

MEASURING PERFORMANCE AMONG COMMUNITY MIDWIVES IN LOW-RESOURCE SETTINGS: A MIXED-METHODS STUDY IN SUDAN

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Abstract

Introduction Decades of war, internal conflicts, and political instability had detrimental effects on maternal and child health in Sudan. The shortage of health workers, skill-mix imbalances, geographical misdistribution, health labour market imbalances, retention and out-migration shape the HWF landscape. In 2013, a UHC expansion programme was introduced to meet the SDGs. Among other initiatives, it sought to train 14,000 community midwives (CMW). Aligned to the national strategic objective to improve performance, the current study sought to develop a practical measure of performance for the CMW cadre.

Methods Implementation research methods were adopted in three phases. Phase one a systematic review of performance measures for maternal HWF in LMICs. The second phase involved 13 KII and 4 FGDs with beneficiaries and 8 IR workshops with CMWs and RMCH state coordinators to co-define, characterise and co-develop a measure of performance. The third phase tests the construct validity of the newly developed tool.

Results: The CMW performance tool combines the results of the three phases of the study, and adopts a system thinking approach to highlight the importance of pre-requisites being the availability, accessibility, and acceptability of CMWs. Next, the country's geosocio-political, supply and demand factors, are considered. The individual performance of the CMW is measured by the 'know-how,' and 'know-what,' (i.e., the constructs of knowledge and competency) and determined predominantly by job satisfaction and motivation.

Conclusion: The study presents a measure of performance that is both evidence-based and contextually appropriate. Following further validation, this tool can be applied in similar contexts towards achieving UHC.

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Introduction

Achieving universal health coverage, designing people-centred health systems, and meeting SDG3 represent some of modern-day's most pressing global health challenges. Indeed, the performance of health care providers is one of the main reasons why many low-income countries failed to reach the health-related MDGs ([WHO, 2015](#)). The performance of the health workforce is listed as a top priority to address these challenges. Despite the momentum, global efforts are still short of addressing the estimated shortage of 18 million health workers (Buchan et al. 2017). The global shortage of health workers threatens the achievement of most of the SDGs, and in particular, SDG 3 on good health and wellbeing (UN, 2017). This projected shortfall, therefore, acts as one of the most pressing obstacles preventing the attainment of universal health coverage (UHC) ([WHO, 2016a, 2016b](#)). This shortage is especially felt in rural, remote, and socio-economically deprived areas ([WHO, 2014, 2016a](#)). The most affected region will likely remain sub-Saharan Africa, which with its population growth and change in morbidity and mortality profile, is poised to experience a projected shortfall of 3.7 million health workers by 2030 ([WHO, 2014, 2016a](#)).

Sudan faces remarkable health workforce challenges including shortages and skewed geographical distribution. The complexity of the health workforce landscape, the country's volatile geopolitical climate, and an unfavorable health labor market marked by weak absorption capacity and poor retention policies, led to significant migration of the country's health workforce involving nearly 60% of the physician workforce. Sudan's response to the health workforce crisis included the introduction of a primary health care (PHC) expansion programme in 2013, which had amongst its priorities to increase human resources for reproductive, maternal, and child health and improve the performance of Sudan's health workforce. To achieve this, the Sudan Federal Ministry of Health (FMOH) trained and deployed three new frontline health workers: the community midwife (CMW), the community health worker (CHW), and the medical assistant.

Despite the performance of the health workforce being prioritised and noted as important by the Sudan's National Health Sector Strategy, the literature on how to optimise health provider performance within Sudan remains scarce. To date, no performance measure has been established at the Federal or State levels of the health sector. Performance measurement is particularly problematic for health managers, who have no systematic way to monitor the progress of the CMWs under their supervision. Indeed, how to best measure performance in developing countries,

such as Sudan, remains a highly debated topic in the literature. Specifically, there remain significant gaps in how performance is conceptualised. The current knowledge gaps around what factors makeup performance and what determines performance represent critical issues in performance measurement. Therefore, the goal of the current research was to develop a practical measure of the performance of CMWs in Sudan.

This study contributes to existing knowledge by developing a contextually relevant tool to measure community midwives’ performance in Sudan. In the short term, it is expected that the results of this study will be used to inform national policy, management and training programmes, while also contributing to the growing literature in the area of health worker performance by identifying and measuring the performance of frontline maternal health workers in similar low-resource settings. New knowledge derived from this study is of particular relevance to NGOs, governments, policymakers, and health programme implementers focused on health worker performance improvement. In the long-term, it is expected that the results of this study will contribute to better performance monitoring and better human resource management, both nationally and internationally.

Broadly defined as the degree to which an individual helps the organisation reach its goals (J. P. Campbell, 1983), individual performance is considerably job-specific. An area of interest across many disciplines, including the fields of management, work psychology and health (J. Campbell, 1990). Table below summarises various definitions of performance present within the literature.

Table: Job performance definitions and factors

Authors	Definition	Performance factors
Campbell et al. (C. H. Campbell, Ford, P., Rumsey, M. G., Pulakos, E. D., Borman, W. C., Felker, D. B., et al. , 1990)	The total population of behaviours and activities that are considered important to accomplish organisational goals. Each of the activities performed at work may require different knowledge and skills, which may be functions of different abilities	(1) job-specific task proficiency, (2) non-job-specific task proficiency, (3) written and oral communications, (5) supervision, (6) management and administration (7) demonstrating effort, (8) maintaining personal discipline, and (9) facilitating peer and team performance

Borman and Motowidlo(Borman, & Motowidlo, , 1997)	There are two types of job performance: task and contextual	Contextual performance (1) Persisting with enthusiasm and extra effort as necessary to complete own task activities successfully (2) Volunteering to carry out task activities that are not formally part of own job (3) Helping and cooperating with others (4) Following organisational rules and procedures (5) Endorsing, supporting, and defending organisational objectives
Motowidlo et al., 1997)	The aggregated value to the organisation of the discrete behavioural episodes that an individual performs over a standard period. There are two types of job performance: task and contextual activities. Behaviour is what people do at work. Performance is behaviour with an evaluative component, that is, behaviour that can be evaluated as positive or negative for the individual or for the organisation	(1) task knowledge (2) task habits (3) task skills (4) contextual knowledge (5) contextual skills (6) contextual habits
Viswesvaran & Ones , 2000)	Performance consists of evaluable behaviours. There are several manifestations of individual job performance with the actual operational measures varying across contexts. In this sense, the explanation of the construct involves identifying the dimensions it is composed of	(1) productivity, (2) quality of work, (3) job knowledge, (4) communication competency, (5) effort, (6) leadership, (7) administrative competency, (8) interpersonal competency, and (9) compliance with/(10) acceptance of authority
Bergeron (Bergeron, 2007)	Behaviours needed to help the organisation reach its goals	Task performance and Organisational citizenship behaviour (OCB)

Source: adapted from (Carlos & Rodrigues, 2016)

In light of the challenges mentioned above and the recognised role of performance as a priority area to strengthen human resources for health (HRH) in Sudan, this study first reviews the current landscape of HRH, its challenges, and identifies current gaps in performance knowledge, policy, and practice, as well as presents current debates within performance measurement, theories, and frameworks. This is followed by an in-depth contextual description of national Reproductive, Maternal, and Child health (RMCH) trends over time, set against the recent geopolitical climate, and a review of relevant RMCH research, policies, strategies, and programmes in Sudan.

Methodology

The current study adopts an implementation research approach using mixed-methods across three distinct research phases: an exploratory phase, a tool development phase, and the tool testing

phase. As part of the exploratory phase, the first research objective was to determine what factor(s) constitute 'performance' of maternal health workers in low and middle-income countries. This was achieved through a systematic review of the performance literature, focusing on maternal health care providers in low and middle-income countries (LMICs).

The second objective was to determine what factor(s) constitute 'performance' of community midwives in Sudan. A series of key informant interviews (KIIs), focus group discussions, and participatory workshops were conducted with key stakeholders. The results were synthesised with the results of the systematic literature review to propose a theoretical framework for the measure of CMW performance in Sudan, depicting both the determinants and components of performance for CMWs in the context of Sudan. During the tool development phase, and aligned with implementation research, participatory approaches with key stakeholders, including reproductive health state coordinators, policy makers, community midwives, and beneficiaries, were again used to develop contextually relevant items for each of the constructs represented by the theoretical framework derived during the exploratory phase.

The fourth objective of assessing the validity of the performance measurement tool was realised through applying measurement modelling procedures. Responses gathered using the CMW performance measurement tool underwent latent variable modeling procedures, namely, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to determine the factor structure of the performance measure.

Results

In light of the challenges discussed in this study and the recognised role of performance as a priority area to strengthen human resources for reproductive, maternal, and child health in Sudan, the current research aimed to develop a practical measure of performance for a newly introduced community midwife cadre in Sudan. The main research findings are summarised below, mapped onto each objective of the study:

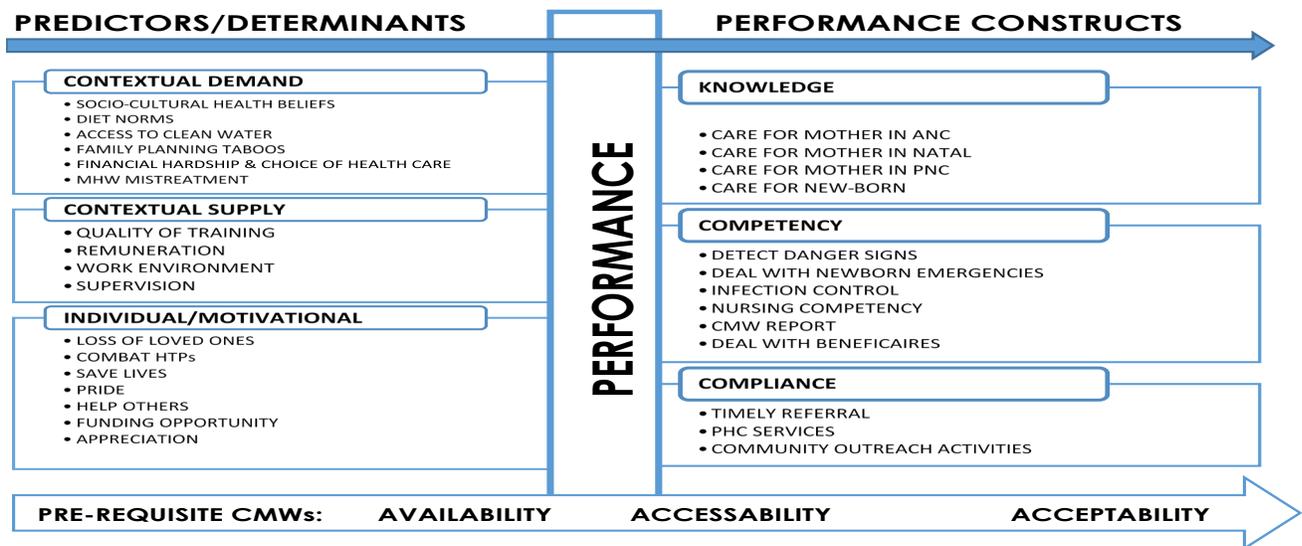
Objective 1: To determine what factor(s) are most commonly used to measure 'performance' of maternal health workers in LMICs

The results of the systematic literature review identified 16 constructs used as measures of performance, reflecting the significant variation in how we come to understand and measure the

performance of RMCH in LMICs. The constructs most commonly identified as components of performance measurement included quality of care, knowledge, skills, competency, compliance, and self-efficacy. Other constructs, including motivation, supervision, job satisfaction, burnout, and workload, were also identified but were more often referred to as ‘impacting’ on or ‘influencing’ performance, rather than as direct measures of performance. The results of the systematic review suggest several quantitative, qualitative, and mixed-method approaches to measure performance among reproductive, maternal, and child health cadres in LMICs. Likert self-report scales were most often used to measure constructs such as motivation, job satisfaction. Observational checklists, focus group discussions, in-depth/semi-structured interviews, case-vignettes, and observed simulated patient were among the qualitative tools used alone, and in conjunction with the quantitative tools, in the case of a mixed-method approach. The need to develop, adopt and adapt performance measures to context and job-specific tasks was highlighted.

Objective 2: To determine what factor(s) should be used to measure ‘performance’ of community midwives (CMWs) in Sudan

The results of the systematic literature review were followed by an exploratory study to contextualise further and determine the factors that constitute the performance of CMWs in Sudan as shown in the figure below. Stakeholders identified the performance of CMWs in Sudan as consisting of three primary constructs: namely, knowledge, competency, and compliance. Determinants of performance identified were either contextual or individual factors. Contextual determinants reflected aspects of the demand side of the health system that would influence the performance of the CMW, including socio-cultural health beliefs, diet norms, access to clean water; family planning taboos; financial hardship, and choice of healthcare and maternal health worker mistreatment. Key informants further identified the remuneration, quality of training of the CMWs, work environment, access to health facilities, and availability of consumables, as supply-side performance determinants. Individual factors, on the other hand, included seven components indicative of CMW motivation. These included pride, appreciation, and happiness in helping others, saving lives, and combating harmful traditional practices. Also, personal experiences, such as losing a loved one due to the unavailability of health personnel, further motivated them to perform as CMWs.



Taken together, and consistent with the results of the systematic literature review, key informants and RH state, coordinators agreed that performance measurement should use both quantitative and qualitative methods. Also, consideration had to be given to both contextual and individual factors. Consistent with existing models, including Waldman’s (1994) Theory of Work Performance and Mitchell’s (1997) Model of Job Performance, stakeholders expressed that job performance is affected by both person factors (i.e., individual differences) and systems factor (i.e., situational variables).

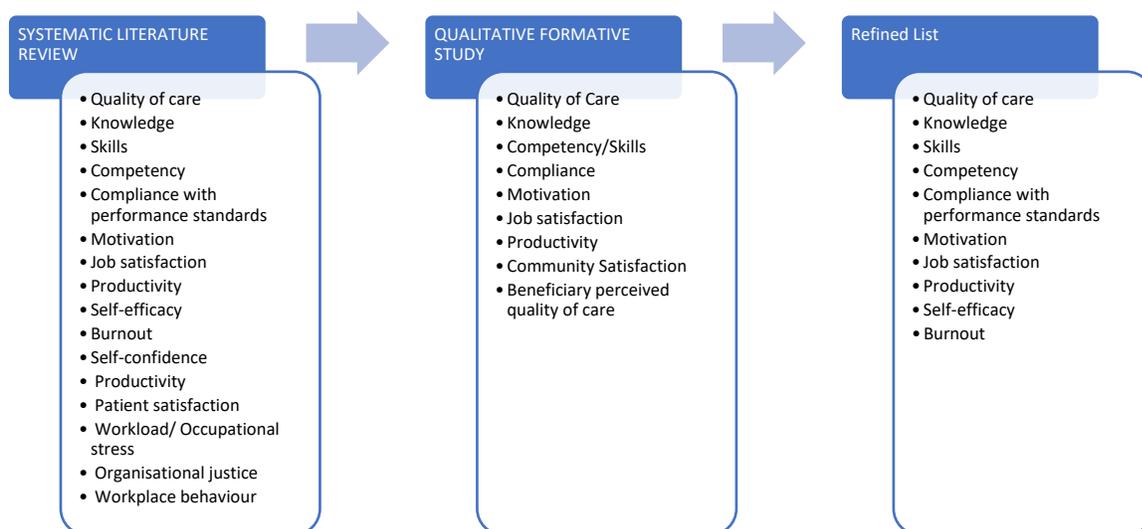


Figure Process of performance identified domains

Objective 3: To develop a contextually-relevant tool to measure performance among community midwives in Sudan

Aligned to implementation research, the results of the participatory consultative process of prioritisation of the primary constructs identified were used to develop the initial version of the CMW Performance Measurement Tool. Of the 16 constructs identified from the SLR of performance measures of maternal health workers in LMICs, only six constructs were ultimately included as a priority measure of performance among CMWs in Sudan. Three of these constructs were intended as measures of performance (competency, knowledge, and compliance); three of these were considered important determinants of performance (supervision, job satisfaction, and motivation) as illustrated in the figure below. The tool further followed a continuum of care approach, antenatal, natal, postnatal care and family planning methods, whereby answers were solicited using a combination of open-ended, non-leading questions in an interview format. Also, the competency questions were identified as best answered by demonstration, use of manikin and direct observation of the detection of vital signs.

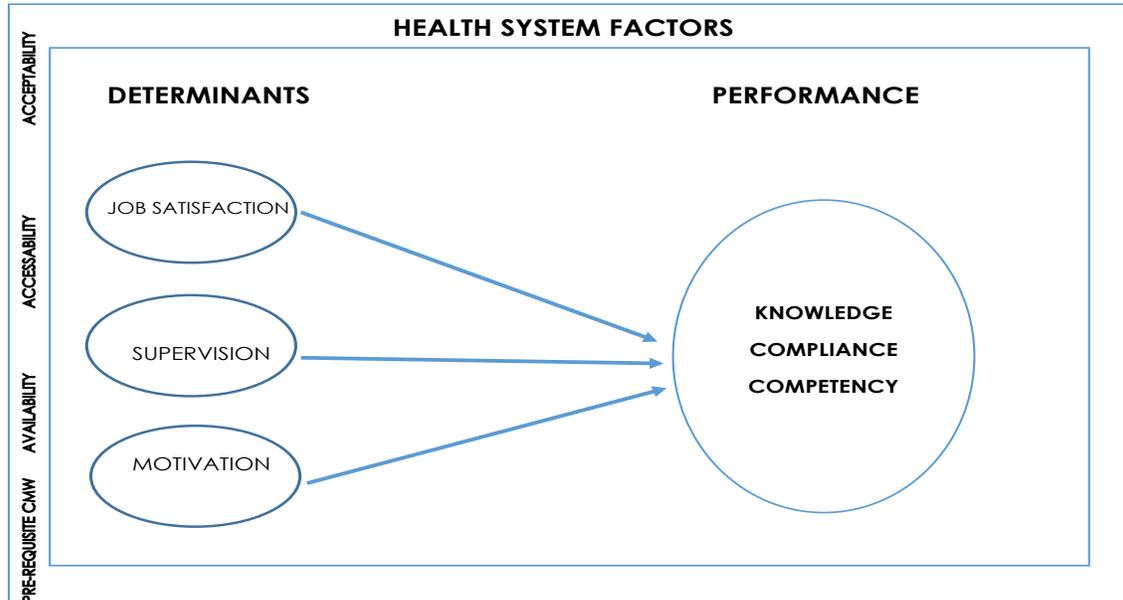


Figure 1 Revised Performance Model

Objective 4: To assess the construct validity of the tool to measure performance among community midwives in Sudan

The tested performance scale consisted of three determinants of performance as motivation, job satisfaction and supervision, and a nine-item, three-factor correlated solution consisting of 5-items capturing those dimensions that measure competencies and 4-items that measure knowledge. The factor analyses performed on the scales measuring determinants of performance: Job Satisfaction, Motivation, and Perceived Supervision yielded good model fit. The results of the regression analysis was contrary to our hypothesised nature of the correlations between these determinants and the measure of performance, whereby an inverse relationship was observed between CMW performance constructs and its determinants in the low-resource setting of Sudan.

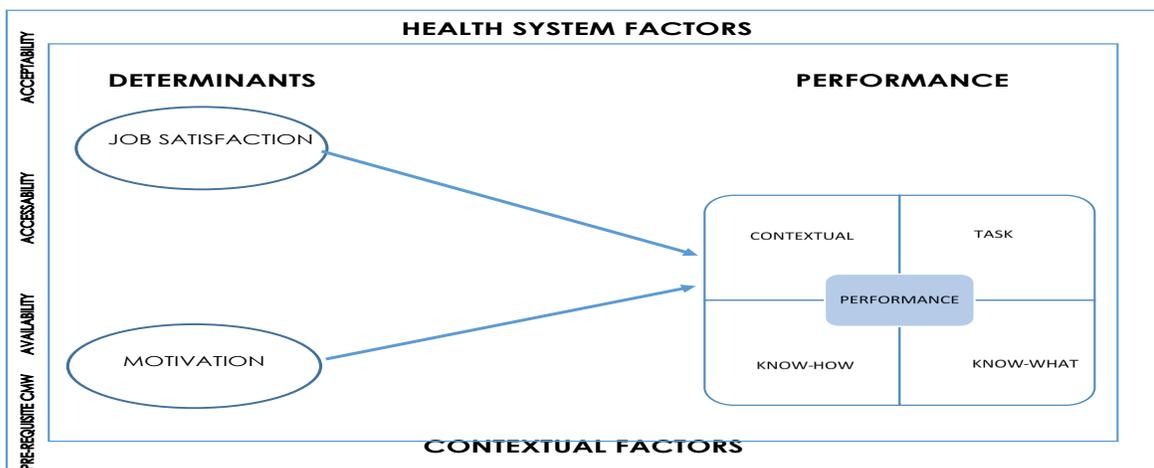


Figure 1 Final Performance Model

Discussion and Conclusion

Despite the urgency and importance of improving and enhancing health worker performance to attain universal health coverage in the Sustainable Development Goal (SDG) era, how performance is measured varies significantly within the literature. Consequently, no consensus currently exists for how performance should be best measured among community cadres for RMNCH. Evidence shows that there is no universal agreement on what constitutes performance, nor is there agreement on what defines a well-performing health worker. What scholars appear to agree on, however, is that performance is complex and can be observed through behaviour, multi-factorial or multidimensional, and influenced by several individuals and broader, system-level, determinants.

Moreover, there appears to be a general agreement that performance measures should consider how performance is defined within a specific role and that chosen performance indicators should be indicative of the tasks and responsibilities assigned to this role. Therefore, in measuring performance in similar and other health worker cadres, a similar approach is required. This research proposes a CMW performance tool, which requires further validation procedures.

Health worker performance definitions, models, domains, factors, and determinants are largely based on theories imported from the Global North. Therefore, any performance measure development needs to incorporate an in-depth contextual understanding of local definitions, perceptions, and understandings of the construct(s) to be measured. Therefore, in assessing the performance of health workers within a specific setting, there is a need to engage in an in-depth, highly consultative process to determine what factors comprise performance for this cadre, in this context, and what indicators are best placed to measure the same. Implementation research, as a methodological approach, offers a useful methodology to explore further and generate contextually rich studies on performance. The framework and tool developed by this research can act as a guide for further studies to explore performance among other cadres in the health profession, further contributing to our understanding of health worker performance for RMNCH in LMICs.

The CMW Performance Tool, developed using participatory approaches with key stakeholders and frontline health workers in Sudan, is an initial tool comprised of a set of observable variables to measure performance among community midwives. Following further validation, this tool has the potential to be applied in other similar contexts, as a more contextually relevant measure of performance towards achieving UHC. The study results suggest that the performance of CMWs in Sudan is best conceptualised by ‘know-how’ and ‘know-what’, i.e., knowledge and competency factors, taking into consideration its determinants of job satisfaction and motivation. Each item developed under each sub-scale further reflects a contextual understanding of performance.

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