Which mechanisms explain motivation of primary health workers? Insights from realist evaluation of a maternal and child health programme in Nigeria

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Abstract

Background: Well-trained, adequately skilled and motivated primary healthcare (PHC) workers are essential for attaining universal health coverage and the Sustainable Development Goal 3 of ensuring healthy lives and promoting well-being for all. While there is abundant literature on drivers of workforce motivation, published knowledge on the mechanisms of how motivation works within different contexts is limited, particularly from low- and middle-income countries. This paper contributes to health workforce literature by reporting on how motivation works among PHC workers in a maternal and child health (MCH) programme in Nigeria. Methods: We adopted a realist evaluation design including scoping review of literature, document review of policies and MCH programme handbook, and in-depth interviews of PHC workers (n=25), facility managers (n=16), policymakers (n=12) and programme managers (n=10) to assess the impact of the MCH programme in Anambra State, Nigeria. A realist process of theory development, testing, verification and consolidation was used to understand how and under what circumstances the MCH programme impacted on workers' motivation and which mechanisms helped explain how motivation works. The developed programme theory drew upon Herzberg's two-factor and Adam's equity theories to unpack the influences of contextual conditions on worker motivation. Results: A complex and dynamic interaction between the MCH programme and organizational, societal and policy contexts triggered five mechanisms which explain PHC worker motivation: i) feeling supported, ii) feeling valued and committed to work, iii) morale and confidence to perform tasks, iv) companionship and v) feeling comfortable with work environment. Some mechanisms were mutually reinforcing while others operated in parallel. Further analysis showed that the conditions that enabled worker motivation to occur were organisational values of fairness, recognition of health workers' contributions and a culture of task-sharing and teamwork. Conclusions: Policy designs and management strategies for improving performance of health workers, particularly in resource-constrained settings should create working environments that foster feelings of being valued and supported while enabling workers to apply their knowledge and skills to improve healthcare delivery. Future research can test the explanatory framework generated by this study and explore differences in motivational mechanisms among different cadres of PHC workers to inform cadre-related motivational interventions.

Introduction

Global interest in Universal Health Coverage (UHC) has endorsed the need for well-trained, adequately skilled and motivated Primary Health Care (PHC) workers (1). Based on the WHO's dimensions of well-performing workforce, motivated workers are more likely to be available, responsive to clients' needs and deliver quality healthcare (2). Evidence also suggests that workforce motivation mediates how programme inputs (e.g. supportive policies, resource availability, salaries and supervision) can contribute to staff performance (3). In other words, staff motivation interacts with factors in the work environment and wider social context to influence staff performance. Whilst there is abundant literature on the determinants of staff motivation (4-8), the published knowledge on the mechanisms of how PHC worker motivation works is scarce, particularly from resource-constrained settings. Bhatnagar et al.(3) critique

existing studies on the determinants of health workforce motivation for being descriptive in nature and for failing to explain the underlying mechanisms through which motivation works. They therefore recommended the use of theory-based research approaches to better understand the causal pathways of how motivation works. Our paper responds to this call.

This paper has three objectives. First, it contributes to the human resource for health literature through reporting results from a realist evaluation (a theory-driven approach) which examined the mechanisms that explain how motivation works among PHC workers in a mother and child health (MCH) programme in Nigeria. Second, it increases understanding of key contextual factors that enable or constrain PHC worker motivation in public healthcare facilities. Finally, it provides a theoretically based explanation of aspects of the MCH programme that impacted on workers motivation at individual, organizational and societal levels.

We start by defining work-related motivation, followed by the background of the MCH programme in Nigeria. The paper then describes the methodology adopted to assess motivation, and the results section describes the proposed causal pathways to PHC worker motivation in Anambra State, Nigeria. We conclude by discussing lessons for influencing policy and practice decisions for improving health workforce motivation in PHC settings.

What is work-related motivation?

Work-related motivation is a contested concept with multiple definitions used in the literature. WHO defines worker motivation as the level of effort exerted by employees and their desire to perform well, and these are central determinants of quality of care (2). Most available research on health worker motivation in Low- and Middle-Income Countries (LMICs) focus on motivation magnitude that activates work behaviour, and on the drivers of motivation (9, 10). However, scholars like Pinder (11) define work motivation to include a set of energetic forces that originate within and beyond individual workers to trigger work-related behaviour, and determine its form, direction, intensity, and duration. Pinder's definition suggests that in addition to motivational intensity, work motivation can be assessed by its origin and sustainability over time (7, 12). This implies that motivation is a process that arises from interactions between individuals, their work environment (e.g., organizational climate and leadership) and the broader context surrounding the work environment (e.g. national funding practices, health reforms) (13). To further Pinder's perspective, researchers have developed several frameworks that divide work motivation theories into two broad categories: exogenous and endogenous theories.

Exogenous theories focus on explaining how contextual influences (i.e. extrinsic factors) can be altered to improve or constrain work motivation, including how resource availability or its absence in the work place and wider social contexts influence motivation (14). Endogenous theories, on the other hand, use psychological mechanisms within individuals (i.e. intrinsic factors) to explain work motivation through understanding how the satisfaction of human needs can boost employee motivation (15). Scholars

further categorized internal factors within individuals into two: i) lower-level needs and goals that aid the satisfaction of basic survival needs such as shelter and personal safety, and ii) higher-level motives and goals that facilitate self-actualization e.g., self-determination and sense of competence (16). Employees often take physiological needs into account in decisions about workspace and lighting; self-worth when they decide about recognition for work done; and self-actualization when they decide about opportunities for challenging tasks (13). Included among exogenous theories are the goal theories, need theories, incentive/reward theories and reinforcement theory whereas the grouping of endogenous theories include but not limited to equity theory, self-efficacy theory, intention theories and other cognitive theories (17).

Despite the growing interest in the drivers and mechanisms of work motivation, only three realist evaluation studies of mechanisms of workforce motivation were identified, two of which drew on self-determination theory to research motivation in autonomous community health volunteers in Uganda (18) and in top-performing community health teams in El Salvador (19) respectively. The third study combined the Herzberg's two-factor theory of needs with the person-environment fit theory to identify mechanisms of employee turnover in Ethiopia (20). We will draw on relevant endogenous and exogenous theories (see methods and results section of this paper) to explain how motivation worked among PHC workers in Nigeria.

The SURE-P MCH programme

Between 2012 and 2015, the Government of Nigeria implemented a Subsidy Reinvestment and Empowerment Programme (SURE-P), to invest profits from fuel revenues into a social protection fund for vulnerable populations (21). The SURE-P had a mother and child health (MCH) component (SURE-P/MCH) aimed at improving the lives of mothers and their infants. The SURE-P/MCH comprised both supply and demand components. The supply component aimed to broaden access to quality maternity services and improve MCH outcomes through providing resources: recruiting and training PHC workers (2,000 midwives, 10,000 community health extension workers—CHEWs), infrastructural development and increasing availability of supplies and medicines. The demand component aimed to increase utilization of health services during pregnancy and at birth using a conditional cash transfer (CCT) programme as a resource. CCTs were given to pregnant women who register at a primary health care (PHC) centre, where they get health check-ups, deliver at a health facility and take their babies for the first series of vaccinations (22).

Methods

Study design

We used realist evaluation (RE) as the overall methodological approach to assess the extent to which and under what circumstances the SURE-P/MCH programme promoted equitable access to quality services and improved MCH outcomes and in what way these results are sustained following the end of support

to the programme in October 2015 (23). RE, a theory-driven evaluation approach that builds, tests, validates and refines theories (24) was used to understand the impact of a multi-intervention MCH programme on PHC worker motivation by clarifying 'how and why the programme worked, for whom, in which circumstances and for how long' (25). Data collection was through document review and qualitative interviews with purposefully selected stakeholders. Context, mechanism, and outcome (CMO) configurations were used as a heuristic tool to develop eight initial programme theories (IPTs) about how the MCH programme was intended to function in the context of Nigeria, and to inform the broader middle-range theories from the study. The process of developing the eight IPTs have been reported elsewhere (22). In this paper, we focus specifically on the IPT for workforce motivation. Next we clarify the meanings of CMOs, and CMO configurations as used in this study.

According to Pawson and Tilley (1997), it is not programmes that work, rather, it is the resources offered by programmes that enable stakeholders (e.g. implementers and service users) to make them work. Mechanisms are the ways in which programme resources or strategies interact with the reasoning of stakeholders to produce effects (26) and they can only be activated in certain circumstances, that is, in specific contexts. Context describes the features of the conditions in which programmes are implemented that trigger the mechanisms to produce intended and unintended outcomes. In this sense context can be categorised by level: micro (related to individual), meso (related to inter-personal), and macro (related to existing policies, economic conditions in Nigeria, organizational practices and cultural norms). Outcome patterns are the proximal, intermediate or distal effects of programmes that result from activation of different mechanisms in specific contextual circumstances (25). Through CMO configurations, the proposed effectiveness of a programme is outlined, with proposed explanation(s) of: i) why programme outcomes turned out as they did, and ii) how the programme responded to underlying mechanisms and in what contexts.

Data collection and analysis

Realist evaluations are method neutral, often drawing on local effectiveness (quantitative) data to identify outcomes and on qualitative insights for theory generation, refinement and consolidation (21). To assess the impact of the MCH programme on worker motivation in Anambra State, Nigeria, we used a combination of document review and semi-structured qualitative realist interviews (27) with 25 facility-based PHC workers, 16 facility managers, 12 policymakers and 10 programme managers. Each interview lasted 45-60 minutes. Participants were recruited between January 2016 and June 2018. Interviews were conducted by female doctors [EE and CM] and a sociologist [NE] who were trained in realist interviewing techniques and the RE approach. Research staff provided study information sheets to potential participants to help them decide whether to participate in the study, giving them at least 72 hours to express an interest in being part of the study. Purposive sampling was used to ensure that all four groups (PHC workers, facility heads, policy makers and programme managers) were represented in interviews.

Interview guides were pre-tested before they were administered on the field. All interviews were audio recorded, transcribed verbatim and analysed manually.

Documents reviewed included health policies, the SURE-P/MCH programme handbook, and the national health management information system (NHMIS) policy identified through discussions with programme managers and examined to ascertain the overall programme architecture and key assumptions. These informed the logic model which underpinned our inquiry (22) and informed the IPTs including the one on health worker motivation reported here.

All data were analysed using a realist logic of analysis to make sense of, test and refine programme theories (27). During data collection and analysis, four data coders (EE, CM, NE and a research assistant) moved iteratively between analysis of particular examples, refinement of programme theory, and application of abstract theory (28, 29). Table 1 shows the features of data collection and analysis methods adopted in each phase of the study.

Initial programme theories were developed during Phase 1 of the RE through extracting tacit theories about what works and why from: i) documents reviewed above, ii) a focused literature review of interventions on community health worker programmes, iii) one-on-one interviews with policymakers and programme managers, and iv) technical workshop with researchers (22). During phase 2, IPTs were tested and refined iteratively (retroductively) in the course of interviews with PHC workers, and in phase 3, theories were consolidated using emerging data from transcripts of qualitative interviews. To facilitate the process of refining and consolidating best-fit programme theories for the MCH programme, we developed bespoke templates to visualise causal linkages between and among possible **C**ontexts, **M**echanisms and **O**utcomes within CMO configurations of theories. The CMO templates (included as Figure 1 below) helped to depict how interaction between resources and reasoning can operate at micro, meso and macro levels.

Table 1: Features of and methods adopted for data collection during the phases of study

hase f udy	Feature of phase	Method of data collection
hase	1. Developed eight working theories and a logic model of how SURE-P/MCH is supposed to function 1. One of the eight theories sought to explain motivation of PHC workers	1. Review of SURE-P/MCH programme handbook 2. Literature review of supply and demand sides of community health worker programmes 3. Interviews with 55 stakeholders: • Health workers (n=20) • Facility managers (n=13) • Policymakers* (n=12) • Programme managers* (n=10)
hase	Tested and refined health workers motivation theory	Qualitative interviews with 8 stakeholders: • Health workers (n=5) • Facility managers (n=3)
hase	1. Verified and consolidated motivation theory 2. Elaborated the mechanisms of motivation	1. Used Herzberg's 2-factor theory and Adam's equity theory to verify mechanisms of motivation. Reasons for selecting these theories are explained shortly 2. Developed CMO templates to visualize CMO configurations using data from transcripts (see Figure 1)

* Policymakers and programme managers were interviewed at LGA, state and national levels.

We then drew on the Herzberg's two-factor theory and Adam's equity theory to explain how motivation worked during SURE-P, using supporting data from CMO templates. These two theoretical frameworks were selected after a scoping review of theories that supported the understanding of work motivation, which led to an initial shortlist of 11 prominent theories of motivation (8). This was followed by appraisal of the extent to which the shortlisted theories offered guidance for articulating how contextual factors at micro, meso and macro levels influenced PHC worker motivation. Finally, we selected the Herzberg's two-factor theory and the equity theory as best-fit theories for explaining how staff motivation worked among PHC workers in Nigeria, prompted by emerging insights from interview transcripts highlighting the importance of resource availability in the workplace and of fairness of staff treatment for meeting the needs of health workers. We explain both theories next.

Herzberg's two-factor theory

Herzberg's two-factor theory considers motivational factors that lead to job "satisfaction" (e.g., educational opportunities, sense of achievement, intrinsic interest in the work and involvement in decision making) to be distinct from hygiene factors that cause job "dissatisfaction" when they are absent (e.g., salary, good working conditions, recruitment policies and administrative practices) (30, 31). Herzberg named the de-motivators hygiene factors, as such factors are common in the work environment. According to the two-factor theory (See summary in Table 2), motivational factors can be intrinsic or extrinsic to the individual whereas factors linked to job dissatisfaction (i.e. hygiene factors) are contextual factors that are extrinsic to the individual. The principle of the theory is that improving motivation factors increases job satisfaction whereas the presence of hygiene factors decreases job dissatisfaction.

Table 2: Herzberg's 2-factor theory showing key components* of motivational and hygiene factors

Job Dissatisfaction is influenced by absence of Hygiene factors	Job Satisfaction is influenced by presence of Motivation factors
• Working conditions • Relationship with co-workers • National/organizational policies, rules and culture • Quality of supervision or leadership • Base wage, Salary • Security	• Achievement • Recognition • Responsibility • Interesting work • Advancement or promotion • Personal growth

* This list and categories are not intended to be exhaustive

Adam's equity theory

This theory focuses on a persons' perception of fairness as a motivator (32). It states that employees are more likely to be motivated when they believe they are fairly treated, with such motivation triggering positive work attitude and behaviours. On the other hand, workers who feel unfairly treated are predisposed to being dissatisfied and display negative work attitudes and behaviour which manifest e.g. as increased absenteeism and low commitment (33). Adam's theory introduced the idea of social comparison wherein motivation is based on what employees consider to be fair when compared to others. In this sense, employees assess organizational fairness by comparing e.g., their own remuneration and/or recognition of performance with those of their peers. According to this theory, contextual factors that influence employees' perception of organizational justice include availability of resources (human and material), development opportunities, and leadership style.

Ethical approval: was granted by the School of Medicine Research Ethics Committee at the Faculty of Medicine and Health at the University of Leeds (ref: SoMREC/14/097) and the Health Research Ethics

Committee at the University of Nigeria Teaching Hospital (ref: NHREC/05/02/2008B-FWA00002458-1RB00002323).

Results

We report findings following the Realist And Meta-narrative Evidence Syntheses Evolving Standards (RAMESES) II guidelines for realist evaluations (34) which recommend, in line with a realist approach, that substantive theory is mixed with programme theory to enhance the explanatory endeavour of the study.

The programme theory developed from testing and verification of IPTs during this study is:

"In the context of human and material resource shortages, the SURE-P/MCH programme deploys adequate numbers of skilled workers, drugs and equipment and decent housing whilst ensuring regular remuneration, training, supervision and recognition for good performance. These inputs/resources generate a feeling of support, self-worth, empowerment and sense of camaraderie among PHC workers**,** leading to positive work behaviour and improved service delivery".

Our findings revealed that a complex interplay of individual, organisational, and wider social factors affected PHC worker motivation during programme implementation in Anambra State. Individual-level (intrinsic) motivation factors were workers' interest in their vocation and concern for the welfare of patients. This supports other studies' findings of altruistic behaviour among health workers who are energized by a desire to provide a good quality service to users' (35) and to communities they served (19). In our evaluation, seven organizational (extrinsic) drivers of worker motivation were: i) increased availability and adequacy of material resources; ii) mentorship iii) on-the-job training and supportive supervision; iv) regular payment of salaries v) recognition for good performance (33); vi) adequacy and good staff mix and vii) renovation of facilities (36-38). Societal-level motivators included community appreciation for and recognition of workers' roles.

The synthesis of data from CMO analytical templates (see Fig 1) identified five significant explanatory patterns (or mechanisms) through which motivation worked in this programme: i) staff feeling supported, ii) feeling valued and committed, iii) morale and confidence to perform tasks, iv) companionship and, v) feeling comfortable. The five mechanisms are discussed next, beginning with narrative propositions, crafted as sub-theories of the consolidated programme theory above, and informed by linkages between/among Contexts, Mechanisms and Outcomes and illustrated with supporting quotes from our qualitative data.

Explaining mechanisms of PHC worker motivation

a) *Supporting PHC Staff*

In a context where health workers enjoy cordial working relationships and mentorship from senior colleagues, the provision of equipment and constant supply of drugs and consumables to PHCs

increases PHC workers' feeling of being supported as they have the necessary tools to work. The following quote from a CHEW illustrates how this mechanism was often explained by staff interviewed:

During SURE-P there were drugs and equipment. They also used to supply drugs and mama kits to the facility...This made me feel better and happy because when our clients come, we had drugs to give to them. They [availability of resources] really motivated me to work and put more effort into caring for our clients because I had all it takes to work and give out those services…I was more motivated during SURE-P because those things that we needed to work were available but now [after the end of SURE-P] we don't have them again. **(Female Community Health Extension Worker)**

In the context of Nigeria, where lack of basic work tools is common, the availability of resources (drugs, equipment and delivery kit) at PHC facilities stimulates health workers to provide quality MCH services whereas resource shortages can cause dissatisfaction and reduced performance.

b) Feeling Valued and Committed

Where PHC workers are underpaid and their efforts remain unacknowledged, regular payment of salaries and recognition of staff who perform well increases morale and commitment to work.

The SURE-P programme appeared to ensure regular payment of salaries, which triggered mechanisms of satisfaction and commitment to work. In explaining the benefits derived from the SURE-P programme, a community health extension worker stated:

I benefitted from the SURE-P programme in many ways. [The] first is that I was committed to my work during SURE-P programme. I was working happily because the payment [salary] we received at the time helped [sustained my commitment]. **(Female Community Health Extension Worker)**

Many health workers explained that salaries were paid promptly during the SURE-P programme, yet some complained that the salary scale for paying workers in Anambra state was lower than at national level (See Adam's equity theory). They cited disparity in salary scales as a cause of worker dissatisfaction. A few health workers also reported that salaries were either delayed or unpaid after SURE-P ended. The next quote explains how nonpayment of salaries creates dissatisfaction:

Non-payment of salaries after SURE-P really affects it [i.e. work effort] because when staff are demoralized they won't come to work when they are supposed to come… [W]hen you come to the health facility you won't see them because they don't feel appreciated.... [T]hey will tell you that they have not been paid for the work they have done, and that there are no drugs [in the facility] for them to work with. **(Female, Community Health Extension Worker)**

Here the non-payment of salaries generated feelings of being under-valued by the health system, leading to diminished organizational loyalty manifesting as absenteeism and non-delivery of service. Nevertheless, some PHC workers interviewed reported that community support for and roles recognition helped to sustain motivation when salaries were unpaid.

Taken together, the preceding subsections demonstrate how the combination of availability of material resources (drugs and consumables) and regular payment of salaries prevented dissatisfaction through making PHC workers feel supported and valued by the health system and their host community, thus leading to enhanced satisfaction and commitment to increase work effort in Nigeria. Next, we explore the impact of physical working environment on motivation.

c) Physical, Functional and Psychological Comfort

Prior to implementing SURE-P programme, many PHC facilities were rundown, lacking staff accommodation or supply of water and electricity. Renovating health facilities and providing staff accommodation within facility premises created a positive working environment that made staff comfortable and enthusiastic to work:

SURE-P gave us all the things we needed such as light [i.e. electricity], water and the other things too [see material resources in previous section]. When these things are provided the nurses are happy [satisfied] doing their work, no matter the little amount [i.e. low salary] they are getting, because our job is to save lives, whether you eat or you don't eat, you will try to put more effort to save lives [i.e. a sense of duty]. **(Female, Midwife)**.

This mechanism relates to the workplace built environment framework (39) that relates optimal staff performance to physical, functional (because it enables workers to do their tasks) and psychological comfort in workspace environments. The physical condition of the workplace (e.g., refurbished facilities and availability of running water and electricity) prevents dissatisfaction and enables PHC workers to achieve their clinical goals of improving healthcare outcomes.

d) Improving Staff Morale and Self-confidence

In a context of irregular supervision and reduced prospects for professional training, the provision of supportive supervision and equitable opportunities for training to improve staff knowledge and skills make staff feel more confident to provide services.

We feel happy when we have regular training and supervision. The reason is that during SURE-P programme they used to train us for like five days every so often, [and] then we will step-down the training to other PHC staff. It is very necessary that, as a health professional, you update yourself with ongoing changes and things in the profession, or else you go out for continuous study. Regular training boosts one's morale [self-worth] and motivates one. After going for those trainings you'd come back with new knowledge that you will put into the work, and things [health service] improve. **(Female Community Health Extension Worker)**

However, not all PHC workers enjoyed regular training opportunities, as reported by a facility manager:

I didn't benefit anything from SURE-P: no regular training, nothing, though there was a time we were called to Abuja for two to three days' workshop – that's all. But other staff working with me did benefit. They

were paid [for attending trainings]. But we, the local government staff, we didn't benefit anything. **(Female Facility Manager)**

While the SURE-P policy aimed to promote a culture of equal access to training, the last quote suggests that, in practice, only workers deployed by the SURE-P programme enjoyed retraining opportunities. In Anambra, the SURE-P programme deployed six new health staff (comprising 1 midwife, 2 CHEWs and 3 village health workers) to complement already existing staff at each participating PHC facility (40). Prioritizing newly posted staff for training (i.e. organizational inequity) seemed to cause feelings of inequality and tension between facility managers employed by the local government and SURE-P deployed staff.

e) ***Camaraderie and Shared Workload***

In Nigeria, given a chronic shortage and mal-distribution of primary healthcare workers, deploying sufficient numbers and right skill mix of PHC workers to underserved areas generates a sense of camaraderie and shared workload during shifts, which enables health workers to spend quality time in service provision for clients:

The way I feel is the way everybody [i.e. PHC workers) feels. When you have many staff in the facility, there will be division of labor and work will be smooth and easy. When you are working with somebody, you become friends with that person. Among the permanent staff, I was the only midwife as it is now, but when they were here there were four other SURE-P workers and I felt better. We used to discuss, you know, work was flowing. **(Female Midwife)**

The abrupt reduction in staff numbers following the withdrawal of programme funding resulted in increased work stress:

The staff strength in this facility is very poor now but during the SURE-P programme, I had 21 staff under me (4 midwives, 2 CHEWs, 9 nurses and 6 village health workers), but as of now, I have only one staff…. Although we are managing but it is stressful on us…. Because the workforce has been reduced so low, it is affecting me and the other health workers. We are almost working round the clock. **(Female Facility Manager)**

Despite the manager's attempt to manage increasing workload, the stress of working round the clock is beginning to constrain health workers' motivation. Most workers interviewed emphasized the significance of interaction, peer-support and convenient working hours as important functional factors that enabled them to do their work effectively, communicate and connect with other professionals.

Apart from the five mechanisms explained above, our analysis identified four contextual conditions at micro, meso and macro levels that enabled workforce motivation to occur: a sense of duty to care for patients (individual level), the values of fairness and a culture of task-sharing and team work (organizational level), and recognition of workers' contribution to improve the health and well-being of the local community (organizational and societal levels).

Discussion

The programme theory examined in this paper focused on understanding how motivation works, whilst also explaining why and in what circumstances the SURE-P/MCH programme had an impact on workforce motivation. Using Herzberg's 2-factor and Adam's equity theories to guide data analysis and synthesis led to development of a middle range theory in the form of five mechanisms that plausibly explain how PHC workers' motivation occurred. The distinctive feature of this study is its identification of the intervention approaches necessary to prevent dissatisfaction and improve motivation among salaried PHC workers and the specific mechanisms that explain how the interventions contribute to motivation.

The findings suggest that interventions of SURE-P interacted with the wider national and local context and a dynamic institutional environment generated by health sector reform policy, to boost motivation through: (a) making workers feel supported, (b) feeling valued and committed, (c) creating comfortable working environments, (d) boosting morale and confidence and (e) fostering peer-support and collegiate relationships (depicted in Figure 2). The Figure shows the complex relationship between components of the theory highlighting how increased motivation is achieved when the "cogs" of theory are in action. The figure provides an explanatory framework that accounts for organizational and wider contextual factors (coloured sky blue) that interact with programme interventions (see left hand column, coloured yellow) to improve/hinder motivation (see right hand column of outcomes, coloured red). Only individual level outcomes are reported in this paper.

Our data and the information in the left-hand column of Figure 2 identified five broad categories of interventions implemented by the SURE-P programme in Nigeria: i) positioning appropriate skill-mix of workers in PHC facilities, ii) regular training and supervision of staff to maintain their knowledge and competence, iii) favourable working environment via infrastructural upgrade and staff accommodation), iv) provision of material resources to facilitate service delivery (i.e. drugs, supplies and transport for referrals), and v) financial compensation (salaries) and non-financial recognition for work done.

The overall findings of our research support the results of other studies of health worker motivation in Nigeria and other LMICs, which found that opportunities for growth, optimal physical working conditions, strong supportive networks and a sense of being valued by the health system and community motivate health workers to perform their jobs well (7, 12, 41-43). These findings have implications for developing strategies that ensure supportive supervision and strengthening community ties, establishing a fair recognition and reward system, and providing opportunities for training and career enhancement for health staff. While many studies focused on highly-performing workers and institutions, or on specific cadres of workers e.g., community health volunteers to identify what motivations and mechanisms drive good performance (18, 37, 44-47), our study assessed how motivation worked among different cadres of PHC workers (doctors, nurses, midwives, and CHEWs) in a dynamic institutional environment generated by changing health sector reform policy.

Similar to studies in Burkina Faso and South Africa (36, 37) we found that provision of equipment, drugs and consumables by SURE-P programme and workers perception of supportive supervision and

mentoring were vital for making workers feel supported. Increased motivation during SURE-P was built on already-existing motivation of PHC workers generated by regular payment of salaries in Anambra state, Nigeria although salaries were sometimes lower than expected. Regular remuneration triggered feelings of being valued by the health system, whereas perceptions of disparity in salary scales between state- and federal-owned facilities undermined motivation. Like studies in sub-Saharan Africa, PHC workers' sense of being valued was reinforced when community members appreciated them for work done (37, 43). This interplay between motivational factors suggest that, in the context of Anambra State, the mechanisms that trigger feelings of being supported and feelings of being valued are mutually reinforcing as they enabled PHC workers to fulfil their professional goals.

In addition to regular remuneration and availability of material resources, our study found that the physical condition of the workplace was related to motivation. This has also been reported by previous studies, for example in Ethiopia (20). We observed that refurbished infrastructural facilities complete with water and electricity supply increased functional capacity to perform tasks and PHC workers' comfort, passion and enthusiasm for delivering MCH care. Another factor that improved service delivery was access to training opportunities. Fairness in implementation of training policies was also important to workers in Anambra state, who saw (re)training as a pathway to achieving personal growth and recognition for good performance (37, 45). This also suggests that the causal mechanisms through which physical environments and access to (re)trainings influence worker motivation may be mutually reinforcing as both mechanisms act through increasing morale, psychological well-being (comfort) and enthusiasm to deliver services.

Besides impacting individual-level motivation we found that availability of material and human resources also sparked team-level motivation. Both individual and team-level motivations have been reported in El Salvador (19). We noticed that deploying adequate numbers and the right skill-mix of PHC workers during SURE-P programme increased team-level motivation through increasing peer-support and companionship among multi-cadre staff and reducing individual workload. By contrast, abrupt reduction in staff numbers following withdrawal of programme funding undermined team-level motivation through increasing workload and stress levels of the remaining staff, who were expected to work unsociable and long hours. To our knowledge this is the first realist evaluation in LMICs to consider the effect of cutbacks and withdrawal of programme funding on health worker motivation.

Practical Implications beyond Nigeria and Study Limitations

The key strength of our study is the identification of a mix of interventions implemented simultaneously by the SURE-P programme with the goal of stimulating access to quality MCH services. This mix of intervention approaches acted at multiple levels to improve job satisfaction and worker motivation through addressing competency-related deficiencies (individual level), staff shortages (organizational level) and under-valuing of health workers roles (health systems and societal levels).

While we acknowledge that in LMIC, diverse contextual factors (cultural, political and socioeconomic) influence workforce performance and that a one-size-fits-all approach will not address workforce

performance issues in all contexts, nevertheless, our findings demonstrate the need for managers and policymakers to implement a group of interventions that simultaneously address multiple interrelated problems that constrain workforce performance (9, 48). In resource limited countries where health systems challenges continually impede attainment of UHC, the mix of interventions can include approaches that involve: i) deploying appropriate skill-mix of workers to address human resources shortages, ii) providing staff accommodation to address essential needs of workers, iii) improving the working environment infra-structurally and by supplying material resources to facilitate service delivery, iv) creating opportunities for regular skills training and supervision in ways that promote organizational justice and social justice.

There are three limitations of the study. First, although it identified patterns of motivational mechanisms of PHC workers at individual and inter-personal team levels, this paper excludes a comparison of factors that motivated different cadres of PHC workers in multi-disciplinary teams. This would have provided insight into similarity and differences in mechanisms of motivation among different cadres of workers. Second, this RE drew insight from health workers in Anambra state only. It is plausible that including workers from other states of Nigeria may have identified other mechanisms of motivation to further enrich our findings. Third, our analysis is based on staff-self reported data. As this study adopted a qualitative research approach, we did not include psychological surveys of interactions between different mechanisms of motivation nor of potential hierarchies among the mechanism identified and their additive effects on staff performance.

Conclusions

The programme theory developed by our study identified causal pathways that plausibly explain how motivation of salaried PHC workers can be increased and sustained to contribute to health system improvements. The findings increase understanding around the potential for wider context and institutional structures and practices to enhance or inhibit workforce motivation. The study can also inform policy design in Nigeria and LMICs with similar contexts for creating positive working environments that foster the feeling of being valued and supported and empowers PHC workers to use their clinical knowledge and skills to improve universal healthcare delivery. Future realist research should further this knowledge by testing the explanatory framework generated by this study, and explore differences in motivational mechanisms between different cadres of workers to inform cadre-related strategies for motivating multi-disciplinary teams.

List Of Abbreviations

CHEW = Community Health Extension Worker

CMO= Context, mechanism, and outcome

LMIC= Low- and Middle-Income Country

MCH= Maternal and Child Health

NHMIS= National Health Management Information System

PHC= Primary Health Care

RAMESES= Realist And Meta-narrative Evidence Syntheses Evolving Standards

RE= Realist Evaluation

SURE-P = Subsidy Reinvention and Empowerment Programme

UHC= Universal Health Coverage

Declarations

Ethics approval and consent to participate

Ethical approval for the wider study were obtained from the School of Medicine Research Ethics Committee at the Faculty of Medicine and Health at the University of Leeds (ref: SoMREC/14/097) and the Health Research Ethics Committee at the University of Nigeria Teaching Hospital (ref: NHREC/05/02/2008B-FWA00002458-1RB00002323).

Consent for publication

Not Applicable

Availability of data and materials

The datasets generated and/or analysed during the current study are available in the University of Leeds Research Data repository: http://archive.researchdata.leeds.ac.uk/

Competing interests

The authors declare that they have no competing interests

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Authors' contributions

TM, BU, OO, AM and RH have jointly conceived the study; EE, CM, NE conducted data collection with support and guidance from BE, TM, RH, AM and TE. BE led the writing of this paper with contributions

from CM, TM, EE, AM, BU, AM, OO, RH, NE, JPH, TE. All authors read and approved the final version of the manuscript.

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Not Applicable

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Figures

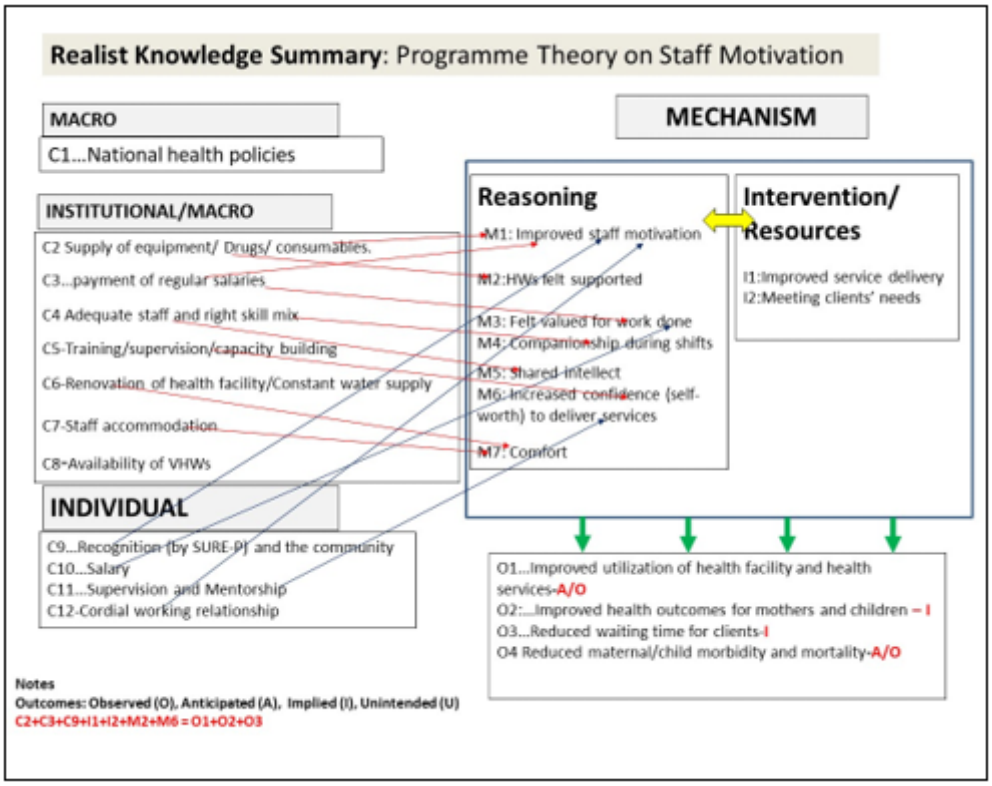

Figure 1

CMO templates for visualising causal linkages between and among Cs, Ms and Os

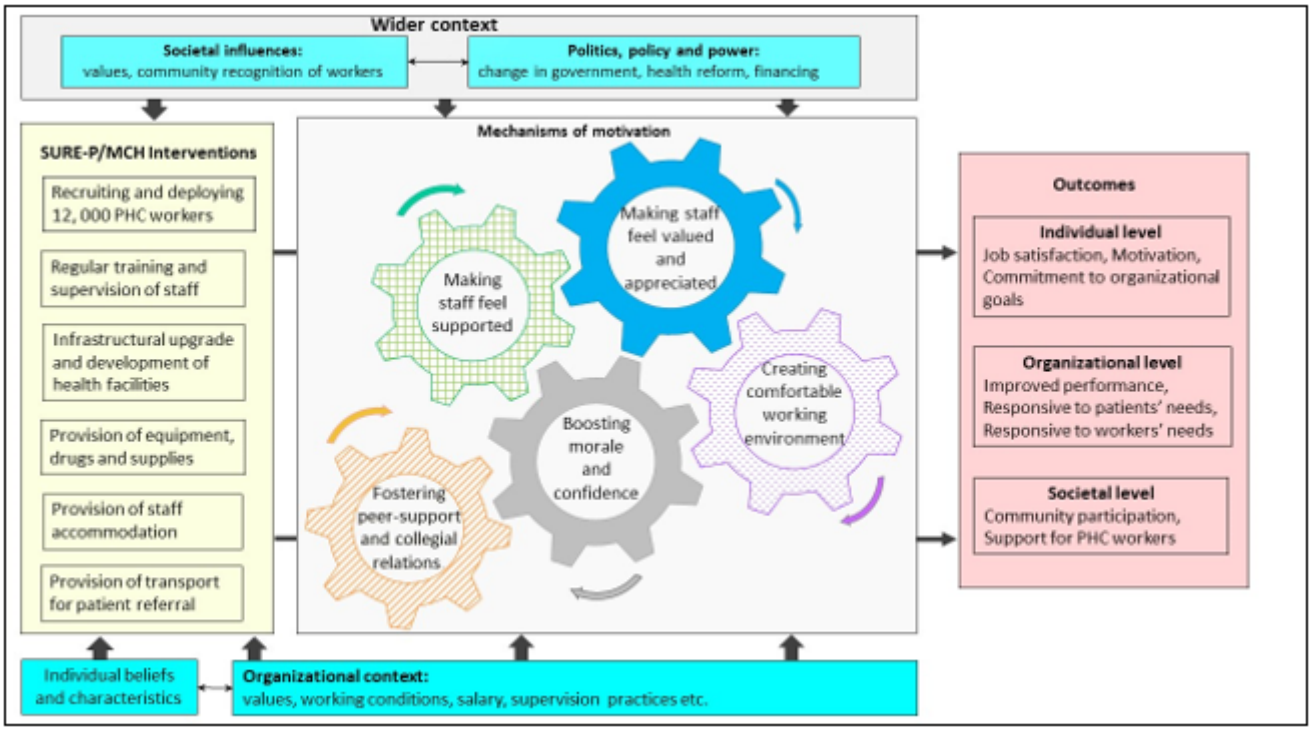

Figure 2

Conceptual representation of the ways in which SURE-P impacts PHC worker motivation

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