The chapter ends with a brief discussion on the utility of the resulting multipolar performance assessment framework.

Methodology

Chapter 4 presents the overall methodology of this dissertation. It begins with the study protocol of a realist evaluation of a local health system capacity building programme in an Indian district. The chapter presents a detailed description of health services organisation in India and the study setting (Tumkur district). The capacity building intervention is then described, followed by the research questions and methodological approach. The three iterations - eliciting the programme theory of the intervention, analysing macro- and meso-level contextual factors and choice of contrasting case studies to refine the initial programme theory - of data collection, analysis and results are described.

The rationale for the choice of realist evaluation to understand the nature of change in a local health system capacity building intervention is discussed at the end of the chapter.

Results

Chapter 5 is in two parts.

Chapter 5.1 describes the process of eliciting the programme theory of the capacity building intervention described in *Chapter 4*. The chapter begins with the initial programme logic of the intervention and proceeds to explain how the intervention *was supposed to work* based on a review of programme (intervention) documents, review of literature on organisational change and an analysis of the context. The chapter ends with hypothetical context-mechanism-outcome formulations in a table, where the possible ways in which the intervention could lead to organisational change. The multipolar framework is used to make a preliminary assessment of how the intervention could work in the various organisational contexts in the sub-districts of Tumkur.

Chapter 5.2 further explores the possible hindering scenarios pointed out by the application of the multipolar performance assessment framework at the end of *Chapter 5.1*, using survey and interview data. This chapter is the second iteration of the realist cycle of refining the initial programme theory, focusing on understanding the role of contextual factors at the macro- and meso-level.

Chapter 6 assesses the response of the various sub-districts of Tumkur in course of the intervention. The possible change scenarios identified through successive refining of the programme theory of the intervention (*Chapters 5.1 and 5.2*) are assessed in relation to two purposively chosen cases, which are somewhat contrasting in their mix of mechanisms and organisational contexts. Several data related to inputs of the intervention, previously hypothesised mechanisms (organisational commitment and self-efficacy) and expected outcomes of the intervention that are logically connected to the intervention inputs are used to identify co-occurring patterns of context and mechanisms. The insights from these cases are used to refine the programme theory further, thus ending with a middle range theory on what worked, for whom and under what conditions.

Lessons learned

Chapter 7 begins with a synthesis of the various chapters, starting with the question and ending with the insights on how capacity building programmes could bring about organisational change in local health systems. The study limitations are discussed and the chapter ends with lessons learnt in studying organisational change as well as for better implementation of capacity building programmes.

Chapter 1: Local health systems and capacity building

"I don't know half of you half as well as I should like; and I like less than half of you half as well as you deserve."

— *Bilbo Baggins addressing fellow hobbits in The Fellowship of the Ring by JRR Tolkien*

Chapter summary

The *Health for all* declaration in 1978 was an important global commitment made by the international community towards ensuring the conditions necessary to achieve the highest level of health for all people. However, achievement of health and well-being differs across and within countries. The nature and quality of primary health care, provided and/or managed by local health systems are among the determinants of health status of the population along with many others. The inherent capacity of local (district and sub-district) health systems to organise and manage healthcare depends on a variety of factors. In this chapter, we present an overview of the organisation of local health systems and introduce the multi-dimensional nature of capacity, capacity building and its relationship with performance drawing from literature on capacity and capacity building of healthcare organisations.

1.1. Background

The World Health Organisation's (WHO) Health for all declaration has been a slogan as well as a guiding principle for organising health services around the concept of primary health care, delivered through a network of primary health centres and referral hospitals. Primary health centres (abbreviated PHC, not to be confused with primary health care) do not work in isolation; they depend on referral centres that provide specialist care. PHCs are expected to provide outpatient consultation services and basic inpatient services for all population that they cover, as well as cater to specific population groups. They provide reproductive and child health services, organise immunisation and disease control programmes, organise preventive healthcare activities, health promotion and provide rehabilitative services as per local or national government policies (WHO 2008). Many countries worldwide have organised their health services on the basis of these broad principles of primary health care, with the PHC being the basic functional unit of their health services. Hospitals are expected to provide specialised care for a smaller proportion of those who visit PHCs and are located at relatively well-connected regions (districts/sub-

district or counties headquarters which are relatively larger than villages), while teaching hospitals and large super-specialty hospitals are based in cities, catering to an even smaller proportion of people in a given PHC catchment area. However, the achievement of *Health for all* requires more than provision of health services; it requires pro-active planning and management of such local health systems towards improving health and well-being of all the people in a given region (WHO 2008).

The global consensus over rising inequities in access to health services and the various social determinants of health have improved our understanding of the important role of ensuring equitable provision of healthcare, in addition to improving quality and availability of healthcare services (Commisson on Social Determinants of Health 2008). According to WHO, the social determinants of health are the conditions in which people are born, grow, live, work and age. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels (Commisson on Social Determinants of Health 2008). On one hand, the need for inclusive policymaking that addresses the social determinants is a challenge for health and public policy makers at national and sub-national levels in several countries, especially the lower- and middle-income countries (LMIC). On the other hand, LMIC policymakers also have to grapple with problems of health infrastructure, human resources and governance gaps in several country health systems resulting in deficiencies in the quality of healthcare provided by government health services (WHO 2010). Health services at district or sub-district level are closer to the people, and are expected to be more responsive than provincial or national health systems, to the needs and expectations of the people. Local health systems which manage and administer these health services are better suited to safeguard equity by planning and managing their services in such a way that the healthcare needs of those who need services the most, are prioritised irrespective of their access to money, power or other resources (Sachs 2012; Segall 2003). Such expectations of the local health systems rest upon assumptions of their capacity, responsiveness and governance of such systems.

1.2. Local health system

The local health system is more than a conglomeration of the health services in a region[1]. By definition, it includes the public and private healthcare providers and is steered by a

[1]A local health system has been defined as an operational or functional and managerial space situated at the meso-level in the national health system. On one hand, it encompasses a pluralistic network of health centres, clinics, practitioners and other delivery platforms offering first line health care; on the other it includes one (or more) technically more elaborate referral level(s) for second line care with which the first line health services functionally relate in a significant way (Bart Criel, ITM teaching materials 2013). This operational space is further characterised by a longitudinal relationship with a given population, for which the health services take specific responsibility. In practice, the majority

body, formal or informal, usually mandated by a public health authority, and is given the responsibility for the organization, regulation and coordination of health care delivery within its territory. Ideally, a local health system is expected to manage and steer the activities of its sub-components in a coordinated manner to improve health status of the population, guided by the policy objectives and vision set by the country's policymakers. In practice, being at the interface with several bottom-up structures (vertically) as well as in close proximity to various other regional services (horizontally: education, sanitation, social welfare and others), local health systems cannot be reduced to the health centres or hospitals, but include the governance and coordination of these centres within and among themselves.

The priorities of a local health system are not exclusively determined by the country health system priorities. Either by choice or as a consequence of operating in a social setting, the various local dynamics between individuals and other community agencies and the population's priorities also have an influence on the functioning of the local health system. Depending on the socio-political context, such an interface between the local health system and the community could influence the processes and outcomes of the health system significantly. In addition, health systems are not merely technical structures designed for healthcare delivery. They are value-laden entities that operate based on the negotiated vision of the political and the administrative agencies of the given country or society. The local health system is, in terms of planning, situated at the interface between top-down planning (from the central level and from specific programs, with a focus on essential interventions) and bottom-up planning on the basis of locally felt needs. It is at that level that these two planning logics meet and needs to be optimized (Criel 2013; Bossert 1998).

The organisation, management and outcomes of a local health system are hence determined by a variety of factors related to the individual health workers in the system, the various structural and functional attributes of the health centres and hospitals, the interface with the population as well as the broader policy environment, the financing and the values on which it is based. Although health centres and hospitals appear to be relatively self-contained and manageable technical units of the health system, their performance and outputs are embedded within complex relationships between and among the various components of the health system. Local health systems are thus better understood as complex adaptive systems that are constantly evolving in response to various internal dynamics and external influences (see *Chapter 2* for discussion of districts as complex adaptive systems).

The frameworks to describe and understand local health systems have evolved in order to capture the dynamic nature of relationships between the various components of the local

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of the health problems people experience should be adequately addressed within the scope of the care provided by the local health system.

health systems. Van Olmen et al. trace the development of health systems theories and frameworks since 1950s and find that the various frameworks "do not reflect a progressive accumulation of insights" (Van Olmen, Marchal, et al. 2012). Instead, the newer frameworks seem to want to be much more inspired by concepts from systems-thinking and complexity thinking (Adam and de Savigny 2012). Similarly, earlier frameworks have been strongly influenced by the prevalent trends in global health literature, being inspired by the agenda of their proponents.

The basis of many of the prevalent health systems frameworks is the WHO's *six building blocks* framework. It has been reworked by others to address some of the criticism concerning its inability to capture the dynamic relationships within and between the building blocks. One of the frameworks which captures the complexity of the interactions between the components of the building blocks is the health systems dynamics framework (Van Olmen et al. 2012; see figure 1). In addition to the six building blocks, the health systems dynamics framework introduces four new elements: population, context, values and goals. The inclusion of population and context are crucial as the very structure of health systems and its utilisation is crucially determined by country policies, which in turn are influenced by the history, socio-political environment and the values prevalent in the society. The framework also recognised that all the components are not equal; the identification of governance, human resources, service delivery and outcomes as the central axis of the framework underscore their importance in contributing to the outcomes of health systems (Van Olmen et al. 2012).

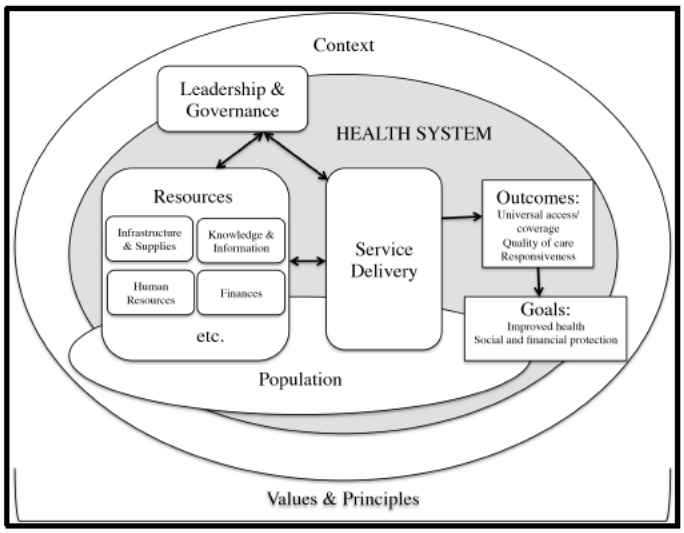


Figure 1: The health systems dynamics framework (Van Olmen et al. 2012)

Local health systems are the workhorses of the country health system. The recent global calls to all countries to achieve universal health coverage cannot be realised without efforts at local and sub-national level. In addition to broad policy-level changes and interventions, there is a need for stronger local health systems in order to realise these policy objectives and utilise the technical inputs from the national level (Meessen and Malanda 2014; Segall 2003).

Recalling the Harare declaration organised by WHO in 1987, that called for strengthening district health systems based on primary health care, the recent global actors' coordinated country-level efforts at improving financing arrangements in order to achieve universal health coverage will be futile if local health systems are not able to efficiently manage resources and effectively deliver services (Interregional Meeting on Strengthening District Health Systems 1987; see box 1). Indeed, India's recent efforts at doubling government expenditure on health through a landmark nation-wide initiative called the National Rural Health Mission (NRHM; see Chapter 4 for description of the NRHM) has faced a major stumbling block, the inability to spend increased resources at local (district and sub-district) levels due to poor management capacity for planning and implementing relevant and appropriate service delivery improvements (see box 2 for a discussion on local health system spending capacity as a possible hurdle to realisation of the objectives of NRHM).

An efficient local health system is able to deliver improved healthcare outputs (access, and quality) within the limited human and financial resource constraints that many countries face. Indeed, the objective of many health systems strengthening interventions is to improve the performance of local health systems by supporting one or more of its components. However, local health systems cannot be operated as if there are mechanical or technical knobs and levers, that if tweaked through specific interventions, could produce quality healthcare, improve patient experience (outputs), and improve and protect people's health status at a reasonable cost (outcomes) (van Olmen et al. 2012; Berwick, Nolan, and Whittington 2008). While clarifying the scope and relevance of the field of health (policy and) system research, Sheikh et al distinguish system *software* from system *hardware* (Sheikh et al. 2011; see figure 2). The more tangible building blocks discussed above are conceptualised as the hardware of health systems, while the implementation and performance of these building blocks are determined by less tangible elements, the system software. These include the "ideas and interests, values and norms, affinities and power that guide actions and underpin the relationships among system actors and elements" (Sheikh et al. 2011). The challenge of health system research is to understand how and why similarly structured health systems could produce variable outcomes across districts, or account for similar outcomes but emerging through differing internal configurations or processes across districts.

Box 1: Harare declaration

The Harare declaration or the Declaration on strengthening district health systems based on primary health care (not to be confused with the Harare Commonwealth declaration of 1991) was adopted on 7 August, 1987, at the Interregional meeting on strengthening district health systems organised by the World Health Organisation (Interregional Meeting on Strengthening District Health Systems 1987). The declaration accepted that merely 12 years before the (then) set date of 2000 for achieving Health for all, there were serious gaps in planning, organisation and management at the level of local health systems in over 90% of WHO member countries. The declaration reaffirmed the need to organise and manage primary health care through better coordination at the level of the district health system. According to the declaration, "a district health system is taken to mean a more or less self-contained segment of the national health system which comprises a well-defined population living within a clearly defined administrative and geographical area, either rural or urban, and all institutions and sectors which contribute to improved health." Among 12 strategies that the declaration proposed, decentralisation of financial and manpower management to district level, developing a district-level planning participatory process and the use of health systems research stand out as having been inadequately realised in many low- and middle-income countries including India (Planning Commission of India 2011).

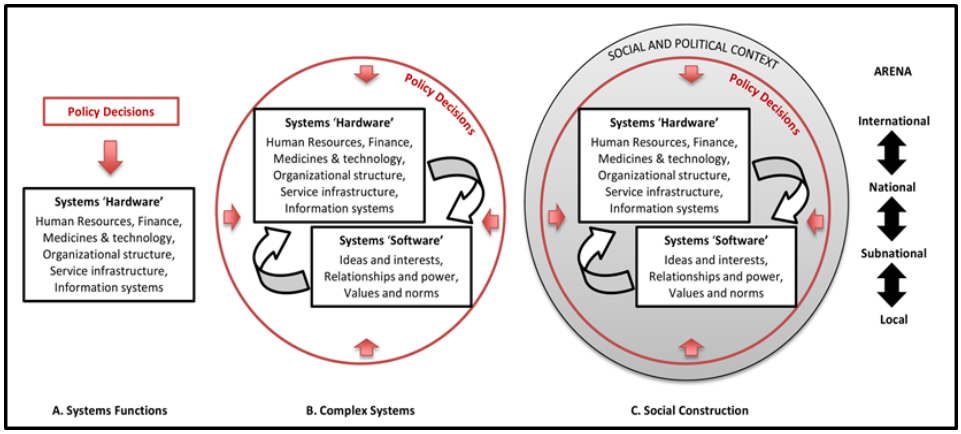


Figure 2: Health systems' hardware and software shaped within given socio-political context (Sheikh et al. 2011)

1.3. Health workforce

At the heart of well-performing health systems are people, including the health workforce within. A well-performing workforce is considered to be a combination of staff being available (retained and present) and staff being competent, productive and responsive to the community's needs (WHO 2006). The 2006 world health report of the WHO was dedicated to the issue of health workforce. The report considered as 'health workers' all people primarily engaged in actions with the primary intent of enhancing health, thus encompassing health service providers, managers and support workers. The report calls for access to motivated, skilled and supported health workers everywhere.

Health worker availability has been associated with better coverage of programmes such as vaccination as well as better outcomes such as reduced child and maternal mortality (Speybroeck, Kinfu, and Dal Poz 2006). The probability of survival of mothers and children increases with density of health workers.

Box 2: Local health systems strengthening needed at district level in India

(Adapted from rapid response by Prashanth N S (published online) to an editorial in British Medical Journal dated 18 September 2013 on Universal health coverage in India)

In an editorial in the British Medical Journal on 18 September 2013 titled "Will India deliver on universal health coverage?" Kollanur makes a clear assertion that the "...only serious barrier is a lack of political will to strengthen the public health system and increase budget allocation" (Kollannur 2013). There are further points made in the editorial that identify unnecessary channelising of public funds into private sector as a problem.

While indeed agreeing with the central argument that financing of government health services is quite poor in India, I wish to highlight that we should also be careful in diagnosing lack of funds as the "main" or "critical" gap in our health services. In fact, the increased funding made available through NRHM over the past five years only confirm that the government health services lack the systemic capacity to plan and utilise (properly) the increased funds. There are several analyses of unspent monies at district and sub-district levels that are sent back to state level. In fact, there are several instances where districts have been pressurised to spend money on *something quick* so that more money could be asked for in the next cycle. I think there is thus a need to focus not only on the allocation but also the technical capacity to spend properly. For example, a report by United Nations International Children's Fund (UNICEF)-India and Centre for Budget and Governance Accountability found that the state of Jharkhand was able to spend only less than half of what it was allocated (see figure 3). Indeed, the same report further states that "Spending is not uniform across quarters, with the last quarter of a fiscal year accounting for, in some states, nearly half of the total expenditure incurred for that year", further strengthening my experience at district levels which shows that expenditure is often driven by a pressure to spend rather than a plan based on a local health system situation analysis or the expectations of the community.

The authors also rightly point out the need for decentralised planning at the district and sub-district level. However, our experience with training district health management teams shows that doctors lead district health management teams, with little inputs from non-medical cadres (nurses, pharmacists or even the newly recruited programme managers under NRHM). An additional handicap with India's district health managers is also that most of them are not trained at all in public health management. It is often the case that a paediatrician or a gynaecologist is made the head of the district health services roughly 1-2 years before his/her retirement. This calls for a fundamental re-look into the way our health bureaucracy is structured.

In this rapid response, I have tried to highlight merely one component of our health system that needs a deeper analysis. There are of course others, for example, the fragmentation between health and hospital services within our public health administration. There are many such systemic issues with the way our government health services are organised, which could be serious barriers to achieving universal health coverage. Merely more money being allocated is certainly necessary, but not sufficient. Indeed, we call for more analysis into the systemic factors within our health services that are impediments to improvement, in short to fall (unfortunately) for the old cliché: more (health systems) research!

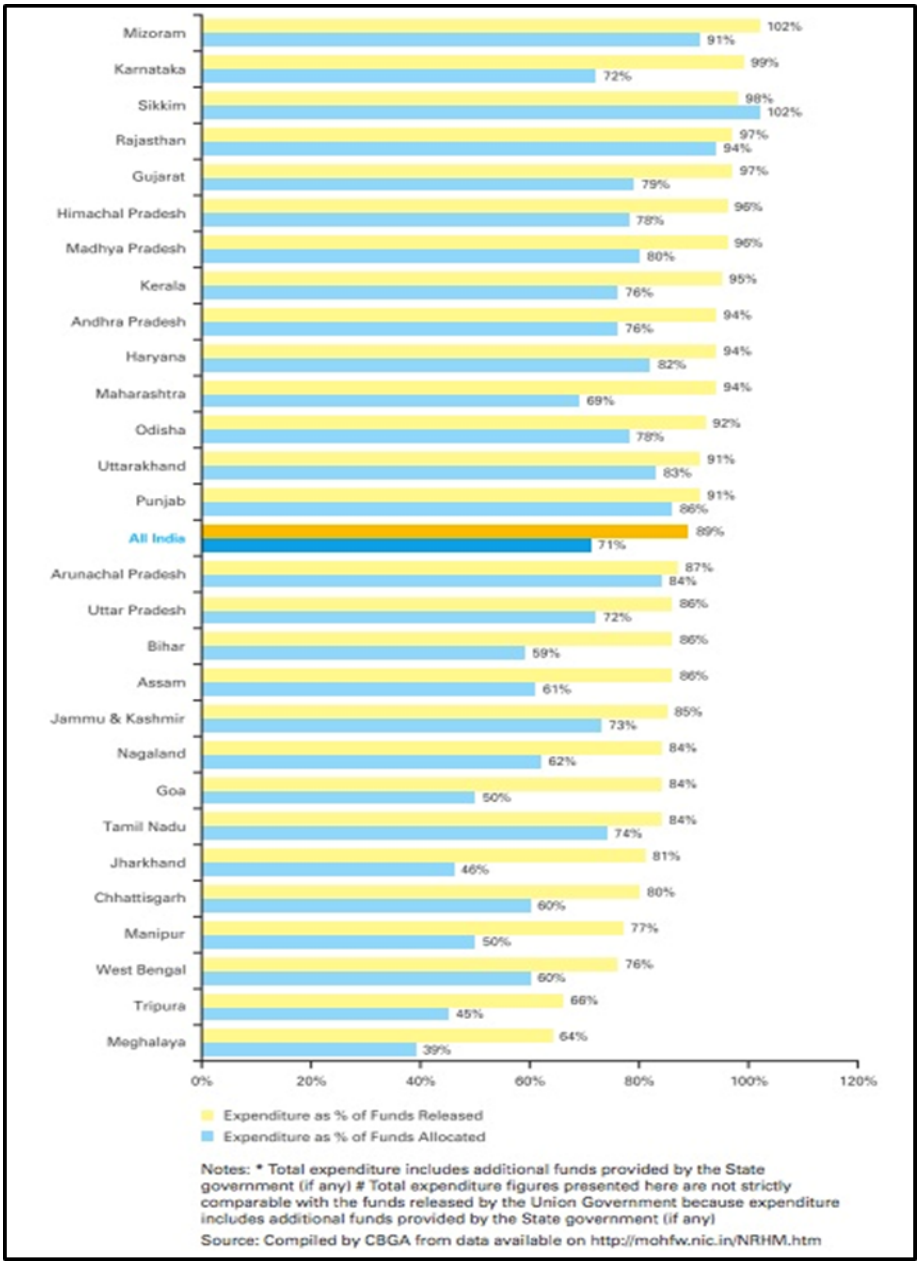


Figure 3: Total expenditure on health by Indian states as a percentage of monies released/allocated (UNICEF & CBGA 2011)

Health worker performance is related to their motivation and other factors ranging from their individual characteristics and their workplace factors to policy and socio-political environment in which they work (Haines, Kuruvilla, and Borchert 2004; Dieleman, Gerretsen, and van der Wilt 2009). In fact, earlier studies exploring associations between health worker availability and health outcomes ranged from no significant association (Kim and Moody 1992) to positive associations (Hertz 1994). An interesting finding has been the doctor anomaly in a global study that found doctor availability to be negatively associated with infant and perinatal mortality (Cochrane, Leger, and Moore 1978). While using better methods, improved data and design, and more recent cross-country multiple regression, a positive effect of health worker availability on child and maternal mortality and vaccination coverage has been shown (Anand and Bärnighausen 2004; Anand and Bärnighausen 2007). Although, the relationship between availability of health workers and improved mortality outcomes appears obvious, the relationship is not always straightforward. Other than providing an evidence base for investment in human resources for country-level policymakers, strong associations between numbers of health workers and improved health outcomes are not actionable for health services managers and proponents of health systems strengthening.

Human resource management (HRM) interventions are key elements of health systems strengthening initiatives. While it is useful to know about the associations between health worker availability and health outputs or outcomes at global and national levels, a key knowledge gap for health systems strengthening is *how* to achieve and maintain the performance of health workers in many of the low- and middle-income country (LMIC) settings (Rowe et al. 2005). Such an apparently paradoxical association is often determined by an interplay between a variety of local factors and are reported within hospitals too; in a large study that evaluated mortality among acutely ill cardiac patients the authors found (paradoxically) lower mortality rates when specialist doctors were unavailable (Jena et al. 2014).

Health system interventions are implemented within existing health services, where it is not always possible to engineer conditions to match a well-designed intervention. Hence, we often see that what works in one setting often does not work in another setting in the same country, and perhaps may not work in the same setting at another moment in time. So, policymakers and managers need to understand how HRM interventions bring about improvements in performance, specifically under what conditions (Ransom, Schaff, and Kan 2012; Dieleman, Gerretsen, and van der Wilt 2009). Such an understanding will help better design and implement interventions that can accommodate a degree of preparedness for the dynamic conditions within the system, as well incorporate elements in the intervention that are likely to succeed within the given local health system setting.

1.4. What are the various strategies for improving capacity?

Various strategies have been proposed for improving performance of health workers. Based on an extensive desk review and consultative process, Dieleman & Harnmeijer identify various factors that determine health worker retention and mobility. They developed a framework to identify the factors influencing health worker performance and identify strategies for improvement (Dieleman and Harnmeijer 2006; see figure 4). Their framework included availability, increased productivity, improved competence and improved responsiveness as being the intended effects of HRM interventions. The upstream outputs of the interventions that could produce these effects are identified (see figure 4). The authors also identify various levels at which these factors could act: the macro (health system level), the workplace or health facility level, and the individual level. Capacity building interventions could then aim for one or more of the intended effects, and be designed to act at one or more levels. The framework also identifies various contextual factors that influence the success of such interventions.

However, the relationship between capacity-building efforts and performance needs to be understood better if local health system capacity has to be improved in a given setting. While the framework identifies the various entry points to improve performance, the particular contextual factors that influence the success of a given HRM strategy are outside the scope of this framework. A later review on what kind of HRM interventions work in what kind of settings underscored the scant reports in literature of the local contextual factors that are important for the success of a given HRM intervention (Rowe et al. 2005; Dieleman, Gerretsen, and van der Wilt 2009). An intervention which works in one setting, often does not work elsewhere, the reasons being related to the micro- and meso-contextual factors in a given local health system. The system software (see figure 2), that enables the interface between the intervention elements and the local health system, is crucial in explaining the success of interventions in a given setting. In order to understand how capacity building interventions could improve performance of health workers and in turn strengthen local health systems, the relationships between capacity building and performance needs to be studied.

1.5. Capacity to performance

Capacity and *capacity building* (or *capacity development*) are used in public health and the wider literature on governance, public policy, and public administration, to refer to people and organisational attributes that are related to (enhanced or envisioned) performance. Their increasing adoption by development agencies has been criticised - being termed “elusive”, “abstract”, “intangible”, and “buzzword” by some (LaFond, Brown, and Macintyre 2002; Potter and Brough 2004) - in view of their broad and poorly understood

meanings, often being applied to relatively well-defined activities such as development of training modules and in-service training, to more broadly defined activities such as quality improvement audits and mentoring programmes. The interest in capacity and capacity building has also increased due to the focus of country policymakers and development agencies on sustainability of short-term support activities and interventions, as it was observed that people's and organisational capacity are crucial if short-term interventions have to continue to have their effects within people and organisations even after the completion of the interventions.

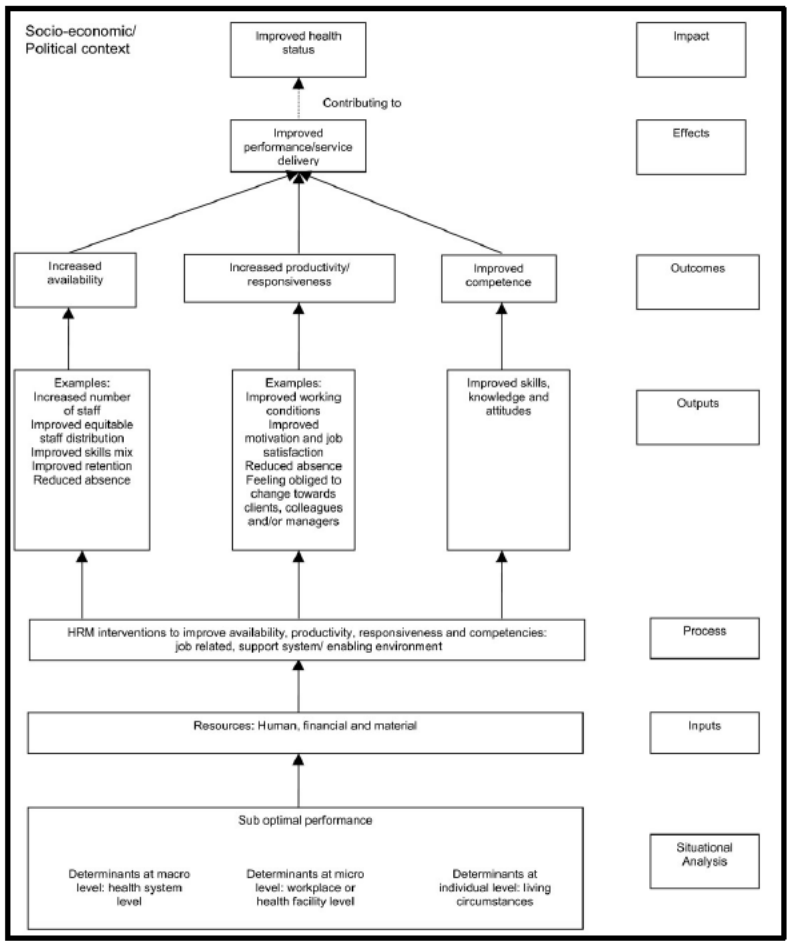


Figure 4: Framework to address performance of health workers (Dieleman & Harnmeijer 2006)

The United Nations committee of experts on public administration defined capacity building as "the process by which individuals, organizations, institutions and societies

develop abilities to perform functions, solve problems and set and achieve objectives" (Committee of Experts on Public Administration 2006). Several authorities recognise capacity building as a multi-dimensional entity; it could be conceptualised at various levels ranging from the individual (building knowledge and skills) to the organisation (improving system-wide information flow, responsiveness, performance and outcomes) and even at the level of society.

Capacity is closely related to performance of people and organisations, but its role in ensuring adequate performance is poorly understood (LaFond, Brown, and Macintyre 2002; see figure 5). While it is easier to understand at the individual level, where it indicates an ability to discharge one's role within the organisation and hence related to their knowledge and skills, its application to organisations and health systems is less understood, in view of the number of factors that influence health systems performance.

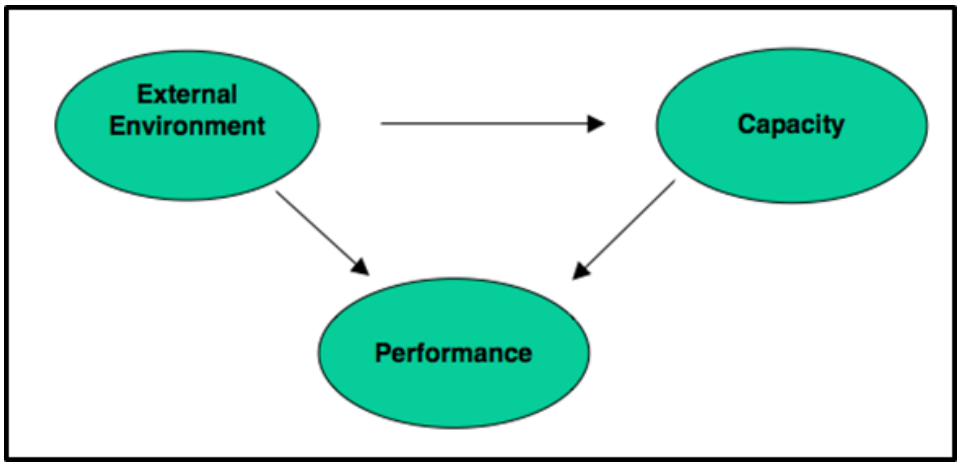


Figure 5: Capacity, performance and the environment of the individual/organisation influence each other (Brown, LaFond & Macintyre, 2001)

A capacity building intervention has been broadly defined as "any activity, project, or change in environment that improves the ability of a health system to bring about positive health outcomes" (LaFond, Brown, and Macintyre 2002). Most literature on capacity building identify various levels at which to conceptualise capacity - individual, institution/workplace and health programme/human resources management level (Vliet and Capasso 2011; Morgan and Baser 2007; Crisp, Swerissen, and Duckett 2000; Handler, Issel, and Turnock 2001; Fritzen 2007; Potter and Brough 2004; Committee of Experts on Public Administration 2006). An additional *health system* level is identified by LaFond et al. to refer to functions independent of individuals, organisations and personnel within them. According to LaFond, system capacities are related to designing the overall structure, financing, policies and environment within which improved capacity of individuals and

institutions could thrive (LaFond, Brown, and Macintyre 2002). In summary, capacity building of local health systems is a complex notion spanning the individual to the system. In a case study of Tanzania's experience with building capacity to manage a complex process of institutional and organisational change, Morgan and Baser describe the various factors to be considered while studying capacity in a simplified framework (Morgan and Baser 2007; see figure 6). At the core of their framework is the overlapping relationship between capacity (capability in their framework) and performance. It includes endogenous change and adaptation, individual attributes that lie at the interface between individual attributes and workplace, organisational and systemic factors, often determining how and why people respond in a given manner (Morgan and Baser 2007).

The assumption that improved capacity leads to performance has generally been accepted (Beaglehole and Dal Poz 2003; Brown, LaFond, and Macintyre 2001; Handler, Issel, and Turnock 2001). However, the former may not automatically lead to the other. Various factors within the immediate and larger policy environment of health workers influence their performance. If capacity is considered as the ability to carry out the roles and responsibilities of health workers, then capacity building interventions ought to improve not only their ability to carry out the roles and responsibilities, but also alter various institutional, environmental and systemic factors that could influence the performance of the health workers and/or the local health system, or at least equip the organisation or the system with the necessary interest or tools to modify their workplace/environment or adapt in such a way that they are able to realise the improvements that are expected of them. Capacity building interventions therefore seek to change the way in which the health system as a whole works through changing the organisations within the system, perhaps through changes in the knowledge, skills, attitudes or motivation of health workers within these organisations.

The multidimensionality of capacity building is captured by the capacity building hierarchy framework proposed by Potter and Brough based on action research in 25 Indian states. The framework captures the complexity of various capacity building inputs and their interface with systemic elements at various levels. Potter and Brough describe a four-level stack of capacity elements in a pyramid with each level composed of interdependent elements (see figure 7). The authors apply this capacity pyramid framework to already exclude scenarios in which a particular capacity building activity or strategy may not work at all. For example, a training programme that imparts skills to a cadre of staff, who are not structurally allowed to implement those skills or make decisions based on the application of such skills.

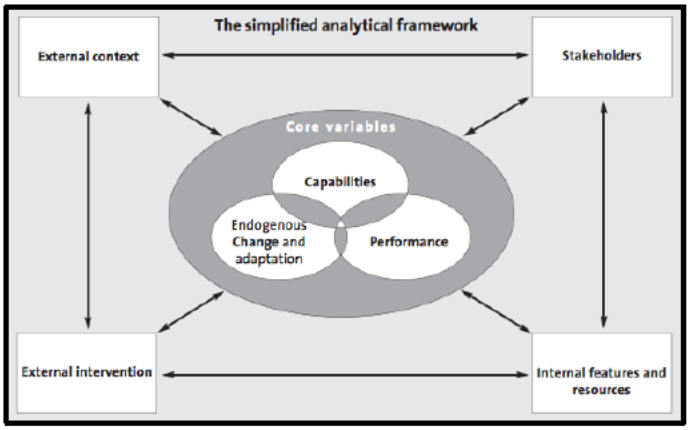


Figure 6: Framework with seven components for study of capacity, change and performance (Morgan and Baser 2007)

The capacity pyramid is also a pyramid of increasing complexity of the task to be achieved; while imparting tools in a training programme could be relatively simple to realise and are in the *technical* domain, improving capacity to realise new structures and processes within a local health system are much more socio-cultural and complex. The four capacity building levels can be further broken up into nine interdependent components and logically arranged in the pyramid, showing the relationships between them (see figure 8). According to the authors, although represented as a hierarchy, the process of achieving systemic capacity building need not be a linear and incremental process of achieving one capacity after another. Rather, the arrangement of these in the pyramid helps assess and understand the design and implementation of capacity building interventions.

The conceptualisation of organisations as complex adaptive systems allows us to see how healthcare organisations evolve differently (one from another) based on their varying internal configurations and external inputs and influences, thus not permitting easily predictable changes in response to intervention inputs (Kernick 2002; Varghese et al. 2014; Agyepong et al. 2012; Adam et al. 2012; Adam and de Savigny 2012). The performance of healthcare organisations is influenced by various internal attributes of its individual health workers and the local norms and rules, as well as the prevailing organisational culture and other features of the constituent hospitals or health centres in the local health system. At the same time, such local health systems are not completely self-contained and isolated from external influences. Being social organisations embedded within social settings and country health systems, the organisation's internal configurations as well as their goals, processes and outcomes are influenced either by mandate or by downstream effects of country policy, other contextual factors and their external stakeholders.

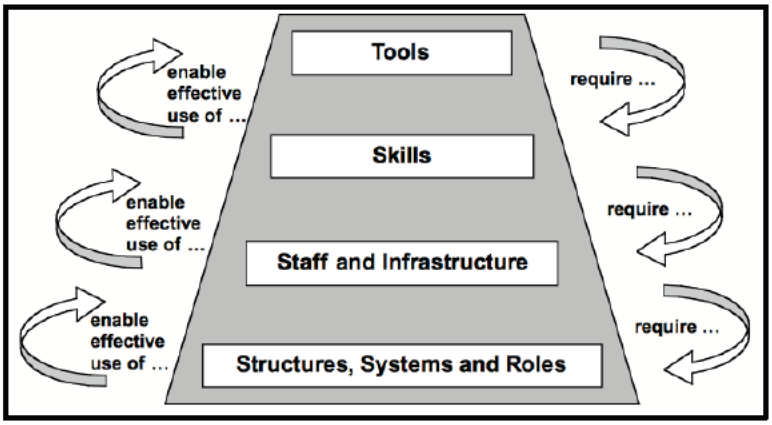


Figure 7: Capacity pyramid (From Potter & Brough 2004)

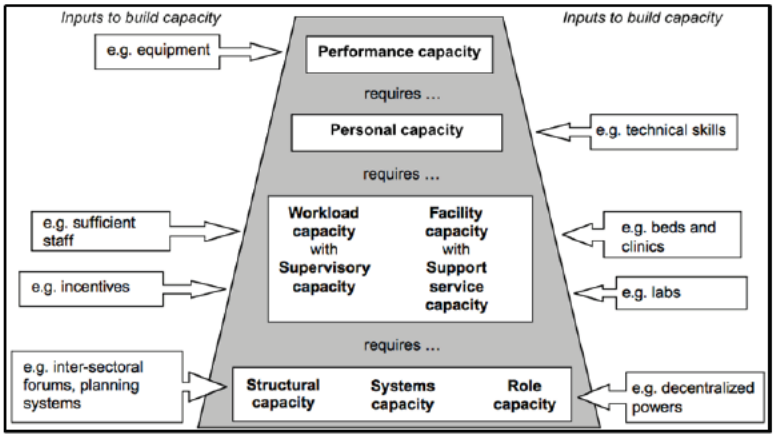


Figure 8: Interdependent capacity building components from the individual to the system (Potter and Brough 2004)

One of the most comprehensive frameworks that integrates several theories on organisational performance in healthcare organisations is the framework proposed by Sicotte et al. for the analysis of healthcare organisation's performance (Sicotte et al. 1998). The framework uses Parsons' social system action theory; it identifies goal attainment, production and adaptation to the environment, values and culture as the four core dimensions of performance with the six alignments among them. This framework has been largely applied to analyse performance of hospitals or individual healthcare organisations and is prepared for North American health services settings. The framework has been modified for application in integrated local health systems and has been applied to analyse hospital performance in resource-limited settings (Marchal, Dedzo, and Kegels 2010a; Marchal et al. 2014). The development and application of the framework are discussed in *Chapter 3*.

1.6. Conclusion

Capacity and capacity building are complex notions when applied to local health systems. They are closely related to performance, but they may or may not improve performance of a given local health system depending on a variety of internal factors, external policy and the socio-political environment of the local health system. These factors are also dynamic and a comprehensive assessment of local health system organisational change requires an understanding of the dynamic relationships within and between various components of the system.

Chapter 2: Evaluating local health system interventions in India

"A box without hinges, key, or lid, yet golden treasure inside is hid"

-- Bilbo Baggins in
The Hobbit by JRR Tolkien

Chapter summary[2]

Healthcare interventions are complex and often do not lend themselves easily to classical experimental study designs. We rapidly assessed published evaluation studies of Indian public health programmes and discuss the scope for using realist evaluation, a type of theory-driven inquiry that attempts to understand what works, for whom and under what conditions. In spite of considerable methodological challenges, framing evaluation questions such that they address the questions of how and why healthcare interventions work (or not) is of key importance to policymakers and decision-makers in health. The recent calls in literature for health systems research offers a new opportunity for collaboration between social scientists and public health researchers in filling up the gaps in evaluation research in India. In this chapter, we present an overview of recent evaluation studies in public health from India. We then discuss the potential for using realist evaluation to supplement the existing knowledge of whether particular interventions work, with insights on what works, for whom and under what conditions.

2.1. Introduction

Over the years, the biomedical dominance of doctors and allied medical sciences in steering the generation of research evidence and priorities in public health has been increasingly documented (Gilson et al. 2011a; Sheikh, George, and Gilson 2014; Illich 2000). The difficulty posed due to public health research being rooted in wider societal research needs and hence demanding a social science approach, is not a recent insight. Calls for interdisciplinary engagement in order to answer public health research questions are quite old in scientific literature (Holmes 1981; also see box 3). Further, the flaws in academic career progress and limitations of peer review mechanisms work against development and use of innovative research designs, locally relevant research and inter-disciplinary research methods (Carey and Smith 2007; Baum 2010). Although this trend still continues, the

[2] This chapter is based on the following paper: Prashanth, N. S., Marchal, B., & Criel, B. (2013). Evaluating Healthcare Interventions: Answering the "How" Question. *Indian Anthropologist*, *43*(1), 35–50.

public health community is confronted with challenging research priorities and questions that are difficult to answer through a biomedical approach and purely experimental research designs. As many LMICs including India, commit to achieve the Millennium Development Goals and aspire for universal health coverage, the need for a strengthened and robust health system to meet these objectives has received sharper attention. Health system strengthening thus is the latest cry among stakeholders involved in planning, managing and delivering health and health policies. Researchers are hence expected to produce rigorous evidence that is relevant to health managers and practitioners within public health services. Such engagements by researchers on difficult yet practical implementation-related questions are being called for from sub-national to international levels. It is this demand and need for context-specific evidence, reorientation of research priorities and questions, which has fuelled the recent spurt of 'Health Systems Research' (HSR) or 'Health Policy and Systems Research' (HPSR).

Health systems research

Health Systems Research (hereafter referred to as HSR) seeks to bring together a variety of disciplines (from social sciences and humanities) as well as a range of actors beyond those engaged with delivering healthcare, but who have a strong influence on organisation, management and delivery of healthcare and policy (policymakers, donors, implementers, media groups, patient groups and communities). Thus, it does not merely expand the methods available for public health researchers, but also reorients the methodological spectrum through its focus on interdisciplinary engagement (application of concepts, theories and methods from social sciences including sociology and anthropology). The PLoS Medicine journal series on HSR in 2011 make a strong case for re-looking at how we (as researchers) frame questions, choose methods to answer these questions and particularly on the potential of social sciences in answering core public health questions (Bennett et al. 2011). The WHO Alliance for Health Policy and Systems Research has steered three biennial symposia (till date) since 2010, to promote and strengthen HSR as a specific field of research. Several background papers by the WHO-Alliance (de Savigny and Adam 2009), a reader on health systems research (Gilson 2012) and series of recent publications strive to define the scope and mandate of this field of research in public health, specifically highlighting the need for interdisciplinary engagement between medicine and allied social science disciplines (Mishra 2013; Storeng and Mishra 2014; Sheikh, George, and Gilson 2014; Sheikh, Ranson, and Gilson 2014).

Expanding on the use of such methodological insights towards an interpretative enquiry (popularly known as qualitative inquiry) of health policies and systems, Sheikh summarises the emerging research methods that are being adapted from the social sciences and are belatedly finding application in health systems research. These methods are characterised by a focus on actors, an attention to the social and political context and emphasis on the *software* of health systems (Sheikh 2012).

Box 3: Health sciences and complexity

The understanding that improving health and well-being of people requires much more than an understanding the biomedical cause of illnesses has been an early insight. See for example the following extract from the introductory address of the (then) Chairman, Dr. Theobald Smith at the section of bacteriology and chemistry of the American Public Health Association in October 1900 (Smith 1900)

"When in the study of public health problems, we pass beyond the confines of the laboratory, we enter a quite different field because we are likely to encounter so many buried links in the chain of causation and so many known elements which cannot be controlled or eliminated. Hence the larger study of nature's problems must appeal to the laboratory for aid in disentangling the interwoven lines of force, which enter into the making of disease. To the undefined factors we as laboratory workers must turn for our subjects of study, ever and again. We must bring them together with those we have studied and thus by gradually enlarging our sphere of experiment, we slowly but steadily approach the real conditions, those that present themselves in the everyday life of the community and the State. The nearer we approach this limit the more applicable and hence the more useful our work becomes, either by establishing new, positive facts, or by destroying current but false beliefs. This steadily progressive march of the analysis of phenomena of health and disease from simple to complex is, however, not always maintained. Much laboratory work is like the movement of a crab, backwards, a continual disavowal of conclusions deemed well established for a time. The difficulty lies less in the perversity of the experimenter than in the perversity of his environment. He is forced by circumstances to take up problems not in the order in which they seem to him most accessible to solution, but in the order in which they happen to occur in the world he is serving. He is set down in a clearing in the forest with his instruments of precision and directed to survey it in its relation to landmarks to him inaccessible and invisible.

Again, the work thrust upon us through the accidents of the world at large must be attended to promptly, if at all, because the very material under observation is changing and will not suffer delay, or else because the pressure from without is too great. Hence our work is likely to be fragmentary and unfinished and to have that flavour of the practical, which does not commend itself to more academically, placed brethren. However, work done with some practical end in view may be fully as scientific in its spirit, method and outcome, and as valuable to the progress of science as any of the traditional work of college or university. Whoever unearths a few consecutive links of the phenomena of cause and effect is entitled to the world's gratitude, be these links near one end of the chain or the other. In all things, nature has applied the same principles and displayed the same degree of ingenuity, and where can it be said has she exercised more of it than in the ever-shifting battle-ground of the infectious diseases, where the cunning of two different orders of living beings is exerted not only to protect themselves, but to find a breach in the other's armour?"

Such methodological reorientation shifts the conceptualisation of a health system from a relatively technical and a linear notion showing straight-forward relationships among different building blocks characterising health system (service delivery, health workforce, health information systems, access to essential medicines, financing and governance) to a

framework that internalises the actors in the system and their dynamic relationships and is in fact informed by theoretical perspectives including critical and social constructivism.

In this chapter, we rapidly assess the methods being used in evaluating existing health programmes in India and explore the scope for using *realist evaluation*.

Evaluation of public health programmes

Evaluation of programmes in public health helps us understand whether the objectives of the programme were met and to what extent (effectiveness of the programme), in addition to the costs of the programme to the funder/state, vis-à-vis its benefits (efficiency and cost-benefit analyses). In addition to answering questions on effectiveness or efficiency, good evaluations of health programmes are vital in the policymaking process; they help improve future programmes by helping us understand why the programme worked in some places (and not in others), as is often the case. If the evaluation is designed to understand how or why the programme was successful, it can shape the course of public policy and improve the benefit of health programmes. Summarising lessons from a policy analysis of five major public policy initiatives in India, Agarwal and Somanathan find, among other things, very little documented knowledge to guide decision-making in public policy and poor institutional capacity to generate evidence within (Agarwal and Somanathan 2005).

Evaluation of public health programmes in India: The missing link

In India, evaluation studies on public policy initiatives, especially in health, are relatively few, and fewer still are available in peer-reviewed formats. Several evaluations of important public health programmes remain as reports submitted to governments or funding agencies, or as working papers. See for example evaluation studies of the government's flagship health programmes such as the National Rural Health Mission and the *Janani Suraksha Yojana*[3] (JSY) (Gill 2009; Bajpai, Sachs, and Dholakia 2009; National Health Systems Resource Centre 2011a; National Health Systems Resource Centre 2011b).

We scanned abstracts of published evaluation studies on Indian health programmes in the last five years (2008-2012). We searched the PubMed database using the keywords "programme evaluation" and "India" to retrieve abstracts of articles that had both the above search terms either in their title, abstract or as keywords. The purpose of searching was to characterise the studies by type and use of particular methods for public health programme evaluation in India. We discuss the relevance of the results of the search using two case

[3] *Janani Suraksha Yojana* (Hindi for Mother's Protection Scheme) is a conditional cash transfer scheme to incentivize safe deliveries among expecting mothers from below poverty line families. Under the scheme, below poverty line mothers who choose to deliver in an institution (government or designated private facilities) are provided with a cash incentive.

studies of two recent programme evaluations. Subsequently, we explain realist evaluation and discuss its relevance for public health programme evaluation in India.

We retrieved 177 abstracts in our search (of which one was a duplicate). Of these, 93 abstracts were retained (83 were excluded, reasons: not Indian (6), not an evaluation, but a commentary/essay/review (18), not related to public health (15), not an evaluation of a public health programme (38) and 5 abstracts were not retrievable). A public health programme was defined as being a programme implemented to strengthen one or more of the building blocks of the health system (per description in *Chapter 1*).

There were a total of 93 published programme evaluation studies of public health programmes from India. One-third of these (30) were evaluations related to human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) initiatives. There were eight evaluation studies that investigated performance of health services at any level. These studies employed a before-after study design to investigate improvement (or change) after an intervention into a health system or a hospital. Less than half reported details of the context within which their results were observed (34 out of 93); and only 35 of the studies employed any qualitative method in their evaluations. In instances when a cross-sectional study design was used to summarise a given phenomenon, most studies relied on surveys alone.

Very few studies outside of the *Avahan*[4]-based HIV/AIDS evaluations were methodologically prepared for the inter-disciplinary nature of the evaluations being conducted. 20 of the 30 evaluations on HIV/AIDS initiatives in India were from the *Avahan* Initiative, which had a comprehensive evaluation design consisting of a mix of data collection methods to collect data on the processes, context and environmental variables. The design sought to use many of these different data sources to develop a "composite picture...to cope with continuous environmental and programme evolution" (Chandrasekaran et al. 2008).

Asking the 'how' question

The context within which a given intervention is studied is vital to drawing conclusions or recommendations. Effectiveness or efficiency evaluations rarely carry detailed enough descriptions of the context, or the explicit or implicit assumptions of the implementers. This has consequences for the use of the results. Indeed, a recent review of human resource management interventions in health identifies the lack of description of context as a barrier

[4] *Avahan* (Hindi for invitation) is an HIV/AIDS intervention implemented in India, funded by the Bill and Melinda Gates Foundation since 2003. The programme aims to reduce HIV transmission and the prevalence of sexually transmitted infections in vulnerable high-risk populations through prevention education and services such as condom promotion, management of sexually transmitted infections, behaviour change communication, community mobilization, and advocacy

to make practical recommendations (Dieleman, Gerretsen, and van der Wilt 2009). Further, healthcare organisations are constituted of and influenced by several actors and their relationships between each other and with others in their environment (community, the socio-political environment, etc.). New initiatives and programmes when introduced within a large hospital or a district do not automatically and uniformly change attitudes and behaviours of the people within. While the technical logic of the programme needs to be sound, its acceptance by the actors within the system, and their responses to it also influence how the programme will function. Our scan of the evaluation literature in India indicates the need for more evaluation studies that can address this complexity by taking into account the context within which interventions work (or do not work) as well as understanding the mechanisms through which these particular contextual conditions influence the outcome. Among other things, exploring interactions and relationships within the healthcare establishment requires a greater use of qualitative research methods and interpretative inquiry.

System software needs to be investigated: two case studies

While discussing the need for rigorous evaluation of health policy initiatives in India, Fan and Mahal call for greater commitment from government for commissioning evaluation of its programmes (Fan and Mahal 2011). However, evaluation of health systems interventions is not merely about political will or funding; evaluations also need to improve our understanding of how the intervention works, as well as fulfil the needs of managers and policymakers within the system. Impact evaluations are able to answer *if and how* the intended consequences (and the rarely investigated unintended effects) of a programme can be attributed to a particular intervention. In addition, evaluations should also acknowledge the complexity of health systems; whether and how the resources introduced into the system by a given programme are taken up (or not) by various existing actors, which triggers processes within the system often working for some, while not for others. The reasons for these are embedded within the so-called system software and are often not investigated in effectiveness studies. Sheikh et al. provide a brief critique of the impact evaluation movement focusing on how the restrictive way in which study designs allowed in this field excludes many designs that are at the core of understanding how programmes work (or do not) (Sheikh et al. 2011). Although impact evaluations are very important for national policy setting, there is also a need for studies that try and understand *how* healthcare interventions work.

In the case of the JSY, for example, Lim et al. assessed whether the increasing coverage of financial benefit under JSY led to better health outcomes (Lim et al. 2010). The study highlighted differences in coverage of the JSY scheme across regions and socio-economic groups as well as differences in health outcomes of the beneficiaries. The study also identified differences in outcomes between states and districts and identified some positive findings, such as a fall in perinatal and neonatal mortality. It concludes that conditional

cash transfer schemes such as JSY, through incentivising institutional delivery, could *somehow* improve health outcomes. However policymakers and decision-makers at district and sub-district level seek information on why there were differences among beneficiaries, and why within a given district, some women or some groups did not use the scheme, or did not show improved health outcomes in spite of availing the scheme.

While calling for a more contextual analysis of the scheme, Das et al. cite several implementation-related observations to urge for further review of the scheme before drawing policy conclusions (Das, Rao, and Hagopian 2011). Among other issues raised, they note: "Very few of these centres were providing facilities for caesarean section, or had blood storage facilities. Quality of care and infection management practices at primary care and community health centres has been repeatedly described as problematic during the Common Review Missions and Joint Review Missions..." (National Rural Health Mission 2010). The scheme encouraged institutional deliveries, and operated under the assumption that such deliveries would be widely acceptable, safe and would be capable of bringing about a favourable delivery outcome to the mothers and new-borns. Das et al. argue that in the lack of a clear and direct connection between the intervention's inputs (cash incentives) and its expected outcomes (improved maternal and child health outcomes), a nation-wide analysis of secondary data will only provide a description of the patterns of coverage and possible hypotheses (Das, Rao, and Hagopian 2011). The study by Lim et al. (albeit based on secondary data) did not ask how the JSY programme's inputs (financial incentive to pregnant women) could have produced positive outcomes (improve maternal and child health) nor does it explain the reason for the heterogeneity of results that are seen across several districts and states (Lim et al. 2010).

Similarly, in a descriptive study that assessed the *Arogyashri* health insurance scheme[5] in Andhra Pradesh in southern India, Rao et al. describe the patterns of utilisation of the scheme, assess how the scheme was working and identify the challenges (Rao et al. 2012). In spite of identifying poor proportional coverage of people from scheduled castes/scheduled tribes (SC/ST) compared to other populations, their assessment design does not allow for an understanding of why this was the case. On the other hand, several SC/ST people also benefited from the programme and we do not know why or how this was the case.

While noting that "the state of learning and evaluation with respect to India's health policymaking presents a bleak picture", Fan and Mahal discuss this rapid assessment and call for "learning and getting better" through rigorous evaluation of public health interventions (Fan and Mahal 2011). They call for a more systemic approach to evaluation

[5] *Arogyashri* is a government-implemented health insurance scheme that was started in the south Indian state of Andhra Pradesh and later adopted by several other states. The scheme covered a variety of tertiary care services for people living below poverty line.

taking into consideration the unintended effects of health policy, that are often complex effects outside the specific institution or component being evaluated or even outside the health sector.

Systems thinking, complexity and healthcare institutions

The above examples of the difficulties in evaluating programmes that are implemented in a variety of settings and within healthcare institutions, like JSY, illustrate the complexity of health systems itself. In this regard, Adam and de Savigny urge for a paradigm shift to "...appreciate the multifaceted and interconnected relationships among health system components, as well as the views, interests and power of its different actors and stakeholders" (Adam and de Savigny 2012). Atun comments on the need for systems thinking when framing and investigating questions in health systems (Atun 2012). The author notes: "Therefore, a broader and more sophisticated analysis of the context, health system elements, institutions, adoption systems, problem perception and the innovation characteristics within these will enable better understanding of the short- and long-term effects of an innovation when introduced into health systems" (Atun 2012). The challenge is in moving from a mere description of all these elements to assessing the linkages and processes that operate in this configuration to cause the observed outcomes.

In classical biomedical research and medical training, researchers focus on particular determinants and explore statistically (or otherwise) the relationships between components or determinants of the phenomenon under study. These approaches are defined by the need to hold or control for a variety of variables in order to attribute effect to treatment (or outcome to intervention). Such approaches have proven very effective in biomedical research, specifically in efficacy and effectiveness trials, where context, according to the internal logic, should be standardised.

However, systems-thinking explicitly urges researchers to gain an appreciation of the specific contextual factors and the way different actors within the system engage/respond to a given intervention. In a systems perspective, the intervention should be framed within the social systems in which it intervenes and the outcome as well. If quasi-experimental designs are used in health systems research, the results lack the contextual details and cannot inform the specific arrangements required within health services to bring about such positive change (Marchal et al. 2012; Svoronos and Mate 2011; Kernick 2002). Evaluation of health systems interventions needs to embrace a systems-approach and be able to investigate the system software, often demanding an inter-disciplinary team of professionals and the application of both quantitative and qualitative methods. Although the acknowledgement and incorporation of complexity of health systems, and development of approaches to address this is a relatively new development within public health, social sciences have developed several research approaches to address complexity (Green 2006; Marchal et al. 2012). Drawing from earlier leanings of public health towards sociology,

Green summarises the recent leanings of public health towards systems sciences thus: "looking for practice-based evidence to advance our evidence-based practice" (Green 2006).

Consider for example a capacity building intervention at district level, that aims to improve knowledge and skills of health managers at *taluka*[6] (sub-district) and district level through periodic classroom training and workplace mentoring, the improvements in performance may be seen in some *talukas*, but not in others. The factors that allow the manifestation of the improved performance in a *taluka* may vary (see *figure 9*). While in one *taluka*, it could be largely due to a supportive supervisory environment that encourages managers to apply innovation and improve performance, in another *taluka* it could be due to an individual manager who is committed to bring about change in his institution. In the latter case, the capacity building programme could have provided the right resource into a setting that was receptive. The specific mechanisms through which we see such a positive change (organisational improvement) are crucial for local decision-makers and policymakers.

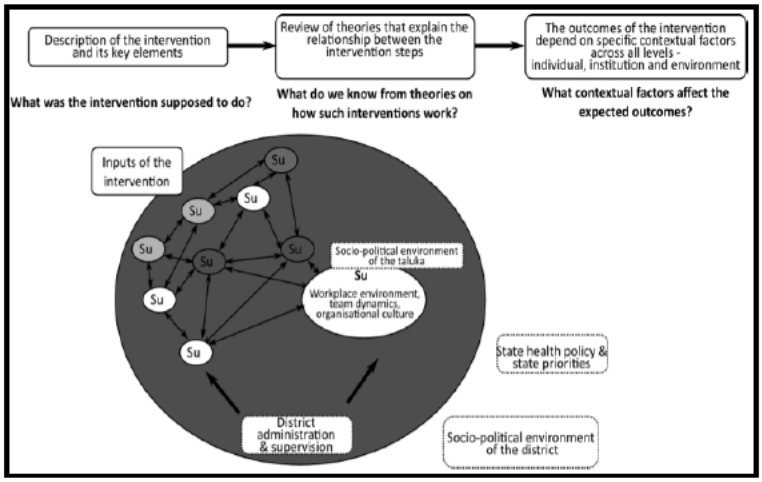


Figure 9: The inputs of an intervention into an existing district health system results in a variety of responses from actors within the system.

Even when a positive outcome (improved health manager performance after training) is observed, the organisational configurations in the *talukas* that led to improved performance may be different, yet the observed outcome could be similar. For an evaluation to be relevant to the decision-makers or health managers, the understanding of the various configurations that led to these outcomes (and those that did not), are essential and not

[6] Health services organisation in India including structural details of district and *taluka* level health services are discussed later in *Chapter 3*

merely whether in-service training and mentoring has improved performance of health managers. In *Chapter 4*, an evaluation study to understand such a capacity building intervention at the district and *taluka* level is presented. The same outcome (better performance) may have occurred through different pathways in the different sub-units (Su) of the system (Prashanth, Marchal and Criel 2013)

However, examples of application of complex systems thinking in evaluating healthcare interventions in India are scarce[7]. One such instance is a summary of findings from action research from 25 states in India by Potter and Brough (2004). They argue for the need for systemic capacity building, that they distinguish from building individual capacity or creating new organisations. They especially criticise the expansion of physical infrastructure and training programmes within healthcare institutions, without first examining why the existing organisations (and the institutional mechanisms within these organisations) are not functioning optimally. They discuss systemic capacity building as a hierarchy of needs, with the system hardware components such as resources (training, money), infrastructure (new hospitals, health centres or training institutes) and inter-sectoral platforms (new community participation structures for example) as inputs. In order for these inputs to function, the organisational configuration within healthcare systems needs to be in place, recalling the system *hardware*-system *software* metaphor used by Sheikh et al. (Potter and Brough 2004; Sheikh et al. 2011). The Potter and Brough framework is discussed earlier in *Chapter 1*.

Realist evaluation and theory-driven inquiry

One of the ways of addressing complexity is by adopting an evaluation design that supports the incorporation of the dynamic relationships between the interacting components of the system and one that allows for an understanding of the context within which changes are seen. Theory-driven evaluation (or theory-driven inquiry) emerged during the 1980s as an approach to evaluation, going beyond input-output or before-after designs (Marchal et al. 2012). One of the key features of theory-driven inquiry is the focus on the implementation process, the existing body of knowledge on how the intervention could work, and the context within which the intervention is being implemented.

Realist evaluation is one of the approaches within the theory-driven evaluation school. Based on the philosophical position of critical realism, it differs from theory-driven

[7] Over a year after the publication of this article, the WHO Alliance for Health Policy and Systems Research brought out a special supplement of the journal, Health Research Policy and Systems titled "Advancing the application of systems thinking in health" in August 2014 which contained two studies applying systems thinking in health from India (Adam 2014). One of these is the basis for ***Chapter 6,*** reporting the results of the study protocol described in ***Chapter 4.***

evaluation by its well-specified ontological and epistemological position[8]. Critical realism is a philosophical position that approaches causation within the social realm as being possible through rationally choosing from rival theories, thus advancing the *explanatory power* of theories. According to Pratschke, in critical realism, "the black-box of causation could be approached by understanding the gaps in the generative mechanisms[9] which may subsequently be explained by positing the existence of additional mechanisms at a deeper or more fundamental level" (Pratschke 2003).

Realist evaluation is positivist in ontology[10], relativist in its epistemology[11]. In this approach, the researcher begins by asking why the programme/intervention worked for some and did not for others, thus trying to understand the conditions under which the intervention works. Outcomes (O) of the intervention are considered as occurring in some circumstances (the context - C) through "mechanisms"(M) - the driver of the reactions of the target group to the given intervention. By seeking patterns of CMO, realist evaluation is able to bring about an understanding of the general principles on "how" a given intervention could work. Realist evaluation is not prescriptive on the type of methods or data to be used. It adopts a pragmatic approach wherein the choice of methods is determined by the type of research question being asked. Gilson et al. identify realist evaluation to be "of growing interest" within health systems research (Gilson et al. 2011). Realist evaluation posits that the resources introduced into the system by an intervention

[8] Ontology belongs to the branch of philosophy called Metaphysics; it deals with the nature of reality and being. Epistemology is the branch of philosophy concerned with the nature and scope of knowledge. The natural and social sciences have differed in the way they approach reality through ontology and epistemology (on if and how it can be known and if there are or are not universal properties that govern reality and our ability to unravel them through science).

[9] Generative mechanism was a term introduced within social sciences to solve the problem of causality in social sciences, where unlike the positivist realm of natural sciences, causality cannot be deduced from a constant conjuction of events (as per David Hume's doctrine, the origin of our knowledge of necessary connections between two phenomena arises out of observation of the *constant conjunction* of certain impressions across several instances). Realist evaluation thus depends on generative mechanism as the key explanatory tool, wherein the researcher describes and analyses patterns of reality that s/he sees and posits the existence of an underlying mechanism that generates these patterns and is hence the quest of a realist evaluation. For more on this, see Astbury and Leeuw 2010.

[10] This entails the realist position that there are *mechanisms* that manifest as tendencies that may or may not manifest through human agency given the right structural conditions possibly through the intervention under study, are in fact universal and can be arrived at through empirical investigation and confronting rival theories.

[11] While clearly positing the existence of universal generative mechanisms, realist evaluation accepts the relativist worldview as far as the study of social programmes are concerned. In this view, reality is constructed by people as a result of their real-world and lived experiences within the social structures within which they function in society. For a discussion on the ontological and epistemological foundations of realist evaluation and its origins within critical realism, see Demetriou 2009.

could result in positive outputs in certain conditions (context) through a number of mechanisms. The mechanisms that operate in producing a given outcome are triggered, partially or entirely, in certain contexts and not or less in others. As an evaluator we have to be able to identify these mechanisms of how the intervention worked.

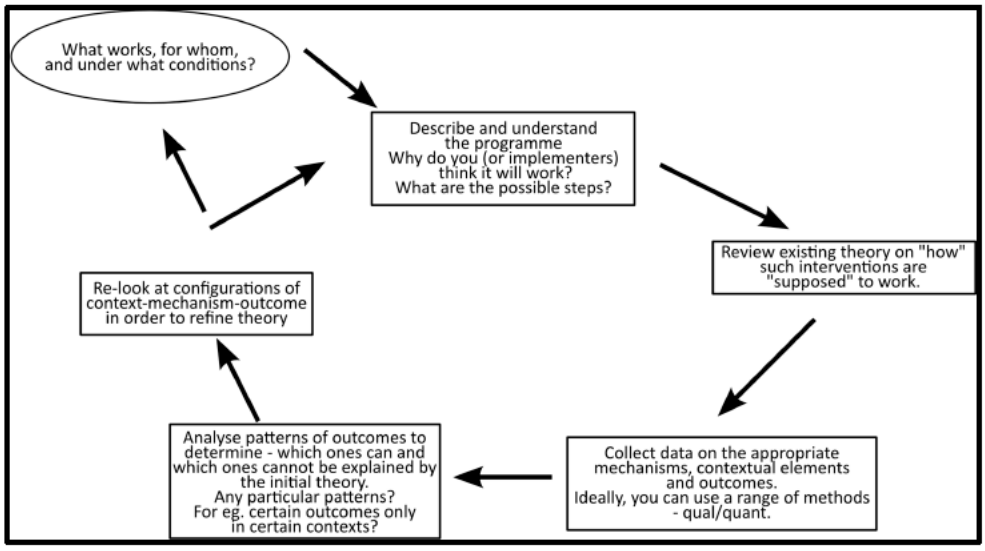


Figure 10: The realist evaluation cycle showing the steps in a realist evaluations study (based on Pawson and Tilley 2008)

Realist evaluation begins with a middle-range theory followed by testing and refining it, in an iterative process, by exploring the complex and dynamic interaction among the particular context, the expected outcomes and the underlying mechanisms of change (see figure 10) (Greenhalgh et al. 2009; Pawson and Tilley 1997; Van Belle et al. 2010). The concept of middle-range theory, developed by the sociologist Robert K. Merton is a way of creating abstractions from empirical observations in the form of a theory that could be verified with the data (Merton 1949). A middle-range theory would be a general statement that can explain observations related to a particular social phenomenon under study.

Although relatively new within public health, there are several examples of studies in published literature in public health that make use of realist evaluation. Marchal et al. review the studies that have applied this approach and examine the scope of its application within health systems research (Marchal et al. 2012). They reviewed 99 studies that were broadly based on the principles of realist evaluation. They find the application of realist evaluation within health systems research to be relatively recent and the literature small in terms of number of studies. However, they find that there are a variety of fields within health systems, ranging from clinical settings to human resources management research,

where it is often applied. Marchal et al. demonstrate the advantage of using realist evaluation in overcoming the limited external validity of a single case study approach while drawing lessons on hospital performance. They draw lessons for management of hospitals using a case study of a well-managed regional hospital in Ghana. They begin with the formulation of a middle-range theory that describes the link between better management and performance, based on empirical data (an initial exploratory study of the hospital through interviews with key informants in the hospital) and a review of literature on high-commitment management. Subsequently, they used a case study approach to answer their research questions related to the vision of the hospital, the management practices in the hospital, the organisational climate within, and the mechanisms underlying the high-performance. In conclusion, Marchal et al. describe particular hospital conditions in which the commitment of its staff could be triggered. They further find that this could occur, in spite of the relatively narrow decision-space available to the managers. Their work illustrates how the realist evaluation approach can be applied to explain apparently complex healthcare organisations and draw lessons valid for similar conditions elsewhere (Marchal, Dedzo, and Kegels 2010).

Our scan of evaluation literature from India shows that realist evaluation inquiry is yet to be employed in evaluation of public health programmes in India. One study however comes close; although, not strictly following a realist evaluation approach of formulating and testing CMO configurations, the authors of an evaluation study of the Accredited Social Health Activist (community health worker under India's landmark health policy, the NRHM) found it very useful to frame the questions for the evaluation in a *realist* manner. They sought to understand the *conditions* under which the programme worked rather than *did it work or not* (National Health Systems Resource Centre 2011a). There is in fact relatively little investigation into how healthcare interventions work, particularly on understanding the relationships between health system components and the context-specific nature of the outcomes. Further, published evaluation studies often do not report on important elements of the context that contribute to determine the outcomes. In spite of several health and related social initiatives taken up under NRHM and various national-level schemes in the country, the policy-relevant question '*what worked for whom and under what conditions?'* remains largely unanswered. Of the 93 programme evaluations in the last five years, only three published studies and one unpublished study from India, apply this approach (Nambiar, Sheikh, and Verma 2012; Michielsen et al. 2011; Prashanth et al. 2012). The reasons for this could be related to poor interface between classical biomedical research and methods in social sciences, medical dominance within public health, lack of research capacity in general, and a culture of publishing in peer-reviewed journals that privilege mainstream research designs (Dandona et al. 2009; Prasad 2005; Sheikh et al. 2011).

2.2. Conclusion

The recent focus on health systems research may be an opportunity to focus on emerging approaches such as realist evaluation that allow for a greater collaboration between social scientists and public health researchers. While it cannot produce results that are generalisable across states or countries, it improves our understanding of why a particular intervention in question worked, for whom and under what circumstances. That said, realist evaluations do offer the possibility of some degree of analytical generalisation that not only improves our understanding of the why and how of public health programs in given contexts, but also refines our understanding of the theories on how such interventions work. To reach this point of critical mass, a large number of studies are needed through which insights and refutations of the middle range theory can be gained. If the research results show what works, for which specific groups and in what context conditions, then policymakers and decision-makers in health may find better use of research in their decision-making processes. This is the promise of theory-driven inquiry approaches.

Chapter 3: The multipolar framework for assessing organisational performance of local health systems

"For even the very wise cannot see all the ends"

Gandalf in "The Fellowship of the Ring"
from JRR Tolkien's The Lord of the Rings

Chapter summary[12]


Building on the EGIPPS performance assessment: the multipolar framework as a heuristic to tackle the complexity of performance of public service oriented health care organisations

Performance of health care systems is a key concern of policy makers and health service managers all over the world. It is also a major challenge, given its multidimensional nature that easily leads to conceptual and methodological confusion. This is reflected by a scarcity of models that comprehensively analyse health system performance. In health, the team of Leggat and Sicotte developed one of the most comprehensive performance frameworks. Their framework integrates four key organisational functions (goal attainment, production, adaptation to the environment, and values and culture) and the tensions between these functions (Sicotte et al. 1998). We modified this framework to better fit the assessment of the performance of health organisations in the public service domain and propose an analytical strategy that takes it into the social complexity of health organisations. The resulting multipolar performance framework (MPF) is a meta-framework that facilitates the analysis of the relations and interactions between the multiple actors that influence the performance of health organisations. Using the MPF in a dynamic reiterative mode not only helps managers to identify the bottlenecks that hamper performance, but also the unintended effects and feedback loops that emerge. Similarly, it helps policymakers and programme managers at central level to better anticipate the potential results and side effects of and required conditions for health policies and programmes and to steer their implementation accordingly.

[12] This chapter is based on the followingpaper: Marchal, B., Hoerée, T., da Silveira, V. C., Van Belle, S., Prashanth, N. S., & Kegels, G. (2014). Building on the EGIPPS performance assessment: the multipolar framework as a heuristic to tackle the complexity of performance of public service oriented health care organisations. BMC Public Health, 14(1), 378. doi:10.1186/1471-2458-14-378

3.1. Introduction

Performance of health care systems is a key concern of policy makers and health service managers all over the world. Demands for better quality of care, higher productivity, better responsiveness, more efficiency and better sustainability are all expressions of the same question of how to improve performance of health services and health workers (Veillard et al. 2005; Smith, Mossialos, and Papanicolas 2008). In the health sector, performance remains a difficult issue because of its multidimensional nature (Scott, Mannion, Davies, et al. 2003). This easily leads to conceptual and methodological confusion and is reflected by a scarcity of models to analyse the performance at health system level (Arah et al. 2003; Kruk and Freedman 2008). Not surprisingly, virtually all current frameworks include quality of care as a key element (Smits et al. 2008). Also effectiveness, productivity and efficiency are recurrent themes, for instance in the World Health Report 2000 and the Organisation of Economic Cooperation and Development framework (WHO 2000; Hurst and Jee-Hughes 2001). In contrast, social outcomes of health care and equity are missing or little developed in most frameworks, with Australian and Canadian national frameworks as notable exceptions (Arah et al. 2003). Furthermore, to our knowledge, only the frameworks developed by Priester, Handler and colleagues, and the Dynamic Health System framework explicitly mention values and organisational culture as a key element of performance (Priester 1992; J Van Olmen et al. 2012; Handler, Issel, and Turnock 2001).

In the health sector, one framework stands out in this crowd: the framework developed by Sicotte et al. (Sicotte et al. 1998). On the basis of a literature review by Leggat and colleagues, Sicotte and colleagues developed a comprehensive framework for the assessment of performance of health care organisations (Leggat et al. 1998). Theirs is a framework of performance that includes goal attainment, production and adaptation to the environment as core dimensions of performance, but it usefully adds a focus on values and culture. The Sicotte framework is geared towards North American settings and has been mainly used in OECD countries, for instance as the basis of WHO-Europe's framework for assessment of hospitals (Veillard et al. 2005), to assess accreditation schemes (Smits et al. 2008), to analyse how actors and stakeholders of a health care organisations define performance (Minvielle et al. 2008; Mauro et al. 2013; Lamontagne et al. 2010; Bravi et al. 2013) and to explore how health care organisations learn (Touati et al. 2012).

In this chapter, we present the multipolar performance framework (MPF) that is an adaptation of the Sicotte et al. framework, keeping its key strengths but redefining some elements on the basis of concepts of integrated health systems and public services. We also adapted the framework to facilitate the analysis of the relations and interactions between the multiple actors that make health organisations complex (see *chapters 2* and *3*). Since most performance frameworks can be considered to be either structuralist or functionalist in

nature, we argue that the relational perspective of the MPF makes it more suitable to deal with the social complexity of health organisations (including local health systems). This allows for an analytical strategy to understand the organisational dynamics. Finally, it is the lean nature of the MPF that makes it effective: more than a structured set of indicators for each function, the MPF calls attention to the dynamic linkages between these functions. The MPF is indeed better considered as a meta-frame or a heuristic[13] that can help managers, policymakers and researchers alike to make sense of performance of any health organisation.

The chapter begins with the Sicotte framework. We then present the MPF and illustrate how it can be used to assess the performance of health organisations. In the discussion section, we present the limitations of the MPF, its use as a meta-frame of analysis and its added value compared with other frameworks.

3.2. Sicotte et al. framework

The work of the team of Sicotte and colleagues is based on a literature review that showed that all existing frameworks to assess the performance of health care organisations (HCO) were missing important dimensions (Leggat et al. 1998). The team found inspiration in Parsons' social system action theory and the competing values framework of Quinn and Rohrbaugh to develop an integrative framework of performance (Parsons 1951; Quinn and Rohrbaugh 1983). Sicotte et al. consider that performance of a HCO is multi-dimensional. More specifically, it is the result of the interaction between four organisational functions: production, goal setting, values & culture maintenance, and adaptation to the environment (see figure 11). The success of an organisation depends not only on how each of these functions is organised, but also on how they are aligned with each other. Performance is therefore understood as more comprehensive than merely efficiently producing desired outputs (Sicotte et al. 1998).

[13] A heuristic (from Greek where it means to find or discover) is an experience-based technique for problem-solving or decision-making that is especially useful in complex scenarios where a systematic reduction of the problem into constituent parts is not possible, and a *good enough* solution is acceptable. Such tools are commonly used in management practice as well as in machine programming and artificial intelligence. See Tversky & Kahneman for a description of three examples of heuristics that people use for decision-making in uncertainty and Perci Diaconis presentation describing at the 1865th meeting of the US National Academy of Sciences where he discusses decision-making in scenarios such as "*what to do given limited resources"* and "reviews work in economics, psychology, search theory, computer science, and (his) own field, mathematical statistics" ending up with rule of thumb (also a heuristic) (Tversky and Kahneman 1974; Diaconis and Mazur 2003).

Key features

Goal attainment

Any health care organisation has aims and goals it wants to achieve. Goals that are clear and specific and that are shared by all members are powerful *pull* factors that can direct both staff and organisation. Goal setting is therefore a key responsibility of management. Sicotte et al. define the key goals of HCO as including effectiveness, efficiency and stakeholder satisfaction.

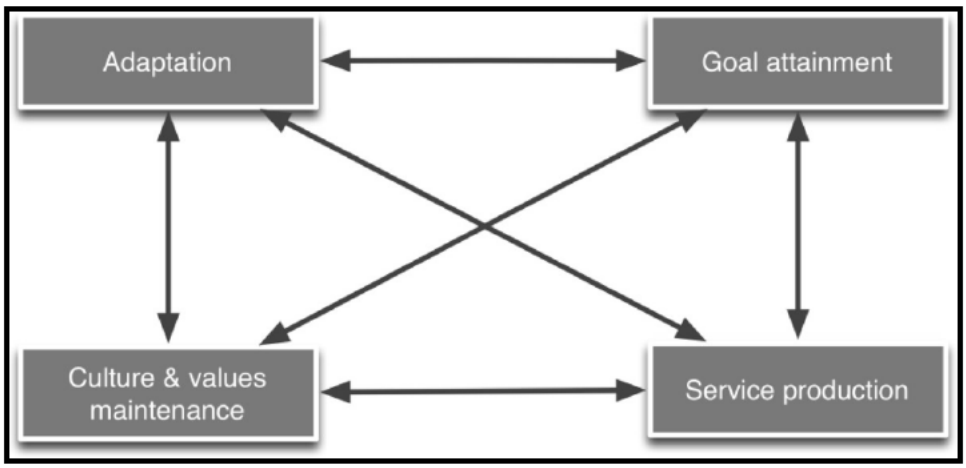


Figure 11: The four functions of Sicotte et al. framework (Sicotte et al. 1998)

Service production function

In order to reach its goals, a HCO needs to organise and coordinate its internal production processes, which consist of clinical and support services. Traditionally, evaluations of HCO performance focus mainly on this function, assessing it in terms of volume, cost and quality of services. Sicotte et al. add productivity and coordination of production factors as elements.

The adaptation function

Health care organisations need to interact with their environment to obtain manpower, financial resources, drugs and equipment. They also draw non-tangible resources from their environment: respect, authority, trust, reputation, knowledge, etc. However, the relationship with the environment is bidirectional. HCOs are expected to respond to the needs and priorities of the population and other stakeholders, and to take their respective values into account. Sicotte at al. therefore include market presence and capacity for learning and innovation as elements of the adaptation function.

Culture and values maintaining function

Sicotte et al. subscribe to Parsons' view that all human action is ultimately generated by the values – hidden and implicit or open and known – of the actors. Maintaining values contributes to good relations between the people working in the organisation and thus to cohesion within the organisation. Parsons called this the pattern maintaining function and considered it to be the most important function in human organisations (Parsons 1977). For Sicotte and colleagues, this function consists of maintaining the fundamental values – in HCO often dominated by professional values like patient dedication, ethics and professional autonomy – and the organisational climate, which in HCOs is *supposed* to be geared towards collaboration.

The alignments

The framework describes six alignments between these four functions, which can be best understood as tensions that may arise between functions as a result of a change in one of them (see figure 12). The tactical alignment links the *Goal attainment* and *Service production* function. This deals first with the appropriateness of the service provision in relation to the goals: "To what extent do the service production processes contribute to attaining the goals? Are they effectively producing the output needed to reach the goals?" Second, this alignment relates goals to the service provision capacity: "Are the chosen goals within reach of the organisation given its delivery capacity?"

The allocation alignment links the *Interaction with the environment* and the *Service production* function. It first deals with resource acquisition. Questions that can be used to assess this include: "Are the obtained resources adequate to organise the service production function? Is the service production function optimal in relation to available resources?". It also covers the opposite direction, i.e. the issue of responsiveness: "Are the right services provided for the population for which the HCO is responsible? Are the services acceptable to the population? Are all relevant stakeholders taken into account when setting service delivery priorities?"

The strategic alignment examines the link between the *Goals* that the HCO is pursuing and it's *Environment*. Here, questions include whether the organisational goals correspond with the needs of the population and other key actors. Inversely, one assesses the influence of external actors on organisational goal setting: "Who influences the goals and how? How is the alignment between the external actors and the goals of the HCO?"

The legitimisation alignment is about the congruence of the *Goal attainment* function with the *Culture and values maintaining* function, and inversely questions how the strategic choice of goals influences and shapes the organisational values.

The operational alignment covers the congruence of the *Culture and values maintaining* function with the *Service production* modalities, and the impact of the service production system on the organisational culture and values.

Finally, the contextual alignment between *Culture and values maintaining* function and *Adaptation to the environment* deals with how the social, political and cultural dimensions of the environment influence the organisational culture and its core operational values, and inversely, whether and how the organisational culture is congruent (or not) with the environment of the HCO. With this framework, the assessment of the performance of a health care organisation therefore covers four functions and six alignments.

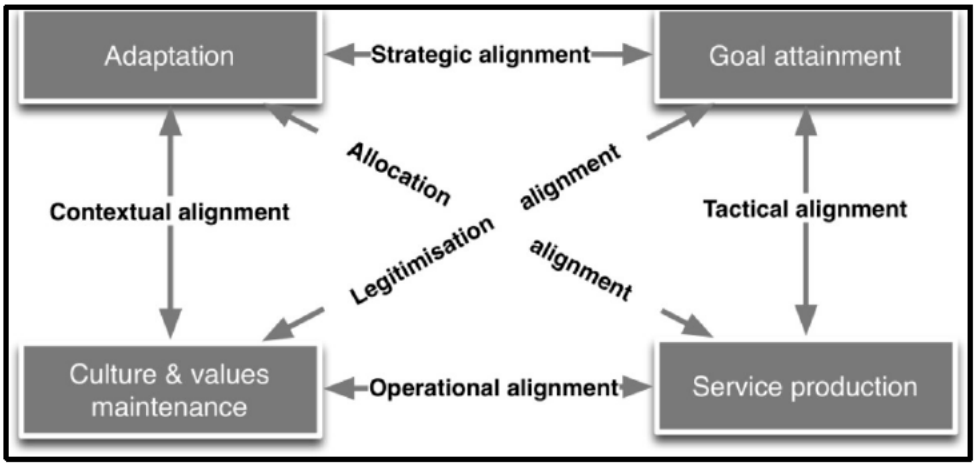


Figure 12: The alignments in the framework of Sicotte et al. (Sicotte et al. 1998)

Strengths and challenges

Whereas previous performance frameworks focused on some of the four functions or favoured particular management theories, Sicotte et al. integrated the main streams of management into one comprehensive performance framework, usefully pushing the definition of performance beyond the assessment of how service provision contributes to goal attainment.

Confronted by the challenge of assessing performance of local health systems in LMICs, we modified the Sicotte framework in three ways. First, we expanded its scope to include not only HCO, but also health support organisations (HSO), which in most health systems in the South, play an important role. We define an HSO as any organisation that mainly supports care and/ or service delivery. Examples include NGOs providing technical and financial support to local districts or hospitals, but also central, regional or provincial health authorities or funding agencies are HSO. The *taluka* health administration falls within the

HSO. This differentiation leads to new categories to describe, for instance, the service production function (see table 1 for examples). From here on, we will use 'health organisation' (HO) to include both HCO and HSO.

Second, we infused key elements and concepts of integrated health systems and public service in the definition of the sub-dimensions (Van Olmen, Criel, et al. 2012; Van Olmen et al. 2012). HO operating in the public domain are not value-neutral, and neither are health system frameworks (Kruk and Freedman 2008). We therefore make explicit the values that influence our definition of the goals that a health organisation should pursue (see figure 13). The goal of a HO is not (only) maximising efficiency and profit. As social institutions with a public service perspective, they are intended to provide care and services that contribute to equitable access and utilisation of health services. In the process, they are to be accountable to the communities they serve, and not only to powerful stakeholders (Giusti, Criel, and De Bethune 1997; J. P. Unger 2001; J. P. Unger, De Paepe, and Green 2003). The pursuit of such values and objectives affects not only all functions of a HO and its management, but also the reference frame used to evaluate such organisations. To this end, we changed the labels of three of the four functions (see figure 13). We replaced *Culture and values maintaining* to *Safeguarding organisational culture and values* to stress the need of ensuring that the organisational culture promotes positive values. The label *Production* is replaced by *Service provision* and *Adaptation to the environment* by *Interaction with the environment*. The latter change emphasises the need for HO managers to actively engage with their key stakeholders and respond to their expectations, instead of undergoing the environmental pressures.

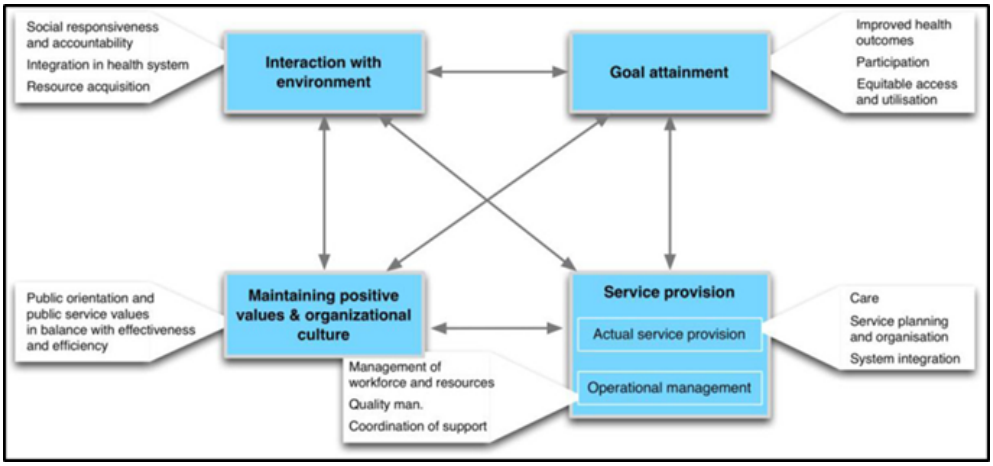


Figure 13: The multipolar performance framework (Marchal et al. 2014)

The third modification is an attempt to better deal with complexity. The advantage of the Sicotte framework, much the same as the competing values framework of Quinn and Rohrbaugh did, was to integrate all main schools of management. Since then, however, complexity theory has entered much more strongly into organisational and management theory. Interesting insights on complexity have been developed in the domain of decision-making (Stacey 1996; Stacey, Griffin, and Shaw 2000), strategic management (Kurtz and Snowden 2003; Snowden and Boone 2007) and leadership (Ford 2009; Marion and Uhl-Bien 2001).

One key aspect of complexity theory is the central role of human agency and relations in emergence of change within organisations. The alignments in the Sicotte framework represent the interaction between the functions and allude to the tensions that often arise as a consequence. However, adopting a functionalist approach, Sicotte and colleagues provide little explanation on how these tensions come about and little guidance to the analysis of these tensions. This modification is, therefore, an analytical strategy to focus attention on the social dynamics within the HO and in its relation with the environment, which accounts for the dynamic interactions within and between functions and the resulting emergence of change, feedback loops and unintended effects. As such, the MPF becomes a heuristic that can help at making sense of complex organisational behaviour.

Table 1: Examples of components of the service delivery function in a range of healthcare organisations

	Hospital	**First line system**	**Disease control programme**	**NGO supporting districts**	**NGO supporting other NGOs**
Actual service provision	Provision of hospital-level diagnosis and care	Health promotion, prevention and curative care	Vector control	Training district management teams	Training NGO managers
			Environmental control	Providing supplies and drugs	Providing material support
			Information, Education, Communication	Provision of targeted services	
			Curative services		
Operational management	Management of wards	Team management	Programme management	Coordination with general services	Coordination of own staff

	Hospital	First line system	Disease control programme	NGO supporting districts	NGO supporting other NGOs
	Procurement Pharmacy Quality management Health information system	Supplies	Financial management coordination with general services	Staff recruitment and training	Communication with the NGOs that are supported
	Continued professional development	Training	Procurement and supply Quality control	Monitoring & evaluation	Supervision of own staff
		Supervision Quality management Health information system	Health information system	Supervision	Monitoring and evaluation

Key features of the MPF

Goal attainment

From an organisational theory point of view, institutional survival, and the concomitant concern for efficiency, cost-containment and user satisfaction, is a major driver of any kind of service organisation. The mission of health care organisations, however, includes other goals, most often summarised as *to contribute to better health status and/ or well-being of the population*.

Inspired by Giusti et al., we argue that the mission of health organisations that are oriented towards public service (in short public HO) includes improving the health status and well-being of the population, supporting the autonomy of individuals and communities and contributing to social justice (Giusti, Criel, and De Bethune 1997). Such a mission can be translated in the following goals:

- Improved health outcomes of the population of responsibility
- Participation of patients, community and other legitimate stakeholders in decisions regarding individual care, community-level action and organisation of health services

- Equitable access to and utilisation of quality health care according to need.

In line with the idea that goals need to match the mission, and that the mission is influenced by multiple actors and interests, dialogue among and coordination of the various stakeholders in defining the mission, setting the priority goals and developing the organisational strategy is of key importance. This makes the legitimisation alignment the key axis of the MPF.

Service provision

We change *service production* of Sicotte's framework into *service provision*, and distinguish two sub-functions: (1) the actual service provision and (2) the operational management.

The components within the actual service delivery function – and their relative weight – vary in function of the type of HO and its core activities (see table 1 for examples). HCO focus essentially on providing health care and services. For instance, the core activities of a hospital include specialised diagnosis and treatment. HSO in essence provide services that enable other organisations to perform better: they typically support the operational management of their target organisation. A non-governmental organisation (NGO) supporting a hospital, for instance, may focus its service delivery on training, supply of inputs, etc. For all HOs, the actual service provision can be assessed in terms of quantity, quality and cost of services.

The actual service delivery sub-function includes care, service planning and organisation, and system coordination. Within the operational management sub-function, we include management of workforce and resources (finances, knowledge and know-how, material and supplies, infrastructure), quality management and coordination of support, all functions which the *taluka* and district health offices are expected to perform for all the PHCs located within the *taluka* or district in the Indian health services.

Interaction with the environment

The interaction function embodies a bi-directional relationship that focuses on resource acquisition as well as on responsiveness. In line with a public service value set, (social or community) responsiveness means in essence to respond to population needs, to health system demands and to relevant societal and political influences. Changing demands and needs should lead to reviewing present service delivery and to modification if needed. HO management teams also need to be accountable to the legitimate stakeholders. In this light, the interaction can be assessed by looking at the voice and power given to patients and communities in matters of goal setting and management of the HO.

An element we add to the MPF is the role of the HO in the wider health system. This refers to the notion of integrated health systems and includes maintaining effective linkages with other tiers of the health system (including, for instance, participating in patient referral systems or providing training and supervision) (Unger and Criel 1995; Unger, Marchal, and Green 2003).

Safeguarding the organisational culture and values

The organisational culture consists of the behaviours, artefacts and norms that prescribe and sanction the behaviour of organisational members. This visible layer is informed by the values that influence the behaviour of staff and their beliefs and assumptions (Schein 1990; Katz and Kahn 1978). The multiple groups of actors in health organisations shape the organisational culture and create their own subculture. In a HO, professional values (both medical and public health values), bureaucratic norms and institutional survival mix with staff members' personal values. Finally, the organisational culture is influenced by the societal values. The interactions between actors in and outside of the organisation lead to *some measure of dependable coordinated behaviour*, mainly through developing (or not) shared value sets (Marion and Uhl-Bien 2001). In other words, the organisational culture is both a driver of social complexity as well as the result of it.

The alignments between the functions

Assessing the alignment between two functions exposes the coherence between these functions. With the MPF, we push the analysis of the alignments into an analytical strategy to understand the organisational dynamics. To this end, the perspectives of actors inside and outside the organisation and their relations are explored, specifically in regards to the one alignment that is *primus inter pares*: the legitimisation alignment between *Safeguarding the organisational culture and values* and *Goal attainment*. An in-depth stakeholder analysis or an assessment of the power relations in the organisation could be methods to assess how priorities and objectives are defined and by whom.

Dynamic assessments of performance

The most straightforward use of the multipolar framework is to provide a static description of the organisational performance in its four key functions – a snapshot of the current performance. In its most basic application, the MPF is indeed best considered as a neutral meta-frame; a static description that can be used to compare the current performance with the objectives of the strategic plan, the national norms or the performance of other HOs.

However, the real power of the MPF lies in its capacity to facilitate a dynamic assessment on the basis of the key alignments that between the four poles within a given health

organisation. This use of the MPF as a heuristic is in line with a complex systems approach to organisations and the assessment of their performance (Snowden and Stanbridge 2004).

A dynamic assessment of performance starts with the triangle Goal attainment–Service provision–Interaction with the environment. This is the common approach to evaluation of performance, in which case the cause of the inadequate goal attainment is sought, first, within the service delivery function, second, in the operational management capacity, and third, in the acquisition of resources and recruitment of manpower. If this first stage does not explain the present performance gaps, the feasibility of the goals needs examination (the tactical alignment). Goals will not be attained if they are set too high relative to the organisational capacity.

However, the MPF goes further than a traditional performance assessment. The second phase concerns the triangle goal attainment–culture and values–interaction with the environment. The relevance of the goals relates to the legitimisation alignment. Here, a first question is in how far the goals are coherent with the mission of the HO: organisations pursuing goals that are not supported by a shared vision and mission often fail to mobilise their personnel. Second, the goals also need to be relevant for the legitimate key actors, among whom the patients, their families and communities – this deals with responsiveness and the strategic alignment.

This then leads to the third phase: the assessment of the influence of the external actors on the HO. First, external actors often have an influence on goal setting, for instance by imposing performance objectives or policy goals. Second, they shape the service provision through (earmarked) resources, knowledge and other means (the allocation alignment). Through funding particular activities or providing specific targeted supplies, for instance, external actors shape the service provision capacity. Strategic use of stakeholder analysis and power analysis can help to map the key actors, their power and influence, their interests (in the HO), and not in the least, their legitimacy.

In a fourth phase, a dynamic analysis focuses on the formal and informal values that are maintained by the HO and on how these values actually shape the mission statement and the goals, as well as the actual service delivery. Key questions include: '*Who shapes the organisational culture? Through which structures, relations and processes are the organisational values expressed and operationalized? Whom does the culture serve? What are the power relations and differentials it maintains and by which it is maintained*?'

The above sequence of four phases is best run reiteratively: any change in one function and the management or staff's response to it has the potential to influence other functions through the alignments. Such reiterative analysis often leads to a better understanding of the evolution of the HO and how and why its performance changed in time. This means that the emphasis shifts from merely describing the current state of each function and its

elements on the basis of quantitative indicators to an analysis of the interactions between an event or change in one function and the resulting changes in other functions. It necessarily calls for exploring the functions of interaction with the environment, and culture and values, and their alignments. Such analysis of dynamics can by its very nature not be formalised in a fixed '7 step' procedure, but the above-described phases indicate how the reiterative analysis process can be structured.

In Marchal et al., an example of the application of the MPF in the form of an analysis of the effects of the start of a national health insurance scheme on hospital performance is provided (Marchal et al. 2014; see figure 13).

3.3. Discussion

We explained how the MPF is based on the work by Sicotte et al. and how we modified it: we expanded its scope to include HCO and HSO, we infused it with key elements of integrated health systems and public service values, and we showed how it can be used to do dynamic performance assessments that take into account the complex nature of health organisations.

We found it most useful if used as a dynamic framework, in which case it opens up (analytical) perspectives. The MPF, indeed, gives the management team of a HO, a helicopter view of their organisation, from which they can oversee its four functions and the alignments. This helps managers to broaden their definition of organisational performance and to move from monitoring of functions through measurement to assessing and managing the social relations and the dynamics of their organisation in its environment.

We argue that a major advantage of the MPF is its parsimonious character. Within this meta-framework, different theories and concepts can be mobilised to understand and explain observed patterns. Its *meta* nature may also be a weakness, as it requires a good knowledge of theories from sociology, psychology, management, organisational studies, etc., and thus ideally a multi-disciplinary team to use it to its fullest potential.

One of the challenges of the MPF framework is the need to assess intangible dimensions of healthcare, as it emphasises the (social) complexity of HO and calls attention to the analysis of relations, interests and power. Also the attribution of change in any function to an intervention or event in other functions is difficult: the alignments interconnecting the functions show pathways of multiple determination and feedback. However, if health organisations are complex organisations, we need to embrace complexity and accept that the best we can do is to search for and provide plausible explanations and look for contribution rather than attribution.

The MPF accords a critical role to the organisational culture and the legitimisation alignment. This is in line with the importance given to organisational culture in the discipline of management, even if in healthcare, a straightforward link between organisational culture and performance may be difficult to demonstrate (Scott, Mannion, Marshall, et al. 2003; Tsai 2011; Ransom, Schaff, and Kan 2012). The organisational culture and values shape the goals of the organisation through the legitimisation alignment and influence the provision function to a large extent. However, organisational culture is seldom neutral. Shared values emerge out of relations between the people in an organisation and shape the organisational behaviour. An important distinction is to be made between officially espoused norms and values, and the operational values that underlie actual individual and organisational behaviour. Positive espoused values described in mission statements (e.g. equity, participation, trust) can be easily undermined by negative operational values maintained by demotivated and ill-paid staff or managers. Inversely, the potential negative influence of certain actors or policies may be averted if staff members are strongly motivated by professional or public service values. Examining the organisational culture and its influence on the other functions is therefore a key competence, for managers and researchers alike.

As for any organisation, health organisations represent political arenas in which different groups and cadres form alliances to advance their goals (Kapiriri, Norheim, and Martin 2007; Minvielle et al. 2008). This reflects the notion of negotiated order, in which the various actors and stakeholders reach a certain equilibrium by means of power struggles, conflicts, negotiation and discussion (Currie 1999; McDaniel, Lanham, and Anderson 2009). Quinn & Rohrbaugh refer to this when they say their competing values framework leads to a '*conflictual, process-oriented, or dialectic view of the nature of organisations*', in which the arrangements to deal with the tensions can be antagonistic (Quinn and Rohrbaugh 1983). As we saw above, Sicotte et al. acknowledged this and called for a multiple stakeholder approach to manage the conflicting values pursued by different actors. This is indeed a second key competence of HO managers.

3.4. Conclusion

The multipolar performance framework builds upon the work by Sicotte et al. (Sicotte et al. 1998). Our modifications include adding concepts of integrated health systems and public-oriented health service organisation. We also adapted the framework to facilitate the analysis of the relations and interactions between the multiple actors that make health organisations complex.

Using the MPF in a dynamic reiterative mode not only facilitates identifying the bottlenecks that hamper performance, but also the unintended effects and feedback loops

that emerge. In this sense, it helps managers in understanding the complex nature of their organisation and anticipating unintended effects and making informed strategic choices for improvement. The relational perspective of the MPF makes it more suitable to deal with the social complexity of health organisations. This includes the central place of decision-making and priority setting, and the role of values in such processes. This pushes performance assessment far beyond the effectiveness and efficiency questions, making it more difficult, but also more relevant.

Chapter 4: Studying a local health system strengthening intervention in Tumkur

"It is not our part to master all the tides of the world, but to do what is in us for the succour of those years wherein we are set, uprooting the evil in the fields that we know, so that those who live after may have clean earth to till. What weather they shall have is not ours to rule"

Gandalf
in The Return of the King by JRR Tolkien

Chapter summary[14]

Despite a lot of focus on capacity building of health workforce to improve health outcomes in developing countries, there are very few studies on how capacity building brings about better performance. Methodological difficulties and complexity of health systems impose restrictions on evaluating human resource management interventions. Health worker practices are complex behaviours that are determined by various individual, institutional and systemic factors. It is possible to use a theory-driven evaluation approach such as realist evaluation to understand the mechanisms through which capacity building programmes improve (or do not improve) performance of health workers. In this chapter, a protocol for the study of a complex intervention to improve management capacities of health managers in a rural Indian district setting is described. The organisation of health services in India is briefly described followed by a description of the intervention. Subsequently, the study design, methods and tools to study *how* the capacity building works, is presented followed by a discussion on the choice of realist evaluation to study the intervention. This is the first application of realist evaluation to a local health system intervention (capacity building) based on our review of literature. Instead of only focusing on '*does it work or not'*, the study seeks to understand '*what works for whom, and under what conditions, and why?'*



[14] Since the chapter is based on a published paper, some portions in the background may be repeated from previous chapter. This chapter is based on the following paper: Prashanth, N. S., Marchal, B., Hoeree, T., Devadasan, N., Macq, J., Kegels, G., & Criel, B. (2012). How does capacity building of health managers work? A realist evaluation study protocol. BMJ Open, 2(2), e000882. doi:10.1136/bmjopen-2012-000882

4.1. Introduction

Health worker availability has been associated with better coverage of programmes such as vaccination as well as better outcomes such as reduced child and maternal mortality (Haines, Kuruvilla, and Borchert 2004; Speybroeck, Kinfu, and Dal Poz 2006). Although the relationship between availability of health service providers and improved mortality outcomes appears straightforward, it is not easy to establish (see Chapter 1 for a discussion on this). Issues of health worker performance, their motivation and the contextual factors that shape an enabling environment to perform effectively are poorly understood (Dieleman, Gerretsen, and van der Wilt 2009). The 2006 world health report drew attention to the human element in the delivery of health care services by focusing on the health workforce. It identified the forces driving the health workforce (health needs, health systems and contextual factors), and the related workforce challenges (numbers, skill mix, distribution and working conditions). A well-performing workforce is considered to be a combination of staff being available (retained and present) and competent (productive and responsive) (WHO 2006).

In order to ensure a well-performing workforce, the 2006 World Health Report suggested the adoption of good human resource management within the health services. Human resources management (HRM) is the management of people in an organisation. It includes the policies, practices and activities at the disposal of managers to ensure the availability of staff in adequate numbers, with skills needed to discharge their functions and having the motivation to accomplish the organisation's objectives (Mathauer and Imhoff 2006). Sub-optimal performance of health workers is a serious issue that requires urgent attention as it is linked to morbidity and mortality, and reviews show that health worker performance is critical to achieve good health outcomes across health conditions, age groups and the health-related millennium development goals (Hongoro and McPake 2004; Rowe et al. 2005). The 2006 world health report suggested four practical and low-cost instruments, of which supportive, yet firm supervision, and lifelong learning are important for a competent and responsive health workforce.

However, the difference that good HRM makes in achieving better performance and outcomes of health services is poorly researched. There are serious knowledge and evidence gaps on what kinds of interventions work. This is mainly due to methodological challenges in measuring HRM practices and performance, and the paucity of studies on district level interventions on health workforce from LMICs, where the need for such evidence is most pressing (Dieleman, Gerretsen, and van der Wilt 2009; Rowe et al. 2005). On the other hand, several reviews highlight the need for evaluations that can improve our understanding of how such interventions work so that HRM interventions may be better designed and implemented (Haines, Kuruvilla, and Borchert 2004; Dieleman, Gerretsen,

and van der Wilt 2009; Chopra et al. 2008; Buchan 2004). Despite the relevance of this question to policymakers as well as health care organisation managers, there are few studies on this topic.

Box 4: Realist evaluation

Realist evaluation begins by asking (about programmes or policies), what works, how, in which conditions and for whom (Pawson and Tilley 1997). The outcome of a realist evaluation is an empirically tested and context-specific explanation for why the programme or policy worked for some and not for others. The evaluators begin by refining the initial programme theory of the programme (or policy); the initial programme theory is based on the assumptions made by the designers/implementers on why the inputs of the programme will bring about the desired output. The evaluator seeks to refine this initial programme theory in order to understand the local contextual conditions that influence the outcome, as well as the possible causal mechanisms that could have resulted in the outcome. Data is collected and analysed using the conjectural context-mechanism-outcome (CMO) configurations; configurations consisting of causal mechanisms that explain the observed outcome, in relation to specific contextual conditions that allow for these mechanisms to operate. The CMO configurations are an analytical tool consisting of testable conjectures drawn from the programme theory that help in generating an explanation for what works, for whom and under what conditions. The current understanding of context and mechanism in realist evaluation is summarised below (Marchal et al. 2012).

Context – Actors or other factors that occur in the setting where the intervention/policy was implemented that occur independent of the intervention/policy, and affect the implementation of the intervention/policy.

Mechanisms – Psychological or social explanations for human behaviour that explain the interaction between social structure and individual/group agency.

Experience from action research in capacity building initiatives in 25 of the (then) 28 Indian states, as well as performance reviews of the Indian government's NRHM highlight the need for systemic capacity building on one hand, and scientific evaluations of how interventions work (or do not) on the other (Bajpai, Towle, and Vynatheya 2011; Potter and Brough 2004; National Rural Health Mission 2010). Given the lack of institutional capacity to utilise financial or technical inputs especially at the district level, increased health spending even on appropriate services may not lead to actual provision of services (Filmer, Hammer, and Pritchett 2002; see box 2 in *Chapter 1*). Our study intends to address the evidence gap (how do district level training interventions improve performance?) and will contribute to the evidence base for better design of health workforce interventions.

In this paper, we present the protocol of an evaluation of a district-level capacity building intervention in Karnataka state in southern India. In this study, we aim to understand not only the effectiveness, but also the causality operating in capacity building programmes in

local health systems. Inspired by principles of realist evaluation[15], this study focuses on understanding how changes could be brought about in such programmes. The capacity building intervention we assess aimed to improve the capacity of health managers to conduct planning and supervision of health services. These managers are posted at district and *taluka* levels (a description of *taluka* is in the next section). The intervention sought to strengthen planning and supervision among health managers by combining classroom-based lectures on the topics with in-service mentoring, where trainers and faculty visited participants in their workplace to build on the classroom teaching, and help participants apply the teaching in their working environment. We will begin with an introduction to health services organisation and district health system in India and then describe the intervention in detail. Subsequently, the methodological considerations and tools are presented followed by a discussion on the choice of realist evaluation as a methodological approach to study the intervention.

4.2. Study setting

Organisation and management of health services in India

In India, health services in a district include PHCs, hospitals and other institutions that organise and manage these health services. In addition to these government-operated health services, there is a relatively large private health sector in India, consisting of a range of actors from single doctor clinics practicing modern and Indian medicine to traditional practitioners and large corporate hospital networks. Although the private sector is a significant provider of curative healthcare services especially for primary and tertiary care, the government health services are responsible for public health responsibilities (including primary health care) and provide health services to a large proportion of the Indian population including the poor. For the purpose of this study, we will restrict the terms health services to the government health services, as the intervention we describe engaged only with the government health services.

India is a large country in terms of its area and population; it is the seventh largest country in the world by land area and the second largest in terms of population, with a large multilingual and multi-ethnic society. Hence, it is a difficult task to summarise the health services organisation for the entire country. The organisation and management of health services, as well as the health outcomes vary from one region to another. India is comprised of 29 states and seven union territories. According to the Indian constitution, health is a state subject, meaning that the Indian central government (the federal government) makes laws and policies, while the organisation and management of health services is vested with

[15] A brief introduction to the philosophical foundations of realist evaluation within critical realism is provided in *Chapter 2*. Also see Box 4.

the various states. Although the basic three-tiered health service structure is adopted by most states, there are some differences in HRM practices, policies and level of decentralisation to district and lower levels. For example, in the south Indian state of Tamil Nadu, after a few years of serving in clinical roles, doctors can choose to specialise in public health management through a separate public health cadre, an HRM practice that is at present limited to this state (Balabanova, Mckee, and Mills 2011).

We describe below the government health services in Karnataka state, where the present study is carried out (see figure 14-16). The various levels of the government health services are organised along the administrative sub-divisions of the states, which are districts and *talukas* (see figure 16). A PHC is the first point of contact between a doctor and the community catering to about 15-20 villages or small towns; it has a team of medical and paramedical staff led by the doctor, who is also the administrator of the PHC. A hospital that provides secondary level care and equipped with four to six clinical specialties (surgery, medicine, obstetrics & gynaecology, orthopaedics and paediatrics) is located at the *taluka* headquarters, usually the most populous town that is relatively better connected with major cities in the region. The district hospital provides tertiary care and is located at the district headquarters. Super-specialty hospitals, expert centres and medical colleges are located in large cities, usually the state capital cities.

A *taluka* hospital is managed by one of the specialist doctors who is designated as the Administrative Medical Officer (AMO). The PHCs report to the *Taluka* Health Officer (THO), who is assisted by a small team of supervisory staff. Since 2005, under the National Rural Health Mission, a *taluka* level Block Programme Management Unit was established to assist the THO in monitoring and supervision of the PHCs. A Block Programme Manager (BPM) was provided for each unit. At the district level, the district hospital is managed by a District Surgeon (the Superintendant of the hospital), while the administration of all the PHCs and THOs of the district is vested with the District Health Officer (DHO). District programme officers work under the DHO; they are in charge of disease-control programs or schemes implemented at the district level (typically, there are about eight such programme officers for each district). The NRHM provided a District Programme Manager at the district level (see figure 26 in *Chapter 5* for a mapping of actors in the district health system).

THOs and DHOs are usually doctors with 10-20 years work experience in the health services. A typical DHO has been a specialist doctor in one of the secondary or tertiary care hospitals in Karnataka. The DHO is the administrative authority for health services at the district level, and is responsible for the personnel, funds and other resources allocated to health. He is the health action planner and manager of health services in the district. The main administrative functions of the DHO include management of human, financial and material resources; planning and implementing health programs; providing leadership and motivating the staff; supervising, coordinating and controlling services at different levels

and, responding to the changes in the external environment. Similarly, a typical THO has been a PHC medical officer for over 10 years with or without a post-graduation in a clinical specialty. Both cadres have no formal training in managing health services.

Taluka as a local health system in India

The view of a district as an operational and actionable level in a health system is widely prevalent in public health literature. However, in India, districts are relatively large in terms of population. The mean population per district in Karnataka state in 2011 was 2.03 million; it could range from 554,762 people in Karnataka's smallest Kodagu district to 96 million in the most populous Bangalore urban district (Office of the Registrar General & Census Commissioner 2011a). Many countries in Africa and elsewhere have much smaller districts; their population often ranges between 100,000 to 500,000. For example, the mean population per district in Ghana's Western region district in 2010 was 139,766 (Ghana Statistical Service 2010). In Karnataka, there are 30 districts (see figure 14). The average population of a *taluka* is usually about a few hundred thousand people. In the study district, Tumkur, there are 10 *talukas*. The *taluka* population ranged from 168,039 in Koratagere *taluka* to 596,347 in Tumkur *taluka* in 2011 (see figure 15).

In view of the relatively large population covered by the health services of a *taluka*, they will be considered as a local health system in this study. The *talukas* with two-tier health services (i.e. a referral hospital administered by an Administrative Medical Officer (AMO) and a network of PHCs with sub-centres administered by the THO) are comparable in terms of their population to a typical district. The *talukas* have usually about 5-10 PHCs. The population coverage norm for a PHC is about 25,000 to 30,000, although this varies from region to region in the state. A cluster of four to five villages are provided with a sub-centre, where an Auxiliary Nurse-Midwife (ANM) provides basic maternal and child health services, basic general health services and referral. Further down at each village, a community health worker called Accredited Social Health Activist (ASHA) was introduced in 2005 under NRHM. ASHA is a health volunteer, paid incentives for assisting mothers and ANMs in various reproductive and child health activities and other activities related to disease control programmes. About four to five sub-centres are attached to a PHC. A snapshot of the organisation of health services is provided in figure 16.

Health status of Karnataka

Karnataka's maternal mortality ratio is estimated to be 178 maternal deaths for every 100,000 live births, higher than its neighbours. Kerala for example reports about 81 maternal deaths per 100,000 live births and Tamil Nadu reports 97 per 100,000 live births (Office of the Registrar General & Census Commissioner 2011a; see table 2).

Table 2: Health outcomes of Karnataka vis-à-vis Kerala and Tamil Nadu

Indicators	Karnataka	Kerala	Tamil Nadu	India
Female literacy rate (%)*	68.1	91.9	73.8	65.4
Full immunisation coverage (%) **	63.4	79.7	86.7	51.2
Proportion of institutional deliveries (%) [#]	67	100	90	41
Infant mortality rate[##](infant deaths per1000 livebirths)	35	12	22	44
Maternal mortality ratio[$] (maternal deaths per 100,000 livebirths)	144	66	90	178

** Census 2011 **Integrated Child Development Services 2011 [#]National Family Health Survey-3 [##]Government of India 2011 [$]Office of Registrar General of India 2010-12*

There is wide variation across India's 600 districts in terms of health outcomes (Ram et al. 2013). Karnataka's 30 districts also vary widely with respect to important healthcare delivery indicators. For example in 2006, while immunisation coverage rate was 91% in Kodagu district, it was about 70% in Raichur district[16]. The Government of Karnataka identified wide disparities within districts when indicators were disaggregated further below to the *taluka* level (Government of Karnataka 2004). The Karnataka government classified nearly half of the 220 *talukas* in the state as *backward*[17] based on various development indicators (including health). Of these, nearly half are in the apparently better developed districts in southern Karnataka (Government of Karnataka 2005). While the reasons for poor health outcomes in these *talukas* are likely to be multi-factorial, systemic failures due to poor planning and management of services is also directly contributory to poor healthcare in these areas (Sen, Iyer, and George 2006; George 2009).

Human resources for health in Karnataka

Karnataka, like most other states in India, does not train doctors in management or in public health (Gupta et al. 2010; Study Group on Delivery of Health Services 2010; Government of Karnataka 2001; Planning Commission of India 2011). Most of the doctors in managerial positions at districts and *talukas,* are clinicians who have been promoted to a public health position or as a hospital administrator (Sathyanarayan and Babu 2011).

[16] Raichur and Kodagu immunisation coverage rates based on the Ministry of Health and Family Welfare, Government of India's District Level Household Survey 4 carried out by the Indian Institute of Population Sciences, Mumbai. Available from http://www rchiips.org

[17] In spite of its derogatory connotation, several government reports in India use this term to indicate regions that report lower human development indicators.

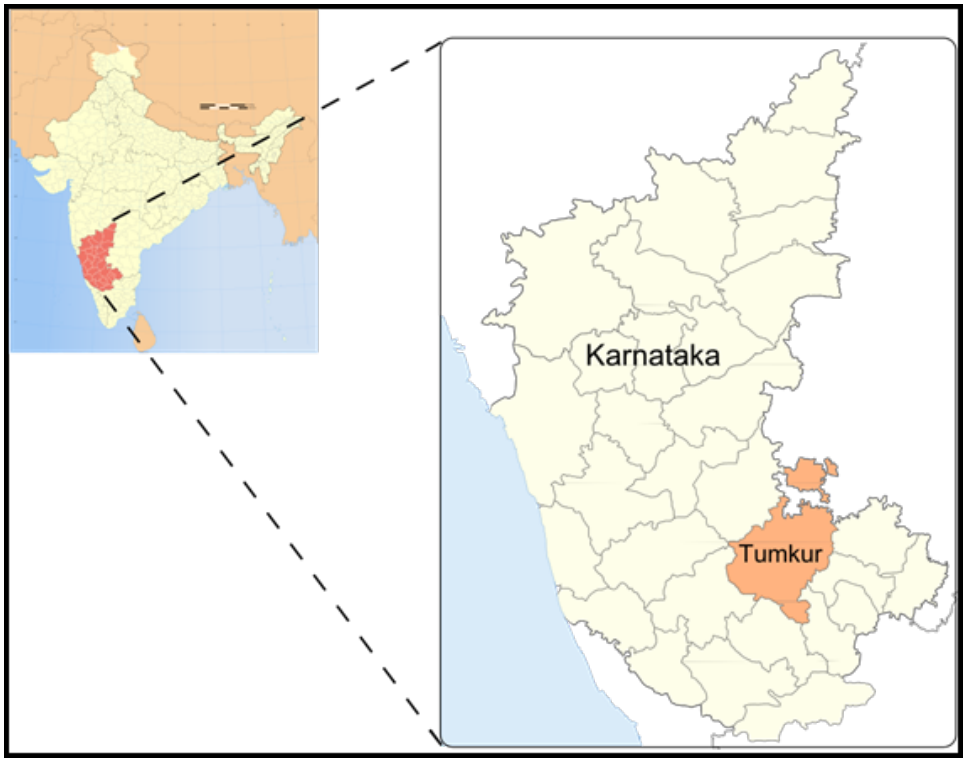


Figure 14: Map of India showing Tumkur district within Karnataka state (Basemap obtained from Wikimedia Commons)

Recommendations for creation of public health cadre at the state level have not yet been actualised in most Indian states. Indeed, the lack of distinct health management cadres is a problem in several other LMIC settings (Omar et al. 2009; Mills 1997; Akbulut, Esatoglu, and Yildirim 2010). At present, HRM efforts within the health services mainly focus on capacity building of existing staff (WHO 2006; Dieleman, Gerretsen, and van der Wilt 2009). In Karnataka, public health or management training, if at all, is a result of individual pursuit or of *ad hoc* training programs organised by the state ranging from a few days to two weeks. An assessment of these programs found that they are perceived as "too theoretical and not useful" (Devadasan and Elias 2008). Indeed, evaluation of externally funded, large-scale capacity-building programs in India have stressed the need for a systemic approach focusing on capacity-building as an institutional process that needs to sustain over time, stressing on moving beyond merely establishing new centralised training centres or training programs. In 2007, only two of the (then) 27 districts had a DHO with public health training, while a specialist clinician managed district health services in the other districts.

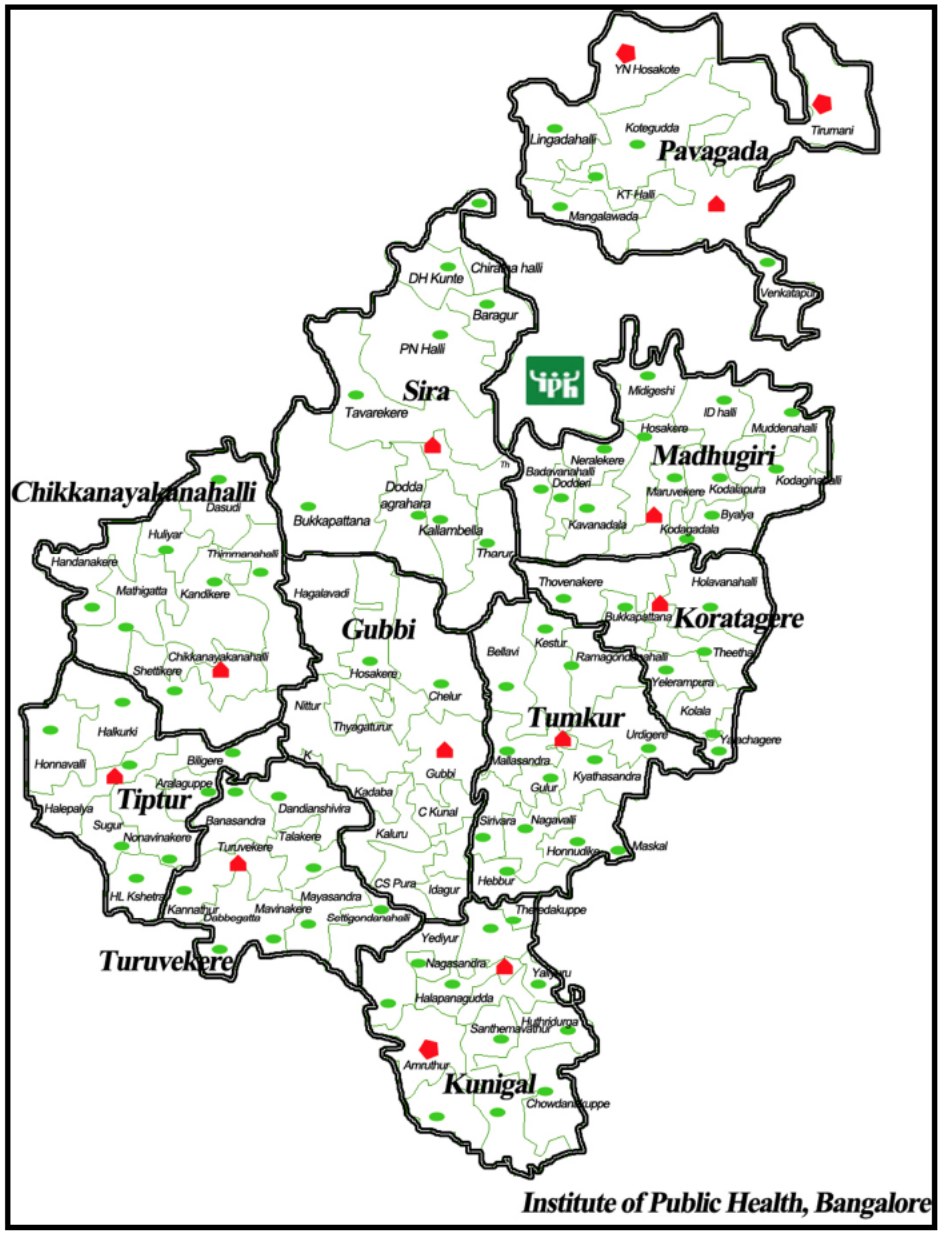


Figure 15: Tumkur district map showing the ten talukas and their government health facilities (green ovals show PHCs, red polygons show secondary care facilities or taluka hospitals) (Prashanth et al. 2014)

Furthermore, in Karnataka with the implementation of the *Panchayati Raj* system[18], several public services administration such as health and education are devolved from the state level to the district level. Even though the health policy is often set by the national and state administration, in the decentralised system of governance, districts have the potential to play an important policy role in addition to being a management unit of the health system.

Districts under the National Rural Health Mission

The National Rural Health Mission (NRHM) (now reorganised to include urban areas under the National Health Mission) is a landmark health systems reform launched in 2005. The NRHM sought to improve the quality and responsiveness of the government health services through restructuring, decentralisation, new human resources and improved financing arrangements. NRHM introduced new human resources at the district and *taluka* (sub-district) levels and sought to "communitise health services" by increasing the role of *panchayati raj* institutions' representatives (abbreviated as PRI representatives[18]).

According to its mission document, NRHM sought to undertake an "architectural correction of the public health system to enable it to effectively absorb increased expenditure to provide accessible, affordable and accountable primary health care services to poor households in remote parts of rural India" (Government of India 2005). The mission document of NRHM echoes several international recommendations for strengthening primary health care and adopting a health systems approach. The translation of this into action is critically dependent on the management capacities of the district health team; a recent evaluation of NRHM has considered the question of capacity to plan and supervise health care at the district level and identified this as an important gap (Gill 2009).

In principle, NRHM incorporated decentralised planning and management of health services at the district level in its vision statement. As per NRHM guidelines, each district is the core unit of planning, budgeting and implementation of all the health programs. Since the launch of the NRHM, districts are expected to develop their own annual action plans called programme implementation plan (PIP). Before NRHM, a comprehensive plan at the district level was lacking and states were the unit of planning and implementation of programmes. A District Health Society (DHS) was constituted with the DHO, the medical superintendent of the district hospital, and members from the district administration and elected representatives from the *Zilla Panchayat* (the local self-government at the district level). Similar bodies were instituted at all levels of the health services up to the PHC.

[18] *Panchayati Raj* is a system of local self-governance adopted by several states in India, wherein elected bodies of people's representatives form a local government in each village, *taluka* and district. At each of these levels, a *Panchayat* (a governance body consisting of elected representatives) is elected and functions as the local government for the region.

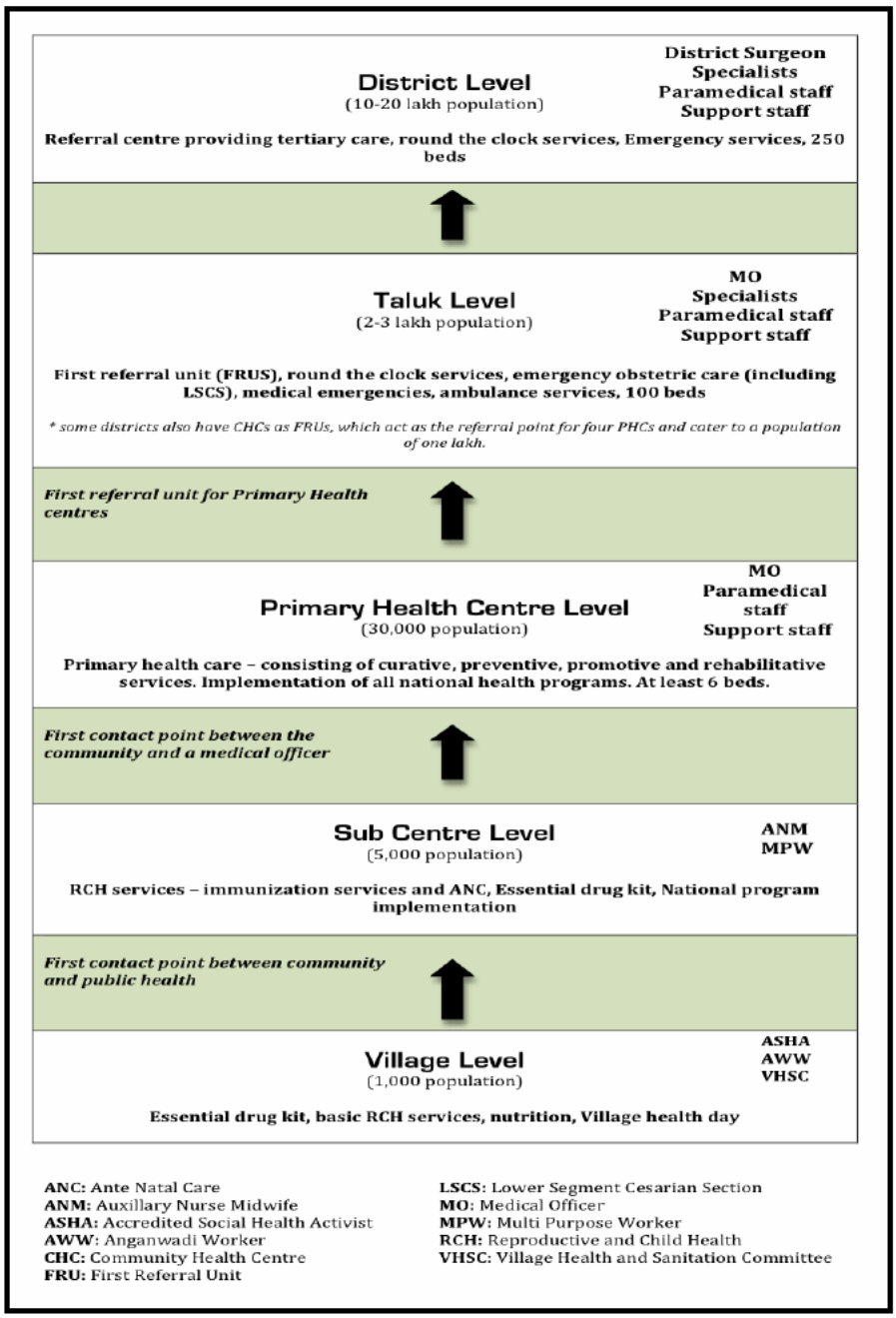


Figure 16: Organisation of health services as in most Indian districts

4.3. Intervention

Intervention: Rationale

In 2000, a government-appointed task force on health concluded that there was an overall neglect of public health principles and practice in planning, organisation and management of healthcare services in the Karnataka. They also found the decision-making to be *ad hoc* and leadership qualities to be poor within the state health services (Government of Karnataka 2001). In their agenda for action, the task force recommended for strengthening public health management skills and competence within the government health services. A study undertaken by Institute of Public Health, Bangalore (IPH) showed that there were many training programs organised to strengthen disease-control programs. However, a systemic approach to build management capacity among the doctors to manage districts and *taluka* healthcare institutions was lacking (Devadasan and Elias 2008).

In 2007, IPH conducted a Delphi study among senior government officials and public health professionals to understand the reason for poor health outcomes at the district level in India (see box 5 and figure 17). One of the key findings of the study was the poor capacity of the existing district and *taluka* health managers to manage health services, in terms of assessing health status of their population, making and implementing action plans to make improvements in the health status of the people in the district. Subsequently, IPH conducted a series of consultations and workshops to address this issue of poor management capacities in districts and *talukas*.

Box 5. Findings of the Delphi study by IPH

- Insufficient management and public health competencies at district level
- Fragmentation of services due to a vertical disease-control based approach and compartmentalisation (programs versus services) of the health system at the operational and management levels
- Centralised decision-making
- Lack of feedback to health managers on their performance and poor feedback to policymakers for policy adaptation/formulation.

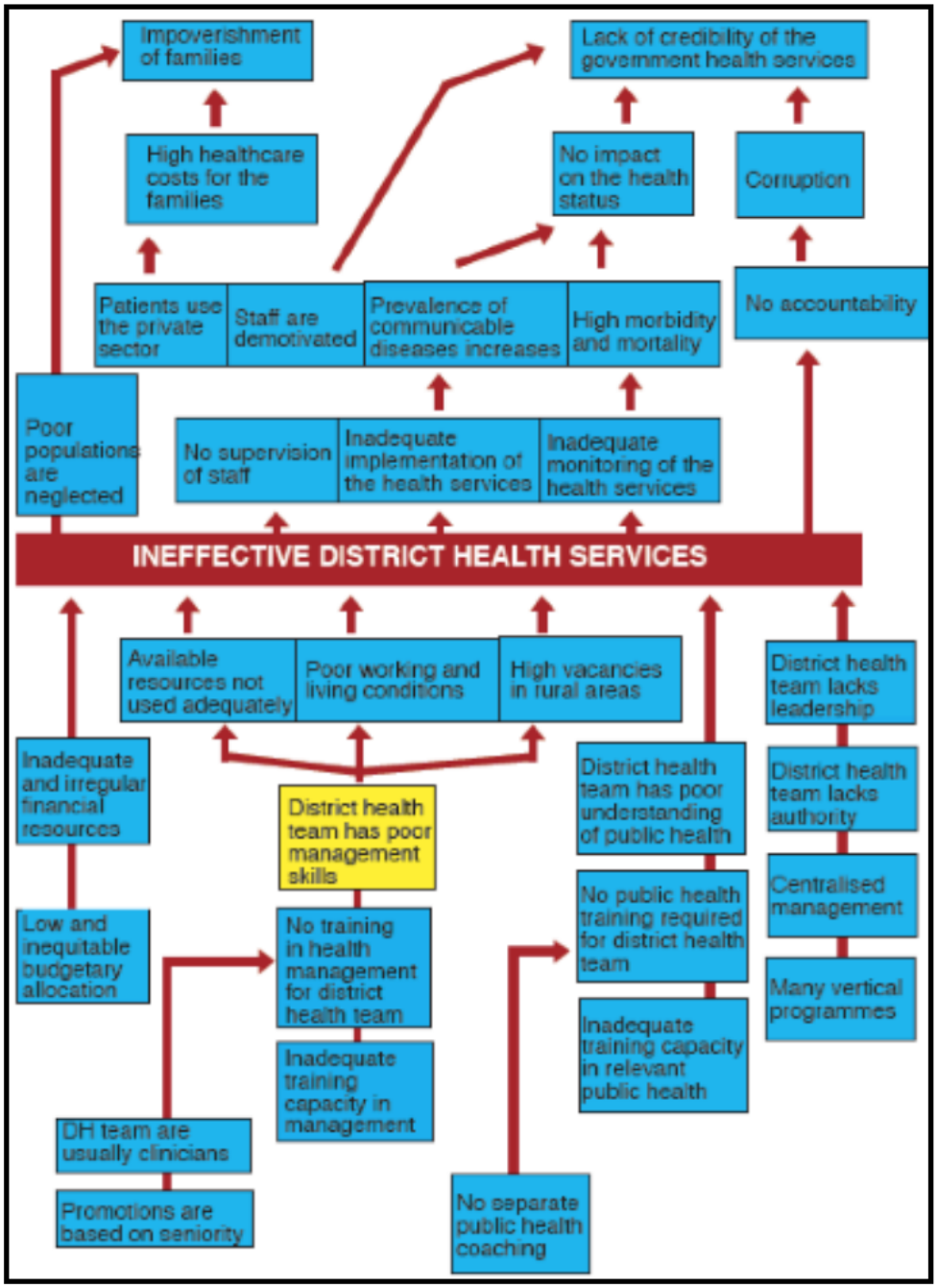


Figure 17: Findings from Delphi study on the issues for poor health outcomes in several Indian districts (Devadasan & Elias 2008)

A critique of the current approach of training adopted by the state government guided the design of the programme. At that time, the state government's training strategy consisted of centralised training programmes conducted by the state institute of health and family welfare in Bangalore, usually lasting a few weeks. The training programme content did not focus on public health management skills, but rather focused on improving implementation of various disease control programmes and government schemes. The basic principles and practice of managing a district or a *taluka* were assumed to be learnt on the job and were not discussed in training programmes. There was also absolutely no follow-up of participants after training programmes and the relevance of the content to their practice at workplace, or solving problems in implementing the skills learnt in the classroom were not a part of the training strategy. Consequently, these training programmes possibly strengthened specific programmes or schemes, but did not result in a strengthening of the core health management practices at district and *talukas.*

Hence, IPH conducted a training needs assessment to understand the needs of the district health managers, and conceived a blended training programme – in-service training delivered through contact classes on a monthly basis, follow-up visits mentoring visits to participants in order to help them apply the knowledge and skills taught in the classroom, and to facilitate a positive ("*can-do*") attitude to bring about positive organisational change (Devadasan and Elias 2008).

Intervention structure and actors involved

In 2008 a consortium, named *Swasthya Karnataka*[19], was formed consisting of five institutions each with specific expertise ranging from public health research to management studies and organising training programmes (see table 3). The involvement of several institutions was to ensure a good mix of knowledge, skills and experience from management sciences, community health and public health. Representatives of the consortium member institutions constituted the steering committee, who worked out and determined the aims of the course, developed its curriculum and assured the means for running it (negotiations with funders and government). Many members also intervened as lecturers and facilitators of the course. IPH took up the role of course coordination, responsible for its daily management, its pedagogical and didactic approach, and for evaluation and quality assurance.

[19] *Swasthya* translates to healthy in Kannada, the official language of Karnataka.

Table 3: Partners of the *Swasthya Karnataka* consortium and their role/competencies

Name of the partner	Abbreviation	Specialty / Expertise
Institute of Public Health, Bangalore	IPH	Research and training institute focusing on health systems
Karuna Trust	KT	NGO working for health and development through community participation
Centre for Leadership and Management in Public Services	C-LAMPS	NGO working for improving management in public services
Centre for Global Health Research	CGHR	Research centre in public health with special focus on health information systems
Institute of Health Management Research	IHMR	Training institute in health and hospital management

The Karnataka government through the Karnataka Health Systems Development and Reforms Project (KHSDRP) mandated *Swasthya Karnataka* to implement the intervention in Tumkur district. KHSDRP and the Tumkur district health services oversaw the implementation of the programme. IPH raised funds to support the programme development and implementation. The government (through KHSDRP) funded the participation of the government health managers in the contact classes for the Tumkur participants. The consortium partners shared the responsibility for organising the contact classes based on their expertise.

Intervention timeline, strategy and activities

The course began in July 2009 and the first session took place on August 3rd 2009. The timeline showing the key events before and during the implementation of the intervention is shown in figure 15. The aim of the course was to build capacity of the health managers so that they could find solutions to problems concerning local health system performance, as identified in the Delphi study and the training-needs assessment study. The programme was expected to help local health system managers utilise the opportunities for local change provided by NRHM's decentralised district level planning strategies. Based on this underlying assumption, the course was conceived as a capacity building programme for the district as a system, rather than only concentrating on individual health manager capacity. The goal was "to improve service delivery and access to quality health care by strengthening district health services". The specific aim of the course was "to build the management capacity of the district health team so that this team is enabled to provide health care in the district in an effective, efficient and equitable manner".

Tumkur district was chosen for the course due to its relative proximity to Bangalore, the capital city of Karnataka state, and Tumkur being a typical rural district with average performance with respect to health and development indicators (see figure 11). So, staff would be able to visit the district health services at an average cost in time and money, and any results obtained in this district would be indicative of what could be expected in many of the other districts of the state. Later on, the aims and objectives were reformulated as learning objectives for the course participants, as "...to enable participants to work as a team, in order to close the divide between curative and preventive care and in order to manage the district/taluka as a system". The underlying values were also made explicit; the course would follow a rights-based approach, striving for more equity in healthcare coverage and utilisation.

Pedagogically this was translated into three explicit ways forward that were as follows:

- To train health teams rather than individuals from the district and *talukas*
- Experiential learning was chosen as a pedagogical approach for ensuring relevance of the contents and the methods for the participants. This led to the conception of a blended programme where contact sessions were followed by mentored visits to participants' workplace and field assignments.
- Team training and experiential learning both require a participatory approach, where participants learn from each other in an open atmosphere with mutual respect.

Therefore all persons working at all levels in the system having managerial responsibilities were targeted for the training - from the district health authorities down to community representatives. The duration and structure of the contact classes and follow-up mentoring visits differed depending on the cadre and the responsibilities. As such, three target groups were identified and for each group, a specific training programme was designed. Initially, only district officers were targeted, but the *taluka* officers were consciously added at a later stage in the planning process.

The logic behind working with different levels of the health system was that engaging only with district officers would not result automatically in the other levels of the health system benefitting from the training. From this reflection was generated the notion of team training. So, all officers with managerial responsibilities were included ranging from the district and *taluka* health managers and hospital administrators to managerial staff at PHC level and PRI members. These are respectively, the THO, the AMO and the block programme manager (BPM). The DHO and the various programme officers in-charge of the disease-control and other vertical programmes at the district level were included. For Tumkur district, this resulted in 61 eligible officers for the training programme (see table 4).

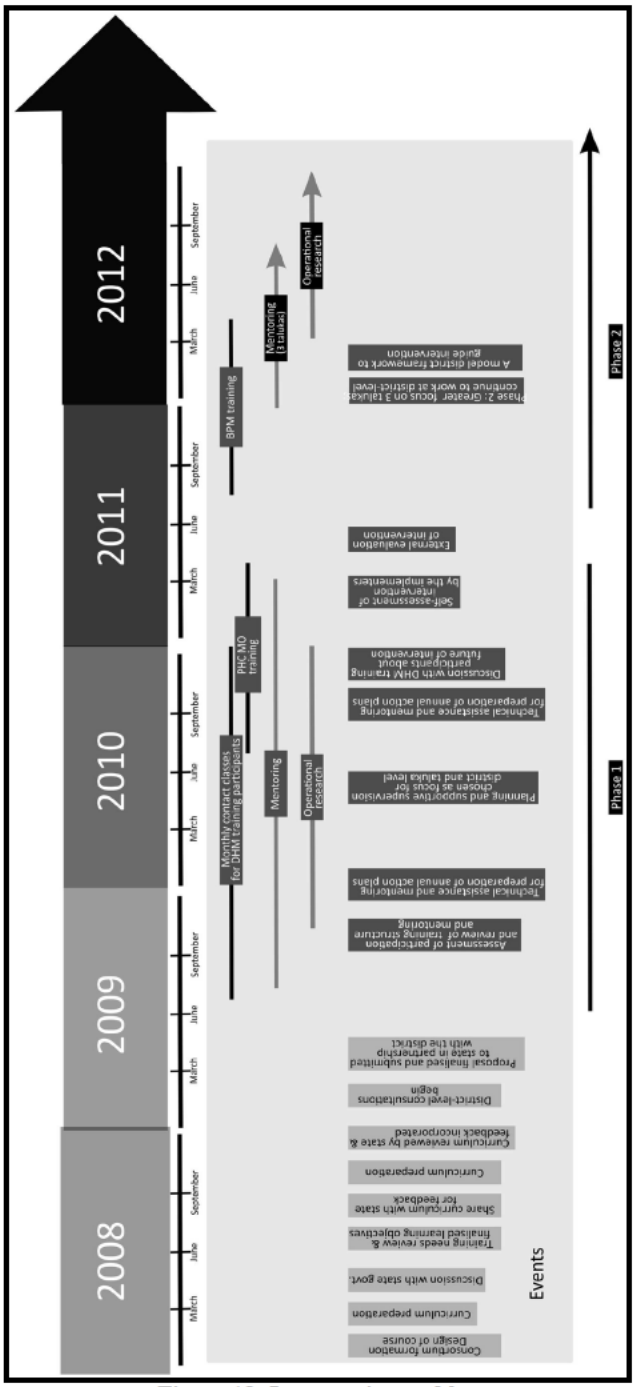


Figure 18: Intervention and key events

The contact classes aimed to improve planning and supervision practices of health managers through providing knowledge of public health planning principles, improving their skills in planning and supervision as well as bringing about a *can-do* attitude towards organisational change. In addition to the monthly contact classes, the intervention consisted of follow-up visits to the participants (called mentoring visits). These visits were conducted by the resource persons who designed/delivered the contact classes (senior public health professionals from the *Swasthya Karnataka* consortium) as well as more junior public health trained staff stationed in Tumkur. The purpose of the visits was to interact closely with participants to help them complete assignments, as well as identify barriers to the implementation of the change suggestions discussed in the contact classes. Each month, up to three mentoring visits were planned; each visit lasting up to one day. The programme staff organised the mentoring visits to one of the participants' workplaces and invited other participants (who were members of the same team) from that *taluka* to the place being visited by the mentor. For example, during a mentoring visit to the Gubbi *taluka* hospital, the mentor would interact with all other intervention participants from the *taluka*, who would have been invited. The visits were also used to obtain feedback about the classes and implement any course correction in the delivery of the programme, if needed.

The participants' workplace problems (for example drug outages) were taken up as operational research topics by the implementers to better understand the problems faced by participants and use the lessons learnt in the contact classes and follow-up mentoring visits. The implementers saw this as a way of making the classes and the follow-up mentoring visits more relevant. The key elements of the intervention, actors involved and their relationship are shown in figure 18 and table 4.

In summary, three target groups were identified and for each group, the following inputs were foreseen:

- Full course: 12 contact classes over a one-year period with monthly mentoring visits at the workplace, which eventually took 18 months to complete as discussed above;

- Capsular five-day course: targeting PHC medical officers who were being supervised by the health managers being given the full course, eventually implemented as a three-day residential training programme with no mentoring visits;

- Orientation only: targeting community representatives consisting of an overview of selected topics, implemented as a single one-day session with dialogue between participants of the full course and PRI representatives on working together for problem-solving and improving health services in the district, in the background of PRI involvement mandated in the NRHM.

Table 4: Type of officers who were invited for the full training course

Level	Post	Number of staff
District health office	Health officer (DHO)	1
	Programme officer	8
	Programme manager (DPM)	1
	Programme management officer	1
	Office Superintendent	1
District hospital	District surgeon	1
	Administrator	1
	Resident Medical Officer	1
	Total district	15
Taluka health office	Health officer (THO)	10
	Block programme manager (BPM)	10
Taluka hospital	Administrative medical officer	13
	Administrator	13
	Total from talukas	46
	Overall total	61

Course content

The course adopted a systems approach to analysing health services performance as opposed to merely looking at disease control programmes or government schemes in isolation. The focus of the course was on trying to get the participants of the course to take an actor's perspective and ensure contextual relevance when developing improvement strategies. For this, the course identified particular public health management topics to be covered in the contact classes.

The choice of course content followed an elaborate process of study and consultation, the outcome of which was a consensus on the specific topics. Table 5 outlines the initially planned course programme, including the timing and subjects. During the preparations of the specific modules, content was refined in consultation with the participating organisations within the consortium as well as two representatives of the government training institute.

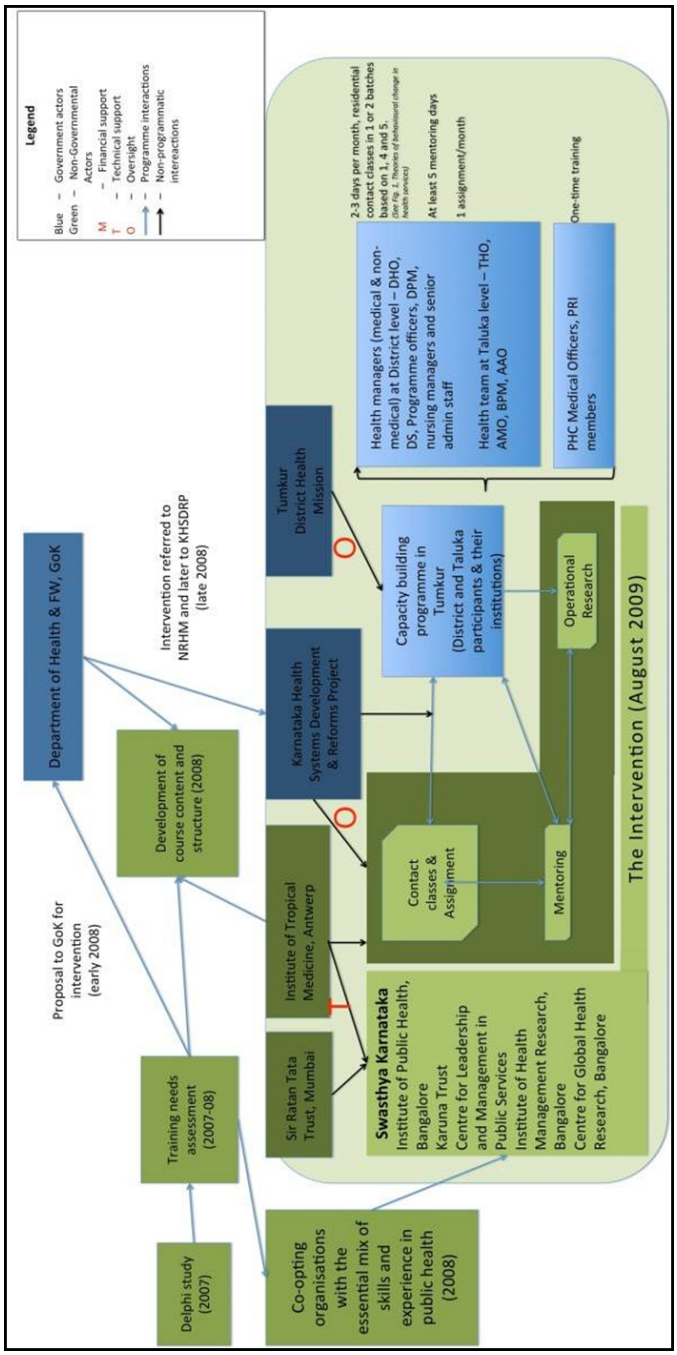


Figure 19: Tumkur capacity building intervention: structure of the intervention, actors, and their roles

(Figure 19 note: Government actors are shown in blue and non-governmental actors are shown in green. M stands for financial support, T for technical support and O for oversight) (Prashanth et al. 2014).

Some subjects proved needing more time than initially estimated, and consequently, some of the content was removed. After a mid-term evaluation with the participants (January 2010), and upon their requests, further adaptations were introduced. Table 5 also summarises the final contact classes organised. The main programme consisted of 12 modules on public health management topics, delivered through classroom teaching for two or three days per month in a residential training programme for all staff involved in management of health services at *taluka* and district levels, along with mentoring of these participants on a monthly basis at their workplace.

Table 5: Initially planned and the final course modules

Year	Month	No.	Modules (planned)	Partner(s) responsible*
2009	Aug	1	Introduction & concepts in public health and health system development	IPH & C-LAMPS
	Sep	2	Management principles: leadership, teamwork, managing change	C-LAMPS
	Oct	3	Management: Human resources: planning, communication, motivation, supervision, performance appraisal, conflict management	C-LAMPS
	Nov	4	Community participation	KT
	Dec	5	Good governance	KT
2010	Jan	6	Management: material & infrastructure: drug supply, logistics, physical infrastructure, time & space	C-LAMPS
	Feb	7	Management: Quality	C-LAMPS
	Mar	8	Health management information systems	CGHR / IPH#
	Apr	9	Management: Hospital & public health operations	IHMR & IPH
	May	10	Management: Financial	C-LAMPS / IPH & GoK#
	Jun	11	Coordination: intra-, inter- & multi-sectoral	C-LAMPS
	Jul	12	Planning	C-LAMPS & IPH#

** Refer table 3. # indicates reassignment of that module to another partner*

The programme began in August 2009; the monthly contact classes for health managers ended in January 2011, six months later than originally planned. The delay was due to an interim evaluation that was taken up by IPH in response to falling attendance by several participants and early interviews with participants and other stakeholders that led to restructuring of the course. The follow-up mentoring visits continued up to January 2012, albeit mentoring visits were progressively offered to participants who showed more interest in the visits and sought them (see *Chapter 6,* where retention of mentor interest is assessed). Since June 2012, IPH continued its presence within the district while shifting its focus from capacity building through training programmes to action research at the PHC level in two *talukas*. In this study, intervention refers to the capacity building programme implemented from August 2009 to January 2012, including the contact classes, mentoring and other training programmes (for PHC medical officers and PRI represetnatives) taken up by the implementers with the objective of improving the management capacity of the Tumkur local health system.

Methods

The aim of the study was to understand how capacity building could contribute to improved district health management in an Indian district setting using realist evaluation. The study objectives were as follows:

- To determine if a district-level capacity building programme is associated with improvement of planning and supervision practices in Tumkur district, Karnataka state;
- To identify and describe plausible mechanisms for changes in planning and supervision practices, if any;
- To develop recommendations for better design and implementation of capacity building interventions for health services managers in Karnataka; and
- To contribute to the development of a methodological framework for the scientific evaluation of complex HRM interventions at local health system level.

Based on these objectives, we framed the following research questions (one main question with three sub-questions) to be addressed in the study. Our focus was limited to only those who received the full course (the various cadres of managerial staff at the district and *taluka* levels):

- How does a training programme for health managers at district level that consists of contact classes and mentoring, have an impact on their planning and supervision practices?

- What are the interventions' elements that are associated with improvement of planning and supervision practices?

- Was there an association between greater participation in the intervention (classroom training and mentoring) and improved planning and/or supervision practices?

- How might a training programme change management practices of health managers with respect to the preparation of annual plans and supportive supervision?

Study design

Marchal reviewed the methodological debate around the use of (quasi-) experimental study designs in complex interventions and scientific evaluations in health systems research (Marchal 2011). He builds a case for using the realist evaluation approach in research on complex interventions in health systems. He presents the results of a realist evaluation of the role of workforce management in well-performing health care organisations and has identified some mechanisms underlying the better performance of these well-performing hospitals. In line with this approach, we carried out a realist evaluation of the capacity building programme in Tumkur, using a mix of quantitative and qualitative methods. The characteristics of the intervention that support the choice of realist evaluation are presented in the discussion section of this chapter.

Our study design was determined by the following considerations:

- Classical controlled (quasi-) experimental designs are limited to answering whether a particular intervention (usually measured as treatment variables) was associated with an observed pre-defined outcome. They do not answer the questions how, why, and under what conditions the intervention worked (or did not). Besides enabling an understanding of the changes in planning and supervision practices in course of the intervention, the realist study design would also generate valid explanations for *why* and *how* the results observed were achieved.

- HRM interventions are implemented in existing health system settings. Hence, the researcher cannot manipulate all treatment variables for the purpose of testing *a priori* hypotheses, either because the context of the intervention does not support this or for ethical reasons or operational feasibility considerations. Although hypothesis testing should be central to discovery of the mechanisms, such hypotheses should be derived from the possibilities permitted by the context within which the intervention is implemented.

In order to understand whether, and how the intervention produces a change in managerial practices at the district level, we carried out the study in six steps. In figure 20, a schematic shows the sequence of steps (steps A, B1-2, C, D, E and F) with the questions that will be addressed at each step and the corresponding methods. The various phases of our study design follow the logic presented in the six-step framework developed by Van Belle et al (Van Belle et al. 2010). The six steps they describe refer to a theory-driven evaluation where evaluators reconstruct the assumptions based on which the programme was designed (programme theory), in order to refine it through testing and verifying. Based on this process, an improved programme theory is developed, which explains how the intervention and outcome are related. Realist evaluation is a type of theory-driven evaluation that generates a theory explaining the mechanisms through which the outcomes were brought about in a given context (Pawson and Tilley 2008). We found the steps used by Van Belle et al. useful to organise and describe the steps in this study. The steps A-F below refer to the steps in our design as shown in figure 20; the six steps of Van Belle et al. are referred to as numbers (steps 1-6; see figure 20). The scope of the evaluation and appropriateness of realist evaluation (corresponding to step 1 of the Van Belle framework) is presented in the Discussion section of this chapter.

The study starts with a reconstruction of the initial programme theory of the intervention (step A in figure 20) corresponding to steps 1 and 2 of the Van Belle framework. A programme theory that may be presented in the form of a logic model is a reconstruction of the assumptions and steps through which the intervention is expected to reach the expected outcomes. An initial programme theory will be the starting point for the study by providing a basis for the questions and tools of the subsequent qualitative and quantitative data collection phases. In figure 22, a simplified hypothetical causal chain based on the initial programme theory as understood from the project proposal and early discussions with the designers, is presented. It links the intervention inputs (contact classes and mentoring) to the expected outputs (improved planning and supervision practices).

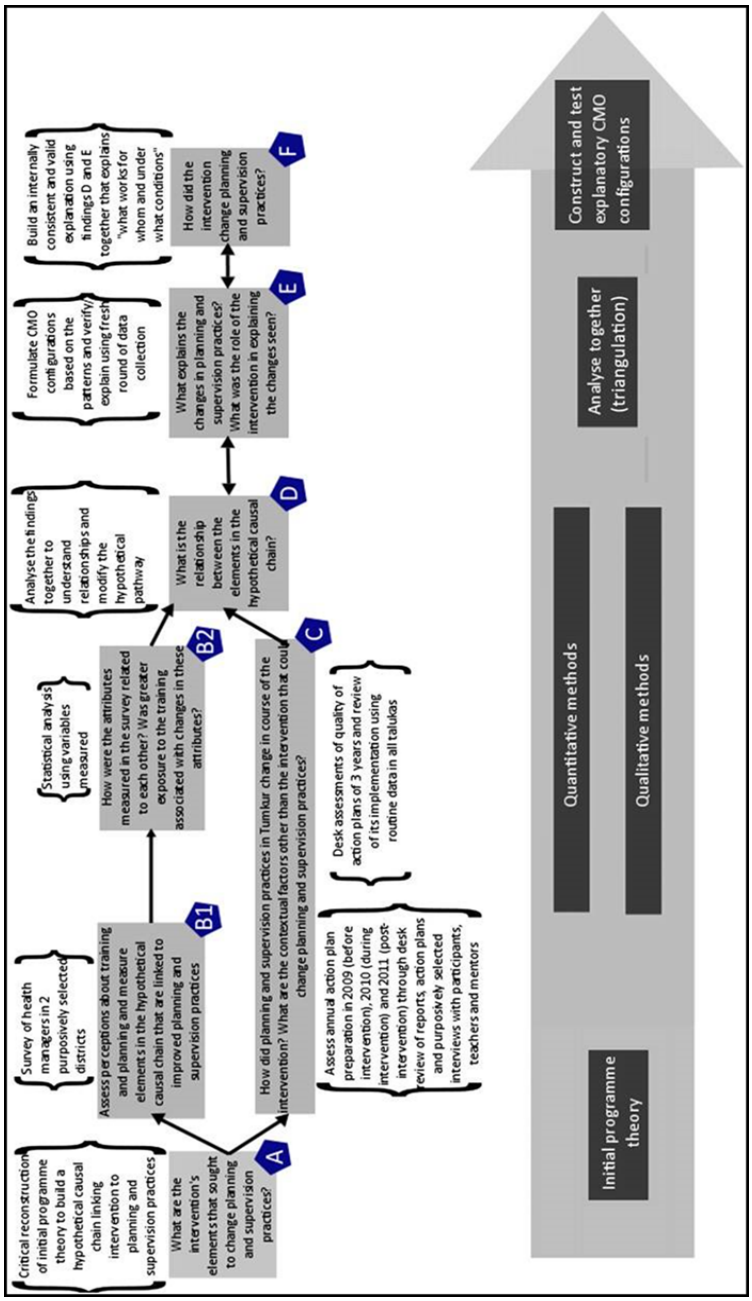


Figure 20: Study design showing six steps (steps A to F) (Prashanth et al. 2012)

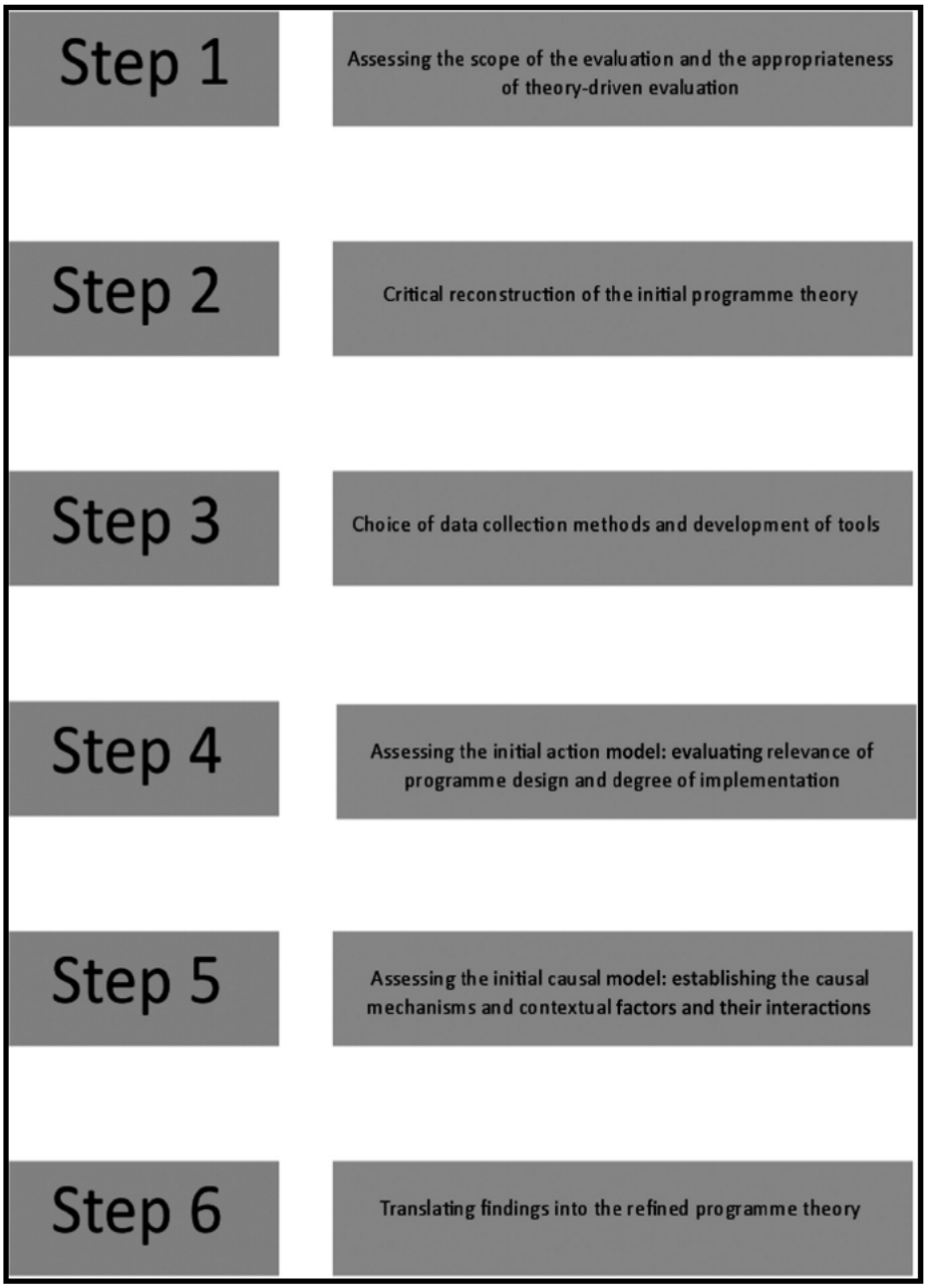


Figure 21: Six steps proposed by Van Belle and colleagues (Van Belle et al. 2010)

Box 6: Organisational commitment, supportive supervision and self-efficacy

Organisational commitment, as a psychological construct has been studied for several decades. While synthesising several years of research on commitment, Meyer and Allen propose a three-component model of organisational commitment. They view commitment as a psychological state that has at least three separable components reflecting (a) a desire (affective commitment), (b) a need (continuance commitment), and (c) an obligation (normative commitment) to maintain employment in an organisation. The commitment is then the nature of the relationship between the individual and his/her organisation and this commitment could vary along these three axes that they identify. They posit that these components could co-occur and could vary from one point in time to another (Meyer and Allen 1991).

Supportive supervision: Style of supervision at workplace has long been identified as an important contextual factor in organisations, being closely associated with performance and creativity (Oldham and Cummings 1996; West and Farr 1989). Style of supervision is of particular relevance in organisations that expect change(s) in response to new policies (or in our case an intervention), wherein controlling style of supervision diminishes new ways of thinking or application of knowledge/skills, while a supportive supervisory environment encourages creativity and change. Supportive supervisors "show concern for employees' feelings and needs, encourage them to voice their own concerns, provide positive, chiefly informational feedback, and facilitate employee skill development" while controlling supervisors "closely monitor employee behaviour, make decisions without employee involvement, provide feedback in a controlling manner, and generally pressure employees to think, feel, or behave in certain ways" (Deci and Ryan 1987; Hülsheger, Anderson, and Salgado 2009; Oldham and Cummings 1996) .

Self-efficacy: As managers, health workers routinely deal with a variety of situations that call upon their technical as well as people skills. Efficacy in dealing with one's environment is not a fixed act or a skill that could be imparted in a training programme. However, it is an important construct that could be realised or brought about by the health manager in dealing with the situations that arise in his/her workplace. This requires cognitive, behavioural and social skills that the health manager may or may not possess independent of capacity building interventions. Albert Bandura posited the concept of self-efficacy as a critical component in explaining positive human behaviour and action. Perceived self-efficacy has been applied in a variety of individual and organisational settings ranging from patient self-management to studying organisations. Perceived self-efficacy has also been posited as an important driver of social change (Bandura 1982).

Organisational change in health services is an outcome of individual, institutional and contextual factors. Existing theories of behavioural change in health services conceptualise that interventions operate at one or more of these three spheres of influence (also see figure 25 in *Chapter 5*). In steps B and C, we used a mix of qualitative and quantitative methods to understand the process of planning and supervision and whether and how it changed in

the course of the intervention (Creswell and Clark 2006). We measured perceptions about training, planning and supervision, organisational commitment, self-efficacy in problem solving and nature of supervision among participants and non-participants through a survey in Raichur and Tumkur districts of Karnataka. Raichur district in northern Karnataka was chosen because of its similarity in size and performance The choice of these variables measured in Step B and their relationship to the inputs and the expected outputs of the intervention were arrived at based on the refining of the programme theory after collecting data on the intervention logic (as understood by the designers and the participants involved), review of literature and an analysis of the larger policy and meso-context of the intervention. This process of the refining of the programme theory and rationale for choosing these variables is discussed in *Chapter 5*.

In step C, we used qualitative methods to document and understand the changes in planning and supervision practices before, during and after the intervention in Tumkur district. In this phase, we also identified contextual factors that influence planning and supervision in the district, especially other programmes initiated by the state health authorities that have similar or overlapping objectives with the intervention. NRHM is a nation-wide initiative of the Indian government that seeks to improve district level planning and supervision and implements this through the creation of a district and *taluka* programme management unit. NRHM introduced technical and human resource inputs into the health system in the form of decentralised annual action plans and placement of young management professionals at *taluka* and district levels for planning and supervision of the plans.

The data from steps B and C will be analysed and interpreted together in step D to understand the relationships between the elements of the initial hypothetical causal chain. This will result in a refined theory linking the inputs, intermediate steps and the effect of contextual factors. We will then formulate – in step E – explanatory context-mechanism-outcome configurations based on the interpretation in step D that will be validated through a fresh round of data collection using qualitative methods. An iterative analysis of findings from steps C, D and E will be conducted so as to build an internally consistent and valid explanation in step F on '*what elements of the intervention worked, for whom and under what conditions*'. The last three steps in our study (steps D, E and F) correspond to the last three steps of the Van Belle framework (see figures 20 and 21).

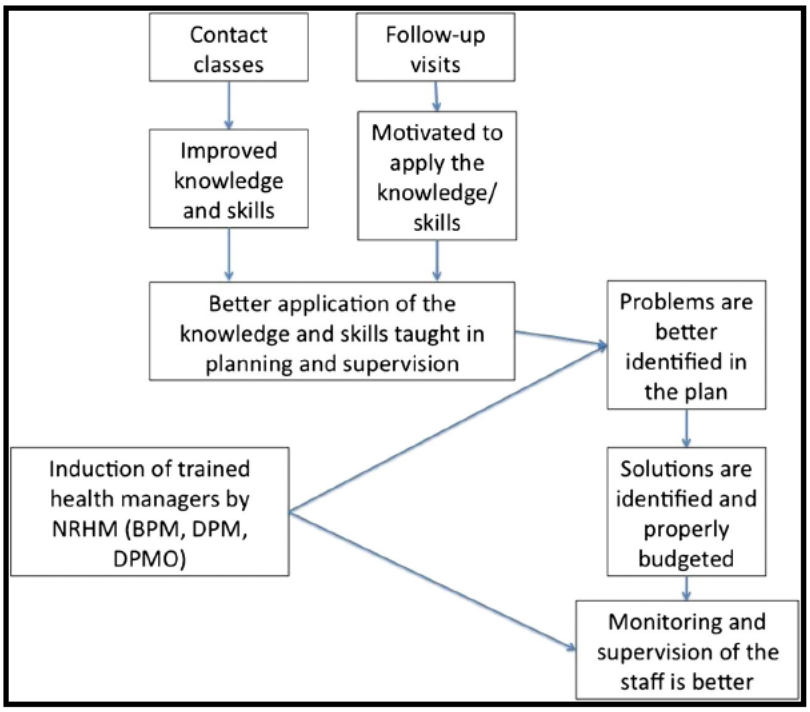


Figure 22: Hypothetical pathways to change based on initial reconstruction of programme theory and literature (Prashanth et al. 2012)

Methods and tools

Realist evaluation is method-neutral; it allows for the use of mixed methods, whereby the choice of data collection and analysis methods is determined by the nature of the research questions and of the programme theory (Pawson and Tilley 2008). The methods and tools for data collection (qualitative or quantitative) are determined by each step and the nature of questions asked at each step (see figure 20). A summary of the tools and expected outcomes at each step is shown in table 5.

The questionnaire used in the survey (step B) includes six modules (modules B to G in appendix 1) to measure attitude towards planning and training programmes, organisational commitment, self-efficacy and supportive nature of supervision. The module on organisational commitment (module C in appendix 1) is adapted from two versions of the Meyer and Allen organisational commitment questionnaire (Meyer and Allen 1991), that have been tested and validated in public services in south Asian settings (Gautam, van Dick, and Wagner 2001; Tayyab and Ajmal 2006; Tayyab 2007).

A five-point Likert scale was used to grade responses. Self-efficacy in managing conflict situations usually faced by managers of health services was measured with a ten-item scale based on the Bandura scale (Bandura 1982), that was developed for use across cultures and has been demonstrated to have cross-cultural equivalence across several languages (Schwarzer and Jerusalem 1995; Luszczynska, Scholz, and Schwarzer 2005; Luszczynska, Gutierrez-Dona, and Schwarzer 2005). The supportive nature of supervision is measured using 14 items on a five-point Likert scale. We incorporated eight items that measure supportive supervision and four items measuring non-controlling supervision from Oldham and Cummings, which in turn is based on the Michigan organizational assessment package (Oldham and Cummings 1996; Cammann et al. 1978). We added two items to measure controlling supervision. The questionnaire was piloted among public health experts and *taluka*-level health managers.

The pilot was used to improve the understandability of the questions because some of the tools have not been tested earlier among south Indian health services staff. Exposure of participants to the intervention, type of participation and their performance during and immediately after the training programme and mentoring was captured through analysis of secondary data from attendance records, monthly reports of the training programme and visit notes by mentors.

In step C, we conducted document review, compiled routine health information data on performance, conducted interviews using a semi-structured interview guide (appendix 3) and conducted non-participant observation.

Sampling

The survey (step B) was conducted among all health managers in the district. For the purpose of this study, a health manager is defined as a health worker in the government services, who is managing a facility, team or institutions at the *taluka* or district level. The questionnaire was administered among the health managers in the two study districts, Tumkur and Raichur. They were invited to participate voluntarily in the study. One of two trained data collectors visited the health managers at their place of work after obtaining an appointment at a time convenient to them to ensure good recruitment. The data collectors were trained to answer questions about the questionnaire and the nature of the study, as well as to clarify doubts arising in the course of filling the questionnaire.

Table 6: Details of the tools, sampling and expected outcomes

Step	Methods/tools	Sampling/selection of respondents	Analysis and expected outcome
Step A: reconstruction of programme theory	Desk review of intervention design, proposal, annual district-level plans, reports and interviews with the people who designed and are implementing the intervention Review of theories of behavioural change in health services	Not applicable for review of documents; purposive sampling for interviews	Initial programme theory and a hypothetical causal pathway linking intervention inputs and expected outcomes Summary of theories of organisational change in relation to their spheres of influence
Steps B1 and B2: data collection - quantitative (process)	Construct survey questionnaire based on a review of theories of behavioural change in healthcare organisations and reconstruction of initial programme theory from step A	All health managers in intervention and control district who agree to participate (about 100 in all; about 60 in Tumkur and 40 in Raichur)	Key outcome variables for survey • Attitudes to training programmes and district planning • Organisational commitment • Self-efficacy • Attitude towards receiving and providing supervision • Statistical analysis to determine relationship among variables and effect of exposure to intervention
Step C: data collection - qualitative (context and outcomes)	Assess action plans before, during and after intervention; assess performance and outcomes using routine institutional data and interview participants and non-participants at district and *taluka* level to understand changes in the course of 3 years	Purposive, based on exposure to intervention	Analysis of the qualitative data to understand how planning and supervision practices changed in the course of the intervention as well as how other contextual determinants influenced these changes
Step D: analysis (CMO configurations)	Analyse findings from B2 and C to understand the relationship between various elements in the hypothetical causal chain and contribution of contextual factors to the outcomes observed	Desk review and joint analysis of findings	Further refining of initial programme theory by improved understanding from application of qualitative and quantitative methods
Steps E and F: validation and refining the theory	Formulate context–mechanism–outcome configurations and verify through fresh data collection as well as re-looking at earlier findings (steps B2 and C)	Purposive sampling of participant and non-participant health managers in both districts	An internally consistent and valid explanation of 'what components of the intervention worked, for whom and under what conditions'

In steps C and E, e carried out purposive sampling; in step C, we choose respondents for interviews in order to reach people ranging from no exposure to the intervention to people who have participated most in the intervention. In step E, data collection was done through participant observation in an iterative manner going back purposively to participants who reported benefit to those who did not. It was based on the findings of steps B2 and C. We planned to select participant health managers purposively in Tumkur district as well as non-participant health managers with similar outcomes from Raichur district to understand which ones among them achieved organisational change and to what extent this was facilitated (or not) by the capacity building programme or individual, systemic or contextual factors (see discussion in *Chapter 5* on the refined programme theory). Various aspects of input, process, outputs, context and other factors identified by the refined programme theory (see *Chapter* 5) for all *talukas* were listed in a table (see table 11 in *Chapter* 6). The results of this phase (from steps C to E) are also presented in *Chapter 6*. In view of several time and resource constraints, interviews with health managers from Raichur was not completed (see discussion under Limitations of the study in *Chapter 7*).

Analysis

The quantitative data from the questionnaire was examined (step B2) and descriptive parametric measures for organisational commitment, self-efficacy and nature of supervision were calculated. Participation in training and mentoring (exposure) among the health managers in Tumkur district were measured through secondary documents (attendance and mentoring notes)[20].

We analysed interview transcripts (step C) using content analysis to understand the process of planning at district and *taluka* levels. We used triangulation by systematically sorting through the qualitative data from the observation notes, interviews and secondary document analysis to find common themes or categories by eliminating overlapping areas.

The results of the qualitative and quantitative phases were analysed together (step D) to develop plausible explanatory context-mechanism-outcome configurations that explain who performs better with respect to planning and supervision in response to a training-mentoring programme in a district. The result from the analysis of participant observation field notes (step E) were used to validate this framework and refine the initial programme

[20] According to the study protocol, we planned to use statistical tests of differences between groups to determine the degree of association between exposure to training and the measures of organisational commitment, self-efficacy and nature of supervision. In course of time as our understanding of the realist approach developed, this analytical approach was not pursued. Other changes from the protocol include the choice of a "control" district, which was later dropped. These changes and the reasons for them are discussed in Chapter 7.

theory. This phase of joint quantitative and qualitative analysis was iterative – we refined the framework through purposive participant observation visits and interviews (see *Chapter 5*). By taking into consideration the context within which a given outcome was observed, and testing and validating explanatory configurations of these three (context, mechanism and outcome), we later explain how the intervention brought about the changes observed in planning and supervision practices (*Chapter 6*).

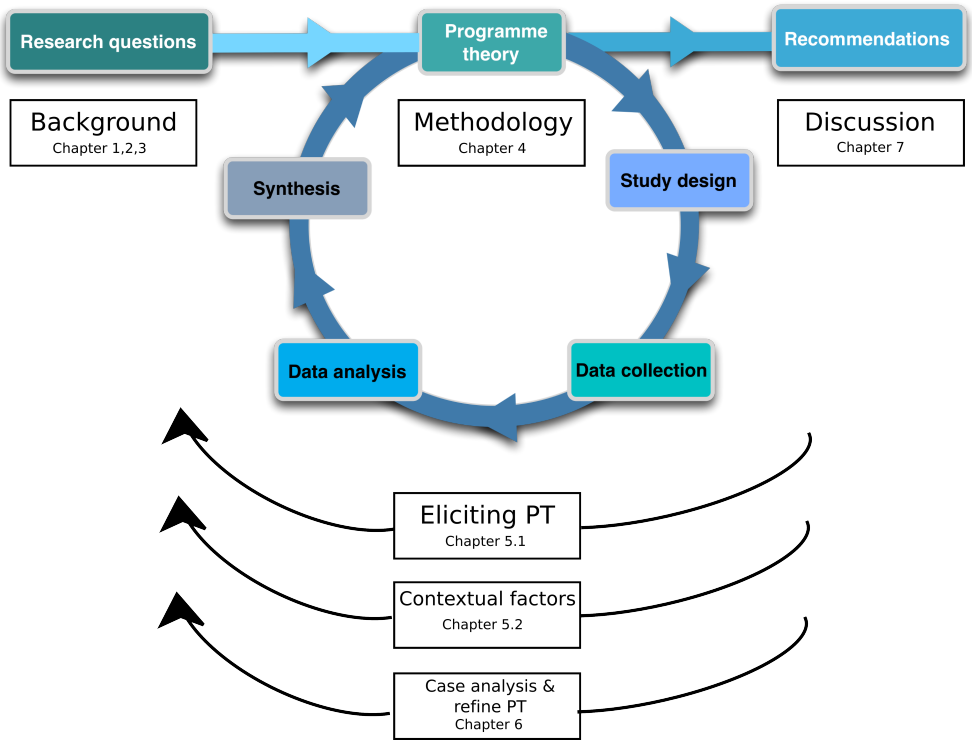


Figure 23: Realist evaluation cycle showing corresponding chapter numbers (Adapted from The realist cycle in Marchal 2011)

In this section[21], the study design and methods has been described. However as the realist evaluation cycle was implemented, changes were made in the analysis and presentation of the results. While the protocol (described in this chapter) helped guide the data collection effort and the first cycle, the results on the first cycle of the inquiry (described in chapter 5.1) contributed to the shaping of the other two cycles. The first cycle dealt with the eliciting of the programme theory, as the intervention logic did not integrated local context

[21] This paragraph onwards till the end of beginning of the next section (on ethics) includes a *post-hoc* reconstruction of how the iterative nature of the realist cycle was implemented. This was not a part of the published paper based on the protocol.

and knowledge from literature sufficiently. Hence, it overlapped chronologically with the preparation of the protocol (this chapter) but continued to proceed till the end of the intervention. The outcome of this first cycle resulted in context-mechanism-outcome formulation, which influenced the data collection and analysis of the subsequent cycles. Some of the changes made to the protocol and the implications for the same are discussed in Chapter 7.

A realist evaluation study begins and ends with a *theory*; it begins with an initial programme theory that seeks to explain why the intervention is supposed to work and through an iterative process (multiple cycles of data collection and analysis) ends with a refined theory that explains the mechanisms through which the intervention could have contributed to the outcomes. This iterative nature of inquiry is represented in figure 23, also showing the chapters where corresponding to the outcomes of each of the steps in the realist evaluation cycle.

Ethics

The protocol of this study was approved by the Institutional Review Board of the Institute of Tropical Medicine, Antwerp, Belgium and by the Institutional Ethics Committee of IPH, Bangalore, India (appendix 5).

All participants were made aware of their participation in the study through formal correspondence. They were offered the option to decline participation in the study, and non-participation did not affect further participation in the training programme. In addition, written consent was obtained for each interview. The study proposal was shared with the state health authority and permission was sought to access routine health data, reporting formats and meeting proceedings. Questionnaires and interview transcripts were coded to ensure confidentiality of all ideas/opinions expressed by participants in the course of the study. None of the study outcomes identified participants by name or exact designation to avoid potential professional or personal harm to the participants in view of opinions/ideas expressed by them.

The language of interaction with participants was either English or Kannada (the local language in the state of Karnataka) in function of their preference; this was established at the beginning of the interaction. Consent forms were made available in both English and Kannada (appendix 2) and the participants had the choice to read and understand the nature of study in the language of their choice and decide accordingly. The trained data collector also orally explained the informed consent to the participant in the case of the self-administered questionnaire and the interviewer in the case of interviews. All interviews were conducted at a time and venue indicated by the participant with prior appointment. The approval for audio recording of interviews was sought separately in addition to the consent for taking notes of the interview. Participants had the right to revoke or withdraw consent to part or all of what they expressed during the study period. In case of collection

of any document outside of public domain (for example privileged communication between district authorities), a permission letter was obtained from the authorised official.

There was no interaction foreseen with patients in the course of the study.

Quality control

All the data from the qualitative data collection methods will be organised on NVivo software with clear documentation of the procedures adopted and consistent file naming (QSR International Pty Ltd. 2012)[22]. For each survey respondent, the data collector checked the questionnaire for completeness. Before data entry, a member of the study team scanned all questionnaires for errors. The data was entered into a spread sheet using a software for programmed data entry with in-built validity checks and error detection (Lauritsen and Bruus 2005; see appendix 4).

4.4. Discussion

Human resource management interventions at the district level are complex; the outputs are produced as a result of interactions between several actors and institutions within a given context resulting in a web of processes, which are difficult to map in a straightforward, linear manner. It is being increasingly recognised that such interventions present a methodological challenge (Campbell et al. 2007; Brown, LaFond, and Macintyre 2001). This study intends to improve our understanding of scientific evaluation of complex interventions in human resource management in health. The capacity building programme in Tumkur has all the features of a complex intervention as described by the new guidance of the Medical Research Council of UK on developing and evaluating complex interventions (Medical Research Council 2000). The guidance lists some dimensions of complexity – "the number of and interactions between components within the experimental and control interventions (if identified), number and difficulty of behaviours required by those delivering or receiving the intervention, number of groups or organisational levels targeted by the intervention, number and variability of outcomes and degree of flexibility or tailoring of the intervention permitted". The latest 2008 guidance of the Medical Research Council, while acknowledging the limitations of experimental designs, notes that inclusion of a process evaluation in complex interventions "is a good investment to explain discrepancies between expected and observed outcomes, to understand how context influences outcomes, and to provide insights to aid implementation" (Craig et al. 2008).

[22] In the study protocol, cross-checking of interview transcripts, categorisation and analysis two researchers was foreseen, but not implemented due to operational difficulties and time considerations.

The guidance builds on the experience gained in understanding the limitations of the earlier experimental designs and suggests the use of a "more flexible, and less linear model of the process, giving due weight to the development and implementation phases, as well as to evaluation" (Craig et al. 2008). This is further reinforced by Campbell et al.; they emphasise the need to use a mix of qualitative and quantitative evidence that needs to be applied to an (often) iterative process of framework development and testing (Campbell et al. 2007).

Realist evaluation of HRM interventions

Conduct of experimental trial-based studies in social systems has limitations in view of the lack of control over the contextual and operational factors that affect the observations. Although a potentially verifiable causal chain that connects an intervention to a hypothesised outcome through sequential steps is often appropriate for scientific evaluation, the responses of social systems to new approaches are very often difficult to reduce to such a linear succession of steps with cause-effect relationships (Connelly 2007; Van Belle et al. 2010; Pawson and Tilley 2008). Increasingly, social programme evaluations have been encouraged to look beyond the successionist format of experimental design that is well suited for classical biomedical research. At the first WHO health systems research symposium at Montreux in 2010, a strong call was made to strengthen the evidence base for capacity development through "*proper evaluation of capacity development initiatives*" and use of multi-method approaches to overcome the difficulties imposed by the complexity of human resources in health interventions (Bennett et al. 2010; Jimba et al. 2010). Realist evaluation precisely posits that programmes are embedded in social systems and stresses the importance of understanding what works for whom and under what conditions. It offers a framework to design scientific evaluations of human resource interventions. Based on a review of literature on choice of methods for complex interventions, Marchal reports that experimental or quasi-experimental designs "are indicated when the effectiveness of an intervention should be tested" and are by themselves inadequate to answer and explain how interventions work, an analysis supported by several other reviews (Marchal 2011; Campbell et al. 2007; Connelly 2007; Berwick 2008).

Health worker practices are complex behaviours that are determined by various individual, systemic or institutional and contextual factors. In their review of theories of behavioural change in health services, Rowe et al. question the premise that poor organisational performance in health is merely due to the lack of knowledge and skills (Rowe et al. 2005, see figure 25). They encourage studies to move beyond the old paradigm "that most performance problems can be solved by training alone". This is further reinforced by an evaluation of several capacity development initiatives implemented in India (Potter and Brough 2004). In the Tumkur capacity building intervention, a reconstruction of the assumptions of the intervention and how it sought to change planning and supervision practices is established. The outcomes (i.e. better planning and supervision practices) are

determined by several factors at the individual (improved knowledge and skills), institutional (competence, enabling environment, motivation to apply/change) and contextual (other programmes or interventions with similar objectives and many other contextual factors that may facilitate or discourage organisational change) levels. In order to understand how the programme worked, we will further build and refine these hypothetical pathways based on a review of literature and the study findings to arrive at context-mechanism-outcome configurations.

Realist evaluation presents a scientific approach towards understanding mechanisms through which social interventions work. According to Pawson and Tilley, "Programs work (have successful *outcomes*) only insofar as they introduce the appropriate ideas and opportunities (*mechanisms*) to groups in the appropriate social and cultural conditions (*contexts*)". By building and testing such Context (C)-Mechanism (M)-Outcome (O) or CMO configurations within the *talukas*, it is possible to generate internally consistent and externally valid explanations of how such interventions work in a given context to produce an observed outcome (Pawson 2013).

Existing theories on behavioural change in health services explain change at or between individual, institutional or contextual levels, and thus evaluations must consider all these levels while trying to explain behavioural change. The variables we chose to measure (attitude towards training, organisational commitment, self-efficacy, nature of supervision) have all been linked to behavioural change and improvement in organisations based on the refining of the programme theory of the intervention as explained in *Chapter 5*.

4.5. Conclusion

Based on the protocol described in this chapter, we proceeded to refine the initial programme theory of the intervention in order to better understand the plausible ways in which the intervention could contribute to organisational change in the district. The next chapter describes the process of refining the programme theory and the resulting context-mechanism-outcome configurations.

Chapter 5: How could capacity-building programmes work? Refining the programme theory of the intervention

"There is nothing like looking, if you want to find something. You certainly usually find something, if you look, but it is not always quite the something you were after"

— Thorin II Oakenshield
in The Hobbit by JRR Tolkien

Chapter summary[23]



In this chapter, we develop a theoretical framework in the form of a refined programme theory as well as assess macro- and meso-contextual factors affecting the Tumkur capacity building programme to understand how the programme could bring about organisational change. A well-formulated programme theory enables an understanding of how interventions could bring about improvements and hence, allow for an evaluation of the intervention. This chapter is in two parts; in the first part the refined programme theory is developed and possible ways through which the programme could contribute to organisational change are identified, while in the second part, we explore various perceptions of stakeholders and the contextual characteristics of the healthcare organisation to understand the nature of change that can be expected in the given context.

In the first part, the refined programme theory of the intervention is presented. We describe how we identified various factors at individual, institutional and environmental levels that could interact with the hypothesised mechanisms of organisational change, such as staff's perceived self-efficacy and commitment to their organisations. Based on this programme theory, we formulated context-mechanism-outcome configurations that can be used to evaluate the intervention and, more specifically, to understand what worked, for whom and under what conditions. We then use the insights from the refined programme theory to identify possible barriers to realising the expected outcome of improved organisational change, particularly focusing on health manager characteristics, their perceptions about the need for and scope of capacity building and their perception on decision-spaces available at their levels for bringing about organisational change. We discuss the application of programme theory development in conducting a realist evaluation.

In the second part, we use various qualitative (interview transcripts and observation data) and quantitative data (from surveys of health managers) to assess if the macro- (policy) and meso-(institutional and local health system level) level conditions necessary for the capacity building

[23] This chapter is based on the following paper: Prashanth, N. S., Marchal, B., Kegels, G., & Criel, B. (2014). Evaluation of capacity-building program of district health managers in India: a contextualized theoretical framework. Frontiers in Public Health, 2(July), 89. doi:10.3389/fpubh.2014.00089

intervention to work exists or not in Tumkur district. The second part of this chapter shall further refine the programme theory to help exclude possible organisational change scenarios due to lack of suitable macro- and meso-level conditions in the implementation context.

5.1. Refining the programme theory

Introduction

The local health system at the district level is an important organisational unit for management of health services. In India and many other LMICs, doctors are usually in charge of the management of local health systems. As health managers, doctors lead a team of health workers, which includes other doctors and clinical specialists, nurses and midwives, pharmacists, laboratory and other technicians, and administrators. A well-functioning local health system is able to translate its inputs (human, financial and technical resources) into processes and outputs (healthcare). In addition, it should ensure that the health care provided is organised and managed in a way that it is physically and financially accessible, equitable, of good quality and responsive to local people's needs (Van Olmen et al. 2012).

Many local health systems in LMICs do not have the capacity to allocate their financial resources equitably and manage their technical resources optimally (Tanner 2005). Furthermore, the health workforce is unequally distributed leading to skill mix problems (WHO 2006). This affects the quality of the healthcare provided and thus the health status of the people. Moreover, in the absence of a well-functioning local health system, disease-control programs are hampered in achieving their goals, in spite of their good design. Indeed, there are instances of such programs failing or even having a harmful effect on health systems, specifically on planning, monitoring and evaluation (Cavalli et al. 2010; Keugoung et al. 2011; Biesma et al. 2009).

It is now generally acknowledged that strong health systems are needed, but studies and reviews on health system strengthening and more specifically on capacity building in health (and how it improves performance) are few (Dieleman, Gerretsen, and van der Wilt 2009; see box 7). In parallel, attention for complexity in health is growing. There have been calls for increasing scientific evaluation of complex interventions and complex interventions in health to improve our understanding of what works for whom and under what conditions (Gilson et al. 2011; World Health Organization 2007; Siddiqi, Newell, and Robinson 2005; Goicolea et al. 2012; Adam and de Savigny 2012).

In Chapter 3, we presented a realist evaluation study protocol to understand how capacity building of health managers translates into improved performance with respect to their planning and supervision in Tumkur district of Karnataka state in southern India. A realist evaluation aims to produce a context-specific understanding of the mechanisms through

which a given outcome is produced (Pawson 2013; see box 4). The frameworks used to describe and analyse health systems have evolved in response to the acknowledgement of complexity of these systems (Chee et al. 2013; Swanson et al. 2010; Gilson et al. 2011b; Van Olmen, Criel, et al. 2012). The response of providers and managers of hospitals or health centres to a given intervention will depend on the dynamic interactions between various factors operating at different levels in their local health system. Hence, interventions at district level could contribute to positive change in some people or in some institutions, while not in others. In order to understand how a given intervention could bring about positive organisational change, the interaction between and among the various individuals within the sub-units of the system needs to be analysed. A systems approach to address complexity within a local health system requires that the relationships between the sub-units of system, and the possible ways in which they could interact and affect the production of the outcome, be understood and made explicit (see figure 9).

The most common approach towards building capacity is training programmes that are implemented with the objective of improving knowledge and skills of the participants. While the training programmes may intend to improve health services performance through improving knowledge and skills of participants, various individual, institutional, policy and socio-political factors play a role in the shaping the healthcare organisations' performance. The underlying assumption that improved knowledge or skills from training programmes will improve performance depends on the context within which such programmes are implemented, as much as it depends on the design and implementation of the programmes. The identification of these factors helps understand the conditions under which training programmes could succeed.

Box 7: Capacity-building through training programs: What do we know?

As an alternative to systematic reviews, realist synthesis is emerging as a way to expand our knowledge base, especially when attempting to answer context-sensitive and policy-relevant questions (Wong et al. 2013; Pawson et al. 2005). A realist synthesis begins with the question: "what works for whom under what circumstances, how and why?" (Ray Pawson 2013). A recently published realist synthesis of HRM interventions in LMICs could identify only 48 scientific articles, of which 21 were related to capacity building through training programs (Dieleman, Gerretsen, and van der Wilt 2009). In these 21 articles, the synthesis reports that "...the mechanisms through which training produced changes were researched in (only) three studies". The report found that "... improvement of health worker performance was triggered by three distinct mechanisms: improved knowledge and skills, critical awareness on the functioning of health services and being empowered to implement change".

Recent evaluation studies have called for approaches that unpack the black-box between an intervention's inputs and its outcomes (Svoronos and Mate 2011; Marchal, Dedzo, and Kegels 2010a). These studies are centred around the development of a programme theory approach that allows for the formulation of a plausible basis for expected outcomes,

drawing from the body of knowledge on the given intervention (literature), as well as building on the role of local context in shaping these outcomes.

In this chapter, we progressively develop the programme theory of the capacity building intervention (developed *a posteriori*)[24], which was launched in Tumkur, India in 2009. After refining the programme theory, we explore conditions within Indian districts that might facilitate or hinder the outcomes of such an intervention.

The intervention involved training of health managers on public health management topics through a mix of classroom teaching and mentoring at their workplace. The formulation of a programme theory enables identification of plausible mechanisms through which organisational change could have occurred, and the contextual factors that triggered these mechanisms. In realist evaluation, the mechanisms could be understood as the agency through which the resources introduced into the system by the programme produce the outcome. Context, in the form of the appropriate external environment (or not) is, however, critical for the manifestation of the outcome (Pawson and Tilley 1997).

Building the programme theory

The programme theory was developed in a step-wise fashion based on guidance in literature (Lipsey and Pollard 1989; Pawson and Tilley 1997; Pawson 2013; Rogers 2008). We first summarised prior theory and research on the subject, then collected data on contextual factors that could affect the expected outcomes of the intervention, and finally formulated the implicit theory of the intervention. Based on this programme theory, we eventually developed plausible CMO configurations helping us to understand how the intervention could have worked, for whom and under what conditions. A realist evaluation of health management interventions builds upon such CMO configurations in order to generate plausible explanations on how this intervention could have worked (Connelly 2007; Bruno Marchal, Dedzo, and Kegels 2010a).

The steps followed are described below and summarised in table 7.

[24] Programme theories describe how a programme is supposed to bring about its intended effects in a given context and are ideally informed by relevant contextual factors that could affect the outcomes. They also make explicit the underlying assumptions that guide the choice of programme activities. In cases where the programme documents do not make explicit the underlying assumptions and the pathway linking the inputs of the intervention to its intended outcomes, a process of formulation of the programme theory is needed. The present chapter describes a succession of events that began along with the intervention itself. The early results and insights from this paper informed the study protocol, especially the choice of variables for data collection and the initial programme theory describe in Chapter 4. Although this paper is chronologically *before* the study protocol, since it describes a process that lasted right through the intervention, it is presented *after* the protocol, as the accumulation of insights from this paper eventually informed the realist analysis described in the next chapter.

Understand the intervention (Initial programme theory): We started with eliciting the initial programme theory of the intervention. These are the assumptions and hypotheses of the designers of the intervention and other stakeholders. To do so, we reviewed programme documents (list of documents in appendix 6) to identify the implementers' main assumptions, to understand the perceptions of the key actors and to identify potential mechanisms – if any – as identified by the implementers. Implementers are the people and organisations who designed and are in charge of the implementation of the intervention. At this stage, we were looking for assumptions of the designers on how and why the programme would bring about the expected outcomes. In a second step, we interviewed 16 actors using an interview guide (appendix 3): two programme designers, two policymakers, 10 participants (health managers) and two health services staff during the early phase of the implementation of the intervention. The interviews focused on the process of planning health services, the perceived scope for change given the current decentralisation process, and the possible role of the intervention in this change. The programme documents and interview transcripts were imported into NVivo 10 (QSR International Pty Ltd. 2012). Portions of text reflecting implementation assumptions, possible contextual factors (see step 3 below) and actors' perceptions were coded and analysed using thematic analysis. These themes were then summarised and the initial programme theory was gradually constructed.

1. **Literature review to identify possible mechanisms**: We reviewed the published literature and identified possible steps through which capacity building could lead to organisational change. We began the literature search on the basis of four themes highlighted in the initial programme theory that matched concepts in literature on organisational change: organisational commitment, self-efficacy, workplace learning and evaluation of training programs. We conducted the search on Google Scholar and PubMed; we also scanned the references and carried out citation tracking of some of the papers we had retained, to identify other key publications. We finally retained articles (primary research, review articles and reports) based on our assessment of the article's relevance to our programme theory: organisational commitment (36 papers), self-efficacy (19 papers), workplace learning (6 papers) and evaluation of training programs (57 papers). The list is in appendix 7.

2. **Identify contextual factors:** We reviewed government reports and programme documents related to performance of district health services (full list of documents in appendix 6). We also analysed the interview transcripts from interviews with participants of the intervention, co-workers of the participants, policymakers and implementers, to identify contextual factors that could possibly influence the actors, the implementation and the outcomes of the intervention. Key events that affected the implementation of the capacity-building intervention were also identified from the interview transcripts and these were mapped. The interview transcripts were imported into NVivo 10 and free coding was done to identify important factors

presenting at various levels of the health system. The codes were then organised into trees and the themes emerging were summarised.

3. **Refine programme theory**: We integrated possible mechanisms (from step 1 & 2) and contextual factors (from step 3) into the refined programme theory.

4. **Formulate CMO configurations**: A framework for plausible CMO configurations was constructed from which empirically testable hypotheses can be drawn.

We finally used the multipolar performance framework to analyse and discuss the refined programme theory (Marchal et al. 2014; see *Chapter 3*).

Table 7: Steps in building the programme theory of the intervention

Steps	Question	Method	Outcome
Understanding the intervention	How was the intervention supposed to work? What was the response of the actors in the system vis-à-vis the assumptions of the implementers?	Review of programme documents, meeting minutes, reports and transcripts of interviews with implementers	Input-outcome logic model connecting intervention inputs to outcomes showing possible intermediate steps (see figure 19)
Review literature	What do we know (from published literature) about how such interventions could work?	Narrative review of literature on organisational commitment, self-efficacy, workplace learning and evaluation of training programs	Synthesis of literature on capacity-building in health with a focus on the mechanisms
Identify contextual factors	What are the conditions in the district health system, that affect the expected outcome?	Review of programme implementation reports, observation notes and interview transcripts	Contextual factors identified
Refine programme theory	How could the intervention lead to improved organisational performance?	Integrate contextual factors and mechanisms into the initial programme theory	Plausible relationship between the elements of the intervention and its expected outcomes (figure 27)
Formulate context-mechanism outcome configurations	What worked, for whom and under what conditions?	Identify configurations of context-mechanism-outcome that could be empirically tested	CMO configurations that could be empirically tested

Results

We present the results of the five steps described above, followed by a discussion of the results using the multipolar performance framework.

We first described the goal of the intervention, its rationale, the components of the intervention, the participants (and other actors involved) and the implementations (see timeline in figure 18). For the purpose of this manuscript, we will focus on two of the key expected outcomes of the capacity building programme viz. improved annual action plans at district and *taluka* level and improved supervision practices. These were the two major outcomes that the designers sought to influence through the capacity building programme. An interim self-evaluation of the intervention by the implementers, as well as an external evaluation, highlighted planning and supervision as possible key outcomes (IPH Tumkur Team 2011; Hoeree et al. 2012). We then present the literature review and the context analysis, and eventually bundle the refined programme theory and the CMO configurations.

Understanding the intervention: Initial programme theory

The Initial Programme Theory (IPT) was discussed in the study protocol presented in *Chapter 4*. The IPT is therein schematized as a linear representation of the intervention's inputs (contact classes and mentoring of participants) connected to the intervention's expected outcomes (improved annual action plans and supervision practices) through a set of intermediate steps (better problem and solution identification, better monitoring and more supportive supervision). The IPT considered the posting of non-medical management professionals at district and sub-district levels (as per NRHM - see below for description of the NRHM) as a significant contextual factor, expected to influence the intervention's outcomes. Based on this IPT, the intervention could be formulated as a human resources management intervention consisting of an in-service training and mentoring programme to bring about organisational change in district health management, through improved preparation and implementation of annual action plans and supportive supervision. The IPT was represented as a logic model. However, from a realist evaluation perspective, it requires further elaboration by making explicit the assumptions of the programme designers on the possible intermediary steps and by taking into consideration the contextual factors that could affect the implementation of the intervention. Also, potential mechanisms of change need to be identified.

Based on documentary review and thematic analysis of the interviews with the designers of the intervention, we identified three key assumptions that *a priori* guided the design and implementation of the intervention. These assumptions have had implications on how the programme was structured (e.g. role of experienced teachers visiting the participants as mentors, whom to include in the programme), its content (e.g. what type of content to include and how to present them) and the implementation (e.g. focus on improving the district and *taluka* health system and focusing on health management teams at these levels).

These assumptions are as follows:

1. An attitudinal change among the participants is needed to achieve the desired results

2. The programme implementers noted that improved public health management knowledge and skills are insufficient by themselves in bringing about change. They thought that an attitude towards creating organisational change among the participants is essential. The implementers sought to encourage or bring about such an attitudinal change by using particular styles of teaching (e.g. applying adult-learning techniques such as participatory and peer/group learning in the contact classes), letting participants identify examples of glaring gaps in existing services, and follow-up mentoring visits to participants at their workplaces. The implementers described the changed attitude that they aimed for, as a can-do attitude. This was based on the perception of the designers that there was apathy and lack of desire to change things at the district and taluka level. The implementers assumed that the participation of experienced health professionals in follow-up mentoring visits could trigger such an attitude among the participants, and hence create an environment where the knowledge and skills would be put to effective use.

3. The programme can benefit from and take into account alignment with existing policy initiatives

4. The Indian government's flagship health programme, NRHM, is being implemented since 2005. The NRHM sought to bring about an architectural correction in the health system through improving financing arrangements and reforms in planning and supervision of health services. One of the reforms was decentralised planning and management of health services to the district level (Government of India 2005). Our analysis shows that the programme implementers felt that the objectives of the capacity building programme aligned with the new resources coming through the NRHM, and NRHM's efforts at district-level decentralisation. They therefore included BPMs at *taluka* level and the District programme Managers (DPM) at district level as participants in the intervention. They also identified the new system of decentralised planning at the district level as an opportunity for the district health team to implement organisational change through improved annual action plans and better supervision practices.

5. Targeting individuals (for the capacity building programme) will produce impact through teams

6. The implementers identified health management teams at hospitals, *talukas*, and disease-control programs as the unit for change within the health services. These teams included medical doctors and administrative staff, but also the newly introduced BPMs and DPMs. The implementers (and NRHM) expected that the

induction of these new cadres and the building of teams at *taluka* and district levels would improve local annual action plans; earlier, action plans were largely made at the state level in a top-down fashion. The programme implementers specifically targeted these enlarged management teams.

Review of literature: How are capacity-building interventions supposed to work?

HRM interventions can be important drivers of health service provision and thus good health outcomes. However, studies on HRM in health are few; they focus mainly on continuing education, supervision, payment of incentives, decentralisation of HRM functions or a combination of these (Dieleman, Gerretsen, and van der Wilt 2009; Rowe et al. 2005). An understanding of the mechanisms through which HRM interventions produce change in healthcare institutions is crucial for the design and delivery of such interventions in LMIC settings. However, the current evidence base for how positive organisational change could be achieved through capacity building based HRM interventions in health services is scarce. Both systematic and realist reviews of studies in human resources for health note that the role of context in producing desirable outcomes in HRM interventions is under-explored; either contextual factors are neglected in designing effectiveness evaluations, or context descriptions are scarce, rendering the studies not amenable to realist reviews (Dieleman, Gerretsen, and van der Wilt 2009; Chopra et al. 2008; Rowe et al. 2005; Prashanth, Marchal, and Criel 2013).

Contrary to the evidence base on HRM in the public health literature, much has been written on the topic in management sciences, particularly in the corporate business industry (Buchan 2004). In a review focusing on evidence on achieving and maintaining good performance of health workers in LMICs, Rowe et al. identify eight theories underlying most HRM interventions in health (Rowe et al. 2005). These theories explain organizational improvement through change in health worker behaviour and practices, which they place across several levels: the team, the institution, and the larger health system environment within which they work. The theories are summarised later in this chapter. They could be thought of as providing explanations of change seen at individual, institutional and systems levels; however, Rowe et al. note that: "... little is known about how well the theories predict health-worker practices or success of interventions". Furthermore, most studies included in their review concern healthcare workers. Studies pertaining to local health system managers, mostly doctors in the case of Indian districts are scarce.

Capacity building programs inject new resources, i.e. knowledge, skills and experiences, in organisational settings. A variety of individual, institutional and environmental factors determine who benefits from such programs and who does not, and who applies what they learnt in terms of organisational change, and who does not. Among the frameworks proposed to evaluate the effect of training programs, the Kirkpatrick & Kirkpatrick

framework is one of the most frequently used (Kirkpatrick and Kirkpatrick 1998; see figure 24). The framework proposes four levels at which the training programs could be evaluated: reaction (to the training), learning (knowledge and skills), behaviour (applying the new learning) and impact (changes brought in the organisation). In a critical analysis of evaluation practice, Bates summarises the common assumption (in literature) of causal linkages between these four levels as follows: the four "... levels of criteria represent a causal chain such that positive reactions lead to greater learning, which produces greater transfer and subsequently more positive organizational results". Bates notes that several training evaluation studies and meta-analyses have failed to confirm such a linear causal pathway connecting training programme inputs to outcomes through these four levels (Bates 2004). The four levels of the Kirkpatrick & Kirkpatrick framework therefore cannot be assumed to represent an incremental four-level causal pathway; the framework provides possible sequential steps that an individual trainee might experience during and after training programs. It helps us by indicating where to look for contextual factors that could affect individual learning and its application within the participants' organisation.

One of the key components of the initial programme theory of the implementers was the intent to bring about a can-do attitude among the participants. The implementers expected that follow-up mentoring visits by experienced public health professionals at the workplace of the participant would bring about such an attitudinal change. The initial programme documents, however, did not elaborate on how the implementers expect such a change to take place in the individual participants. We had hypothesised that, in addition to organisational and environmental factors, such a positive organisational change could be linked to individual attributes of the participant, like the organisational commitment of the individual and the confidence that the individual places in his ability to produce such a change (Prashanth et al. 2012). The latter is related to perceived self-efficacy (Box 6 in *Chapter 4*), identified as a mechanism that explains why some people feel able to take up some tasks while others do not, in spite of similar knowledge and skill levels (Bandura 1982). Similarly, organisational commitment and performance of an individual are closely related (Box 6 in *Chapter 4*), as shown in several industrial and healthcare organisational settings (Meyer et al. 1989; Maheshwari, Bhat, and Saha 2008; Mosadeghrad, Ferlie, and Rosenberg 2008; Marchal, Dedzo, and Kegels 2010b).

In a local health system, where individual health managers work in small teams within organisations belonging to a broader network of healthcare institutions, the dynamic nature of the interactions at individual, team, institutional and broader environmental levels contributes to whether participants apply what they learn and whether the expected organisational change manifests or not. Organisational frameworks therefore incorporate the role of such factors when analysing healthcare organisational performance (Sicotte et al. 1998; Bates 2004). Workplace environment, nature of teams and teamwork, supervision received, attitude of state-level officials, and the needs and demands of the communities are all important factors that can affect organisational change after capacity-building. The

various subunits of a district health system, their interactions and influence on organisational performance are visualized in figure 9 earlier.

Workplace environment in healthcare organisations has been identified as an important element explaining the application of learning from training programs in some settings, while not in others (Clarke 2005). In the conceptual framework of workplace learning proposed by Jacobs & Park, the inter-relationships between location of the training (learning occurs away from workplace), degree of planning (use of a systems approach) and an active role of the trainer were key variables in understanding workplace learning (Jacobs and Park 2009). Although not specific to healthcare organisations, this framework identifies important elements for developing the programme theory of our intervention.



Figure 24. Original illustration based on Kirkpatrick framework

Figure 25: Theories of behavioural change in health services in relation to their sphere of influence (adapted from Rowe et al. 2005

Analysis of the context

While the theoretical frameworks provide plausible pathways through which the intervention inputs and outcome could be related, for the outcomes to effectively occur, local conditions matter. From a realist evaluation perspective, these are contextual factors that facilitate (or hinder) the outcome - they are crucial in refining the programme theory. Contextual factors have been shown to influence organisational change in healthcare settings (Mbindyo et al. 2009; Gray 2008; Squires et al. 2013; Victora et al. 2005; Kapiriri and Martin 2006; Byng et al. 2008; Bigdeli et al. 2013). While it is unlikely that each and every possible contextual factor will be identified, a documentary and literature review may help identify the most important and more obvious ones, especially if a plausible causal chain can be used as an anchoring point. We also used the mapping of key events (see figure 18) as a guide to identify relevant contextual factors.

We identified three key themes from the contextual analysis: the local effects of the on-going decentralisation of planning to district level in India, the acceptance and role of newly introduced non-medical programme managers, and the local actors' conceptualisation of the district health services as a system. Below, we discuss these in more detail and analyse implications for our evaluation.

Pushes and pulls of a decentralizing bureaucracy

While the NRHM formally introduced decentralised planning in 2005, decentralisation of the management of health services to the district level has been an old recommendation (Mills et al. 1990; Oliveira-Cruz, Hanson, and Mills 2003; Segall 2003; Gill 2009). Over the last decade, there has been an increasing trend of decentralisation of planning and implementation of health care to the district level. There have also concurrently been calls for caution against hasty application of decentralisation (sometimes characterised as a *disruptive innovation*, especially without creating an appropriate environment for decentralization to succeed (Rae-dupree 2009; Tuli 2009)). Studies stress the need for proper institutional capacity and an enabling environment before undertaking decentralization of health bureaucracies (Bossert 1998; WHO 2008; Dieleman, Gerretsen, and van der Wilt 2009; Fritzen 2007).

The opportunity to conceive organizational change at their levels, through the design of their annual action plans, is an important contextual element for making sense of the response of Indian district health managers. Wherever health managers perceive this to be an opportunity, capacity building programmes may find fertile grounds and they can contribute to change planning practices. The available and perceived decision-spaces of health managers are another factor. For example, a recent study in Pakistan shows that perceived decision-space could vary from region to region, as well as among individuals within the same region (Bossert and Mitchell 2011). Parallel to the decentralization of the

health bureaucracy is the on-going process of decentralised governance at district and lower levels. PRI are composed of elected representatives of the local governments at village, *taluka* and district levels. The health services, at the district level and below, have been made accountable to the PRI, albeit they continue technical reporting to health officials at state level. The shifts in power dynamics in favour of representatives of PRI are important determinants of organisational change at district level in Karnataka. Capacity building programs could work through providing health managers with the necessary capacity to negotiate with PRI members, and utilise their formal decision-spaces more effectively.

The relationship between decision-spaces available to health managers and their organisational commitment has been investigated. It has been shown that highly committed managers are able to bring about positive change through HRM interventions, even in settings where they have relatively constrained decision-spaces (Marchal, Dedzo, and Kegels 2010b). Organisational commitment and decision-spaces available to health managers are important links in the pathway towards organisational change at the district level in health bureaucracies that are in the process of decentralising.

Involvement of young management professionals in doctor-led teams

The NRHM, as explained above, introduced management professionals with a non-medical background into the health services at district and *taluka* levels. Their short-term contract appointments are in contrast to permanently tenured appointments of the doctor-health-managers in their team. These programme managers were meant to strengthen planning and monitoring practices. However, their contribution to improving these processes is dependent on their relative position within existing health management teams, which remain led by doctors. The action of BPMs interested in making changes is determined not only by their technical capacity, but also their informal power vis-à-vis the doctors leading the traditional *taluka* teams. The same holds for DPMs at district level. The implementers' initial assumption (as well as that of NRHM itself) on the role of programme managers in enabling better planning and monitoring definitely needs to be examined in relation to existing team dynamics.

The district health services as a system

The implementers' conception of a district health system as a complex system has guided the design and implementation of the intervention. Whether this approach resulted in creating truly functional teams of health managers depends on many individual and workplace factors. The implication of the team assumption on the performance of *taluka* and district participants therefore needs to be critically examined. In India, there is not much information on what a district health manager requires in terms of inputs, skills and knowledge (Devadasan and Elias 2008). Neither is there a well-established concept of a district health team among the health staff. Health managers may not perceive themselves

as being part of a broader system that is supposed to work together in steering the district's healthcare institutions towards improved performance. There are in fact both structural and functional problems in conceiving the Indian district health managers as functioning in teams.

Structurally, the district health services are separated into a health and hospital wing. Both wings have independent reporting relationships to the state (see figure 26). The health wing, in addition to management of smaller (<100 bed) secondary hospitals and primary care facilities, oversees the operation of the many disease-control programs (e.g. vector-borne diseases and tuberculosis) and programs for reproductive and child health. Some of these programs have dual reporting lines: they report to the district health officer (DHO) as well as to dedicated disease control programme managers at the state level.

In the Tumkur capacity building intervention, the implementers adopted a systems approach towards training health managers, on the assumption that they effectively worked with functional teams in their workplaces. This is evident in the selection of relatively diverse cadres of staff in the training programme and in the team approach while training and mentoring. For example, mentoring visits targeted teams and not individual participants. The contact classes included district health officers, programme officers and hospital heads (all of them doctors), BPMs and DPMs, the administrative officers of the hospitals and senior nurse-administrators at *taluka* and district levels. Although the implementers' assumption was that the participants were members of a team of health managers, these teams were in fact not necessarily functional. Doctors are viewed as the health managers in charge, automatically sliding into and being accepted into positions of leadership and responsibility in their teams. New staffs are thus expected to enter into a reporting relationship with the doctors and are seen as subordinate in knowledge and in function. The factors related to the age gap, to the team relationships between medical and non-medical members of the teams and to the relative power positions of members of the management teams all influence the functionality of the teams, and the degree to which non-medical team members will take up responsibilities.

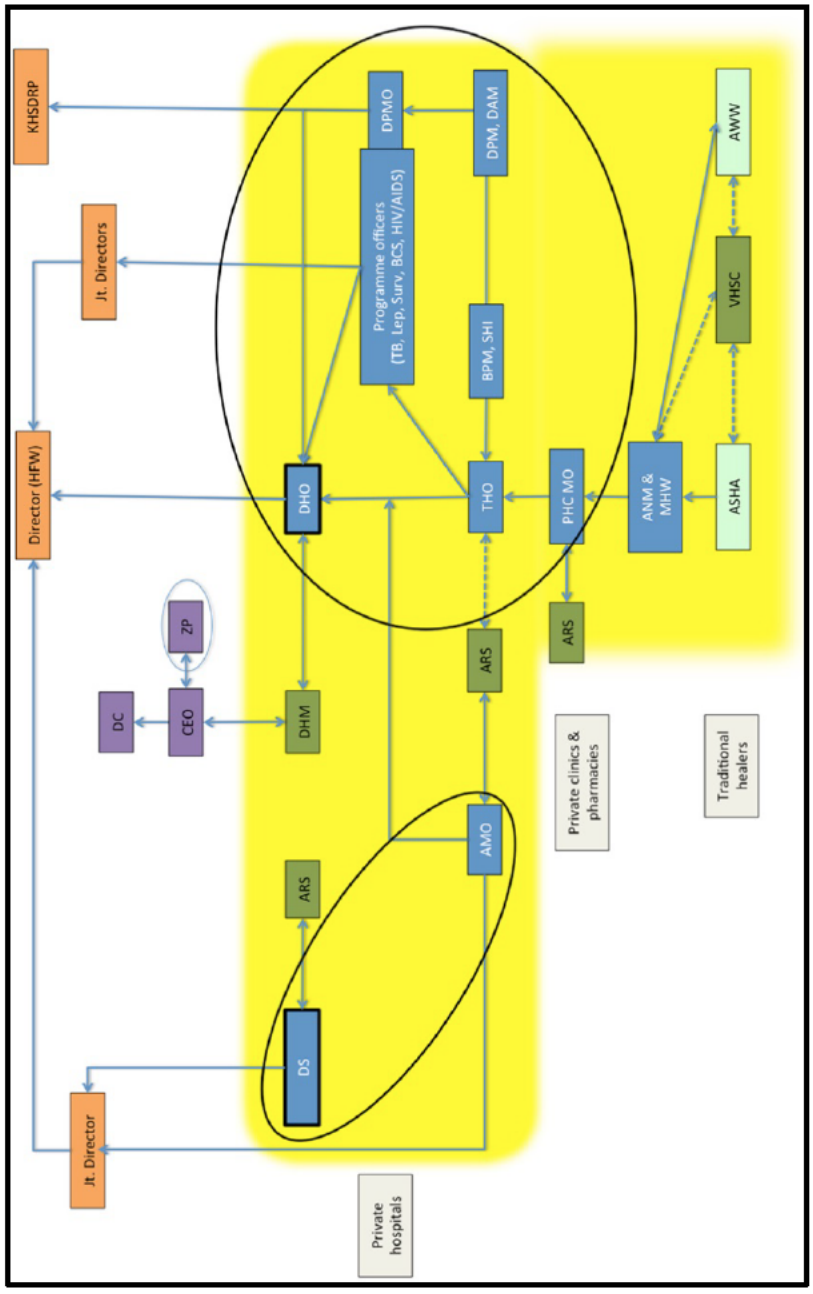


Figure 26: Mapping of the actors in the Karnataka district health system showing their reporting relationships

(Figure 26 note: The various actors – state level officials (orange boxes), district administration (purple boxes), community participation platforms under NRHM (green boxes), health managers and health workers (blue boxes), other village-level health workers (light green), and private healthcare providers (grey boxes) – are shown. The actors targeted in the capacity-building intervention are circled. The yellow background indicates district health services. Abbreviations (in alphabetical order): administrative medical officer (AMO), anganwadi worker (AWW), auxiliary nurse-midwife (ANM), Arogya Raksha Samiti (ARS – patient welfare committee), accredited social health activist (ASHA), block programme manager (BPM), Chief Executive Officer (CEO), Deputy Commissioner (DC), district health mission (DHM), district health officer (DHO), District Surgeon (DS), health and family welfare (HFW), Karnataka Health Systems Development and Reforms Project (KHSDRP), male health worker (MHW), primary health centre medical officer (PHC MO), Senior Health Inspector (SHI), Taluka Health Officer (THO), Village Health and Sanitation committee (VHSC), Zilla Panchayat (ZP – local self-government at the district level)).

Putting it all together: the refined programme theory & CMO configurations

Capacity building of district health managers and its contribution to organisational change is influenced by relationships between actors and among the components of the district health system. In figure 27, we have represented the refined programme theory of the intervention. As described above, we did this by critically examining the initial programme theory and the assumptions of the implementers, in relation to existing literature on capacity building and by drawing from a description of the most important aspects pertaining to the local context.

The programme theory enables us to formulate a number of CMO configurations that can be subsequently used in guiding the analysis of data collected in course of the intervention (see table 8). The CMO framework provides a lens through which to analyse empirical cases and build explanations for purposively chosen cases of positive and negative outcomes among the participants and teams. For example, the programme theory points towards an important intermediate outcome, the intention to make positive organisational change after a training programme. The contextual analysis and review of literature have also indicated important factors - individual mechanisms, institutional and systemic factors (local context) – which could be mapped on a CMO framework. In this case, the CMO frame would start with positing possible contextual factors and mechanisms that could together bring about an intention to make positive change within a healthcare organisation (outcome). We formulated three such CMO formulations based on the refined programme theory. These formulations can be tested using a mix of qualitative and quantitative data to explain how positive organisational change could occur in response to such capacity-building programs (see table 8).

Table 8: Progression from initial programme assumptions toward explanatory mechanism, plausible contextual factors, and supporting theory, in relation to the expected outcome

Key IPT assumption	Supporting theory	Key contextual factor	Plausible mechanism identifiable from IPT and theory	Outcome of interest
Contact classes' work through improving knowledge and/or skills, which are eventually applied. This results in improved performance	Outcomes of training programmes accrue through four hierarchical levels: reaction (to training programme), learning, behaviour and impact (Kirkpatrick and Kirkpatrick 1998)	Team dynamics (nature of team and relationships) affects the individual with intention for positive change Socio-political environment in the taluka/district	Motivation of the participant towards positive organisational change - a "can-do" attitude in the IPT	Intention to make positive changes
Mentoring participants at workplace facilitates application of knowledge and skills	Workplace environment in healthcare organisations has been identified as an important element that explains application of learning from training programmes in some settings, while not in others (Clarke 2005).	Nature of supervision and district's openness to "allow" change Decentralised action plans and decision-making at district and lower levels. State and higher levels' openness to change proposals	Nature of commitment to organisation Self-efficacy	Identify/seek opportunities to make positive change in the organisation's performance Improved annual action plans – Better situation analysis, problem identification, allocation and utilisation of resources
A capacitated health manager can become an agent of positive organisational change	High commitment management literature shows the potential for change by committed staff in settings where resources could be mobilised (Marchal, Dedzo, and Kegels 2010a).	Change proposals by districts are in line with state (or central) vision as well as address local needs. (Allocation and strategic alignment with external environment per Sicotte et al.'s conceptual framework)(Sicotte et al. 1998)	Claiming and utilising decision spaces; organisational commitment and self-efficacy in negotiating with superiors and community leaders	Taluka and districts plan improves. They identify more needs, mobilise more resources from state and utilise it better (Efficiency – both allocative and technical – improves)

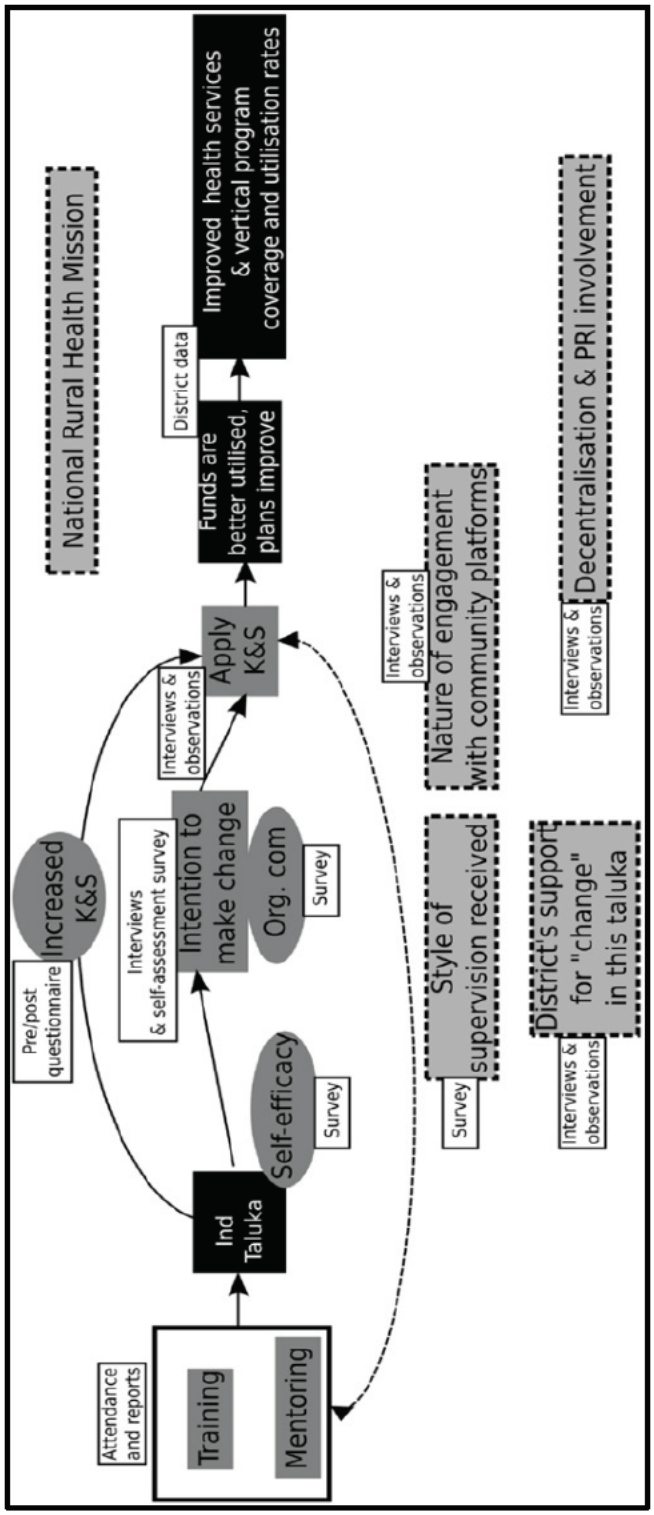


Figure 27: Revised programme theory based on incorporation of the implementer assumptions, theory (literature review), and analysis of the context.

(Figure 27 note: The first box in extreme left includes the intervention inputs. Boxes shaded black represent elements within the local health system which are targeted by the intervention. Oval boxes represent plausible mechanism at individual level that are identified in literature on organisational change. Boxes with dashed lines represent contextual elements identified. Data collection methods to assess the contextual element or the proposed intermediate step between programme inputs and outcomes are shown within white boxes. (Prashanth et al. 2014)).

Discussion

Programme theory and realist evaluation

A programme theory (PT) is a way of representing the expected relationships between the elements of an intervention implemented in a given context and its expected outcomes. Programs introduce new resources into a dynamic system. A PT is a "set of propositions regarding what goes on in the black box during the transformation of input into output; that is, how, via treatment inputs, a bad situation is transformed into a better one" (Astbury and Leeuw 2010; Chen 1990). A PT could be conceptualised as a logical and ordered description of the relationships between the various constitutive elements of an intervention, and the plausible pathways through which they interact with the elements of the system to produce the expected outcome. It draws upon the assumptions that the implementers have made in designing and implementing the intervention. It also incorporates the response of various actors within the system to the intervention and other contextual factors that could influence these actors and their responses to the intervention. A PT is thus a pathway with interacting elements, showing how the inputs of an intervention could lead to the expected outcomes, taking into consideration contextual elements and the assumptions of the implementers on how they could achieve the objectives of the intervention.

In realist evaluation, Pawson and Tilley posit that programs are embedded in social systems. They stress the importance of understanding what works for whom, and under what conditions (Pawson and Tilley 2008; Pawson and Sridharan 2009). The realist evaluation approach focuses on the interaction between the mechanisms activated by the intervention and the context(s) in which it is implemented, specifically seeking to understand how this interaction in the various contexts produces changes that could lead to the outcomes (of interest to the evaluation). It is one of the several context-sensitive approaches to evaluate health programs at district level in low resource settings (Svoronos and Mate 2011). In keeping with this, the PT should identify intermediate steps in the pathway connecting the inputs of the intervention to the outcomes, the relationships between the steps and the conditions under which these occur. While existing theories provide plausible explanatory mechanisms through which inputs and outcomes could be related, the systemic factors unrelated to the intervention that could affect the outcome of

the intervention (the context) are very important to understand how the intervention worked. Configurations of CMO based on programme theory, could be seen as plausible explanations of what worked for whom, and under what conditions. CMO configurations will enable us to collect data and test how the change occurred, in addition to whether the change occurred (or not). A critical reformulation of the IPT on the basis of empirical research, taking into consideration the conditions that could affect the outcome (like for instance other initiatives with similar outcomes and/or contextual conditions favourable or hindering the outcome locally), would eventually improve our understanding of the mechanisms of change, as well as enable a scientific evaluation. In addition, periodic and iterative reformulation of PT could be a powerful tool for course-correction and a more context-sensitive implementation of HRM programmes.

Implications for evaluation of district-level HRM interventions

A district health system in India consists of a network of government-owned healthcare organisations providing primary, secondary and tertiary care in addition to private hospitals and providers. A district or a *taluka*, ideally, would be the meeting point of top-down resource allocation and planning with bottom-up planning driven by local needs and people's demands. Both dynamics would need to be integrated in a manner that ensures a well-performing health service that is responsive and provides good quality and equitable healthcare.

Local health systems at *taluka* and district level can be conceptualised as complex adaptive systems, a network of inter-related and inter-dependent organisations, which are relatively similar, yet dynamically interacting with each other and their environment. From a complex adaptive systems perspective, a linear causal logic model cannot be applied to evaluate a local health system intervention. Local contextual factors contribute to determine differences in outcomes, even if the appropriate resources for change are introduced (Mitleton-kelly 2003). For example, the lack of a supportive learning and working environment in a given *taluka* hospital will be a barrier to realise the expected outcome, despite the introduction of new knowledge and skills through a training programme, while it would have the potential to achieve this outcome in yet another hospital, where such an environment would exist (see the study on health managers perceptions of supervision in Malawi and Tanzania (Bradley et al. 2013; Frumence et al. 2013) or a similar situation described from Turkey by Akbulut and others (Akbulut, Esatoglu, and Yildirim 2010)).

Analysing local health system performance: the multipolar framework

As described in *Chapter 3,* a HO is a dynamic entity constantly interacting with a continuously changing environment through an internal dynamic exchange between its different functions. Based on a synthesis of several, often competing models of organisational performance, Sicotte et al. proposed a conceptual framework for analysing

performance in HO (Sicotte et al. 1998). The overall performance of a HO is seen as being "determined by the dynamic equilibrium resulting from continual interaction of, and interchange among (these) four functions (attributes or properties of an organisation)": attaining the organisation's goals, and adaptation to its external environment on one hand and its internal environment (the organisational culture and values) and its production (healthcare outputs) on the other (see figure 28). This framework has been the basis for designing the multipolar performance framework, a heuristic that has been used to analyse performance of complex public HO (Marchal 2011).

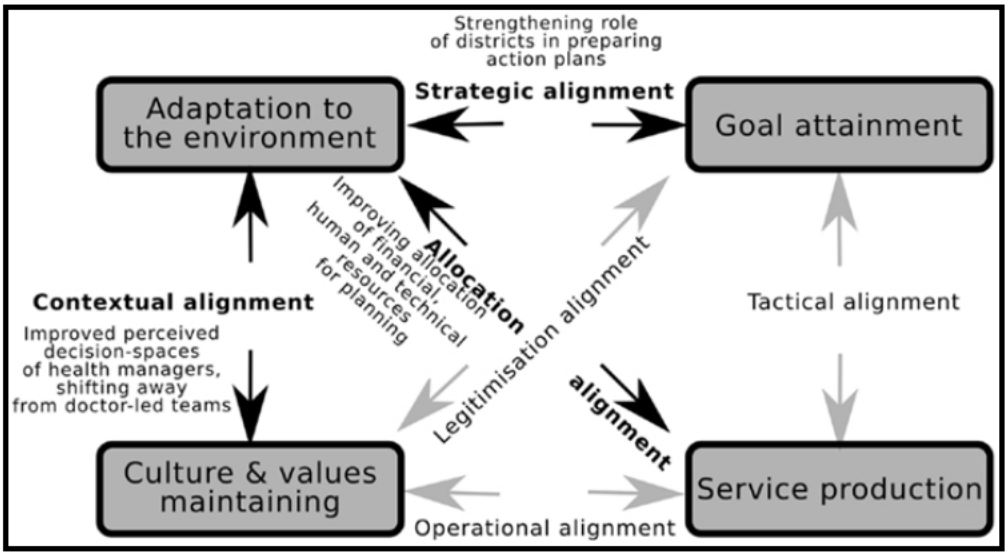


Figure 28: Organizational change in Tumkur could be explained through identifying which of the alignments in the multipolar framework were triggered by the intervention inputs

The pushes and pulls of the four poles result in six alignments, and the resulting performance of a given healthcare organisation could be conceptualised as the net result of how the management team deals with the pushes and pulls along these various axes. For example, in the case of our programme theory, change proposals introduced by a given *taluka* management team need to be in line with the district's vision on one hand (allocation alignment) and the expectations of local actors (PRI members, community and other actors at the *taluka* level) on the other (strategic alignment). In such a scenario, capacity building interventions could operate through triggering changes in alignments, for example, by decreasing tensions in the allocation alignment through better negotiation skills provided to the *taluka*. The Tumkur capacity-building intervention implemented within the existing policy context of NRHM, aimed to improve both allocation alignment

(improved allocation of financial, human and technical resources for planning) and strategic alignment (strengthening role of districts in making their own action plans). However, our programme theory shows that in the present Indian district context, improved organisational performance would also need better contextual alignment (perceived decision-spaces of health managers and BPMs) and operational alignment (decreasing the social distance between doctors as leaders of health management teams and their other members, improved teamwork among the members of the team including the young programme managers). We shall assess the possible negative influences of these two alignments in hindering the capacity-building strategy pursued by this intervention in section 5.2 of this chapter.

Programs for capacity building of health workers operate at, and across several levels – individual, institution and system – and the positive outcomes, in this case improved management of health services, vary from one institution to another, and across different healthcare delivery teams. In a hospital where the doctor would be able to decrease the perceived social distance between herself and the BPM, there is likely to be a better operational alignment and higher chances of the BPM's improved knowledge and skills manifesting as improved organisational performance. These plausible explanatory CMO configurations need to be tested using programme data to understand which of the many possible organizational change mechanisms is operating in the Indian district setting.

Conclusion

In this section, we have described the process of building a revised programme theory beginning from the initial programme theory of the implementers, based on a thorough understanding of the local context and integrating relevant theoretical knowledge. This is helpful in understanding how, for whom, and under what conditions the intervention works. The resulting refined programme theory clarifies the plausible causal links in the intervention, making it amenable for evaluation.

Although the design and delivery of HRM interventions could be standardised, the institutional (hospital or *taluka*/district) contexts and socio-political contexts vary from one institution/*taluka* to another and across districts. The plausible mechanisms through which a capacity-building programme in health could bring about organisational change lie at the level of the individual (self-efficacy and organisational commitment), the teams (workplace characteristics), the organisation or district level (organisational characteristics of health services at the district level and the nature of the reporting relationships to levels above and below) and the interaction with other *talukas* or healthcare organisations (local health systems). The Tumkur intervention has provided us with an opportunity to improve our understanding of these plausible mechanisms and their interactions with the context to produce a desirable outcome. The refined programme theory can be used to further

investigate how the capacity building intervention worked, and for whom it worked and why.

Based on the CMO configurations from the refined programme theory, we will use qualitative data from interviews and data on perceived decision-spaces to understand the role of the perceptions of the health managers of Tumkur towards the intervention, as well as assess the scope for the capacity building intervention to bring about organisational change.

5.2. Macro & meso-level conditions for capacity building programme to work

In section 5.1, we described the reformulated programme theory of the intervention that identified the capacity building intervention strategy as primarily pushing the local health system towards better performance through its action at the allocation and strategic alignments (see figure 28). However, the analysis of the contextual factors (in the same chapter) indicated the need for certain local conditions so that the local health system could benefit from the infusion of new resources (either the NRHM-appointed programme managers or the intervention-mediated improvement in knowledge/skills). In this chapter, we shall asses if the macro- (policy) and meso- (institutional and local health system level) level conditions necessary for the capacity building intervention to work exists or not, by posing the following questions to the data we collected (see *Chapter 4*):

1. How do health managers perceive the recent changes in planning and management of health services being introduced by the NRHM (decentralised planning, involvement of elected representatives and introduction of BPMs)?

2. How do health managers and other actors perceive their decision-space to make positive organisational change, given that a process of decentralised planning is being put in place in India?

This section does not focus exclusively on the intervention itself, but rather examines if the conditions needed for improved performance through a stronger allocation or strategic alignment exists or not. Specifically, we shall explore if there is any hindrance to these alignments due to the effects of poor contextual alignment (perceived decision-spaces of health managers and BPMs) and operational alignment (decreasing the social distance between doctors as leaders of health management teams and their other members, improved teamwork among the members of the team including the young programme managers).

Methods

For the first question on perceptions of health managers on recent changes in the planning process from two districts of Karnataka, we used data from a survey of health managers[25] (step B1 in table 6, *Chapter 4*). We used interview transcripts from in-depth interviews conducted with 21 health managers (step C in table 6, *Chapter 4*), all of them participants in the Tumkur capacity-building intervention. We revisited health managers during and after the completion of the intervention, purposively selecting health managers who identified opportunities for creating positive change because of the capacity-building intervention and/or the new planning process, and those who saw no benefit from either of these. We also conducted in-depth interviews with other actors within and outside the district, who influence planning processes and organisational change. This included PHC staff (doctors and other health workers), state-level policymakers overseeing the health services and implementers of the capacity-building programme.

For the second question on perceived decision-space of district health system actors, we used data from an on-going survey of health managers in five districts of Karnataka, being conducted by one of the members of *Swasthya Karnataka*, the consortium implementing the capacity building programme. The data is from survey conducted in five districts of Karnataka[26], *viz.* Tumkur, Kolar, Chamarajanagar, Mandya and Yadgir districts of Karnataka. This data was collected using a self-administered tool to measure perceived decision space of health managers and PRI representatives. The tool measures perceived decision space along the following dimensions: (i) finance/budgeting; (ii) contract management; (iii) service delivery; (iv) human resources; and (v) performance monitoring. A total of 24 interviews were conducted in each of these districts.

Data analysis

Health manager survey data was imported into R statistical software and descriptive analysis was done. The decision-space data was analysed using Excel software (Microsoft Corporation, USA). The qualitative analysis (thematic analysis) was done using NVivo 10 software. The interview transcripts and the notes of the interviewer were imported into

[25] Full details of this survey including the questionnaire and data management are explained in *Chapter 4*.

[26] This survey was led up by a member of the implementing consortium during the implementation of the capacity building intervention in order to examine the extent to which Karnataka district health system actors perceive their decision-space for implementing change locally. I was invited to participate in the study in view of the current realist evaluation. The study findings are being analysed for publication. In this chapter, the data from this study is analysed with permission of the study investigators from the Centre for Global Health Research, Bangalore and Azim Premji University, Bangalore (Seshadri, Hebbare, and Kotte 2012). The data was collected between January 2012 and March 2013.

NVivo 10. The transcripts were coded based on the themes emerging from the research questions using deductive coding probing for themes related to the alignments in question: strategic, allocation, contextual and operational alignments. The thematic analysis focused on identifying the role of any of the alignments identified in the previous section in shaping the perceptions and choices of health managers towards capacity building programmes. The reasons or barriers identified by the managers in making positive organisational changes with respect to annual action plans preparation and implementation (planning) and supervision that they provide and receive. As the results of the survey became available, further probing of the data was undertaken and related codes were combined. Based on this, we identified quotes indicative of the themes that emerged.

Results

We first describe the health manager survey results: characteristics of health managers in Karnataka and their perceptions on planning, especially under the new NRHM planning process. We then report the results of the thematic analysis of the interview transcripts. Finally, the results of the decision space survey are reported. The findings of the surveys and interviews are discussed with respect to their implications for capacity building and its role in improving district health management in India.

Health managers' survey

Age and experience

Health managers are mostly medical doctors and/or specialists with only one-fifth (21%) of the health mangers having been formally trained in management. These formally trained managers are the newly established cadres of young (<40 years of age) managers recruited on short-term contracts as BPM under the NRHM. None of the doctors were trained in public health management.

In terms of years of experience, *taluka* level health managers are a mix of freshly recruited people (especially the BPM's with <5 years of experience) while the other members of the teams typically have over 20 years of experience. At the district level, most health managers typically have over 20 years of experience in the health services, with a very small number of relatively younger people. In figure 29, violin plots are used to show the distribution of health managers' years of experience and age. Very experienced people lead both *taluka* and district health management teams, but among them several close to retirement from services (60 years of age in Karnataka). The median age of a health manager in Tumkur, irrespective of whether they were in charge of a hospital/district/*taluka* was around 50. Nurses and pharmacists are conspicuously absent in health management teams at district or *taluka* level. In the case of the *taluka* hospital management, this was largely by a specialist doctor with at least 15 years of experience.

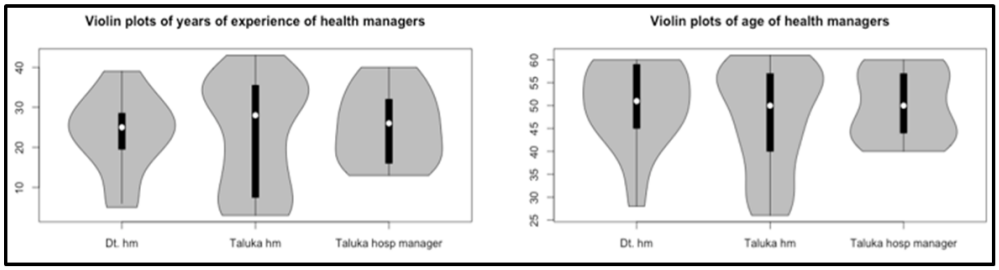


Figure 29: Violin plots of health managers' years of experience in health services and their age.
Note: White dot in the central axis indicates the median; the black box is the interquartile range. A violin plot includes the box plot along with a density plot showing the frequency distribution at a given y-axis value (comparable to a histogram).

Health manager perceptions about NRHM

The NRHM introduced young programme managers with post-graduate degrees in management for help with decentralised planning at district levels and below. Districts and eventually, *talukas* and PHCs were expected to take the lead in planning and managing their services. This central objective of decentralising the planning to lower levels seems to be generally understood by the district and *taluka* health managers. Most health managers (64%) identified planning of all activities of their facilities as the purpose of the PIP. A large proportion of health managers (78%) felt that the most peripheral level at which planning should happen was either the PHC or the newly established village health and sanitation committees (VHSC), which consisted of a mix of community members and health workers.

The first five questions on perceptions of health managers on the PIP[27] are summarised in table 9. The need for situation analysis and its role in improving facilities were well appreciated by the health managers; 87% of the respondents agreed on the need for situation analysis and saw a role for the PIP in improving their facilities. However, a slightly smaller proportion (67%) of the managers used data that they collected to conduct a situation analysis for the PIP. Most of the health managers (80%), reported that they chose the activities for the next year, based on their situation analysis. The results of the survey corresponding to questions about situation analysis are presented in figure 30.

[27] The NRHM introduced the Programme Implementation Plan (PIP), the annual action plan of the district. The PIP was the first instance in India to decentralise situation analysis and planning to district level. Before this, situation analysis, prioritization and choice of activities in a year were decided at the state level. The intervention identified the NRHM PIP as a possible window of opportunity for the health managers to introduce improvements in their local health systems.

Table 9: Health managers' perceptions of the district-level annual action plans (PIP)

Topic	Response*	Percentage (number) n=92
Purpose of NRHM PIP	Evaluate the performance of a facility	4 (4)
	Data for planning at state/higher levels	20 (18)
	Planning all activities of the respondent's facility in the year	64 (59)
	Assessment of NRHM programme in the respondent's facility	9 (8)
	No response	3 (3)
Most peripheral level at which PIP planning should be done	State	2 (2)
	District	12 (11)
	Taluka	10 (9)
	PHC	38 (35)
	VHSC	38 (35)
At PHC, the PIP should be prepared by	PHC medical officer with the health worker supervisor	9 (10)
	PHC medical officer and all the field staff	40 (43)
	PHC staff along with members of ARS and PRI members	40 (43)
	PIP should not be prepared at the PHC level	3 (4)
At *talukas*, PIP should be prepared by	THO and BPMU staff	14 (13)
	THO, BPMU and all PHC medical officers of the taluka	37 (34)
	THO, BPMU and AMO of taluka hospital	10 (9)
	THO, BPMU, AMO, ARS and PRI members	37 (34)
	PIP should not be prepared at the taluka level	2 (2)
Opinion on which statement is the best summary of role of PIP	To collect data from village level to district level and submit to state for micro-level analysis at state level	16 (15)
	A plan for facility/taluka/district based on situation analysis, which helps to identify problems and find solutions	33 (30)
	Important requirements for obtaining resources through NRHM that must be satisfied by all facilities	17 (16)
	Time-consuming and does not really help in routine work through the year	2 (2)
	Helps budget activities based on need and guides all programmes and activities through the year	27 (25)
	Not sure	4 (4)

**NRHM – National Rural Health Mission, PIP – Programme Implementation Plan, PHC – Primary Health Centre, VHSC – Village Health and Sanitation Committee, THO – Taluka Health Officer, BPMU – Block Programme Management Unit, AMO – Administrative Medical Officer, ARS – Arogya Raksha Samiti, PRI – Panchayati Raj Institutions*

Health managers perceived the need for technical inputs for PIP preparation and situation at district, *taluka* and PHC levels (see figure 30). Health managers also felt that most staff at district, *taluka* and PHC levels were involved sufficiently in their respective districts, in preparing the PIP (see figure 31). Additionally, most of them also felt that the PIP process has resulted in improved problem identification at their facilities. However, only a few health managers (33%) identified the PIP as a tool for conducting a situation analysis, identify and solve problems for their facility.

A little over half (59%) of the health managers felt that they had the ability to discuss utilisation of various NRHM funds with PRI members, while the others were either neutral to this or did not feel that they are able to discuss utilisation of funds with PRIs (see figure 32). Negotiation of priorities with their superiors was perceived much easier; a larger proportion of health managers (80%) rated their ability to negotiate priorities with their superiors.

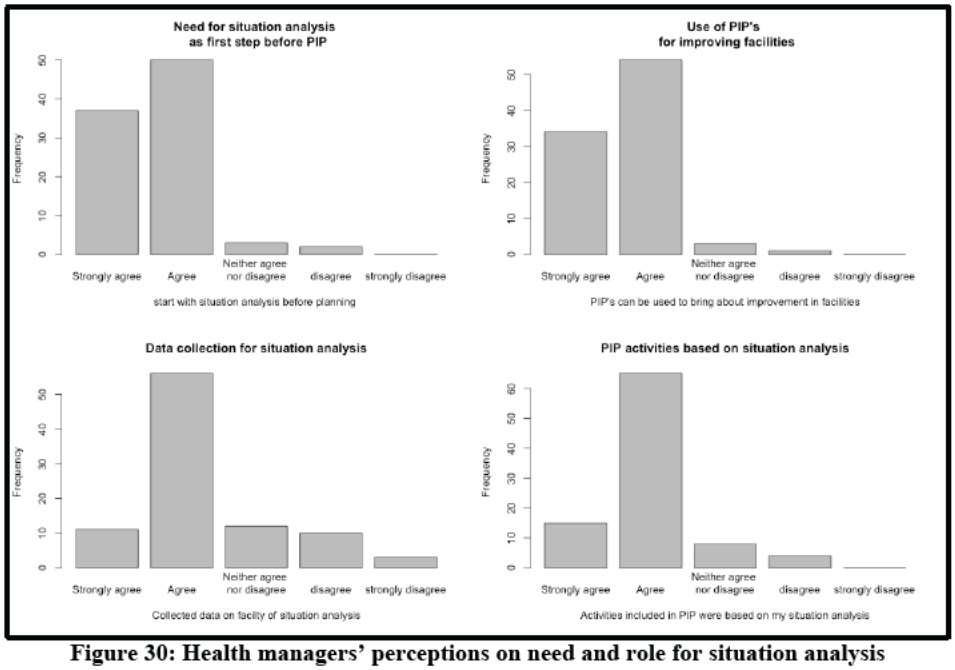


Figure 30: Health managers' perceptions on need and role for situation analysis

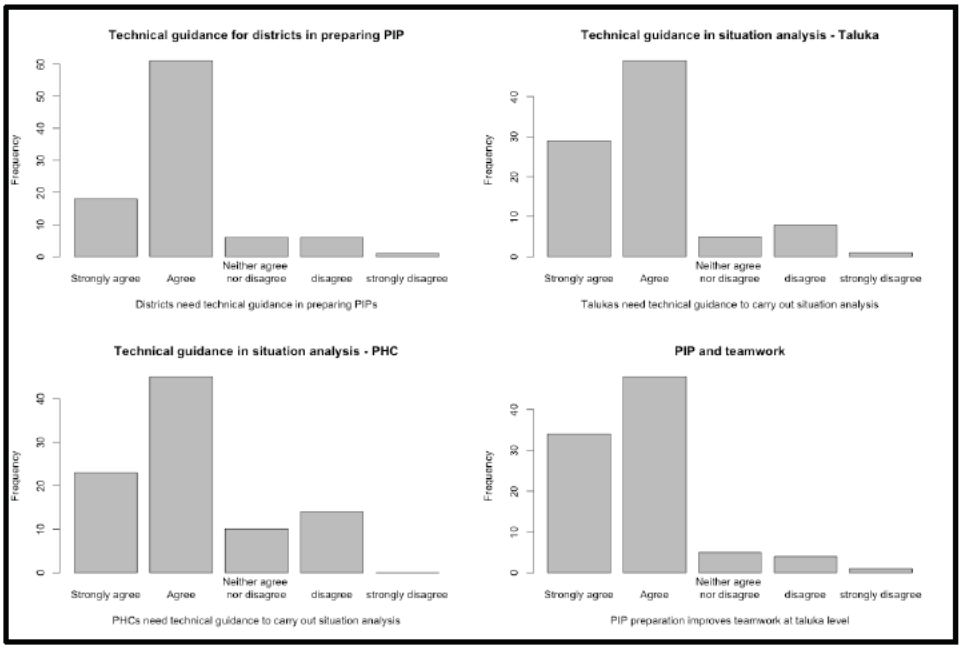


Figure 31: Perceptions on the need for technical guidance in preparing PIPs at district and sub-district level

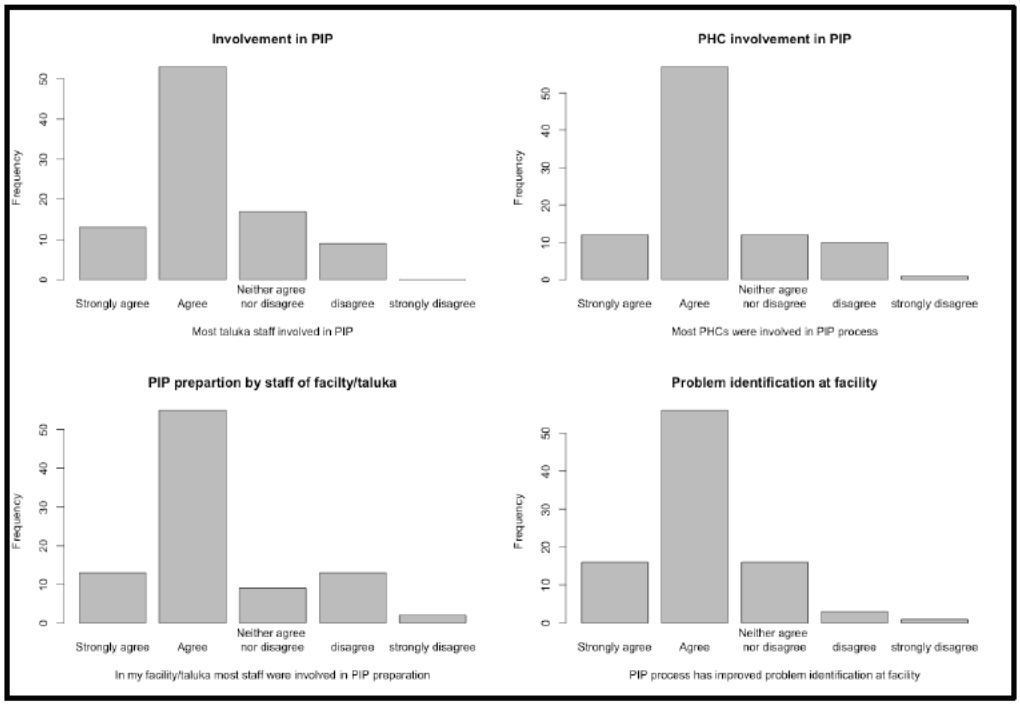


Figure 32: Health managers' perception on involvement of health staff in PIP process and its utility in making facility-level improvements

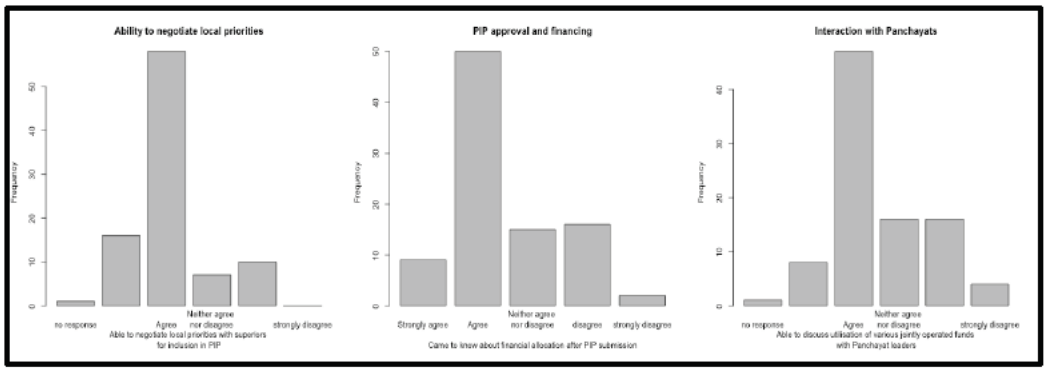


Figure 33: Health managers' perceptions on PIP approval, financing and interaction with community members (PRIs)

Thematic analysis of interview transcripts

The strategic and allocation alignments

State level control of decentralised planning

In contrast to the general positive assessment of the role and utility of the PIP in identifying local problems and solving them, the Tumkur health managers who participated in the capacity building programme expressed displeasure over their inability to ensure that the plan they send is approved finally. One of the dominant themes in the interview transcripts was the influence of the state over the district's activities to be included in the plan. This was in sharp contrast to the survey responses by health managers, where they felt that they were able to negotiate priorities. However, the experience with three plans since 2009, in their opinion showed that the state level authorities often overturned the activities proposed based on the district's situation analysis.

> *"What is the use of putting my time into the PIP, if they will change it anyway at the state (level)?"*
>
> \- a district level health manager
>
> \-

Demand for more powers to districts

Participants at district level who began to claim greater stake in their district's planning and allocation were perceived as noisier by state-level officials. Although expressed only by two of the three state-level officials interviewed, this perception of demands from the district and lower levels as *noisiness* could have a greater impact on the change proposals introduced by the *taluka* and districts. This is especially the case because the three state-

level officials interviewed occupied key positions with respect to approval of funds and plans coming from the 30 districts of the state. The perception of the officials at upper levels (in this case state level bureaucrats and officials) to innovations emerging from application of new knowledge and skills (especially after capacity-building of health managers) could influence the motivation and perceived decision-spaces of health managers at lower levels. The refined programme theory indicates that decentralisation of the planning process under NRHM depends on positive experiences for change proposals introduced from district and sub-district levels, lest they become demotivated by negative experiences. The following remark by a state-level bureaucrat about health managers who attended the capacity-building programme illustrates this.

> *"They seemed to make more noise than usual"*
>
> - a senior state-level official

The contextual and operational alignments

Mistrust of lower levels

Though the planning process sought to involve people from the village level, health managers were not yet convinced that village level involvement was useful for the planning process. Health managers at each level – *taluka*, district and state – showed a mistrust of the ability of the levels below in planning effectively.

Many health managers perceived a negative impact on the motivation and performance of health services staff due to formal platforms being provided to people's representatives through NRHM's communitisation process. Many health managers did not approve of oversight and participation by PRI members in the various committees being formed in the health services. However, this was seen only among the doctor respondents; THOs quoted several examples of negative influence due to the provision of such spaces to people's representatives.

> *"At village level they do not really know much planning. They are actually not bothered about plans and all."*
>
> - a taluka health manager
>
> *"What do they know? After all, many of them are uneducated? What is the need for them to oversee our decisions?"*
>
> - a taluka health manager

Sub-optimal utilisation of non-medical managers

The introduction of new human resources for the purposes of improving decentralised planning, the block programme managers was expected to improve planning through providing dedicated staff at *taluka* and district levels for preparing situation analysis and

conducting effective monitoring of health services performance. However, the acceptance of the new cadre of young management-trained professionals by the medical doctors was contributory in decreased opportunities for teamwork in planning and monitoring activities at *taluka* level. At the same time, it also contributed to sub-optimal utilisation of the capacities of the BPM. The general perception among health managers about the potential for BPMs to contribute to management and planning was poor; many felt that only medical doctors could understand and manage health services. This hindered the acceptance of new resources like BPMs and DPMs. The following response by a health manager illustrates this theme:

> *"BPMs should provide data as and when required and prepare good reports. They are too young and cannot understand the health department's work."*
>
> - a taluka health manager

Perceived decision-spaces of health managers and other actors

As seen in table 10, despite the efforts by NRHM to achieve decentralised planning and management at district level and below, the health managers at the district level do not perceive that they have the decision space to make changes in important management functions such as human resources, planning and budgeting. District level data shows that apart from performance monitoring (scores >3), district level managers perceive themselves to be relatively disempowered in all other functions (scores between 1.0 and 2.85).

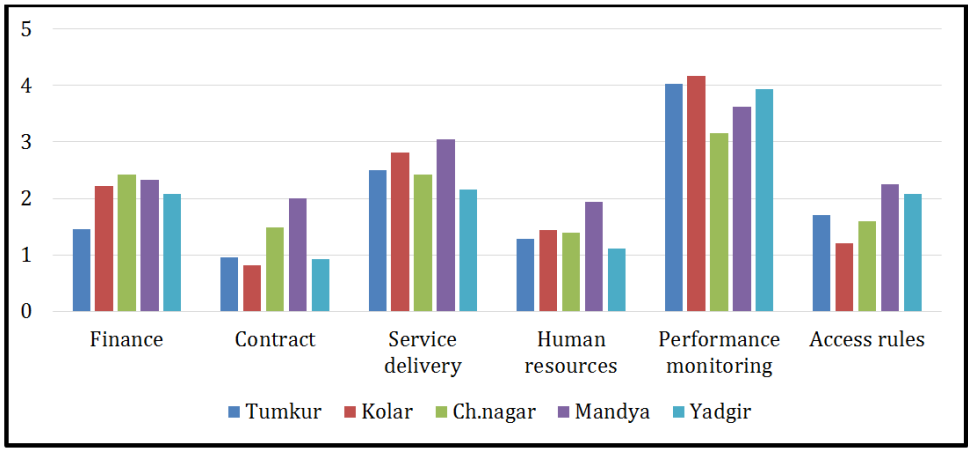


Figure 34: Perceived decision space of senior health managers

Self-assessment of decision-space along a scale from 0 to 5 with 0 being perceiving absolutely no space for decision in that domain and 5 indicating total authority over decisions in that domain

Table 10: Perceived decision space of health managers in five districts of Karnataka, India*

District	Finance	Contract management	Service delivery	Human resources	Performance	Access rules
Tumkur	1.74	1.00	2.30	1.44	3.16	1.79
Kolar	1.96	1.04	2.20	1.36	3.15	1.58
Chamarajanagar	2.36	1.65	2.58	1.51	3.60	2.38
Mandya	2.23	1.74	2.75	1.83	3.59	2.36
Yadgir	1.32	0.54	1.68	1.24	2.85	1.54

** Self-assessment of decision-space along a scale from 0 to 5 with 0 being perceiving absolutely no space for decision in that domain and 5 indicating total authority over decisions in that domain*

Discussion

Entry of managers into the team

NRHM's introduction of young management professionals into a health service that is historically run by doctors and clinical specialists was an effort at improving the ability of preparing and monitoring district and *taluka* level plans. However, the wide age gap between the doctors, who were the de facto team leaders, and the newly introduced BPMs who were on short-term contracts and inexperienced with government health services, could hinder the optimal discharge of their functions vis-à-vis planning. The relatively marginal involvement of non-medical members such as nurses, pharmacists or senior health workers (lady health visitor, senior health inspector) within *taluka* or district teams further illustrates the prevalent organisational culture of *doctor-led* health management teams in Tumkur. The centralised nature of health bureaucracies and its dominance by medical doctors in LMICs has been well documented (Gupta et al. 2010; Mills 1997). In spite of the technical need to improve district and *taluka* level planning and monitoring through the involvement of formally trained managers and paramedical health workers, structural changes may be needed to ensure the acceptance of these new approaches into existing doctor-led health services bureaucracies.

Perceptions on NRHM

The NRHM sought to communitise health services by greater involvement of community members in the various formal structures created at the level of PHCs, *taluka* and district hospitals, and the district health administration (Government of India 2005). However, there were varying perceptions on the scope for involvement of community members directly or indirectly (through participation of elected representatives) in the planning process. At the PHC and *taluka* levels, health managers were divided about the involvement of elected representatives (PRI members). The divide between health services

(understood among the health managers as the PHCs) and hospital services (the secondary and tertiary care at *taluka* hospitals and district hospitals respectively) was very apparent in the responses; very few respondents identified a role for the *taluka* hospital in the district health planning process, in spite of the *taluka* hospitals' central role in handing all referrals from the PHCs in the *taluka*.

The perceptions about new reform processes and its role among health managers is central to how they will make use of this new role granted to the district level in analysing their situation and making appropriate need-based plans for their district (Gray 2008). A favourable organisational climate is important in the success of innovation and reforms (Greenhalgh et al. 2004). In the case of improving district level planning in India, the role of mixed teams (of doctors, paramedical health workers and management professionals) is required and thus being implemented through NRHM and the capacity-building programme in Tumkur. However, the history of districts and *talukas* being led by senior doctors and specialists close to retirement, and not by a management team, may affect the success of such an intervention.

NRHM sought to decentralise planning to the district level by asking districts to prepare annual action plans through bottom-up planning. The district-level annual action plans were called PIP and for the first time, bought under one document the health services planning for the entire district, including all the disease control programmes. Previously, disease control programmes submitted plans separately to their respective programme management at the state level. Although, NRHM envisioned that planning should occur at the village level through the newly established village health and sanitation committees, a formal system for submitting plans was set up only at the PHC level. Such a decentralised district plan based on a situation analysis at each PHC, *taluka* and finally the district, was the basis for the new PIP process.

Decision-spaces and relationships among actors in the health bureaucracy

Regarding how much perceived decision-space exists for change, we analysed survey responses from five districts. According to Bossert's framework, the concept of decision space implies the range of choice that different actors in the health system perceive as being available to them along a series of functional dimensions. Within the overall framework of decentralization, officials operate within an actual or perceived area of autonomy, which is characterised as their decision space. The assumption is that within the boundaries of this decision space, officials are able to make innovative choices that promote their/the systems efficiency and effectiveness, and thereby enhance the achievement of measurable health outcomes (Bossert and Beauvais 2002). Perceptions vary significantly between districts within the same state. On their perception of decision space with respect to six management functions measured, the programme managers at the district level perceived their decision-spaces to be generally poor (figure 34 and table 10).

Implications for the capacity-building programme

The government health services function within a bureaucracy that is managed along with several other public services. Improving performance of health services through capacity building needs to take into consideration the dynamic relationships within the healthcare establishments, as well as their interaction with their reporting and supervising structures on one hand, and the community-based structures on the other. While decentralisation of planning and management to district and sub-district level structures are desirable keeping in mind the resulting improvements in planning and monitoring, this process has to be accompanied by simultaneous process of enabling district and sub-district level health managers. This process of enabling should not only include improved public health knowledge and skills, but also take into consideration the limited decision spaces perceived by them.

In the case of NRHM, early negative experiences with introduction of change proposals by district level staff could demotivate them; district and sub-district health managers' initial experiences may be crucial to the success of institutional reform such as decentralised planning. In the case of Tumkur, early efforts at introducing change proposals through their district plans did not align well with the state's efforts at harmonising change proposals by 30 other districts (see results under strategic and allocation alignments). There was a general perception among the higher levels that lower levels of the services (village health and sanitation committee →sub-centres → PHCs →*talukas* →districts →state) lack the ability to prepare good plans for their own institutions. At the same time, people viewed higher authorities as generally rejecting change or innovation. The tendency for higher levels in the bureaucracy (such as the state level officials) to seek a common thread from the several district plans rather than consider innovative change proposals (characterised as *noise* by the state level official) needs to be taken into consideration by programmes such as NRHM or the capacity building programmes, that seek organisational change within local health systems. These initial experiences with institutional reform reinforce existing perceptions on the role and influence of higher bureaucratic levels; even though the NRHM in principle granted full authority to districts to think and plan innovatively, this was hindered in practice by the contextual alignments.

Indeed, the characterisation (by the state-level official) of district's claiming of more decision space as noise illustrates this. In a comparative analysis of decentralisation of health systems in four countries, Bossert & Beauvais (2002) caution against application of decentralisation as a single activity of granting authority from a central authority to a more peripheral one (Bossert and Beauvais 2002). The perceptions of existing staff about their decision spaces and their experiences with exercising this newly granted authority bear an influence on the outcome of the decentralisation process. Early studies over two decades ago, when the devolution of several responsibilities to the districts and further below to the locally elected bodies began, also discuss the lack of claiming of these decision-spaces,

even where they were formally granted and communicated (Abdul et al 1994). The need to communicate the new autonomy to lower levels and invest in a slow and incremental process of enabling lower level functionaries to take decisions that may be often drastically different from what they did in the previous year is needed to reinforce the new way of doing things (Frumence et al. 2013)[28].

Conclusion

In this section, we were able to explore the possible hindering influence posed by the operational and contextual alignments to capacity building efforts, given the space available for organisational change within the macro-policy environment in Karnataka, as well as the prevailing perceptions about reform processes and decentralisation among the actors in Tumkur. District level capacity building programmes should consider working at multiple levels of the health system in order to ameliorate the possible barriers posed by these alignments. The perception of health managers' vis-à-vis the role of community members or people's representatives bears an influence on the nature of engagement in formal community participation platforms in health services. Capacity-building initiatives at the district level could work through improving trust and alignments between the interests of PRI members and health managers.

In this chapter (5.1 & 5.2), we have refined the programme theory and identified possible alignments through which the capacity building programme could contribute to organisational change in Tumkur. In the next chapter, we will use the *lens* provided by the refined programme theory to analyse the changes over time in some of the *talukas* of Tumkur using quantitative data relating to individual and team characteristics as well as *taluka* outputs related to better planning and supervision. We will identify patterns of change seen across purposively selected *talukas* of Tumkur that could explain why we certain changes occurred, keeping in mind the role of the intervention as well as various other factors contributing to the health outputs.

[28] Karnataka, unlike many of its neighboring states has a much longer experience with devolution of public services to the district local governments. Nonetheless, negative perceptions on the rationale for such devolution persist among professional services like doctors and teachers. In fact, neighbouring states have achieved better health and education outcomes without such devolution (Kadekodi, Kanbur, and Rao 2007).

Chapter 6: Explaining organisational change in the local health system: What was the role of the intervention?

"All that is gold does not glitter,
Not all those who wander are lost..."

Ancient prophecy translated by Bilbo Baggins in
The Fellowship of the Ring by JRR Tolkien


RESEARCH

Advancing the application of systems thinking in health: a realist evaluation of a capacity building programme for district managers in Tumkur, India

Chapter summary[29]

Realist evaluation can help to make sense of the complex nature of change that is expected in a scenario such as a district level capacity-building intervention. We aim at demonstrating how the realist evaluation approach advances complex systems thinking in healthcare evaluation by applying the approach to understand organisational change within local health systems in Tumkur district of southern India. We collected data on several input, process and outcome measures of performance of the talukas (administrative sub-units of the district) and explore the interplay between the different individual, institutional, and contextual factors in contributing to the different outcomes using qualitative data (interview transcripts and observation notes) and quantitative measures of commitment, self-efficacy and supervision style. The talukas of Tumkur district responded differently to the intervention. Their responses can be explained by the interactions between several individual, institutional and environmental factors. In a taluka with committed staff and a positive intention to make changes, the intervention worked through aligning with existing opportunities from the decentralisation process to improve performance. However, commitment towards the organisation was neither crucial nor sufficient. Committed staff in two other talukas were unable to actualise their intentions to improve organisational performance. In yet another taluka, the leadership was able to

[29] This chapter is based on the following paper: Prashanth, N. S, Marchal, B., Devadasan, N., Kegels, G., & Criel, B. (2014). Advancing the application of systems thinking in health: a realist evaluation of a capacity building programme for district managers in Tumkur, India. Health Research Policy and Systems, 12(1), 42. doi:10.1186/1478-4505-12-42

compensate for the lack of commitment. Capacity building of local health systems could work through aligning or countering existing relationships between internal (individual and organisational) and external (policy and socio-political environment) attributes of the organisation. At the design and implementation stage, intervention planners need to identify opportunities for such triggering alignments. Local health systems may differ in their internal configuration and hence capacity building programmes need to accommodate possibilities for change through different pathways. By a process of formulating and testing hypotheses, making critical comparisons, discovering empirical patterns and monitoring their scope and extent, a realist evaluation enables a comprehensive assessment of system-wide change in health systems.

Introduction

A capacity building intervention that targets district health management teams is complex for two reasons. Firstly, its implementation is complex as it involves various actors with different objectives, roles, and power. Secondly, the setting in which it intervenes is complex. A district health system is often changing in response to national policies, the local socio-political environment and internal dynamics within the healthcare institutions (LaFond, Brown, and Macintyre 2002; McDaniel, Lanham, and Anderson 2009; Adam and de Savigny 2012). Realist evaluation can help to make sense of the complex nature of change that is expected in a scenario such as a district level capacity-building intervention.

People at the core of health systems

At the core of health systems capacity are people; the health workers who make up the system (WHO 2006). One of the characteristics of a well-performing health system is a robust human resources management system that ensures the right conditions to achieve and maintain performance of the health workforce, which includes health managers. Health worker performance is closely related to their management capacity, but not limited to capacity alone; performance of health staff is determined by a variety of factors related to motivation, organisational dynamics and culture, and environmental factors including socio-economic and political factors (Dieleman, Gerretsen, and van der Wilt 2009; Mbindyo et al. 2009; Rowe et al. 2005). These determinants of performance are constantly changing. From a complex adaptive systems perspective, capacity and performance could be viewed as emergent characteristics of a district health system that has many constantly self-adjusting and inter-dependent components (Plsek and Greenhalgh 2001).

From a realist perspective, it is not merely the implementation of programmes, but people who change things. A programme is expected to work through providing new resources to one or more actors (agents) within this system. In response to the new resources introduced into the system by the programme, a change in the actors' behaviour or their interactions with systemic elements could create a new way of doing things and thus result in the programme outcome. This new way of doing things is expected to result in better performance and hence better health services. While programmes could be designed to

change behaviour of people through introducing new knowledge, skills or ideas, we see that in complex adaptive systems, the response of the people and the systems is neither straightforward nor easily predictable.

Building capacity and improving performance

Capacity building programmes are one of the most commonly used strategies to improve performance of health workers, especially in LMICs (LaFond, Brown, and Macintyre 2002). However, the connection between capacity building and performance is not straightforward; capacity building is described as being multi-dimensional, spanning various dimensions: individual, teams, institutional and health system. Experience from action research in several Indian settings has shown that the more we seek strengthening of systemic capacity, the more complex it seems to be and harder to achieve, being rooted in organisational and the prevailing socio-cultural factors, while implementation of new skills and introduction of tools seem to be relatively less time-consuming and rooted in more technical domains (Potter and Brough 2004). In view of this multi-dimensional nature of health worker capacity (and performance), the implementation of capacity building interventions in district health systems is complex; improved performance may occur in some settings and not in others. Also, the transition from individual capacity to organisational capacity is not straightforward; several organisational factors play a role in realising the individual capacity of health managers. The variance in results can be due to a variety of factors, including (but not limited to) the context, the actors' perceptions of the intervention and their responses to it, their interactions with each other, their organisation and their environment.

Complex adaptive systems: Implications for programme evaluation

The conceptualisation of district health systems as a complex adaptive system has implications for evaluating healthcare interventions. In this view, districts are sensitive to (dynamic) contextual factors, the initial conditions in which they are as well as the series of conditions through which they evolve, which accounts for often differing outcomes of the same policy or programme. On the other hand, policies or programmes may produce similar outcomes through different organisational configurations within the same district (Sturmberg and O'Halloran 2012). The literature on programme evaluation as well as on complex adaptive systems urge evaluation researchers and practitioners to adopt research designs that allow for taking into account unanticipated effects, adopting more flexible designs, capitalising on patterns and regularities emerging in the observations and adopting an iterative manner of inquiry (Patton 2010; McDaniel, Lanham, and Anderson 2009). Studies that embrace CAS thinking and theory-driven methods inherently allow for these aspects as they invariably involve several cycles of observations and analysis, especially in the complex healthcare settings. In public health, programme evaluation has embraced complexity. The recently revised Medical Research Council guidance for the assessment of complex interventions, for instance, calls for a closer examination of the causal mechanisms and theory-building to contribute to developing more effective interventions,

and provide insight into how findings might be transferred across settings and populations (Moore et al. 2013; Craig et al. 2008). However, flexible research designs for understanding change in response to interventions in a complex adaptive system may have trade-offs in terms of generating knowledge that has external validity beyond the intervention being studied. In this paper, we use the refined programme theory of the capacity building intervention to understand how the intervention could have contributed to organisational change within local health systems in Tumkur district. Realist evaluation can be used to explain change within complex adaptive systems such as a district health system, while broadening the transferability of results to other settings where the mechanisms reported could be triggered, given particular contextual conditions to produce comparable outputs (Pawson 2013).

Realist evaluation and complexity

The realist evaluation approach engages with complexity by taking an open systems approach to social systems (Pawson 2002). The number of interacting agents, components and forces that influence people and organisations in a given system is high, outcomes are sensitive to initial conditions and thus outcomes are likely to show high variability. The realist approach to this complexity is to view reality as being stratified, with several layers of explanations to be found for the empirical observations. This provides a possibility to hypothesise and refine our explanations of why some phenomena occur (Pawson 2002; Wong et al. 2013). In the realist view, there are many possible behavioural choices that people manifest (or not) in specific conditions, which results in the outcome. An evaluation using the realist approach thus begins by seeking an explanation for why the outcome of interest occurs in some places and not in others, keeping in mind that programmes work through people and their choices. Programmes facilitate agents to make choices and interact in new ways by providing physical or symbolic resources (Pawson and Tilley 1997).

In order to understand the relationship between intervention, context and outcome, realists use the concept of mechanisms, which are the "... underlying entities, processes, or [social] structures which operate in particular contexts to generate outcomes of interest" (Wong et al. 2013). In the case of complex adaptive systems, several latent mechanisms could be present within the system, which can be triggered by the intervention in the presence of specific contextual elements and result in the observed outcomes (Bunge 2004). In practice, realists use the CMO relationship as a tool for empirical investigation and analysis. It allows for developing an explanatory theory of why the intervention worked for some and did not for others (see figure 10). Theoretical explanations of this kind are referred to as middle-range theories, explanations which "...involve abstraction... but [are] close enough to observed data to be incorporated in propositions that permit empirical testing" (Wong et al. 2013; Astbury and Leeuw 2010). It should be noted that in the literature, middle range

theory and programme theory are increasingly used interchangeably. In this chapter, for reasons of clarity, we will use the term programme theory or PT.

In a realist approach, the evaluation begins with formulating a PT (integrating the assumptions of the programme designers and implementers with the existing wider knowledge or evidence on the topic and insight regarding the contextual factors that could affect the outcome). The PT is tested through empirical studies and a refined theory that explains why the intervention worked for some and not for others is the end point of the evaluation. This could be the starting point for a next study. Such cycles allow for fine-tuning of the PT and ultimately to accumulation of insight. The seeking of an explanation for the patterns (or demi-regularities, which are somewhat predictable patterns or pathways of programme functioning) seen in some cases (and not in others) is the hallmark of a realist evaluation (Jagosh et al. 2013; Pawson 2013; Marchal 2011). This addresses one of the features of complexity in social systems, wherein orderly patterns could be seen at the systems level, but often not at the individual level due to reiterative positive and negative feedback loops among some components (and not in others) (Kernick 2004). The foundations of realist evaluation within critical realism, and its evolution as a scientific evaluation method are described by Pawson (Pawson 2013) and have been discussed earlier in *Chapter 2*. Its potential as an evaluation approach for complex health systems problems has gained interest over the last decade (Prashanth, Marchal, and Criel 2013; Marchal et al. 2013; Marchal et al. 2012; Sheikh 2012; Westhorp 2012).

In this chapter, we shall use the case study approach to explore how a capacity building intervention implemented in two different places in a district (both nested systems within the larger complex system of the district) evolved over time, using a realist evaluation, in order to understand how and why observed outcomes occurred. We build upon the insights gained in the refining of the PT (*Chapter* 5.1) and possible facilitating or hindering factors identified through the analysis of the macro- and meso-context (*Chapter 5*.2) and explore the plausible pathway through which change could have occurred in purposively chosesn *talukas* (cases). In line with the realist evaluation approach, cases were purposively selected to allow testing the propositions of the refined PT and to improve our understanding of why programmes work for some and not for others (Pawson 2002). We then re-apply the MPF (see *Chapters 3* and *5.2*) to summarise how the capacity-building intervention could have led to organisational change in a district health system.

Methods and analysis

The realist cycle

A realist evaluation begins with developing the initial theory. A PT is best considered as an explanatory pathway, connecting the inputs of the intervention to the expected outcomes, taking into account possible contextual factors and mechanisms (Lipsey and Pollard 1989). The refining of the programme theory, starting from the initial programme logic of the designers to a refined programme theory incorporating insight from literature, design of the programme and its implementation context, is explained in *Chapter 5* (also see Prashanth et al. 2014). Our refined PT aimed at explaining the differences in *taluka* outputs following the intervention, accounting for differences in the individual characteristics of the health managers, institutional factors within the two *taluka* health services and the differing environmental factors. The refined programme theory of the intervention that guided the choice of data and the analysis is shown in figure 35.

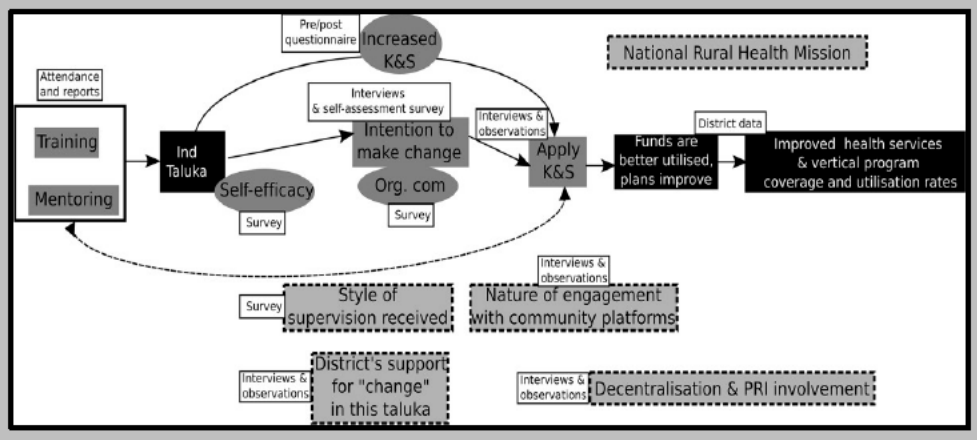


Figure 35. The refined programme theory of the intervention showing possible intermediate steps between intervention inputs and expected outcomes. (Prashanth et al. 2014).

Data collected for the intermediate steps are shown. Grey boxes with stippled border show contextual elements identified as having an influence on the intervention outcomes during the refining of the programme theory. Unshaded boxes indicate the source of data. Boxes shaded black, indicate outcomes. Intermediate steps are shown in boxes shaded grey with no border.

Case selection

In the second step, cases were selected purposively. We assessed the performance of the 10 *talukas* of Tumkur district from 2009 to 2012, focusing on performance aspects that could be logically connected to the capacity building intervention (using the programme theory of the intervention as a guide). We scanned various characteristics of the cases and purposively chose cases to match the propositions drawn from the refined programme theory (from *Chapter 5*). The *talukas* of Tumkur, including the *taluka* hospital and the PHCs are shown in figure 15.

Data collection[30]

In realist evaluation, the choice of data to be collected is guided by the programme theory. First, we collected data on the intensity of the programme implementation: participation in classroom activities, frequency of mentoring visits and retention of mentoring interest. The mentors seem to have preferred *talukas* based on their own assessment of interest shown for mentoring by the *taluka* team. Hence, retention of mentor interest has been chosen as a proxy for the *taluka's* commitment towards the vision for change as articulated by the intervention. It was assessed on the basis of frequency of mentoring visits and observation notes of the mentors, and scored into high, moderate and low. Second, we assessed intermediate outputs (self-efficacy, organisational commitment, style of supervision and expression of intention of *taluka* managers to make changes) using data from a survey of health managers in Tumkur.

Organisational commitment along with self-efficacy has been described as being crucial to performance and is considered as a key mechanism explaining human agency in various settings (Bandura 1982; Meyer et al. 1989). The three-component construct of organisational commitment by Meyer and Allen describes the nature of commitment of people to their organisations along three dimensions: affective commitment (emotional attachment to the organisation; a feeling of belongingness), normative commitment (a feeling of being obliged to the organisation) and continuance commitment (a feeling of being in the organisation because of lack of alternatives) (Meyer and Allen 1991; see box 6). The three different dimensions of commitment are not exclusive; they often co-occur. Self-efficacy was measured using a 10-item scaled based on the Bandura scale and degree of supportive nature of supervision was measured using a Likert scale questionnaire adapted from a tool by Oldham and Cummings and the Michigan Organizational Assessment Package (Bandura 2006; Oldham and Cummings 1996; Cammann et al. 1978; see box 6). The tools used have been described earlier and published (Prashanth et al. 2012).

[30] The data collection and the tools are explained in *Chapter 4*.

To assess the distal outputs of the intervention, we collected annualised data on budget utilisation, provision of 24/7 PHC services, coverage rates of institutional delivery, delivery by caesarean section (CS), completion of three antenatal care visits and immunisation. We also assessed changes in infant mortality rate and stillbirth rate from 2008 to 2012. Stillbirths and infant mortality reported in all the facilities of the taluka were used to calculate the rates. These quantitative data were supplemented with qualitative data collected through interviews with health managers and observations. In-depth interviews were conducted with 21 health managers of Tumkur who participated in the intervention, their superiors at state level (n=2) and their subordinates (PHC health staff and co-workers; n=4)[31]. Participant observation of monthly and annual review meetings at the taluka and district level was carried out to understand the organisational dynamics and the differences in interpretation and implementation of state policy.

Analysis

All interviews were transcribed and entered into NVivo 10 (QSR International Ltd., Australia), together with the observation notes. During the analysis, we used the CMO configuration as a heuristic tool (see table 8). These hypothetical CMO frames were based on the refined programme theory of the intervention, as described in *Chapter 5*. Initial codes reflected the PT elements of intervention, actors, context, mechanism and outcomes and new codes emerged. The quantitative data, including measurements of organisational commitment, self-efficacy and style of supervision provided were integrated into the analysis and this helped in triangulating emerging findings. In this way, each case was analysed.

We then compared two *talukas* (the cases) to further test whether the refined PT explained the differences in the outcomes. We supplemented these two contrasting case studies with demi-regularities[32] from comparable settings in the other *talukas*. We focused on the internal dynamics within the *taluka* teams (micro-context) and the interaction of these teams with the immediate *taluka* environment (meso-context) and the larger policy environment at the district, state and above (macro-context). We also described the organisational configurations of the two cases using the multipolar framework.

[31] These were the same interviews described in *Chapter 5* using interview guide described in *Chapter 3*.

[32] These are somewhat patterns that arise across one or more cases; they are somewhat predictable based on the accumulation of insights from the refining of the PT and an understanding of the intervention. For example, a health manager who seems to have benefitted from the intervention, but posted in a remote and poorly resourced *taluka* not benefitting from follow-up mentoring visits (due to frustration) and the designers too losing interest in him/her could be such a pattern.

Outputs

The responses of the *talukas* to the intervention varied, as shown in table 11. The aggregated budget utilisation rate for Tumkur district increased marginally, from 83% in 2009 to 85% in 2012. However, this conceals a variety of responses at *taluka* level. In figure 36, the net annual change in utilisation (the net change in the proportion of available funds timely spent between two years) from 2010 to 2012 is shown.

While some *talukas*, like Pavagada, improved their utilisation rate, others like Madhugiri reduced their spending rates. Yet others, like Turuvekere, showed wide changes from one year to another, while net change from 2012 to 2009 was only marginal.

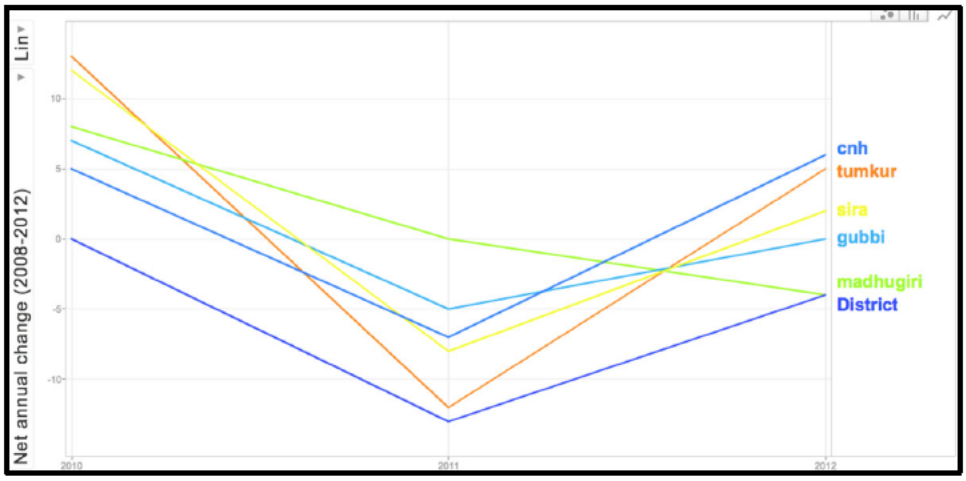


Figure 36: Annual change in utilisation rate from 2010 to 2012 among *talukas* of Tumkur. (Prashanth et al. 2014)

Note: *The net change (from the previous year) in the aggregate budget utilization rates of all facilities in the talukas are shown for CN Halli, Tumkur, Sira, Gubbi, and Madhugiri talukas. The District figures are for utilization rates of budget allocated for disease control programmes and other functions managed at the district level.*

In figure 37, the stillbirth rate in 2012 is plotted by *taluka*, against net change in stillbirth rate from 2009 to 2012. We use the net change in stillbirth rates as a proxy indicator of performance. Stillbirth was chosen because of the emphasis in the intervention on using planning (through good annual situation analyses and problem identification) and supportive supervision in improving maternal and child health outcomes. Such variability could result from several factors, including existing reform processes that promote institutional deliveries, and improvements in the functioning of the health services (including the capacity building intervention). Besides such interventions, which influence all *talukas* to the same degree, context-specific socio-political factors and organisational

factors, which are of interest in our evaluation lie within the *taluka* health services and could influence performance. We shall use the variability in the *taluka* level outcomes to purposively choose *talukas* and examine if the hypothesised explanations from the refined programme theory could explain these differences.

Confronting the programme theories

The refined PT could be elaborated as follows: (illustrated in figure 27 in *Chapter 5*)

Contact classes could work through commitment and efficacy of health managers who bear an intention to make positive change by providing them resources in the form of knowledge and/or skills; they are likely to apply these knowledge and skills in *talukas* where local team environment supports such change and the change agenda aligns with the local PRI and district/state expectations

Mentored participants are more likely to seek opportunities to improve their local health systems to make positive change in the organisation's performance wherever there is no hindrance (or there is an alignment) to such moves either from above or from the PRI/community structures.

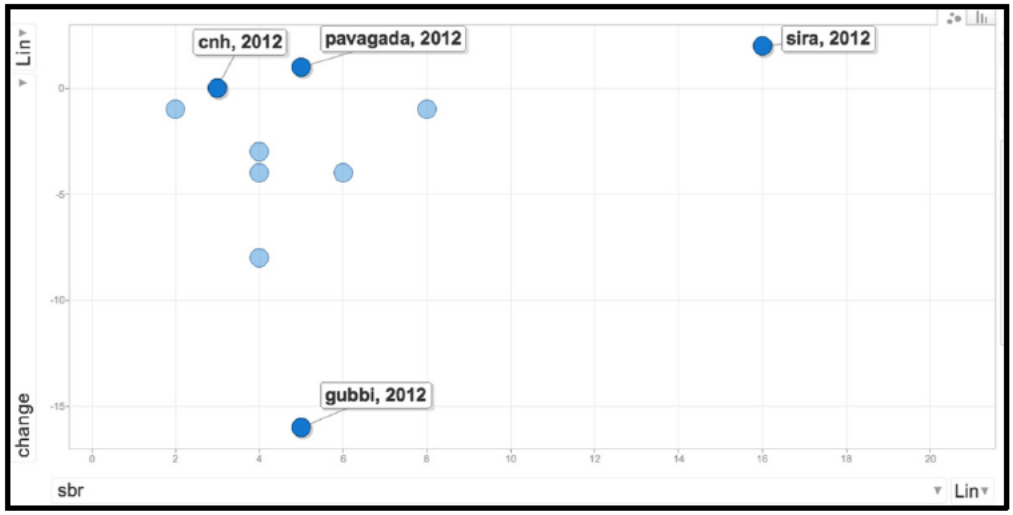


Figure 37: Stillbirth rates in 2012 by *taluka* shown against net change in this indicator from 2009 to 2012. Gubbi, Sira, Pavagada, and CN Halli stillbirth rates are labelled (Prashanth et al. 2014)

Table 11: Assessment of exposure to intervention, key intermediate mechanisms (commitment and efficacy) and outcomes of the 10 talukas of Tumkur (Prashanth et al. 2014)

Districts	Classroom participation[1]	Mentoring[2]	Retention of mentoring[3]	Organizational commitment[4]	Self-efficacy[5]	Supportive supervision[6]	Intention to change[7]	Stability of team[8]	Net change in budget	Net change in CS rate[10]	Net change in stillbirth rate[11]	Development index[12]
Gubbi	0.7	0.7	High	AC 2.66 NC 2.47 CC 2.42	68	2.5	50	Moderate	2	1	-16	0.95
Tumkur	0.7	0.7	Moderate	AC 2.85 NC 2.46 CC 2.69	68	2.6	75	Low	6	1.5	-8	1.21
CN Halli	0.6	0.5	Moderate	AC 2.75 NC 2.29 CC 2.71	70	2.2	100	High	4	0.1	0	1.02
Turuvekere	0.6	0.4	Low	AC 2.81 NC 2.80 CC 2.47	68	2.4	83	High	5	5.8	-4	1.06
Tiptur	0.5	0.5	Moderate	AC 2.25 NC 2.33 CC 3.17	86	2.5	75	Low	-4	12.6	-1	1.25
Koratagere	0.4	0.5	Low	AC 2.87 NC 2.73 CC 3.07	71	2.3	20	Moderate	3	1.8	-3	0.89
Madhugiri	0.5	0.5	Low	AC 2.50 NC 2.03 CC 2.50	83	2.4	40	High	4	1.3	-1	0.82
Pavagada	0.6	0.5	Moderate	AC 2.50 NC 2.05 CC	79	2.3	0	High	6	0	1	0.78

Table 11 note: [1]Average of degree of classroom participation of all participants from a taluka, based on assessment of attendance and classroom activity (assessed by observation notes) expressed on a scale of 0 to 1.
[2]Average of degree of mentoring received based on attendance of participants at mentoring sessions (0 to 1.0).
[3]Qualitative assessment of the taluka's ability to retain interest of the mentor expressed as high, moderate, and low.
[4]Three dimensions of organisational commitment: Affective commitment (AC), normative commitment (NC), and continuance commitment (CC). Individual commitment measures for each of these three dimensions were computed and the averages of these were calculated by taluka. Commitment scores are on a scale of 0 to 5.
[5]Self-efficacy scores expressed on a scale of 0 to 100.
[6]Style of supervision largely assessing supportive nature of supervision (1 to 5; 1 being most supportive and 5 being most authoritative).
[7]Percentage of ever-trained members in the taluka, who expressed intention to make changes based on the capacity building programme.
[8]Stability of team assessed based on turnover of health managers in the taluka team from 2009 to 2013 expressed as high, moderate, and low. High indicates stable teams (low turnover).
[9]The net change in percentage budget utilization from 2009 to 2012. Budget utilisation for each of the PHCs in the taluka was obtained.
[10]The net change in proportion of caesarean sections (CS) among total deliveries from 2009 to 2012. CS at taluka hospitals is at present very low and efforts are on to improve emergency obstetric care at taluka hospitals through ensuring facilities to perform CS.
[11]The net change in stillbirth rate (of the total live births in the taluka) from 2009 to 2012. Negative change indicates a fall in stillbirth rate.
[12]The socio-economic development index for the taluka. Scores less than 1 are considered very poor and such talukas have been designated "backward" (Government of Karnataka 2004)

Local health systems could be improved in decentralising health systems if teams have the ability to negotiate with various actors about their change proposals and if they claim decision-spaces for preparation and implementation of action plans and local decision-making at district and lower levels; if the capacity building programme could work at multiple levels to ensure better alignments between opposing elements across various actors and levels in the health system.

We examine the refined programme theory using aggregated *taluka* level individual, team and local health system characteristics chosen based on the contextual and mechanism elements suggested by the refined PT. In this case *mechanism* is used to indicate drivers of individual human agency in a given contextual setting and not (yet) the mechanism(s) for how the capacity building programme works. The purpose of the current analysis is to understand the complex interaction between the various individual mechanism(s) with contextual elements that vary from one individual to another that appear as emergent characteristics of a local health system.

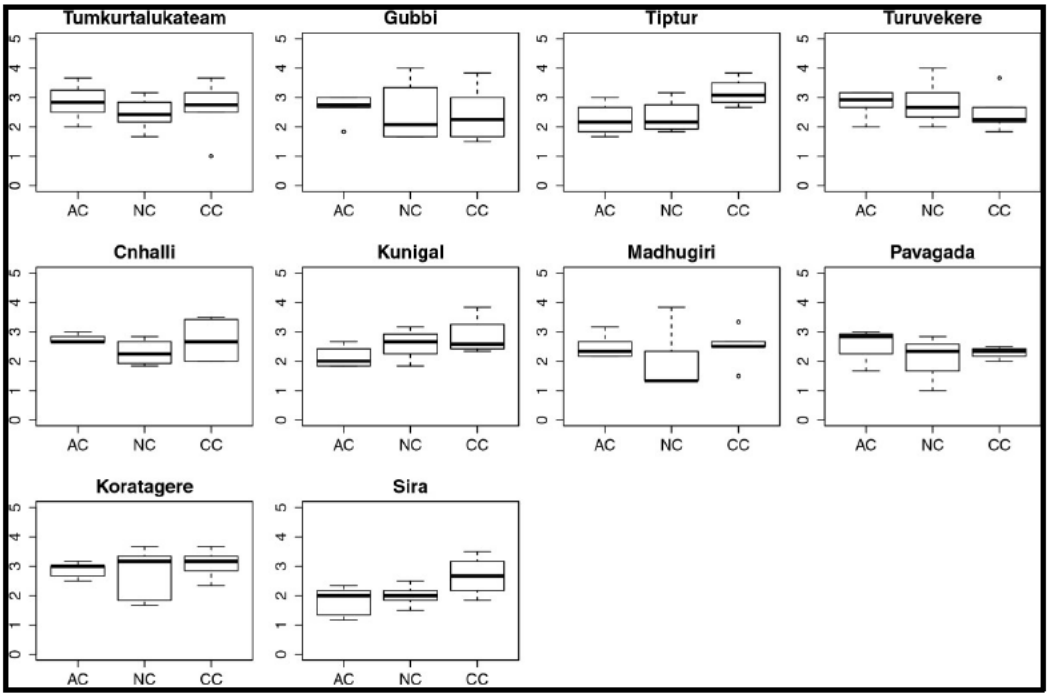


Figure 38: Boxplots of three dimensions of organisational commitment in the 10 talukas of Tumkur district. (Prashanth et al. 2014)

The three dimensions of commitment are based on Meyer and Allen 1991. AC is affective commitment, NC is normative commitment and CC is continuance commitment. Individual commitment measures for health managers were computed separately for AC, NC and CC. For each taluka, box plots of the scores for each of these were plotted.

In table 11, the various individual, team and institutional factors that we assessed based on the programme theory are shown. The factors chosen are a mix of individual and organisational contextual factors (intervention exposure, socio-economic development index of *taluka*, mentoring interest & supervision received, stability of team), mechanisms of human agency at the individual level (intention to change, organisational commitment and self-efficacy) and proxy measures of outcomes logically related to improvements in the *talukas* expected from the intervention as well as more distant *taluka* outcomes determined by several other factors. The *talukas* varied in their participation in classroom and mentoring activities, in view of transfer in and out of health managers in the *taluka* or absenteeism (either by choice or due to priority work at the *taluka*). Higher participation in the intervention did not always result in an intention to make changes at workplace (*cf.* Gubbi and Tumkur with highest participation and only moderate expressions of intention for positive change); nor did expressions of such intentions always result in improved outcomes (*cf.* CN Halli with a 100% of the team expressing intent but showing negligible change over the three years in the outcomes).

Refined PT 1 (Gubbi): Committed health management teams could utilise new opportunities for organisational improvement presented by decentralising health systems wherever their change agenda aligns with the expectations of higher levels of the bureaucracy.

Gubbi's stillbirth rate decreased the most among all the *talukas* in Tumkur; the improvements in proportion of CS performed and budget utilisation were modest (see table 11). Health managers from Gubbi participated actively in the intervention and retained interest of the mentors. They showed relatively higher affective commitment than many other *talukas* (see figure 38). Only half of the health managers expressed an intention to make changes.

From the interviews and observations at Gubbi, the main theme emerging was commitment. The interest shown by the THO and the AMO towards improving services is evident from the interviews. The THO was given temporary charge of heading the team while simultaneously being the medical officer of a nearby PHC. Yet, he felt that he could mobilise greater support to improve services in the *taluka* by motivating like-minded people. He felt that being a health manager is an opportunity to bring about changes.

> *"In my taluka for example, I think we can make big change. It is not that everybody in my taluka want to make changes. Only one-third of them are motivated to make changes. And that is enough. I think I can make a lot of improvement by motivating these people."*
>
> - *Taluka* health manager from Gubbi

Such positive assessment of motivation of PHC staff as a strategy towards improving services was not shared widely in the other *talukas*. Both the AMO and the THO saw the intervention as an opportunity to benefit from the recent efforts to decentralise the preparation of action plans to *taluka* and PHC level. They felt that the decentralisation of planning under the National Rural Health Mission (NRHM) was an opportunity to address specific problems at the PHCs.

> *"More resources mean more opportunities to make change. If they slowly give more and more power to us at taluka level, we can make many more improvements. Right now, very little is possible at taluka level."*
>
> - *Taluka* health manager from Gubbi

> *"NRHM has given BPMs. This will improve plan preparation and monitoring. They are young and enthusiastic, but they need to some guidance and I think I can provide that."*
>
> - *Taluka* health manager from Gubbi

This general pattern of commitment at Gubbi is also seen in Tumkur *taluka*, with a relatively high affective commitment, albeit with a higher turnover of staff.

Refined PT 2: Tapping commitment for organisational change could be frustrating in low-resource local health systems where health managers working in poorly resourced talukas, in spite of their improved management capacities and intentions to make change, could get frustrated by the lack of facilitating action from above.

While Gubbi is situated close to the district headquarter town of Tumkur, CN Halli is further away, but with similar level of socio-economic development (see table 11). CN Halli showed hardly any change in most outcomes, in spite of a high intention among the health managers to make improvements in the *taluka*. CN Halli also had lower turnover rates of *taluka* level health managers. The level of affective commitment was comparable to that at Gubbi, but continuance commitment was relatively higher. CN Halli is amongst the most remote *talukas*. With a limited private sector, it is not a favoured choice of posting for doctors. For several months, the function of THO and AMO was taken up by the same person. The *taluka* level staff showed commitment towards the services and took pride in working in a remote *taluka* with very limited human resources. However, during discussions about decentralised planning expressed by this *taluka's* health managers, the dominant theme was frustration.

> *"What PIP? What decentralisation? I sent so many requirements for staff and proposals for improvement. Only thing I got is more work, less staff and zero solutions. On one hand, I have to answer the local ZP members' complaints and on the other hand, I have to just keep implementing plans and schemes coming from above. Nothing can be done without more staff."*
>
> - Health manager from CN Halli

While the decentralised planning brought about by NRHM was perceived as an opportunity in Gubbi, in CN Halli the respondents expressed frustration. This was also evident in several meetings at the *taluka* level, where lack of power at the *taluka* and district level to make changes, for instance in recruitment of human resources and purchase of critical equipment, was often raised.

> *"NRHM has just brought more and more responsibilities, but no powers. For everything, we have to wait for a visit from the secretary or commissioner. More money means more work and more statements of expenditure and paperwork"*
>
> - PHC health worker from CN Halli at a review meeting

Similar frustrations about increased paperwork and responsibilities were found in the thematic analysis of interviews and observation notes from Pavagada, another poorly staffed and the most remote *taluka* in Tumkur.

> *"The increased money with NRHM is good. But it's not merely money. We need committed people who can stay in such a remote area. I am from this area and I live and work here. People who come here hardly stay beyond a few months. They either get frustrated or seek transfers"*
>
> - Health manager from Pavagada

The recent reforms towards giving greater powers to the elected representatives were seen as a threat to their functioning. The *taluka* health staff felt that channelling the frustrations of the PHC staff upwards was their role much more than managing conflicts and frustrations or building amicable relationships with the elected representatives.

> *"Nothing much can be done without giving powers at taluka level and PHCs. I cannot even appoint a Group D staff. Where is decentralisation in this?"*
>
> - a PHC staff from CN Halli

> *"What more can I do? I communicate promptly to my superior all the problems and I am still waiting for the solutions. In the (capacity building) programme they are saying, find local solutions. With so little staff, how much local solution can I find? People just don't want to work here. I handle two responsibilities at the same time..."*
>
> - a health manager from CN Halli

The pattern of CN Halli is also seen at Pavagada *taluka*, which is also severely under-staffed, with a small group of health managers with comparatively lower levels of affective commitment. The improvements of Pavagada *taluka* were poor, in contrast to Sira *taluka*, which is also geographically remote and socio-economically poor, yet showing a remarkable vision in the *taluka* team to operationalize emergency obstetric facilities in the hospital, a dire need in this remote region. Sira *taluka*, unlike Pavagada and CN Halli was much more dominated by a continuance commitment rather than affective.

> *"We felt that we have to do it. So many mothers were just being referred to Tumkur. The delivery load is high and for several months, we had only one obstetrician, but somehow we managed. I know how the pressure is at the district hospital, so having LSCS (CS) facility at Sira decreases the burden at the district hospital. It's not easy, but somehow it is happening."*
>
> - a Sira health manager

Health system interventions need to take into account the subunits of the local health system in which they intervene. In this case, each *taluka* can be conceived as a sub-system with a particular organisational context but a similar macro-context, exposed to the same intervention. In such cases, the realist evaluation approach helps to formulate specific CMO-based propositions that can be tested through comparing contrasting cases. This allows for building explanations on how organisational change occurred in some settings and not in others. The process of testing and refining the CMOs allows for an understanding of the conditions through which such interventions could work in a complex local health system.

Explaining change: contribution of the intervention

While the training programme (the intervention) included all health managers in the district, their actual participation was variable. This depended on several factors at the level of the participant (their interest and motivation), distance between the *taluka* and the district headquarters, the staff turnover rate and the responsiveness of the implementers to the *taluka* teams. Many of these factors are related to each other sometimes counter intuitively. For example, remote *talukas* like CN Halli and Pavagada had a relatively low turnover, while more sought-after *talukas* like Tiptur and Tumkur *taluka* had a higher turnover. Capacity building interventions that seek to strengthen local health systems ought to take into account such existing variations within the sub-systems at the design stage.

Health system strengthening interventions seek to strengthen core systemic functions of the local health system. The capacity building intervention sought to improve performance through improving planning and supervision. The contribution of such improvement (if any) ought to be framed against several other activities at the PHC-, *taluka*- and district-level. For example, the provision of secondary level obstetric care at the *taluka* hospital includes developing the capacity of the facility to conduct CS. This has been the policy focus in Karnataka for several years. In addition to the state government's pressure to implement this, health managers also face the pressure of the community and local elected representatives to operationalize CS facilities at *taluka* hospitals. However, in spite of favourable environmental conditions at the *taluka* level, effectively ensuring this requires a strong managerial vision and leadership. This was observed only in some *talukas*. This illustrates that, in a district health system influenced by several policies and environmental factors, it may be difficult to disentangle the contribution of the intervention to the observed outcomes. However, by choosing intermediate and distal outcomes at various levels (individual and institutional) that are most sensitive to the intervention inputs, it is possible to identify *talukas* where the intervention could have contributed to the outcome by seeking alignments with existing conditions and the characteristics of the people and teams in these *talukas*.

Capacity-building interventions could work through identifying such existing alignments between local actors' needs, policy and practice, and by strengthening conditions for the same. As the CN Halli case shows, in spite of favourable policy, community pressure and a committed team at CN Halli, the frustrations of health managers resulting from previous negative experience with decentralised planning altered their choices and collective agenda-setting against actualising CS sections in their hospital. In contrast, health managers of Sira *taluka* showed relatively low levels of affective commitment and self-efficacy, but frustration was low. With the participation of elected representatives and through effective leadership by the AMO, the CS facility was organised. Thus, in a *taluka* considered to be poorer than CN Halli in terms of socio-economic development indicators, the proportion of deliveries conducted by CS increased by 8.3% between 2009 and 2012. Further thematic analysis of *talukas* that resemble some of the characteristics of our cases (such as the case of Pavagada discussed under the CN Halli case summary above) or are contrasting with our cases in some respects, could strengthen our findings, and allow validation of these findings in future studies in similar settings.

From individual change to systemic change

Although the capacity building intervention was implemented at the district level across all *taluka*s, the exposure to the programme, the response to the intervention (attitudes towards change and intentions), the internal individual and organisational dynamics and the outcomes varied. These factors determine why programmes implemented at the district level may or may not achieve their expected outcomes, especially in those healthcare institutions where the conditions necessary for such a change do not exist. However, despite this potential for variation, formulating hypotheses in the form of context-mechanism-outcome propositions and testing these empirically can help identify patterns of response to intervention. The resulting CMO configurations can then be refined further by testing them in other cases of the district to arrive at an explanatory theory that explains what worked, for whom and under what conditions.

Capacity building interventions work through people and choices they make. Many individual attributes, such as organisational commitment and self-efficacy, have been reported as mechanisms that explain human agency (Bandura 2006; Meyer and Allen 1991; Marchal, Dedzo, and Kegels 2010a). However, the *taluka* health system is more than a group of individuals with varying commitment or efficacy measures. The change in the organisation comes about through the interaction among these participants, governed by rules and norms within their organisation (the organisational culture and their activities that result in the organisational outputs), and the interaction between the organisations as a whole with the external environment. These relationships between the internal and external components of the organisation have been brought together in the multipolar framework for assessing performance of healthcare organisations, shown in figure 39.

The observed changes in the *talukas* could be seen as having occurred through shifting or triggering of any of the six alignments in the multipolar framework. The *taluka* management team is responsible for managing not only the four core functions (the boxes in figure 39), but also the alignments (the arrows in figure 39) between the functions. The local configuration of these functions, and the management team's response to tensions between these functions explains the variation in the outcomes of the capacity building programme.

Refined programme theory

The capacity building intervention sought to alter the outputs (service production) through increasing knowledge and skills to develop annual action plans and supervision functions. An analysis of the programme theory of the intervention indicates that the designers of the intervention sought to bring about these changes through instilling a can-do attitude among the health managers. This could be seen as trying to strengthen the allocation and operational alignments in the multipolar framework (see figure 39). However, in the context of a health system that is undergoing decentralisation to the district levels, and where participation of elected representatives within formal structures of the health service is being increasingly pushed for by the national and state policy, the contextual alignment could dominate in some *talukas*, as was the case in CN Halli. However, a committed leadership at the *taluka* level could counter the negative perceptions of participation of elected representatives prevailing within the health service. In such cases (as in Gubbi), the legitimisation and strategic alignments could be triggered, where the capacity building programme was seen as an opportunity to translate existing commitment towards the organisation into an improvement in its performance. The overall performance of the *taluka* is the result of how the alignments between the four poles are perceived locally and managed. The capacity building programme thus acts upon the *taluka* performance through imparting skills and vision to managers, who then balance or counter the emerging alignments. However, it must be emphasised that in our study, the insight from the evaluation were not periodically fed back into the system to enable the local actors (implementers of the intervention and the recipient health managers) to benefit from or reflect on these. Realist evaluation could also be used as an entry-point for action research on local change, wherein the CMO frames being considered or the refined programme theory could be shared periodically with local actors. Furthermore, such discussions and sharing with local actors could be further used to refine or validate the middle-range theory emerging from the evaluation.

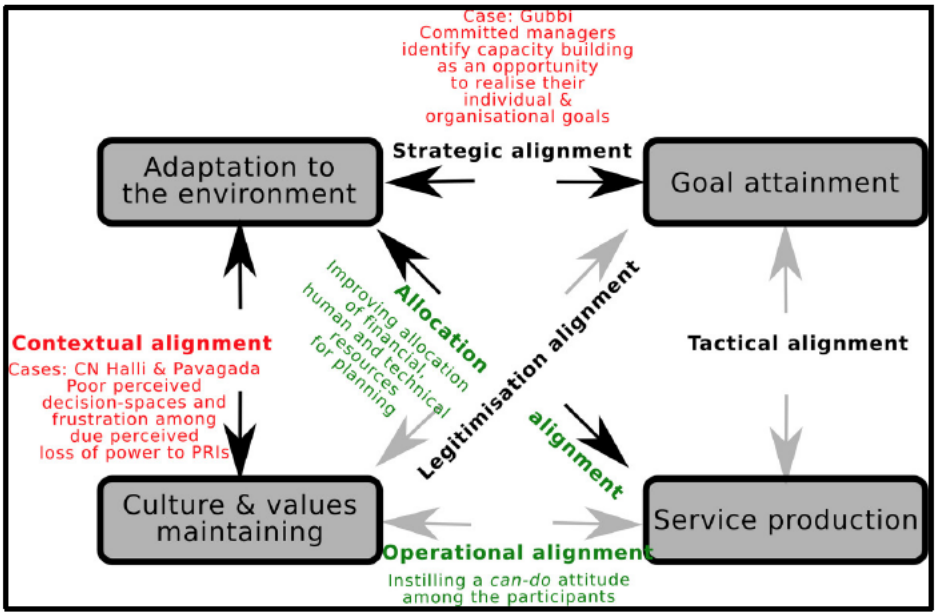


Figure 39: The alignments in the multipolar framework that were identified by the intervention (green) and those that were actually triggered in the cases (red) (Prashanth et al. 2014)

The study results could be contrasted with other CMO-like configurations (or explanations) tested in comparable settings. Morgan and Baser report on organisational change in response to capacity building in Tanzania. In their case a comprehensive and planned approach to public service reform programme was made as a strategic choice. They find in their case that an unusual combination of political support, low levels of political conflict, some skilled Tanzanian managers, an absence of deep bureaucratic resistance, some historical resonance, funder patience and some key domestic constituencies may be enough to make the public service reform programme effective. They conclude "in a theatrical analogy that Tanzania may just have the right stage, actors and even props to pull off a comprehensive reform show" (Morgan and Baser 2007). In contrast to our settings where bureaucratic resistance was "managed" in some settings by skilled and/or committed managers, elsewhere it prevailed, thus curtailing the manifestation of local change, wherever it was possible. Wherever macro- and meso-level policy opportunities aligned with skilled and capacitated local health system management teams where the team dynamics were favourable, change was possible. Indian local health system settings have been known to curtail teamwork and rather focus on doctor-led or individual-led teams rather than allow for participatory processes in multi-skilled health management teams, where capacity of newly inducted members may not be allowed to manifest due to the nature of these teams (Purohit and Verma 2013; Maheshwari, Bhat, and Saha 2008).

Chapter 7: Synthesis and lessons learned

"The Road goes ever on and on
Down from the door where it began.
Now far ahead the Road has gone,
And I must follow, if I can,
Pursuing it with eager feet,
Until it joins some larger way
Where many paths and errands meet.
And whither then? I cannot say"

— Bilbo Baggins
in The Fellowship of the Ring by JRR Tolkien

Chapter summary

In this chapter, we summarise the progress starting with the research question, proceeding to the methodological approach and finally the insights gained. Subsequently, the lessons learnt are discussed in relation to the methods as well as practical implications for design and implementation of HRM programmes in local health systems in Karnataka. We end with a discussion on the limitations of this study.

7.1. Synthesis

We began with the question on how capacity building programmes such as the one in Tumkur could contribute to improving local health system performance in *Chapter 4*. The nature of our question necessitated a methodological approach that is sensitive to the influence of a various factors within the local health system and its policy environment. In this dissertation, we have explored the application of the realist approach in understanding the nature of change in a local health system capacity building intervention. On one hand, the use of realist evaluation allowed for formulating and analysing context-sensitive questions. At the same time, the choice of such methodological approaches are very important at this instance, where very few programmes undergo critical evaluation in terms of *how* they work; most studies focus on *whether* a programme works or not. Both these questions complement each other, but the latter is more often answered than the former in India (*Chapter 2*).

The approach

By nature, HRM interventions in local health systems are complex interventions (*Chapters 3* and *4*). The question of how the programme could contribute to change required a better understanding of local health system performance and its assessment. Organisational change in response to policy processes or capacity building interventions could bring about change (or not) through a variety of processes, some foreseeable and intended, but others often not intended. The MPF in view of its generic nature is a powerful heuristic tool that allows the study of organisational change within local health systems. However, the capacity building intervention's initial programme theory as formulated by the designers was insufficient in terms of explaining how the intervention elements could contribute to organisational change. In this scenario, there was a need to better understand the designers' assumptions on how the intervention was expected to work, as well as the various local health system actors' perceptions with respect to these intervention elements. At the same time, there was a need to examine these assumptions and perceptions within the background of the vast literature on organisational change and capacity building. This reformulation of the programme theory was attempted keeping the realist approach of *what works, for whom and under what conditions* and was based on implementer assumptions, review of literature and an analysis of the context (table 7). This process of refining the PT was iterative and progressed as the intervention rolled out, starting before the writing of the study protocol (*Chapter 4*) and culminating in the refined PT and the plausible CMO configurations (table 8) towards the end of the intervention. Such an approach was useful in clarifying the possible pathways for change in the given Tumkur context. While the refined PT did not (yet) identify the plausible change pathways, it helpfully pointed us towards the potential barriers in the form of the dominant contextual and operational alignments[33] in the local health system, whereas the capacity building intervention relied on strengthening the allocation and strategic alignments (see figure 28). The hindering role of these alignments, largely influenced by the current phase of decentralisation within the health bureaucracy in India (narrow perceived decision-spaces of managers) and the difficult relationships within doctor-led teams as well as the relationships between local health system managers and PRIs, did not provide the scope for the intended strategy of the intervention to trigger allocation/strategic alignments (see conclusion of *Chapter 5.2*).

The results

Based on these insights, a further analysis of the individual level mechanisms of change (organisational commitment and self-efficacy) was attempted. The lens provided by the refined PT was used to analyse the interview data on purposively chosen cases, and hence further refine the PT based on the data. The choice of cases was based on scanning the

[33] The alignments refer to the MPF alignments discussed in Chapter 3.

various *talukas* for patterns of co-occurrences of individual mechanisms and similar contextual elements. The resulting refined PTs (both listed below in italics) provide an insight into the nature of change that can be expected in Tumkur-like settings where there is a tension between the intervention-mediated push for locally actionable change and the rigidity of a decentralising health bureaucracy.

> *Committed health management teams could utilise new opportunities for organisational improvement presented by decentralising health systems wherever their change agenda Aligns with the expectations of higher levels of the bureaucracy.*
>
> *Tapping commitment for organisational change could be frustrating in low-resource local health systems where health managers working in poorly resourced talukas, in spite of their improved management capacities and intentions to make change, could get frustrated by the lack of facilitating action from above.*

The refined PTs confirmed the dominance of contextual and operational alignments in countering the intervention's *push* to the local health system towards improving its allocation and strategic alignments.

Discussion

The notion of building capacity of a local health system involves influencing decisions and choices made by health managers in such a way that their new choices could steer their organisational goals towards providing and improving their health services. If and whether such well-intentioned programmes result in improving health manager capacity, and thus result in positive organisational change depends on a variety of individual, institutional and local environmental alignments, as shown in *Chapter 6*.

The question of contribution of the capacity building programme to organisational change in the district health system reflects on our desire to make change in the way things are through well-intentioned and possibly well-designed programmes. These intentions and the design seek to bring about lasting change in the way things are being done at present within the health system, and in hope that these programmes could bring about a change in the way things are being done. However, for the evaluator trying to understand the contribution of the intervention in any of the changes observed, this recalls the age-old chicken and egg question on structure and agency. While trying to understand if reviews of healthcare interventions teach us anything about how to improve health systems, Pawson et al. grapple with the difficulty of simplifying policy implications of complex healthcare interventions into scorecards or bullet-pointed briefs and rather suggest a theory-driven approach that takes into account the dynamics of social change in complex organisations. The actions and decisions of health managers are shaped by the social structures in which they sit. However, these structures themselves are subject to change as a result of the activities and

choices of the historically situated individuals who make them up. According to Pawson et al., social change, in short, occurs through a never ending cycle: "structural conditioning shapes social interaction which in turn shapes structural elaboration, which then provides structural conditioning and so on, and so on" (Pawson et al. 2014). Moving organisations towards change clearly needs to induce lasting changes in these iterative cycles of structural conditioning and/or social interaction. It requires that people within these local health systems make use of these knowledge and skills to effect changes that will move their organisations towards better performance. However, people are not passive recipients of knowledge and/or skills or even the change agenda. One of the ways capacity building programmes could do this is to harness the feeling of unhappiness with the current state of things especially in the top management. This could provide the premise for making changes that may be necessary to move organisations closer to better performance. Capacity building programmes could then provide the *context* to set in motion particular *mechanisms* that could change norms and practices that stand in way.

The lessons learnt from this study could be organised at two levels, firstly on the lessons learnt for organising capacity building programmes that target local health systems such as the district level health system in India, and secondly on using realist evaluation to study a local health system intervention.

7.2. Lessons for capacity building

Programme theory building for HRM programmes

HRM programmes need to invest time and resources in explicating their own assumptions on how they seek to bring about change in a given local health system. Formulation of a programme theory could be a powerful programme design tool in addition to an evaluation tool. Such an explicit *a priori* formulation of programme theory based on drawing out implementer assumptions as well as an understanding of the local context helps implementers identify barriers and confront their own assumptions on how the local health system actors are likely to respond. The formulation of such PTs also allows for the evaluation to progress deeper into the programme.

District as a system

A local health system as a concept is widely prevalent in public health literature. However, health managers at district and sub-district levels may not always see themselves as components of a system. Such system-level interventions could fail in the Indian district context, due to the people within the system not sharing this lens of looking at the district as a district health system as opposed to seeing districts or sub-districts as self-contained units meant to implement policies or programmes designed at a higher level.

Change in decentralising local health systems

In a local health system such as the one in Tumkur which is in the process of decentralising key functions such as planning and management of health services, capacity building programmes need to provide the health managers with the ability to claim decision-spaces that are available to them without disrupting the established lines of authority. At the same time, the programmes need to equip the managers with the ability to manage possible negative experiences from applying some of the knowledge and skills from the capacity building programme.

Capacity building strategy for local health systems

And finally addressing the question of which strategy ought to be used for capacity building of health managers in local health system such as the one we studied in Tumkur, the application of the multipolar framework has shown us possible broad principles on which to design capacity building programmes.

Most of the capacity building programmes focus on strengthening tactical alignment i.e. strengthening the knowledge and skills of the health managers in achieving the goal of improving health services coverage, utilisation and quality. However, as seen in the case of Tumkur and perhaps in several similar Indian settings, the tactical alignment may not operate effectively in improving healthcare provision due to the influence of other alignments.

Firstly, let us consider a local health system that is in the process of decentralising such as the one in Tumkur. As we saw, formal decision-spaces are granted but not actually claimed due to various reasons including the lack of a favourable organisational climate; these health systems are not used to decisions being made locally, as well as lack the vision to set or institutionalise goals locally at the district and sub-district team level. They rather conceptualise themselves as purely implementing guidelines and programmes and tend to await goal setting from above, in spite of a desire to take control locally. One of the strategies in such a situation could be to strengthen the legitimisation alignment. However, this has to be carefully balanced by enabling health managers to cope with the increasing PRI involvement in formal structures of the health system, a reform that has generally seen poor acceptance among the doctor-health managers. This requires trust building and dialogue between PRI bodies and doctors. Although such platforms exist, there have not been any internal or external efforts at building trust or negotiating each other's goals.

The *modus operandi* of the NRHM in ensuring decentralised decision-making has been to focus on the allocation alignment by improving fund availability to the districts. However there has been severe under-utilisation of funds and poor strategic planning or prioritisation on what to invest the new monies in. This problem could be overcome by focusing on strengthening the legitimisation alignment and thus strengthening goal setting, while

keeping in mind the culture and values of the teams in these local health systems. New management staff or consultants who are not doctors or permanent staff are not well accepted in power positions within district and sub-districts, thus hampering their performance. This could be remedied through formally involving and empowering other cadres (nurses and pharmacists) that are currently marginal to local health system management.

7.3. Lessons for studying organisational change in local health systems

Choice of realist evaluation and lessons learned

Realist evaluation adopts a generative perspective on causality, according to which change occurs as a result of the interaction between actors within a specific context (Stame 2004; de Souza 2013; Greenhalgh et al. 2009). A PT that is constructed along these lines can be tested in an iterative manner and allows for comparison across cases. The resulting insight, in the form of a refined programme theory, informs policymakers, managers and funders on what works, for whom, in which conditions and how. A realist evaluation of an intervention provides an explanatory theory on why the intervention worked for some and not for others through a process of adjudication between rival explanations. By employing the classical apparatus of the scientific method – "formulating hypotheses, making critical comparisons, discovering empirical patterns and monitoring their scope and extent" – realist evaluation enables a comprehensive assessment of system-wide change (Pawson 2002).

The CMO framework and the *what works, for whom and under what conditions, and why* was not only a powerful lens on one hand to look at the empirical observations and the data, but also served as a useful tool to organise and analyse the data and report findings. The use of very broad framework such as the multipolar framework helped to understand the dynamics within the otherwise static (snapshots) of reality that our data captured.

This study is the first structured application of the realist evaluation approach to understand an intervention in Indian settings. The lack of very concrete results of a given realist evaluation is compensated by application of this approach and possible testing/refining of the middle-range theories generated in a given setting, elsewhere. This is because the effect of the context is particular and may not be standardised across all settings. But, frequent evaluation using the realist approach will allow for testing of crucial contextual conditions that could possibly be *managed* to improve the design and implementation of capacity building interventions. We hope that the present study will be the first of a series of realist and theory-driven inquiries in India, thus opening up the possibility of answering the question on how capacity building programmes work across the country, and not just in Tumkur.

Choosing theories for the evaluation

Public health programmes are social programmes implemented within complex social settings. One of the ways of understanding the relationships between the inputs of a programme and its intended outcome is to build the evaluation around programme theories. However, programme theories (which are middle-range theories) could also draw upon a variety of overarching theories in literature. These overarching theories rely upon the inter-play between social structures and the latent human agency, which may or may not manifest in a given setting. A good programme theory is able to draw upon the implementer assumptions on why the given intervention is likely to bring about change in the given setting, and is thus the beginning of a realist evaluation. However, the choice of larger overarching theories to draw from is a crucial step. The need to link intervention design and implementer assumptions with the larger theory is crucial; else the evaluation runs the risk of evaluating the theory, rather than the intervention. A critical assessment of implementer assumptions reveals their logic underlying particular style of implementation or particular choice of intervention activities. If indeed, these crucial assumptions guided their choice of activities or implementation steps, then finding an overarching theory that explains such a logic is crucial to the evaluation of the intervention.

The theory in question needs to explain if the programme (or policy) has resulted in a transformation (rather than a reproduction or reinforcement of existing structure-agency states) of "workings of structure, culture, agency and the relations and interplay between them" (Pawson and Tilley 1997). In our study, the choice of theories of commitment and the theory of self-efficacy followed the intervention designers' assumptions of banking on bringing about a *can do* attitudinal change among health managers and tapping committed ones through focused mentoring efforts. Although the choice of theory was in close alignment with the implementer assumptions, the available contexts did not allow for a clear manifestation of commitment and efficacy in our setting. The setting also did not allow for enough diversity of programme theories to be tested. One possible way of resolving this could have been to seek further validation of the outcome of our study in other districts of Karnataka which also face similar policy barriers to realising decentralised district-level planning.

Outcomes, contexts and mechanisms

Through scanning the implementation setting shared characteristics, in our study we tried to identify likely co-occurences of particular outcomes in particular sub-district contexts, and posited the possibility of the inter-play between individual health manager commitment, decision-spaces and capacity building interventions. Through the analysis for such probabilistic co-occurrences, realist evaluation tries to advance probabilistic laws (as opposed to statistical regularities) that explain the plausible reasons underlying such co-

occurrences. In a treatise on mechanism and explanation[34], Bunge (1997) explains the need for mechanismic explanations which "afford satisfactory – though somewhat provisional – explanations", recalling complexity approaches that called for "good enough" solutions in systems which are not yet fully understood (Post and Johnson 1998; Kernick 2002; Sridharan and Nakaima 2012).

The realist formulation of mechanisms in relation to particular contexts where they could be triggered thus leading to particular outcomes has been the inspiration behind the context-mechanism-outcome formulation. We used outcomes logically relate-able to our intervention to track back towards plausible mechanisms (and their contexts) after hypothetically framing them based on our programme theory. The formulation of the CMOs is seen as a way of examining what works, for whom and under what conditions closer to the data than as an overarching analytical approach. According to de Souza, it could be understood as follows: "How a social program might reconfigure a context by activating mechanisms pre-existing in the action context". The CMOs should follow from the elicited (or explicitly stated) programme theory, but not entirely so. They could also borrow from the wider body of knowledge (literature) or from a closer and comprehensive analysis of the contextual factors in the implementation setting (ranging from macro- and policy-level factors to the individual levels ones). As the programme theory of our intervention was not explicitly stated, we were unable to advance deep enough with respect to formulating CMOs. Ideally, various implementation scenarios incorporating micro- and meso-level variations could have been foreseen and assessed. In our case, eliciting of the programme theory took away time and resources and only one iteration of the CMOs was conducted. Future evaluations of capacity building in similar settings could build upon the CMOs that we framed and assessed. A larger implementation setting and diversity of contexts also improve the possibility of contrasting or opposing rival explanations and advancing to the refined programme theory.

Evaluator within the implementation team: Reflexivity and positionality

In the study, various qualitative data collection tools have been used to collect Data on perceptions and practices of health managers. These tools require a constant engagement between researcher and the participants. Unlike the case of quantitative data collection methods like surveys, the use of interviews and field notes from observations during field visits require a degree of reflexivity on the part of the researcher. A degree of self-

[34] This comprehensive treatise, dedicated to Robert K Merton, "…the sociologist and philosopher, scholar and Defender of the Rational Faith", deals brings together the thinking of mechanisms in the natural sciences with the various schools of thought on the same within the social sciences and drawing from the need (either in the natural or the social sciences) for statistical regularities to be accompanied with mechanisms, without which the regularities not amounting to much in terms of explanation.

awareness of the various identities of the researcher during collection of data, and how these identities could shape the collection and analysis of data and reporting of the results requires to be kept in mind during all these steps, as well as made explicit to the extent such reflexivity is embraced by the researcher. A closely related aspect of such data collection is the positionality of the researcher, which refers to the "being explicit about (one's) position (e.g., in terms of power, hierarchy, solidarity, control) and how this influences social relations in the field, and ultimately…presentation of findings" (Kielmann, Cataldo, and Seeley 2011).

In this study, the researcher has been a member of the team that was involved in the design and delivery of the intervention. Early involvement included being a member of the core team within IPH Bangalore, although not as the leader of the implementation team. The role involved participation in meetings where agenda-setting and design of various intervention components were being discussed, both within the consortium as well as with the other key actors (Government of Karnataka, ITM and other participating organisations). Such early involvement provided a unique insight into the key logic behind particular intervention components. However, the close involvement was hampering the reflexivity of the researcher and hence the researcher sought distance from the implementation early on during the intervention itself. Once the contact classes began, the researcher took on the role of an active observer during the contact classes and mentoring visits. Being within the implementation team provided a close insight into the discussions among the intervention implementers. At the same time, on both ethical and technical grounds, efforts were made in informing participants of the *researcher role* (as opposed to being a member of the implementation team) through oral and written consent forms that explained the reasons for the interviews. Although there was initial hesitation by the participants in being critical about the intervention, building a rapport with participants and clarity over time that the discussions were indeed anonymous allowed greater reflexivity both in the researcher as well as the participants.

7.4. Study limitations

Limitations in the scope of study

Neglect of private sector

In our study, only the government healthcare organisations were studied and the widely prevalent private health sector was not included. One of the reasons for this was the way the intervention approached a local health system. The private sector was not considered by the designers of the intervention, in spite of their focus on the system instead of the disease control programmes. Many HRM interventions that focus on health systems strengthening suffer from this limitation of choosing to avoid the private sector. On one hand, engaging

with them is *messy* as there are a variety of actors in the private health sector in India. On the other hand, there is a need to involve them as they cater to a large proportion of outpatient care and tertiary hospital care in India. While acknowledging this limitation, we may note that the inclusion of the private sector in such HRM interventions could further increase the complexity of the setting.

Consortium-led implementation

Our evaluation also did not closely investigate the intervention itself and the dynamics of such interventions operating through a consortium. Both locally and internationally, public health research as well as health system interventions are increasingly being implemented by consortium of organisations. This is indeed a positive and much sought after trend as it tends to bring together different perspectives, strengths and possibly pools resources. However, consortium-led implementation adds to the complexity of the intervention in view of the dynamics within such implementing consortia. Our approach did not sufficiently consider this influence.

Methodological limitations

The output of a realist evaluation is a PT or a middle-range theory (not a universal overarching theory), which provides a plausible explanation for the outcomes of the intervention; it cannot make irrefutable predictive statements about the intervention. However, such middle-range theories form the basis for improving our understanding of complex interventions and help in improving design and implementation of such programmes in future.

In *Chapter 6*, outliers were purposively selected based on outcomes that are logically connected to the intervention inputs. The explanation that we provide suffers from a possible confirmation bias. Ideally, a full realist evaluation needs to refine the middle-range theory through several iterations of cases selected based on diversity of outcomes. This will strengthen the explanatory power of the middle-range theory.

In an open systems world, there is no end to the explanatory possibilities and role of other mechanisms that can be put forth and tested. Hence, a major limitation of our evaluation is the number of such rival explanatory theories that can be practically put to test. While acknowledging this practical limitation, it may be said that a critical mass of realist evaluations will strengthen the explanatory power of the middle-range theories tested by these evaluations (Pawson 2002). The dynamic nature of the context and the various socio-political influences could be several and some of them, often unforeseen. For example, in late 2014, a minor exchange of words between a group of doctors and a senior bureaucrat led to doctors striking work, the event quickly spiralling into a political issue in Karnataka. After a few days of healthcare delivery being paralysed in many of the PHCs and hospitals in the state, strong assurances were given about changing several work conditions,

incentive structures including salaries and filling up the huge vacancies in the rural hospitals. Such large-scale policy development could shift the alignments and alter how health managers relate to their workplace. Our approach although comprehensive enough to include foreseen and expected policy shifts such as the NRHM, was not able to capture some unforeseen ones.

A realist protocol

In *Chapter 4*, we attempted to present a study protocol of a realist evaluation. The experience of framing a protocol for the realist evaluation was useful in systematically documenting our approach towards evaluating the intervention, early in its implementation. However, unlike experimental approaches, realist studies progress through an accumulation of insights often through iterative rounds of data collection, analysis and going back to the field for further refining of the PT. On one hand, the depth to which one could refine the PT is limited by the time and resource availability. In our study, another comparable district in Karnataka was selected (see *Chapter 4*) to compare and contrast the PT emerging from Tumkur and validate the PT. However, in view of time and resource constraints, we had to abandon the further validation of the PT in another comparable setting.

Also, analysis of the data cannot be precisely described at the beginning of a realist evaluation study, especially in interventions such as the one we studied where an explicit programme logic has not been formulated *a priori* by the intervention designers. The initial step of eliciting the programme theory from document review and interviews revealed factors at the district level as well as in the larger policy environment that could have hindered the realisation of the outcomes of the intervention. The evaluator then had to adapt accordingly and devise tools in course of the study, or adopt an analytical approach that allows for exploration of these themes within the qualitative data collected.

Individual mechanisms and systemic change

The availability of the protocol also helped to track the relative importance accorded to individual mechanisms, as postulated in *Chapter 4*. The role of organisational commitment and self-efficacy was accorded a central role in literature and we anticipated investigation of association between better performance at individual level and the measurement of these psychological constructs. However, the refining of the PT (*Chapter 5.1* and *5.2*) showed the hindering influence of various contextual factors. With the development of the MPF, the focus shifted from exploring the associations between individual performance and these individual mechanisms to the systemic mechanisms. An important lesson was the relative weakness of apparently universal mechanisms that explain human agency at the individual level, in explaining organisational change in particular settings. The MPF helps to understand systemic change better because its generic nature allows for placing various individual context-influenced mechanisms in a given organisational context. And indeed, HRM programmes may (or may not) trigger multiple mechanisms, some foreseen (and foresee-able) and others not.

Afterword

"Why can't reason give greater answers? Why can we throw a question further than we can pull in an answer? Why such a vast net if there's so little fish to catch?"

- Yann Martel in *The Life of Pi*

Realist evaluation broadened my horizons in terms of looking and evaluating healthcare interventions. My earlier work in public health had already expanded my perspective on the wider social underpinnings for health, beyond biology and medicine, but the choice of realist evaluation as an approach to understand change within a local health system allowed me to appreciate the abundance of knowledge and insights in various other social science disciplines from which to borrow insights and explanations from. Indeed, one of the primary outcomes of this dissertation has been the insight gained in appreciating the depth and breadth of inquiry needed to understand or explain change in social systems.

An ancient Sufi aphorism goes as follows: "Good judgment comes from experience. Experience comes from bad judgment"[35]. While the effort into understanding the nature of change has been substantial, in hindsight CMO building could have benefitted from more parsimony and the theorising (building the middle range theory) could have benefitted from stronger empirical basis and more iterations in the field. That said, the experience of conducting this realist evaluation and learning about nature of change in local health systems is a major personal and professional milestone that will add value to future work on human resources management programmes and policies.

Over the last five years, my interactions with health managers, policymakers and advocates of health systems strengthening has improved my understanding of the reasons for comparatively poor health systems in this part of India. There are many reasons that can be put forward for this, including technical reasons (within the domain of medicine and public health) but also spanning historical, socio-political, economic and cultural domains. For example, a well-managed district hospital could often be so, against all odds, while in another place an extremely well-resourced hospital may be managed sub-optimally, in spite of all efforts. There are various states of performance between and beyond these contrasting paradoxes. Over the last five years, I was able to understand the nature of change one can expect (or not) in the current policy environment that prevails in Karnataka, given that there is an on-going effort at decentralising(?) the health bureaucracy. On one hand, answers to

[35] Although attributed to several modern Western thinkers, this aphorism can be traced to Mulla Nasreddin, a Turkish philosopher and Sufi saint of the 13th century known for his stories laced with populist and daily-life philosophical themes.

public health management problems are within social structures, agencies and their interplay, operating in wider historical and societal framework than our relatively narrow methodological frameworks may allow for. On the other hand, the layered nature of reality hides explanations for the patterns we see; cognition and behaviour can draw as much from biology, chemistry and psychology, as from sociology and organisational sciences. However comprehensive we may try, it is not comprehensive enough. At some point, the need for wider nets to improve the *catch of fish* is compromised by its *unwieldiness*.

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Appendix 1: Modules taught in the course

Month	N°	Modules (organised)	Learning methods
Aug /2009	1	Concepts in public health	lecture & group discussion
Aug /2009	2	Leadership	lecture
Sep /2009	3	General planning	lecture & facilitated discussion
Nov /2009	4	Human resources planning	lecture
Nov /2009	5	Motivation	lecture
Feb /2010	6	Administrative procedures	participatory discussion + problem solving exercise
Mar /2010	7	Health information system (HMIS)	lecture & discussion + problem solving exercise
Apr /2010	8	Financial procedures	lecture & facilitated discussion
Apr /2010	9	Medico-legal procedures	lecture
Jun /2010	10	Teamwork	group discussion + games & exercises
Jun /2010	11	Obstetric emergency care (guidelines)	lecture
Aug /2010	12	Role of PR-institutions in health system	lecture & facilitated discussion + group exercise
Sep /2010	13	NRHM- PIP planning	demonstration forms + exercise
Oct /2010	*14*	Supportive supervision	group discussion + role play & field visit
Nov /2010	*15*	Conflict resolution & negotiation	facilitated discussion + games & exercises
Dec /2010	16	Quality in health care and way forward	lecture & facilitated discussion

Appendix 2: Consent forms

(In English)

Institute of Public Health
#250, Masters Cottage, 2nd C Main, 2nd C Cross, Girinagar I Phase, Bangalore – 560 045
www iphindia org **Phone: +91** [redacted]

Information sheet

Background: Institute of Public Health, Bangalore is a non-profit public health institute in Bangalore involved in training, research, consultancy and advocacy The Institute has recently begun a training programme for the district and taluka health team in Tumkur

About the study: The Institute is undertaking a study in your district to understand the process of planning, specifically the NRHM Programme Implementation Plan for 2010 The study will involve interviews and focus group discussions with people in the health department at district, taluka, PHC and village level The study will also involve interviews with non-health personnel in the district who have been involved in making the NRHM PIP In addition, policy makers within the state as well as national level will be interviewed

Why the study? The study is being undertaken to understand the operational problems that happen in implementing the process of NRHM PIP as per the guidelines We also hope to understand the problems that people face in the field and inform policy makers about it

Anonymity and confidentiality of all views and opinions expressed during the interviews is guaranteed The aim of the study is not to find fault with the process in your district, but to understand and document issues and problems with the process of PIP preparation itself, and on trying to find out how this can be improved All original recordings of the interviews shall be destroyed after transcription and interviewees shall not be identified in any report or publication

Audio recording will be done to help in capturing all the views and opinions expressed The audio will be destroyed after transcribing Complete anonymity and confidentiality of the individuals is guaranteed

Outcome: The study findings will be used to inform policy-makers about the operational issues in PIP preparation The findings will also help streamline and improve the process in the coming years In addition, the findings will be used to inform training programmes and workshops for district health personnel in other district training programmes A brief of the findings will be shared with you after the study

For further information, please contact: Dr Prashanth NS, PhD Fellow, Institute of Public Health, Bangalore Phone: [redacted]

Informed Consent

I have read and understood the details provided to me about the study through the information sheet above I hereby consent to participate in the study with the understanding that my views and opinions shall be treated as anonymous

I also agree to record my opinions Yes/No

Signature:
Date:

Appendix 2: Consent forms

[redacted]

(In Kannada)

Institute of Public Health

#250, Masters Cottage, 2nd C Main, 2nd C Cross, Girinagar I Phase, Bangalore – 560 045

www iphindia.org Phone: +91[redacted]

ಮಾಹಿತಿ ಚೀಟಿ

ಪಿಸ್ಸೆಲೆ : ಇನ್ಸ್ಟಿಟ್ಯೂಟ್ ಆಫ್ ಪಬ್ಲಿಕ್ ಹೆಲ್ತ್, ಬೆಂಗಳೂರು ಒಂದು ಸಮುದಾಯ ಆರೋಗ್ಯದ ಬಗ್ಗೆ ತರಬೇತಿ, ಸಂಶೋಧನೆ ಹಾಗ ಸಮಾಲೋಚನೆಯಲ್ಲಿ ತೊಡಗಿರುವ ಸಂಸ್ಥೆ. ಈ ಸಂಸ್ಥೆ ತುಮಕೂರಿನಲ್ಲಿ ಜಿಲ್ಲಾ ಹಾಗು ತಾಲೂಕು ಆರೋಗ್ಯ ಸಂಸ್ಥೆಗಳಲ್ಲಿ ಸೇವೆ ಸಲ್ಲಿಸುತ್ತಿರುವ ಸಿಬ್ಬಂದಿಗೆ ತರಬೇತಿ ನೀಡುತ್ತಿದೆ

ಸಂಶೋಧನೆ : ನಮ್ಮ ಸಂಸ್ಥೆಯು ನಿಮ್ಮ ಜಿಲ್ಲೆಯಲ್ಲಿ ನಕಾಶೆ ಮಾಡುವುದರ ಬಗ್ಗೆ, ಆದರಲ್ಲೂ ರಾಷ್ಟ್ರೀಯ ಗ್ರಾಮೀಣ ಆರೋಗ್ಯ ಅಭಿಯಾನದ ಅಡಿಯಲ್ಲಿ ೨೦೧೦ ವರ್ಷದ ಪಿ ಐ ಪಿ ಯಾವ ರೀತಿ ಮಾಡಲಾಯಿತೆಂಬುದರ ಬಗ್ಗೆ ತಿಳಿಯಲು ಒಂದು ಸಂಶೋಧನೆ ನಡೆಸುತ್ತಿದೆ. ಈ ಸಂಶೋಧನೆ ಪಿ ಐ ಪಿ ಮಾಡುವುದರಲ್ಲಿ ನಿಮ್ಮೆಲ್ಲರಿಗೆ ಯಾವ ರೀತಿ ತೊಂದರೆ ಹಾಗು ಅಡಚಣೆಗಳು ಬರುತ್ತವೆ ಎಂದು ತಿಳಿಯಲು ಮಾಡುತ್ತಿದ್ದೇವೆ. ಸಂಶೋಧನೆಯಲ್ಲಿ ತಪ್ಪು ಕಂಡುಹಿಡಿಯುವುದಾಗಲಿ, ಅಥವಾ ಕೊರತೆಗಳು ಕಂಡುಹಿಡಿಯುವುದಕ್ಕಾಗಲೀ ಮಾಡುತ್ತಿಲ್ಲ. ನಾವು ಈ ಕುರಿತು ಜಿಲ್ಲಾ, ತಾಲೂಕು, ಪಿ ಎಚ್ ಸಿ ಹಾಗು ಹಳ್ಳಿಗಳ ಮಟ್ಟದಲ್ಲಿ ಆರೋಗ್ಯ ಸೇವೆಗಳ ಸಿಬ್ಬಂದಿಯೊಂದಿಗೆ ಸಂದರ್ಶನ ನಡೆಸುತ್ತೇವೆ. ಜೊತೆಗೆ, ಜಿಲ್ಲಾ ಮಟ್ಟದಲ್ಲಿ ಪಿ ಐ ಪಿ ಯಲ್ಲಿ ತೊಡಗಿದ್ದ ಅಧಿಕಾರಿಗಳೊಂದಿಗೂ ಸಂದರ್ಶನ ಮಾಡುತ್ತೇವೆ. ನಂತರ, ರಾಷ್ಟ್ರ ಮಟ್ಟದಲ್ಲಿ ಹಾಗು ಕೇಂದ್ರ ಸರಕಾರದ ಮಟ್ಟದಲ್ಲಿ ಏನ್ ಆರ್ ಎಚ್ ಎಂ ಅಧಿಕಾರಿಗಳೊಂದಿಗೂ ಸಂದರ್ಶಿಸುತ್ತೇವೆ

ಏಕೆ : ಪಿ ಐ ಪಿ ಮಾಡುವುದರಲ್ಲಿ ಹಲವಾರು ತೊಂದರೆಗಳು ಮತ್ತು ಅಡಚಣೆಗಳು ಕಂಡುಬರುತ್ತವೆ. ಆದರೆ ಪ್ರತಿ ವರ್ಷ ಪಿ ಐ ಪಿ ಇಡೀ ದೇಶದಲ್ಲಿ ಒಂದೇ ರೀತಿಯಲ್ಲಿ ಮಾಡಲಾಗುತ್ತದೆ. ಈ ಸಂಶೋಧನೆಯ ಮುಖಾಂತರ ನಾವು ಜಿಲ್ಲ, ತಾಲೂಕು ಹಾಗು ಕೆಳ ಮಟ್ಟದಲ್ಲಿ ಆಗುವ ತೊಂದರೆಗಳನ್ನು ಅರಿತು, ಇವನ್ನು ನಿವಾರಿಸುವುದಕ್ಕೆ ಯಾವ ಕ್ರಮ ಕೈಗೊಳ್ಳಬೇಕೆಂದು ಮೇಲಿನ ಅಧಿಕಾರಿಗಳ ಮುಂದೆ ಇಡುತ್ತೇವೆ

ಅನಾಮಧೇಯತ್ವ ಹಾಗು ಗೌಪ್ಯತೆ : ಸಂದರ್ಶನದಲ್ಲಿ ವ್ಯಕ್ತ ಪಡಿಸಿರುವ ಎಲ್ಲಾ ಅಭಿಪ್ರಾಯಗಳ ಗೌಪ್ಯತೆ ಕಾಪಾಡಲಾಗುವುದು. ಹಾಗೂ ಎಲ್ಲಾ ಅಭಿಪ್ರಾಯಗಳು ಅನಾಮಧೇಯವಾಗಿ ಅಧ್ಯಯಿಸಲಾಗುವುದು. ಮೊದಲೇ ತಿಳಿಸಿರುವಂತೆ, ಈ ಸಂದರ್ಶನ ಪಿ ಐ ಪಿ ಯಲ್ಲಿ ಆಗುವ ಅಡಚಣೆಗಳು ಹಾಗು ತೊಂದರೆಗಳನ್ನು ಅರ್ಥ ಮಾಡಿಕೊಂಡು ನಿವಾರಿಸಲು ಮಾಡಲಾಗುತ್ತಿದೆ; ತಪ್ಪು ಕಂಡುಹಿಡಿಯುವುದಕ್ಕಲ್ಲ. ನಿಮ್ಮ ಅಭಿಪ್ರಾಯಗಳನ್ನು ನಿಮ್ಮ ಹೆಸರಿನಿಂದ ಯಾವುದೇ ರೀತಿಯಲ್ಲಿ ಗುರುತಿಸುವಂತೆ ಹೊರಪಡಿಸಲಾಗುವುದಿಲ್ಲ

ಧ್ವನಿ ಮುದ್ರಣ: ನಿಮ್ಮ ಉತ್ತರ ಹಾಗು ಅಭಿಪ್ರಾಯಗಳನ್ನು ಧ್ವನಿ ಮುದ್ರಣ ಯಂತ್ರದ ಮೂಲಕ ಉಲ್ಲೇಖಿಸಲಾಗುವುದು. ಈ ರೀತಿ ತೆಗೆದುಕೊಂಡಿರುವ ಧ್ವನಿ ಮುದ್ರಣವನ್ನು ಅಧ್ಯಯನದ ನಂತರ ಅಳಿಸಲಾಗುವುದು

ಪರಿಣಾಮ: ಈ ಅಧ್ಯಯನದ ಪರಿಣಾಮವನ್ನು ಮೇಲಿನ ಅಧಿಕಾರಿಗಳಿಗೆ ಜಿಲ್ಲಾ, ತಾಲೂಕುಕು ಹಾಗು ಹಳ್ಳಿಗಳ ಮಟ್ಟದಲ್ಲಿ ಪಿ ಐ ಪಿ ಮಾಡುವುದರಲ್ಲಿ ಯಾವ ರೀತಿಯ ತೊಂದರೆಗಳು ಹಾಗು ಅಡಚಣೆಗಳು ಉಂಟಾಗುತ್ತವೆ ಎಂದು, ಮತ್ತು ಯಾವ ರೀತಿಯ ಬದಲಾವಣೆಗಳನ್ನು ತರಬೇಕು ಎಂಬುದರ ಬಗ್ಗೆ ತಿಳಿಸಲು ಉಪಯೋಗಿಸಲಾಗುವುದು. ಆದರೊಂದಿಗೆ,ಜಿಲ್ಲಾ ಮಟ್ಟದ ಅಧಿಕಾರಿಗಳ ತರಬೇತಿಯಲ್ಲೂ ಉಪಯೋಗಿಸಲಾಗುವುದು. ಪರಿಣಾಮಗಳ ಪಕ್ಷಿನೋಟವನ್ನು ನಿಮಗೆಕೊಡಲಾಗುವುದು

ಹೆಚ್ಚು ಮಾಹಿತಿಗಾಗಿ, ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ: ಡಾ ||ಪ್ರಶಾಂತ್ ಏನ್ ಎಸ್, ಪಿ.ಎಚ್.ಡಿ. ವಿದ್ಯಾರ್ಥಿ, ಇನ್ಸ್ಟಿಟ್ಯೂಟ್ [redacted] ರ್, ಬೆಂಗಳೂರು - ೫೬೦೦೪೫ ದೂ: ೯೪೪೮೫೫೫೬೬ ಈಮೈಲ್: [redacted]

ಸಮ್ಮತಿ

ನಾನು ಮೇಲಿರುವ ವಿಚಾರವನ್ನು ಓದಿ ತಿಳಿದು, ಈ ಸಂಶೋಧನೆಗೆ ಸಂದರ್ಶನ ನೀಡಲು ಒಪ್ಪಿದ್ದೇನೆ. ನಾನು ಹೇಳುವ ಮಾತುಗ ಗೌಯತೆಯನ್ನು ಕಾಪಡಲಾಗುತ್ತದೆಂದು ತಿಳಿಸಲಾಗಿದೆ
ನನ್ನ ಮಾತುಗಳ ಧ್ವನಿಮುದ್ರಣಕ್ಕೆ ಒಪ್ಪಿದ್ದೇನೆ/ ಹೌದು/ಇಲ್ಲ

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Appendix 3: Survey questionnaire

CONFIDENTIAL

For research purposes only

September 2011

Questionnaire for health managers
on training programmes, planning and supervision

Greetings from Institute of Public Health, Bangalore!

This survey has been designed by Institute of Public Health, Bangalore (IPH) to better understand the factors that influence management of health facilities and health care in your district and taluka.

The study is for research purposes only and the information that you provide in this questionnaire will help us gain a better understanding of district health management and help inform policy makers.

Please read the following carefully before starting the questionnaire.

1) The success of this research depends on frank and honest answers. We would like to assure you that your individual responses would be held in complete confidence.
2) We are interested in your personal views on the questions and hence there are NO right or wrong answers. So please respond frankly to all questions.

All answers will be kept confidential.

FOR OFFICE USE **To be filled in by the interviewer/facilitator AFTER FINISHING THE SURVEY.** **NOT FOR RESPONDENTS**		
A1	Respondent number	
A2	Interviewer/Facilitator name	
A3	Date (DD/MM/YY eg. 26/12/2011)	
A4	Time taken (To be filled up at the end of the interview – **in minutes**)	
A5	Name of person doing data entry	
A6	Data entry checked by	

For any clarifications regarding this survey, please contact the facilitator who is administering this survey or contact:
Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone: ***(080)*** [redacted] *or* [redacted]

B. WHAT DO YOU THINK ABOUT NRHM PIP AND PLANNING?

This section helps us understand your opinions about NRHM PIP and its use.

Please tick only ONE statement on the right hand side that BEST describes how you feel about the statement on the left hand side.

B1	The purpose of the NRHM PIP is to…	1☐ Evaluate the performance of my facility during the year 2☐ Collect data for planning at district or state level 3☐ Planning of all activities of my facility for the year 4☐ Assessment of performance of NRHM in my facility during year
B2	If I were in charge of NRHM, the most peripheral level at which I would make the PIP would be at….	1☐ State 2☐ District 3☐ Taluka 4☐ PHC 5☐ Village health and sanitation committee
B3	At the PHC level, PIP should be made by…	1☐ PHC MO and LHV 2☐ PHC MO and all field staff 3☐ PHC staff, ARS and PRI members 4☐ PIP should not be prepared at PHC level
B4	At the taluka level, PIP should be made by…	1☐ THO and BPMU staff 2☐ THO, BPMU along with all PHC MOs 3☐ THO, BPMU and AMO 4☐ THO, BPMU, AMO, ARS and PRI members 5☐ PIP should not be made at taluka level

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Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone: ***(080)*** [redacted]

B5	***Please read each of the statements carefully.*** Which statement best summarises how you feel about the role of NRHM PIP in your work	1☐ The role of the PIP is to collect data from village level to district level and submit to state so that micro-level data is available at the state level 2☐ The PIP is a plan for my facility/taluka/district based on situation analysis which helps identify problems and find solutions 3☐ PIP is one of the important requirements for obtaining resources through NRHM that must be satisfied by all health facilities in the district 4☐ PIP is time-consuming and does not really help me in my routine work through the year 5☐ PIP helps me budget activities based on my need and guides all my programmes and activities through the year 6☐ Not sure				
		Strongly agree	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**
B6	For every PIP, we must do a situation analysis as the first step before proceeding with the planning	☐	☐	☐	☐	☐
B7	PIPs can be used to bring about improvement in the quality of care of facilities	☐	☐	☐	☐	☐
B8	Districts need technical guidance in carrying out a situation analysis for the PIP	☐	☐	☐	☐	☐
B9	Talukas need technical guidance in carrying out a situation analysis for PIP	☐	☐	☐	☐	☐
B10	PHCs need technical guidance in carrying out situation analysis for PIP	☐	☐	☐	☐	☐
B11	PIP preparation at taluka level improves teamwork among doctors, nurses and BPMs	☐	☐	☐	☐	☐
B12	I am able to negotiate the priorities of my facility with my superiors so that they could be included in the district PIP	☐	☐	☐	☐	☐

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Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone: [redacted]

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
B13	In this year's PIP (December 2010), we collected data to do a situation analysis for my facility	☐	☐	☐	☐	☐
B14	The activities that we included in the PIP were based on a situation analysis of my facility	☐	☐	☐	☐	☐
B15	After the NRHM PIP process has started, problems in my facility are being better identified than before	☐	☐	☐	☐	☐
B16	After the submission of PIP, I come to know soon about the financial allocation for my facility	☐	☐	☐	☐	☐
B17	In my district, most of my colleagues at the taluka level were actively involved in preparing the PIP this year	☐	☐	☐	☐	☐
B18	In my district, most PHCs were also actively involved in preparing the PIP	☐	☐	☐	☐	☐
B19	In my facility, all the staff participated in preparing the PIP	☐	☐	☐	☐	☐
B20	I am able to discuss and negotiate with Panchayat members regarding utilisation of the various joint funds (untied funds/ARS funds and other joint signatory funds)	☐	☐	☐	☐	☐

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Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone: ([redacted]

C. How do you relate to your organisation?

In this section, we ask you questions about how you feel about your organisation. For this section, "ORGANISATION" means your hospital/taluka/district depending on where you work.

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
C1	It is difficult for me to leave the organization right now, even if I wanted to leave	☐	☐	☐	☐	☐
C2	I would not leave my present organisation right now because of a sense of obligation	☐	☐	☐	☐	☐
C3	I would be very happy to spend rest of my career in this organization	☐	☐	☐	☐	☐
C4	I will not leave the organisation right now mainly because there are not many choices available	☐	☐	☐	☐	☐
C5	Even if it were to my advantage, I do not feel it would be right to leave the organisation now	☐	☐	☐	☐	☐
C6	I really feel as if my organisation's problems are my own	☐	☐	☐	☐	☐
C7	Right now, staying in this organisation is both a necessity and a desire.	☐	☐	☐	☐	☐
C8	I do not feel a strong sense of "belonging" to my organisation	☐	☐	☐	☐	☐
C9	I think that there are very few options for me to consider leaving this organisation	☐	☐	☐	☐	☐
C10	I do not feel emotionally attached to this organisation	☐	☐	☐	☐	☐
C11	I would feel guilty if I leave this organisation right now	☐	☐	☐	☐	☐
C12	I do not feel like "part of a family" at my workplace	☐	☐	☐	☐	☐

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Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone: [redacted]

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
C13	This organization deserves my loyalty	☐	☐	☐	☐	☐
C14	I might consider working elsewhere if I had not already put so much of myself into this organisation	☐	☐	☐	☐	☐
C15	I would not consider leaving the organisation right now because I feel a sense of obligation to the people in this organisation	☐	☐	☐	☐	☐
C16	This organisation has a great deal of personal meaning for me	☐	☐	☐	☐	☐
C17	Too much of my personal life would be disturbed if I wanted to leave this organisation right now	☐	☐	☐	☐	☐
C18	I owe a great deal to my organization	☐	☐	☐	☐	☐

For any clarifications regarding this survey, please contact the facilitator who is administering this survey or contact:
Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone:[redacted]

D. How confident are you with respect to your efficacy at dealing with PRI member demands?

Think about a situation such as a conflict with a PRI or community member making what you feel are unreasonable demands on your time/staff or resources.

Given that you face such circumstances routinely, *please rate how certain you are that you can do each of the things described below by circling the number from 0 – 100 that best captures your degree of confidence.*

Rate your degree of confidence by recording a number from 0 to 100 using the scale given below:

0 10 20 30 40 50 60 70 80 90 100

Cannot do at all → Moderately certain that I can do → Highly certain I can do

		CIRCLE BASED ON THE SCALE GIVEN ABOVE										
D1	I can solve difficult problems if I try hard enough	0	10	20	30	40	50	60	70	80	90	100
D2	If someone opposes me, I can find ways to get what I want	0	10	20	30	40	50	60	70	80	90	100
D3	It is easy for me to stick to my aims and accomplish my goals	0	10	20	30	40	50	60	70	80	90	100
D4	I am confident that I could deal efficiently with unexpected events	0	10	20	30	40	50	60	70	80	90	100
D5	Thanks to my strategic nature, I know how to handle unexpected situations	0	10	20	30	40	50	60	70	80	90	100

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Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone: [redacted]

D6	I can solve most problems if I invest the necessary effort	0	10	20	30	40	50	60	70	80	90	100
D7	I can remain calm when facing difficulties because I can rely on my coping abilities	0	10	20	30	40	50	60	70	80	90	100
D8	When I am confronted with a problem, I can usually find several solutions	0	10	20	30	40	50	60	70	80	90	100
D9	If I am in trouble, I can usually think of something to do	0	10	20	30	40	50	60	70	80	90	100
D10	No matter what comes my way, I'm usually able to handle it	0	10	20	30	40	50	60	70	80	90	100

E: WHAT WAS THE NATURE OF TRAINING PROGRAMMES IN YOUR DISTRICT?

For those in Tumkur district, please answer this section with respect to the Swasthya Karnataka training programme.

		Response *Tick your response wherever there is a box. Elsewhere, please write your response*
E1	District	1☐ Tumkur 2☐ Raichur
E2	Taluka where your work	
E3	Primary designation	
E4	How long have you held your present designation *(In years, including period on contract. Write <1 if held for less than one year)*	

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Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone: [redacted]

E5	Which among these topics were covered in the training programmes you attended in the **last two years (2009-2011)?** ***Circle how many ever topics that apply***	1 ☐ Concepts in public health 2 ☐ Leadership 3 ☐ Planning 4 ☐ Human resources planning & Motivation 5 ☐ Administrative procedures 6 ☐ Health and hospital management 7 ☐ HMIS 8 ☐ Health and hospital management 9 ☐ Financial and medico-legal procedures 10 ☐ Teamwork 11 ☐ Emergency Obstetric Care 12 ☐ Role of PRI in health system 13 ☐ NRHM PIP planning 14 ☐ Supportive supervision 15 ☐ Quality in health care 16 ☐ Other topic not listed here
If you have not participated in the Swasthya Karnataka Training Programme, then skip the rest of this section and proceed to Section F on the next page		
E6	Have you attended the Swasthya Karnataka training programme?	1 ☐ YES 2 ☐ NO 3 ☐ Not sure
E7	**IF YES,** which components of the Swasthya Karnataka training programme have you attended?	1 ☐ Contact classes 2 ☐ Discussion with Swasthya Karnataka trainers during visits to my facility/institution 3 ☐ Both 4 ☐ Not sure
E8	In the Swasthya Karnataka training programme, how many classes did you attend? (Max N=12) ***(Each class consisted of one or more consecutive days of contact sessions)***	
E9	Have you been visited by Swasthya Karnataka trainers at your facility for helping you apply what was covered in the classes?	1 ☐ YES 2 ☐ NO 3 ☐ Don't know
E10	**IF YES,** how many times have you been visited by Swasthya Karnataka trainers in the last two years?	

For any clarifications regarding this survey, please contact the facilitator who is administering this survey or contact:
Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone: [redacted]

F. What do you think about the training programmes in your district?

Please respond to this section **based on your experience with the Swasthya Karnataka programme.** If you have not attended the Swasthya Karnataka programme, then please respond keeping in mind the training programmes in your district that dealt with **NRHM PIP planning or supervision in the last two years.**

Tick the response that best captures what you think about each statement.

		Strongly agree	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**	**Not applicable**
F1	The content of the classroom teaching during the training programmes were relevant to my work	☐	☐	☐	☐	☐	☐
F2	After attending the classes, my knowledge on the topics taught improved	☐	☐	☐	☐	☐	☐
F3	After the classes, I can better understand the importance of NRHM PIP in managing the services under my responsibility	☐	☐	☐	☐	☐	☐
F4	The visits by trainers motivated me to apply new skills learnt during the training	☐	☐	☐	☐	☐	☐
F5	The visits by the trainers motivated me to implement changes to improve in my institution	☐	☐	☐	☐	☐	☐
F6	The visits by trainers to my workplace help me to discuss problems I faced in applying what is taught in classroom training programmes	☐	☐	☐	☐	☐	☐
F7	Working on assignments given during the training along with my colleagues and subordinates improved teamwork in my organisation.	☐	☐	☐	☐	☐	☐
F8	Because of the discussion with my colleagues and subordinates during trainers' visit, their confidence in me as a manager increased	☐	☐	☐	☐	☐	☐

For any clarifications regarding this survey, please contact the facilitator who is administering this survey or contact:
Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone: [redacted]

F9	After the training programme, did you make any changes to improve the preparation or implementation of the PIP?	1 ☐ YES 2 ☐ NO 3 ☐ Not sure
F10	**If you answered YES to the previous question,** In the space provided, please give up to TWO examples of improvements you introduced in the preparing/implementing NRHM PIP after the training programme.	1) 2) ☐ Not applicable because I answered NO/Not sure to Question F9
F11	**If you answered NO to F9,** What were the main reasons for not making any improvements in the PIP preparation or implementation? ***(Tick as many as appropriate)***	1 ☐ The training did not provide any help in improving the PIP 2 ☐ There are several constraints in the organisation that prevent me from improving the PIP 3 ☐ I do not have the necessary technical skills/knowledge to bring about improvements 4 ☐ This is not within my powers to make such changes 5 ☐ I am not involved in PIP preparation 6 ☐ Other – Please specify in the space below 7 ☐ This question is **not applicable** to me because I answered YES to F9
F12	After the training programme, did you make any changes in the way you conduct supervisory visits?	1 ☐ YES 2 ☐ NO 3 ☐ Not sure

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Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone: [redacted]

F13	**If you answered YES to the previous question,** In the space provided, please give TWO examples of how you improved your supervision practices after the training programme.	1) 2) ☐ Not applicable because I answered NO/Not sure to Question F9
F14	**If you answered NO to F12,** What were the main reasons for not making any improvements in your supervision practices? ***(Tick as many as appropriate)***	1 ☐ The training did not provide any help in improving supervision of staff 2 ☐ There are several constraints in the organisation that prevent me from changing supervision practices 3 ☐ I do not have the necessary technical skills/knowledge to bring about improvements 4 ☐ It is not within my power to make such changes 5 ☐ I do not supervise anybody 6 ☐ Other – Please specify in the space below 7 ☐ This question is **not applicable** to me because I answered YES to F12

For any clarifications regarding this survey, please contact the facilitator who is administering this survey or contact:
Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone: [redacted]

G. What are your opinions about supervision by your immediate superior?

This section is about your experience with supervision and supervision visits. For this section, your supervisor is the person you **report to**, and who supervises your work. This is usually an officer one rank above you. For example, a BPM is supervised by THO, while THO's are supervised by DHO. DHO's and programme officers are supervised by Directors or Joint Directors respectively. PHC MOs are supervised by THOs.

		Strongly agree	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**
G1	My supervisor helps me solve work-related problems such as implementation issues with new schemes or problems with PRI members	☐	☐	☐	☐	☐
G2	My supervisor encourages us to speak up when we have a different opinion on a decision he has taken	☐	☐	☐	☐	☐
G3	My supervisor leaves it entirely up to me to decide how to go about doing my job	☐	☐	☐	☐	☐
G4	My supervisor encourages me to learn new things related to my work	☐	☐	☐	☐	☐
G5	My supervisor does not explain his or her actions or decisions	☐	☐	☐	☐	☐
G6	My supervisor knows my reaction to various issues at work	☐	☐	☐	☐	☐
G7	My supervisor helps me take important decisions	☐	☐	☐	☐	☐
G8	My supervisor does not give me a chance to make important decisions on my own	☐	☐	☐	☐	☐
G9	My supervisor trusts my actions and *vice versa*	☐	☐	☐	☐	☐
G10	My supervisor recognises and praises good performance	☐	☐	☐	☐	☐
G11	My supervisor is always around checking on how I am working	☐	☐	☐	☐	☐

For any clarifications regarding this survey, please contact the facilitator who is administering this survey or contact:
Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone: [redacted]

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
G12	My supervisor decides and tells me what to do and how to do	☐	☐	☐	☐	☐
G13	My supervisor finds fault in most of what I do	☐	☐	☐	☐	☐
G14	My supervisor and I both respect each other	☐	☐	☐	☐	☐

H. PLEASE TELL US ABOUT YOURSELF.

		Response
H1	Sex	1 ☐ Male 2 ☐ Female
H2	Date of birth DD/MM/YYYY (eg. 26/12/2011)	
H3	In what type of locality did you go to high school?	1 ☐ Rural (Village/Hobli) 2 ☐ Semi-rural (Taluka town) 3 ☐ Semi-urban (District HQ excluding Bangalore, Mysore, Mangalore, Hubli-Dharwad, Tumkur and Belgaum) 4 ☐ Urban except Bangalore (Mysore, Mangalore, Hubli-Dharwad, Tumkur and Belgaum) 5 ☐ Bangalore 6 ☐ Other place outside Karnataka

For any clarifications regarding this survey, please contact the facilitator who is administering this survey or contact:
Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone: [redacted]

H4	Educational qualifications **(TICK AS MANY THAT APPLY)**	1☐ MBBS 2☐ PG medical degree (MD/MS, Diploma etc) 3☐ Nursing degree (Bachelor/Diploma) 4☐ Management degree (MBA/BBM or equivalent) 5☐ Other graduate degree 6☐ Other degree not mentioned above
H5	In case of MBBS, what type of medical college did you study in?	1☐ Private medical college 2☐ Government medical college
H6	Year of joining service	
H7	How many years have you worked in this district?	_____ Years
H8	Type of employment (Presently)	1☐ Permanent in this post 2☐ Temporarily in-charge
H9	If holding any additional charge, mention which post	_____ ☐ No additional charge held
H10	Type of appointment	1☐ Contract 2☐ Regular

Thank you for your time and patience

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For any clarifications regarding this survey, please contact the facilitator who is administering this survey or contact:
Dr. Prashanth NS, Institute of Public Health, Bangalore. Phone: [redacted]

Appendix 3: Interview guide

Interview guide

Greetings and introduce

Explanation about the research

Consent for recording the interview.

1) As a _____(Designation)_____, what is your role in the PIP?

Notes: *This question should ideally provide information on knowledge of the interviewee about the PIP process under NRHM. It should also reveal the interviewee's perceived involvement in the PIP. If interviewee suggests minimum role, ask whether he thinks he should be involved. What prevented him from involving.*

2) How was the PIP for this year for your district prepared?

Tags: Can you explain the whole process from the beginning?

Notes: This question is the key question of the interveiw, which is expected to capture the role played by the interviewee in this year's PIP. Details of when the process began, what obstacles were met and how s/he went about the process needs to be captured. Also, the interviewee's perceptions about who were involved in the PIP, and their roles should emerge.

Probes: When did you start (Probe for communication from directorate)?

Who was involved and what was the nature of involvement? Also, according to you, have everybody been involved to the extent needed?

(Probe specifically for PHCs, VHSCs, ANMs, ASHAs, Anganwadi workers and people from other departments – primary education, women and child development if they are left out by the interviewee)

How did you begin the process of making the plan? Who took the lead within the district to make the plan?

Tags: Meetings, orientation, other communication, emails. Outcomes of these.

What were the difficulties you faced in the process of making PIP(Probe for orientation on involvement)

Tags: time constraints, lack of consensus, poor understanding on process by some, role conflicts

How did you feel about the process of making the PIP this year?

What do you feel about the PIP?

Appendix 4: Data management

DATA FILE: \[redacted]Phd survey\Survey_dhm_20Oct2011.rec
File label: SUrvey DH

File size: 11 k
Last revision: 20. Oct 2011 4:57 PM
Number of fields: 130
Number of records: 0
Checks applied: Yes (Last revision 20. Oct 2011 6:20 PM)

Fields in data file:

No.	Name	Variable label	Field type	Width	Checks	Value labels
1	id	automatic id number	ID number	5		
2	a1	respondent number	Number	3	Must enter Legal: 100-300	
3	a2	interviewer name	Number	1	Must enter Legal: 0-11	interview 1: Pra 2: Kur 3: Bhee 4: Mah 5: Other
4	a3	date	Date (dmy)	10	Must enter	
5	a4	time taken(in minutes)	Number	2	Must enter Legal: 0-90	
6	a5	person doing data entry	Number	1	Must enter Legal: 0-3	dataentry 1: Srinivas 2: Other
7	a6	data checked	Number	1	Must enter Legal: 0-2	yesno 0: Blank 1: Yes 2: No
	b1	The purpose of the NRHM PIP	Number	1	Must enter Legal: 0-4	
	b2	If I were in charge of NRHM	Number	1	Must enter Legal: 0-5	
10	b3	At the PHC level	Number	1	Must enter Legal: 0-4	
11	b4	At the taluka level	Number	1	Must enter Legal: 0-5	
12	b5	Which statement best summarises	Number	1	Must enter Legal: 0-6	
13	b6	For every PIP	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
14	b7	PIPs can be used to bring about	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
15		Districts need technical guidance	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
16		Talukas need	Number	1	Must enter	likert

		technical guidance			Legal: 0-5	0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
17	b10	PHCs need technical uidance	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
18	b11	PIP preparation at taluka level	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
19	b12	I am able to negotiate	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
20	b13	In this year's PIP	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
21	b14	the activities that we included	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
22	b15	After the NRHM PIP process	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
23	b16	After the submission of PIP	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
24	b17	In my district, most of my colleagus	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
25	b18	In my district, most PHCs	Number	1		
26	1	In my facility	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d

27 b20	I am able to discuss	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
28 c1	it is difficult for me	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
29 c2	I would not leave my present	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
30 c3	I would be very happy to spend	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
31 c4	I will not leave the organisation	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
32 c5	Even if it were to my advantage	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
33 c6	I really feel as if my organisation	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
34 c7	Right now staying in this organisation	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
35 c8	I do not feel a strong sense	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
36 c	I think that there are very	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
37 c10	I do not feel emotionally	Number	1	Must enter Legal: 0-5	likert 0: Blank

					1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
38 c11	I would feel guilty if I	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
39 c12	I do not feel like part	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
40 c13	This organisation deserves	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
41 c14	I might consider working	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
42 c15	I would not consider	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
43 c16	This organisation has	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
44 c17	Too much of my	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
45 c18	I owe a great	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
46 d1	I can solve difficult	Number	3	Must enter Legal: 0,01,10,20, 30,40,50,60,70,80, 90,100	
47 d2	If someone opposes me	Number	3	Must enter Legal: 0,01,10,20, 30,40,50,60,70,80, 90,100	
48 d3	It is easy for me to	Number	3	Must enter Legal: 0,01,10,20,	

					30,40,50,60,70,80, 90,100	
49	d4	I am confident that	Number	3	Must enter Legal: 0,01,10,20, 30,40,50,60,70,80, 90,100	
50	d5	Thanks to my strategic	Number	3	Must enter Legal: 0,01,10,20, 30,40,50,60,70,80, 90,100	
51	d6	I can solve most	Number	3	Must enter Legal: 0,01,10,20, 30,40,50,60,70,80, 90,100	
52	d7	I can remain calm	Number	3	Must enter Legal: 0,01,10,20, 30,40,50,60,70,80, 90,100	
53	d8	When I am confronted	Number	3	Must enter Legal: 0,01,10,20, 30,40,50,60,70,80, 90,100	
54	d9	If I am in trouble	Number	3	Must enter Legal: 0,01,10,20, 30,40,50,60,70,80, 90,100	
55	d10	No matter what	Number	3	Must enter Legal: 0,01,10,20, 30,40,50,60,70,80, 90,100	
56	e1	district	Number	1	Must enter Legal: 0-2	
57	e2	taluka	Number	3	Must enter Legal: 0-16	taluka 0: Blank 1: Tumkur 2: Gubbi 3: Tiptur 4: Turuvekere 5: CNhalli 6: Kunigal 7: Madhugiri 8: Pavagada 9: Koratagere 10: Sira 11: Raichur 12: Sindhanur 13: Manvi 14: Lingsugur 15: Devadurga 16: Other
58	e3	primary designation	Text	34	Must enter	
59	e4	How long have you (in years)	Number	2	Must enter Legal: 0-35	
60	e51	concepts in public health	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
61	e52	leadership	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
62	e53	planning	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
63	e54	human resources planning and motivation	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked

64	e55	administrative procedures	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
65	e56	health and hospital management	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
66	e57	HMIS	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
67	e58	health and hospital management	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
68	e59	financial and medicolegal	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
69	e60	teamwork	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
70	e61	emergency obstetric care	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
71	e62	role of PRI	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
72	e63	nrhm pip	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
73	e64	supportive supervision	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
74	e65	quality in health care	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
75	e66	other topic not listed	Number	1	Must enter Legal: 0,1	tickbox 0: Blank or no tick 1: Ticked
76	e6	have you attended the	Number	1	Must enter Legal: 0-3	
77	e7	if yes which components	Number	1	Must enter Legal: 0-4	
78	e8	in the swasthya karnataka	Number	1	Must enter Legal: 0-12	
79	e9	have you been visited	Number	1	Must enter Legal: 0-3	
80	e10	if yes how many times	Number	2	Must enter Legal: 0-50	
81	f1	the content of the classroom	Number	1	Must enter Legal: 0-6	
82	f2	after attending the classes	Number	1	Must enter Legal: 0-6	
83	f3	after the classes, I can	Number	1	Must enter Legal: 0-6	
84	f4	the visits ...skills	Number	1	Must enter Legal: 0-6	
85	f5	the visits ...implement	Number	1	Must enter Legal: 0-6	
86	f6	the visits ...discuss	Number	1	Must enter Legal: 0-6	
87	f7	working on	Number	1	Must enter	

		assignments			Legal: 0-6	
	f8	because of the discussion	Number	1	Must enter Legal: 0-6	
	f9	After the training programme	Number	1	Must enter Legal: 0-3	
90	f10a	reasons given yes or no	Number	1	Must enter Legal: 0-2 Jumps: 0>f11,2>f11	yesno 0: Blank 1: Yes 2: No
91	f10b	reason given 1	Text	78	Must enter	
92	f10bb	reason given 1 continued	Text	78		
93	f10c	reason given 2	Text	78	Must enter	
94	f10cc	reason given 2	Text	78		
95	f11	if you answered no	Number	1	Must enter Legal: 0-7 Jumps: 0>f12,1>f12, 2>f12,3>f12,4>f12, 5>f12,7>f12	
96	f11a	Other Please specify in the space below	Text	78	Must enter	
97	f11b	Please specify	Text	78		
	f12	after the training programme	Number	1	Must enter Legal: 0-3	
	f13a	reasons given yes or no	Number	1	Must enter Legal: 0-2 Jumps: 0>f14,2>f14	yesno 0: Blank 1: Yes 2: No
100	f13b	reason given 1	Text	78	Must enter	
101	f13bb	reason given 1 continued	Text	78		
102	f13c	reason given 2	Text	78	Must enter	
103	f13cc	reason given 2	Text	78		
104	f14	if you answered no	Number	1	Must enter Legal: 0-7 Jumps: 0>g1,1>g1, 2>g1,3>g1,4>g1,5>g1, 7>g1	
105	f14a	Other Please specify in the space below	Text	78	Must enter	
106	f14	Please specify	Text	78		
107	g1	my supervisor helps	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
108	g2	my supervisor encourages	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
109	g3	my supervisor	Number	1	Must enter	likert

	leaves			Legal: 0-5	0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
110 g4	my supervisor encourages me to learn	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
111 g5	my supervisor does not explain	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
112 g6	my supervisor knows my reaction	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
113 g7	my supervisor helps me take	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
114	my supervisor does not give	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
115	my supervisor trusts	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
116 10	my supervisor recognises	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
117 g11	my supervisor is always	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
118 g12	my supervisor decides	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
119 g13	my supervisor finds fault	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a

						2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
120	g14	my supervisor and I	Number	1	Must enter Legal: 0-5	likert 0: Blank 1: Strongly a 2: Agree 3: Neither a nor d 4: Disagree 5: Strongly d
121	h1	sex	Number	1	Must enter Legal: 0-2	sex 1: Male 2: Female 9: Unknown
122	h2	dob	Date (dmy)	10	Must enter	
123	h3	in what type of locality	Number	1	Must enter Legal: 0-6	
124	h4	educational qualifications	Number	1	Must enter Legal: 0-6	
125	h5	in case of mbbs	Number	1	Must enter Legal: 0-2	
126	h6	year of joining	Number	4	Must enter Legal: 1950-2011	
127	h7	how many years	Number	2	Must enter Legal: 0-35	
128	h8	type of employment	Number	1	Must enter Legal: 0-2	
129	h9	if holding any additional	Text	49	Must enter	
130	h10	type of appointment	Number	1	Must enter Legal: 0-2	

Appendix 5: Ethics approval

INSTITUTE OF PUBLIC HEALTH

Date: May 13, 2011

Dear Dr.Prashanth,

Subject: Regarding your proposal **"How to improve planning and supervision of health care at the district level through in-service training and supportive supervision: An evaluation of a district-level capacity building programme in Tumkur district, India"**

I am pleased to inform you that your proposal titled **"How to improve planning and supervision of health care at the district level through in-service training and supportive supervision: An evaluation of a district-level capacity building programme in Tumkur district, India"** has been granted ethics approval by the Institutional Ethics Committee (IEC) at the Institute of Public Health, Bangalore.

You are requested to comply with the following norms.

1. Provide a summary report on half-yearly basis, quarterly if the research is under six month, to IEC regarding ethical issues of the research study. This report shall primarily focus on ethical aspects of the conduct of the study including any ethical violations, how these violations were dealt with as well as the overall experience of the research team in the field in terms of ethical implications of the conduct of the study. Lengthy and general descriptions of what all activities happened shall be avoided.
2. In case, there is a major change in research design, ethical approval will have to be sought. Examples of major change would include change in respondents' profile, change of study location, change in data collections methods or similar. Minor changes like small variation in sample size would not need a separate ethical approval but the IEC would need to be informed about such changes.

In case you have any queries, please feel free to write to me. I will be happy to answer.

Best regards,

Dr.Upendra Bhojani
Member Secretary,
IPH Institutional Ethics Committee

No 250, Master's Cottage, 2nd 'C' Cross, 2nd 'C' Main, Girinagar 1st Phase, Bangalore 560085
Contact: 080 26421929
mail@iphindia.org

Appendix 5: Ethics approval

Prins Leopold Instituut voor Tropische Geneeskunde
Institut de Médecine Tropicale Prince Léopold
Prince Leopold Institute of Tropical Medicine
Instituto de Medicina Tropical Príncipe Leopoldo
Stichting van openbaar nut | BE-410.057.701

Dr. NS Prashanth
Prof. dr. B. Criel
Department of Public Health

IRB/AB/kw/081 4 May 2011

Dear Colleagues,

Re: **Evaluation of a district-level capacity-building programme in Tumkur district, India**

Our ref: **11 14 1 769**

I am pleased to inform you that the IRB has approved the protocol of the above mentioned study during its meeting of 5th May. We had however some comments which you will find in attachment, just for your information.

Kind regards,

Prof. Anne Buvé
Chairperson IRB a.i

Anne Buvé – Chairperson Institutional Review Board
Institute of Tropical Medicine Antwerp
Nationalestraat 155, 2000 Antwerpen - Belgium
Tel: +32 3 247 65 33 abuve@itg.be

Ann Caron – Secretariat Institutional Review Board
Institute of Tropical Medicine Antwerp
Nationalestraat 155, 2000 Antwerpen - Belgium
Tel: +32 3 247 07 28 acaron@itg.be

Appendix 6: List of programme documents reviewed

List of documents reviewed

Serial number	Title (number of documents)	Document type & publisher/source	Dated
1	Strengthening district health management in Tumkur(1)	Government order by Government of Karnataka	10 July 2008
2	Mentoring notes (5)	Project document by SK/IPH	Multiple dates between August 2009 to August 2010
3	Training needs assessment (DHM, BPM, financial management) (3)	Project document by SK/IPH	Multiple dates between August 2008 and August 2010
4	Training reports (4)	Reports of contact classes: Project document by SK/IPH	Multiple dates from August 2009 to January 2011
5	Curriculum development process documents (4)	Project document by SK/IPH	February 2009
6	Tumkur Operational research reports (3)	Project document by SK/IPH	Multiple dates in 2009 & 2010
7	Inauguration of training program (invitation and report) (1)	Project document by SK/IPH	August 2009
8	SK consortium meeting minutes and notes (5)	Project document by SK/IPH	Multiple dates from April 2009 to January 2011
9	Project proposal to Government and Sir Ratan Tata Trust (1)	Project document by SK/IPH	2009
10	Letters/communication to the Government by SK (4)	Project document by SK/IPH	2009-2010
11	NRHM PIP guidelines (2)	NRHM/Government of India	2009 & 2010
12	Tumkur district PIP (2)	Tumkur district	2009 & 2010
13	Government circulars and orders related to district health planning (4)	Government of India, Madhya Pradesh & Karnataka	2009 & 2010
14	Karnataka state PIP (1)	Government of Karnataka	2009
15	Evaluation reports (2)	Project document by SK/IPH	2011
16	Field visit reports and observation notes (8)	Project document by SK/IPH	2009 & 2010

Total: 42 documents

Appendix 7: List of papers reviewed

List of papers reviewed

Organisational commitment (34)

Allen, N J , & Meyer, J P (1990) The measurement and antecedents of affective, continuance and normative commitment to the organization *Journal of Occupational Psychology*, *63*(1), 1–18 doi:10 1111/j 2044-8325 1990 tb00506 x

Balabanova, D , Mckee, M , & Mills, A (Eds) (2011) *"Good health at low cost" 25 years on. What makes a successful health system* London: London School of Hygiene & Tropical Medicine

Banks, D L (2006) *Relationships between Organizational Commitment, Core Job Characteristics, and Organizational Citizenship Behaviors in United States Air Force Organizations* Air University

Berman, P A , & Bossert, T J (2000) A Decade of Health Sector Reform in Developing Countries: What Have We Learned? In *DDM Symposium on Appraising a Decade of Health Sector Reform in Developing Countries* (pp 0–20) Data for Decision Making Project, USAID

Bowen, S , & Zwi, A B (2005) Pathways to "evidence-informed" policy and practice: a framework for action *PLoS medicine*, *2*(7), e166 doi:10 1371/journal pmed 0020166

Chirewa, B (2012) Development of a practical toolkit using participatory action research to address health inequalities through NGOs in the UK: Challenges and lessons learned *Perspectives in public health*, *132*(5), 228–34 doi:10 1177/1757913911399364

Chopra, M , Munro, S , Lavis, J N , Vist, G , & Bennett, S (2008) Effects of policy options for human resources for health: an analysis of systematic reviews *Lancet*, *371*(9613), 668–74 doi:10 1016/S0140-6736(08)60305-0

Crisp, B R (2000) Four approaches to capacity building in health: consequences for measurement and accountability *Health Promotion International*, *15*(2), 99–107 doi:10 1093/heapro/15 2 99

De Dreu, C K W , Evers, A , Beersma, B , Kluwer, E S , & Nauta, A (2001) A theory-based measure of conflict management strategies in the workplace *Journal of Organizational Behavior*, *22*(6), 645–668 doi:10 1002/job 107

Dolea, C , Stormont, L , & McManus, J (2010) *Increasing access to health workers in remote and rural areas through improved retention* (p 72) Geneva: WHO, Geneva

Fritzen, S A (2007) Strategic management of the health workforce in developing countries: what have we learned? *Human resources for health*, *5*, 4 doi:10 1186/1478-4491-5-4

Gautam, T , van Dick, R , & Wagner, U (2001) Organizational Commitment in Nepalese Settings *Asian Journal of Social Psychology*, *4*(3), 239–248 doi:10 1111/1467-839X 00088

Gray, B H (2008) The Influence of Context on Quality Improvement Success in Health Care: A Systematic Review of the Literature *The Milbank quarterly*, *86*(4), 529–32 doi:10 1111/j 1468-0009 2008 00538 x

Greenhalgh, T, Robert, G , MacFarlane, F , Bate, P , & Kyriakidou, O (2004) Diffusion of Innovations in Health Service Organisations: a systematic literature review *The Milbank quarterly*, *82*(4), 581–629

Greenhalgh, Trisha, Humphrey, C , Hughes, J , Macfarlane, F , Butler, C , & Pawson, R (2009) How do you modernize a health service? A realist evaluation of whole-scale transformation in london *The Milbank quarterly*, *87*(2), 391–416 doi:10 1111/j 1468-0009 2009 00562 x

Hackett, R D , Bycio, P , & Hausdorf, P A (1994) Further assessments of Meyer and Allen s (1991) three-component model of organizational commitment *Journal of Applied Psychology*, *79*(1), 15–23 doi:10 1037/0021-9010 79 1 15

Henning, M (2003) *Evaluation of the Conflict Resolution Questionnaire* Auckland University of Technology

Kumar, R , Ahmed, J , Shaikh, B T , Hafeez, R , & Hafeez, A (2013) Job satisfaction among public health professionals working in public sector: a cross sectional study from Pakistan *Human resources for health*, *11*(1), 2 doi:10 1186/1478-4491-11-2

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