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Working Paper

Dimensions of health workforce performance: a scoping review

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Code	Country	Objective	Type of health workforce	Study design	Performance Output	Performance Outcome	WHO Dimension	Elements inside dimension
57 [1]	Iraq	To explore the views of nurses on what they believe constitutes effective leadership in Iraq.	health professional s - nurse	Semi-structured interviews	Performance, leadership, motivation		Responsiveness, availability, productivity	Leadership, workload, availability, equal treatment
58 [2]	Ghana	To explore how perceived injustice in policy and organizational matters influence frontline health worker motivation and the consequent effect on workers' attitudes and performance in delivering maternal and neonatal health care in public hospitals.	health professional s - medical doctor	Ethnographic study	Perceived interactional injustice, motivation, attitude, performance	Quality of care (interaction with patients, responsiveness of care - timeliness)	Responsiveness	Justice, motivation, attitude, performance
531 [3]	Denmark	To analyse whether the behaviour and performance of health professionals are influenced by economic incentives, public service motivation and/or professional norms.	mix	Hypothesis testing based on survey data	Behaviour and performance		Responsiveness	Professional norms, public service motivation, economic incentives, behaviours
661 [4]	Ghana	To estimate health service activity standards and standard workloads at the primary health care level in Ghana and explore any differences across health facility types	mix	Survey	Performance, quality improvement	Quality of care, Patient safety	Productivity, competence	Performance, work overload,
841[5]	United States	To determine the impact of Team STEPPS tool to improve team dynamics among practicing professionals, including physicians and nurses.		Prospective trial	Team leadership, teamwork, task management, Situational monitoring, Mutual support, Communication	Patient safety, patient care process	Competence, responsiveness	Teamwork, training
871[6]	Mix	To systematically review and critically appraise the evidence for the effects of interventions to improve the performance of community health workers (CHWs) for community-based primary healthcare in low- and middle-income countries	health associate professional s - community health workers	Systematic review of RCT studies	Use of health services, quality of care provided by CHWs and CHW retention	Objective physical outcomes for patients and subjective health outcomes for patients	Competence, availability	Supervision, incentives, equipment, recruitment, training, retention
1059 [7]	Niger	To understand the factors that influence the attraction and retention of health professionals working in rural areas in Niger	mix	Mixed method	Attraction, retention		Availability	Attraction, retention, environment, working conditions, financial compensation
1097 [8]	Saudi Arabia	To assess the level of job satisfaction and factors that motivate pharmacists	health professional s - allied pharmacists	Survey	Pharmacists' turnover and department performance, job satisfaction		Responsiveness	Motivation, job satisfaction
1128 [9]	El Salvador	To study the effects of in-kind group incentives for community health teams in El Salvador's public sector.	mix	Randomised controlled trial	HW productivity and comfort	Outreach, quality of prenatal care	Productivity	Incentives, productivity, outreach, quality, timeliness

						and reference to institutional delivery, timeliness of pre-post-natal care, utilization		
1163 [10]	Nigeria	To explore individual and organizational determinants, their interactions and effects on motivation in Nigerian primary health care	mix	Semi-structured interviews	Motivation, performance		Responsiveness	Supervision, leadership
1269 [11]	Canada	To explore practitioners' perceptions of their professional work in a large urban centre for addiction and mental health that had undergone organizational change.	mix	Focus group	Competence, job satisfaction, performance		Competence, responsiveness	Job satisfaction, performance, supervision, knowledge
1319 [12]	The Netherlands	To explore hospitals' use of performance indicators for internal quality management activities.	health professionals	Qualitative interview study	Production and use of performance indicators	Quality of care	Responsiveness, productivity	Management
1596 [13]	United Kingdom	To investigate the utility of the General Medical Council patient and colleague questionnaires in assessing the professional performance of a large sample of UK doctors	health professionals - medical doctor	Cross-sectional questionnaire survey	Good medical practice	Quality of care	Competence, productivity, responsiveness	Performance, competence, responsiveness
1601 [14]	Australia, Canada, USA	To review the literature describing the motivation of allied health professionals (AHPs) to work in remote and rural areas and then analysing the findings from the perspective of motivation theory using Herzberg's extrinsic and intrinsic classification.	health professionals - allied	Systematic literature review	Recruitment, retention, motivation to work in remote and rural areas		Availability, responsiveness	Recruitment, retention, motivation to work in remote and rural areas
1896 [15]	Canada	To examine the relevance of these review processes to all aspects of community pharmacy practice	health associates - community health workers	Descriptive study	Performance, quality improvement	Quality of care	Competence	Competence, problem solving
1938 [16]	United States	To measure subjective categories of workload in community pharmacists	health associates - community health workers	Quantitative analysis	Performance, satisfaction, burnout	Quality of care, Patient safety	Productivity	Performance, workload

2096 [17]	Australia	To explore the contextual factors impacting the recruitment and retention of allied health professionals (AHPs) in rural Australia	health associate professionals	Semi-structured interviews	Job satisfaction, Retention, Recruitment	Quality of care	Availability	Attraction, recruitment, retention
2142 [18]	United States	To develop a higher-level perspective on multiple team membership's relationship with performance of entire units of teams.	mix	Regression analysis	Unit performance		Productivity	Unit performance, task complexity
2251 [19]	Ethiopia	To identify the level of motivation and factors affecting it among health professionals	mix	Cross-sectional study	Motivation		Responsiveness	Motivation, supervisor, financial incentives, hospital location
2257 [20]	Saudi Arabia	To provide a theoretical framework to explain how the use of SM can enhance the skills of health professionals and levels of organizational productivity in uncertain environments	mix	Semi-structured interviews	Skills, organizational productivity		Productivity, responsiveness	Collaboration, Organizational productivity, education, communication
2327 [21]	LMIC	To identify workforce opportunities and interventions in LMIC that can facilitate increased access to emergency contraceptive pills (ECP).	health professionals	Narrative literature review	Knowledge, attitudes		Competence	Knowledge, attitudes, beliefs, access
2523 [22]	LMIC	To systematically review published human resource management (HRM) interventions to improve the performance of professional health workers in LMICs, applying a realist perspective.	mix	Systematic review of intervention studies with realist approach	Availability: number of staff, equitable distribution, skill mix, retention, reduced absence; productivity responsiveness: working conditions, motivation and job satisfaction, reduced absence, feeling obliged to change towards clients, colleagues, and managers; competence: skills, knowledge, attitudes	Service delivery and health status	Availability, productivity, responsiveness, competence	Working conditions, motivation, job satisfaction, availability, retention, responsiveness, competencies, productivity, performance
2665 [23]	Australia	To investigate the usefulness and effectiveness of clinical governance and the barriers to supervision in rural and remote Queensland.	health associate professionals	Qualitative thematic analysis	<i>Usefulness/effects of supervision:</i> enhanced clinical skills, knowledge, and confidence; reduced professional isolation; increased growth and professional enthusiasm; and increased evidence-based practice	Patient safety	Availability, Responsiveness	Supervision, retention, safety, organisation
2702 [24]	Australia	To identify barriers to AHP recruitment and retention and identify strategies to encourage and support AHPs from educational, financial, organisational, professional, and social perspectives with a view to improving recruitment and retention at different stages along the rural pipeline.		Review	Recruitment, retention		Availability	Recruitment, retention, professional development, work-life

2707 [25]	Turkey	To examine the relationship between nurses' forgiveness, compassion, and professional commitment	health professional s - nurse	Cross-sectional study	Compassion, forgiveness as predictors of professional commitment which in turn affect performance and job satisfaction		Responsiveness	Commitment
2823 [26]	UK	To estimate cost effectiveness of the PINCER intervention by combining effectiveness in error reduction and intervention costs with the effect of the individual errors on patient outcomes and healthcare costs, to estimate the effect on costs and QALYs.	health professional s - allied pharmacists	Cost-effectiveness	Medical errors: prescribing, monitoring	Patient safety	Productivity	Medical errors, monitoring
2859 [27]	Bangladesh	To assess provider compliance in the context of infant and young child feeding (IYCF) counselling, its relationship with client IYCF behaviours in Bangladesh, and explore its potential determinants.	health associate professional s - community health workers	Survey	Performance	Quality of care	Competence	Competence
2867 [28]	Tanzania	To study the quality of malaria case management of under-fives at health facilities in a rural district, 2 years after the Tanzanian malaria treatment policy change in 2001		Observational study	Work performance, Health professional practice behaviours	Quality of care	Availability, productivity, competence	Performance, quality of care, competence
2984 [29]	Philippines	To determine the professional nursing competencies and evaluate the Key Performance Indicators (KPIs) for patient safety outcomes of staff nurses.	health professional s - nurse	Descriptive-correlational study	Competence	Patient safety	Competence, responsiveness, productivity	Competencies, leadership, management, safety
3624 [30]	The Netherlands	To investigate health professionals' perceptions about their clinical performance and the influence of feedback on their intentions to change clinical practice.	mix	Theory-based experiment alongside cluster-RCT	HW perceptions about clinical performance and intentions to improve practice	Patients' pain	Responsiveness	Audit, feedback, perceptions
3668 [31]	Australia	To a) identify the effect of dental production factors (capital and labour) on different measures of output, and b) to assess whether Australian dentists operate under increasing returns to scale.	health professional s - allied	Regression analysis	Productivity output: raw activity, time, price		Productivity	Productivity
3874 [32]	South Africa	To explore the factors influencing recruitment and retention of three categories of HPs in KwaZulu-Natal and has implications about how to retain them in rural areas	mix	Cross-sectional study	Perception about rural job, job satisfaction	Quality of care	Availability	Attraction, retention, incentives
3879 [33]	Iran	To evaluate the frequency of clinical skills performed and perceived competency levels among Iranian emergency nurses	health professional s - nurse	Descriptive study	Performance	Quality of care	Competence	Competence, performance, attitude
4098 [34]	Mozambique	To examine how different aspects of jobs are valued and how health professionals might respond to policy options that would		Discrete choice experiment	Job preferences, motivation, retention, performance		Availability, responsiveness	Motivation, recruitment

		post them to district hospitals in rural areas.						
4294 [35]	Japan	To understand the factors that increase and decrease the willingness to work and the factors that influenced the motivation and hesitation of hospital workers to work in Japan		Survey	Hesitation, motivation to work	Hospital function in critical situation	Responsiveness	Safety, Stress, pandemic
4508 [36]	Europe, Saudi Arabia, Brazil, United States	To identify and critically appraise the available evidence on the overall quality of professional life of primary care nurses worldwide and its main influencing factors.	health professional s - nurse	Systematic literature review	Quality of professional life	Quality of care	Responsiveness	Quality of professional life
4563 [37]	Africa	To determine healthcare workers' behaviours and related personal determinants associated with providing adequate and quality SRH services to women and adolescents in sub-Saharan Africa	health professional s - medical doctor	Systematic literature review	Quality, access and availability, utilization	Quality of SRH services	Competence, availability, responsiveness	Knowledge, attitudes, availability, competence
4693 [38]	USA, Canada, Taiwan, and Switzerland	To identify the interventions for strengthening professional nursing governance and describe their outcomes.	mix	Systematic literature review	Professional governance: 1. structural empowerment, 2. leadership (e.g.: inspiring a shared vision and challenging processes, leadership competencies) and 3. teamwork (e.g.: nursing burnout, ability to work in team and handle disagreements and conflicts, interprofessional collaboration and team efficiency)		Responsiveness, competence	Governance, leadership, competencies, teamwork
4782 [39]	Australia	To identify aspects of recruitment and retention of rural allied health professionals using qualitative methodology	health professional s - allied	Focus group	Stay or leave the job		Availability	Recruitment, retention
4880 [40]	Cambodia, China, and Pakistan	To qualitatively investigate what factors apart from or in addition to financial incentives can encourage better performance of frontline health care providers.	mix	Semi-structured interviews	Performance, recognition, career development		Responsiveness	Incentives, recognition, career development, meritocracy, motivation
4908 [41]	South Africa	To develop a model to attract and retain radiographers in the public sector	mix	Mixed method	Job satisfaction, organizational commitment, intent to leave	Quality of care	Availability, competence	Retention, training, workload, safety
5045 [42]	LMIC	To conduct a systematic review on intervention design factors influencing performance of CHWs.	health associate professional s - community health	Systematic literature review	Performance		Performance	Tasks, time, human resource management, quality assurance, community links, health system links, resources, logistics

workers								
5314 [43]	Denmark	To assess the effects of delegation on the performance of hospital departments in a public health care system.		Interrupted time series	Performance		Productivity	Delegation of authority (facilities)
5574 [44]	Australia	To investigate recruitment and retention issues of importance to AHPs providing services to people with disability in rural New South Wales, Australia.	health professional s - allied	Focus group and semi-structured interviews	Recruitment, retention, job satisfaction		Availability, Responsiveness	Recruitment, retention, satisfaction
5609 [45]	China	To compare changes in quality of care, nurse job outcomes, nursing work environment, non-professional tasks, and nursing care left undone in acute hospitals in China between 2014 and 2018 and to determine the association of changes in nursing work environment, non-professional tasks, and nursing care left undone with nurse job outcomes and quality of care.	health professional s - nurse	Longitudinal study	Burnout, job dissatisfaction, job retention	Quality of care	Responsiveness	Quality of practice
5784 [46]	Tanzania	To test the hypothesis that high caseload reduces the level of effort per patient in the diagnostic process.	mix	Regression analysis	Effort in the diagnostic process	Quality of clinical work	Productivity, Responsiveness	Workload
5897 [47]	Kenya	To examine the feasibility of the Moi Teaching and Referral Hospital anticoagulation monitoring service and compare its performance with clinics in resource-rich settings.	health professional s - allied pharmacists	Retrospective chart review	Performance	Anticoagulation care	Productivity	Quality of practice
5920 [48]	Ethiopia	To determine the current status of the six WHO health system building blocks in public healthcare facilities in Ethiopia	mix	Cross-sectional study	Hospital performance	Quality of care	Productivity	Governance, information, availability
5992 [49]	Mix	To investigate how physicians and other health care professionals perceive Pay-for-performance programs in clinical practice.	health professional s	Review	Performance	Quality of care	Productivity	Incentives
6022 [50]	United States	To determine (1) the participants' understanding of performance-evaluation criteria; (2) motivating factors and barriers to achieving performance measures; and (3) strategies to achieve (or exceed) performance measures.	health professional s - allied pharmacists	Focus group	Work performance		Responsiveness	Motivation
6268 [51]	Ethiopia	To investigate perceived organizational justice and turnover intention among healthcare workers in public and private hospitals at Bahir-Dar and Gondar cities, Ethiopia.	mix	Mixed method	Turnover intentions, organizational success		Responsiveness, availability	Organizational justice, turnover
6324 [52]	Canada	To assess the knowledge, attitudes, and practices of pharmacists working in	health professional	Survey	Knowledge of SUD, attitude towards provincial harm reduction policies		Competence	Knowledge, attitude

		hospitals in the Lower Mainland of British Columbia, Canada in caring for patients with SUD and to identify barriers and facilitators that exist in the current work environment and evaluate how these factors play a role in pharmacists' practice.	s - allied pharmacists					
6362 [53]	Canada	To explore pharmacists' perceptions of the barriers and facilitators to the implementation of cpKPIs	health professional s - allied	Focus group	Performance	Quality of care	Productivity	Task organization, monitoring
6377 [54]	Mix	To determine whether task delegation in diabetes teams could improve quality of diabetes care.	0	Scoping review of RCT, Clinical Controlled Trials and before/after studies	Quality of diabetes care	Glycaemic control, Patient satisfaction, Quality of life	Productivity	Tasks, productivity
6422 [55]	Egypt	To investigate the relationship between organizational justice and quality performance among healthcare workers.	health professional s	Descriptive-correlational study	Perceived performance quality		Responsiveness	Organizational justice, performance
6428 [56]	Malaysia	To assess how several system quality characteristics predict the care provider's performance	mix	Partial least squares-structural equation modelling	Provider performance, electronic health records, system characteristics		Responsiveness, productivity	Electronic health record, system characteristics
6482 [57]	Australia	To identify mechanisms for the successful implementation of support strategies for health-care practitioners in rural and remote contexts.	health professional s	Systematic literature review	<i>Service Outcomes:</i> Enhanced quality and safety. Organizational culture shifts. Improved access and efficiency. <i>Staff Outcomes:</i> Elevated knowledge, confidence, and job satisfaction. Higher retention and collaboration. Enhanced mentoring understanding. <i>Program Outcomes:</i> High attendance and sustainability. Knowledge dissemination. Overall program satisfaction. <i>Patient Outcomes:</i> Improved screening and reduced transfers. Client satisfaction. Better health information quality.	Quality, safety of care and higher standards of practice, patient outcomes: improvement s in screening procedures for clients, improved access to and quality of services, reduced number of transfers of care from rural to regional centres,	Responsiveness, competence	Supervision, support and mentoring

						improved client satisfaction with services and the completeness of health information and services received by clients.		
6739 [58]	United States and Canada	To investigate factors that promote engagement in quality improvement work when status differences are present in teams and contribute to knowledge of the role of status in shaping perceptions of psychological safety and, more broadly, the conditions that support improvement and learning in cross-disciplinary teams.	health professionals	Hypothesis testing based on survey data	Professional status, psychological safety, Leader inclusiveness, Engagement in quality improvement work		Responsiveness, competence	Leadership, training, safety
6842 [59]	UK	To provide a test of whether presenteeism is associated with higher work-related error rates and to examine presenteeism among pharmacists, providing the first evidence (to our knowledge) of the prevalence and effects of presenteeism in this under researched occupational group.	health professionals - allied pharmacists	Survey	Medical errors, mental strain (anxiety, depression while at work)	Quality of care	Productivity	Presenteeism, absenteeism, medical errors
6993 [60]	Nigeria	To explore the patterns of financial incentives received by some frontline health workers and the implications for their productivity within rural settings.	mix	Cross-sectional study	Workforce productivity, satisfaction with incentives		Productivity	Productivity, incentives
7213 [61]		To systematically review direct evidence about effects of interventions to improve communication performance amongst allied health professionals (AHPs).	health associate professionals	Systematic literature review	Performance, trainees' attitudes, trainees' behaviours	Patients' outcomes and satisfaction	Competence	
7247 [62]	United States	In EMS personnel and related shift worker groups, does banking sleep mitigate fatigue, fatigue-related risks, and/or improve sleep?	mix	Systematic literature review	Personnel safety, performance, acute fatigue, indicators of sleep (specifically sleep latency), health status, turnover and job satisfaction, stress and burnout	Patient safety	Responsiveness	Performance, safety, shifts
7322 [63]	Belgium	To evaluate the effectiveness of two strategies for implementing a guideline on oral contraceptives in order to enhance the quality of the first contraception consultation in general practice, by either empowering patients or by introducing a computer decision	health professionals - medical doctor	Randomised controlled trial	Performance	Quality of contraceptive consultation	Performance, responsiveness	Technology support, information, empowering

		support system (CDSS).						
7475 [64]	Mix	To assess the effects of interventions aimed at supporting the resilience and mental health of frontline health and social care professionals during and after a disease outbreak, epidemic or pandemic.	mix	Systematic literature review	Burnout, resilience, mental well being		Responsiveness	Resilience, mental well-being
7713 [65]	Finland	To examine the extent and relative value of presenteeism and absenteeism and work-related factors affecting them among health care professionals.	health professionals	Survey	Job satisfaction, work capacity		Productivity, responsiveness	Presenteeism, absenteeism, stress
7781 [66]	UK and USA primarily	To assess the effectiveness of interprofessional education interventions compared to education interventions in which the same health and social care professionals learn separately from one another and to assess the effectiveness of IPE interventions compared to no education intervention.		Systematic review of RCT studies	Collaboration	Patients care	Competence	Education
7964 [67]	Canada	To gain insight into pharmacists' perceptions of the Fee for Service (FFS) and Pay for Performance (P4P) payment models within RxACTION, and the models' influences on pharmacists' processes of care	health professionals - allied pharmacists	Semi-structured interviews	Pharmacists' perceptions	Patients care	Responsiveness	Type of remuneration
7982 [68]	OECD countries	To perform a quick scan of the current situation about doctor managers in hospital management in 19 OECD countries, explore the phenomenon of doctor managers, and investigate whether doctor involvement in hospital management is associated with more advanced implementation of quality management systems.	health professionals - medical doctor	In-depth study	Quality management systems, hospital performance	Quality of care, efficiency	Productivity	Management, managerial roles, governance
7985 [69]	Mix	To syntheses the evidence of international literature on the enablers of, and barriers to effective clinical supervision in the workplace; 2) to identify the benefits of effective clinical supervision in the workplace.	mix	Rapid evidence review	Job satisfaction	Quality of care	Responsiveness	Supervision
7996 [70]	LMIC	To review the effectiveness and cost of strategies to improve HCP performance in LMICs.	mix	Systematic literature review	<i>Elements that facilitate correct HCP performance:</i> availability of supplies and equipment; supervision; and HCP knowledge, attitudes, and satisfaction; <i>Processes of care:</i> patient assessment, diagnosis, treatment, chemoprophylaxis, vaccination,	Morbidity, mortality, Patient care-seeking/utilization of health services, <i>Patient non-health</i>	Availability, productivity, responsiveness, competence	Training, supervision, patient and community support

					counselling and communication, referral, consultation time, and HCP documentation	outcomes: patient or caretaker knowledge, healthy behaviours, patient and community attitudes, patient satisfaction		
8012 [71]	Canada	To provide Otolaryngologists with a basic overview of the theory behind behavioural incentives associated with different physician payment methods and highlight the empirical evidence that supports or contradicts theoretical claims	health professionals	Review	Remuneration		Responsiveness	Type of remuneration
8036 [72]	Singapore	To evaluate the acceptability and validity of an adapted version of the General Level Framework (GLF) as a tool to facilitate and evaluate performance development in general pharmacist practitioners (those with less than 3 years of experience) in a Singapore hospital.	health professionals - medical doctor	Prospective cohort study	<i>Delivery of patient care:</i> Patient Consultation, Gathering Information, Provision of Medication, Drug Specific Issues, Patient Education; <i>Problem solving:</i> Problem Identification, Knowledge, Analysis and recommendation, Follow-Up; <i>Professional:</i> Organization, Professionalism, Communication skills, Teamwork.	Patient care	Productivity, competence, responsiveness	Quality of practice, problem solving, performance
8214 [73]	Turkey	To examine the impact of individual, professional and work environment characteristics of nurses on their job performance levels.	health professionals - nurse	Descriptive-cross-sectional study	Performance	Patients care satisfaction and health outcomes	Competence, responsiveness	Work environment
8220 [74]	Italy	To investigate the impact of hybrid hospital CEOs on organizational performance in comparison with other backgrounds.	mix	Hypothesis testing	Hospital performance: quality of services, financial efficiency	Quality of care, efficiency	Productivity, competence	Managers background, quality, financial efficiency
8257 [75]	United States, UK, Canada, Australia, Europe	To explore factors that have the potential to influence pharmacists' performance.	health professionals - allied pharmacists	Systematic literature review	Performance, errors, performance problems (breaking rules)		Competence, responsiveness, productivity	Workplace environment, workload
8287 [76]	United States	To develop standard metrics and automated electronic methods for their collection in order to evaluate pharmacists' activities and impact in ambulatory care clinics.	health professionals - allied pharmacists	Case-study	Performance, efficient use of time, financial benefit	Patient experience, quality of care	Productivity	Electronic health record, system characteristics, metrics

8401 [77]	Rwanda	To explore which institutional factors may help explain the (often disappointing) performance of health workers, who actively respond to the work environment and incentives they face.	health professional s	Semi-structured interviews	Performance, career choice	Quality of care	Availability, competence, responsiveness	Availability, skills, training, incentives, corruption, monitoring, norms
8493 [78]	Palestine	To develop and achieve formal consensus on a core set of key performance indicators (KPIs) that can be captured in measuring the impact of pharmacists in caring for patients with epilepsy (PWE) visiting epilepsy clinics as outpatients in primary healthcare practice.	mix	Delphi consensus study	Performance	Quality of care	Productivity	Key performance indicators, quality of care
8511 [79]	Zambia	To evaluate the effects of a performance-based financing program on health workers' satisfaction, motivation, and attrition, and examines the potential causal pathways leading to such effects	health associate professional s	Randomised controlled trial and qualitative (mixed method)	Performance: motivation, job satisfaction, Distribution: attrition		Responsiveness, availability	
8553 [80]	Ghana	To explore motivations and incentive preferences of CHOs to promote attraction and retention and, in turn, to improve access to effective community-based health services.	health associate professional s - community health workers	Discrete choice experiment	CHO preferences	Access to community services	Availability, Responsiveness	Motivation, attraction, retention, preferences
8741 [81]	Ghana	To understand how practicing doctors and medical leaders in Ghana describe the key factors reducing recruitment and retention of health professionals into remote areas	health professional s - medical doctor	Semi-structured interviews	Attraction to rural jobs: recruitment and retention		Availability	Retention, attraction
8774 [82]	South Korea	To describe the relationship between professional communication competences and nursing performance of critical care nurses in South Korea.	health professional s - nurse	Cross-sectional study	Performance		Competence, responsiveness	Communication, quality of care
9025 [83]	Zimbabwe	To explore the impact of the human resource for health policy interventions on healthcare workers.	mix	Cross-sectional study	Satisfaction with health reform interventions		Competence, availability	Incentives, training, policies application
9146 [84]	Canada, Australia, New Zealand, United States, Ukraine	To comprehensively identify the factors associated with recruitment and retention of the pharmacist workforce in rural and remote settings	health professional s - allied pharmacists	Systematic literature review	Rural practice motivators		Availability	Recruitment, retention, satisfaction
9363 [85]	Mix	To examine the role of healthcare practitioners' individual characteristics and their work environment in predicting normative SRHR attitudes and behaviours	health professional s	Cross-sectional study	Normative SRHR attitudes, active SRHR knowledge seeking and normative SRHR practice.	Universal coverage	Competence	Attitudes, beliefs, knowledge

		(practices).						
9556 [86]	LMIC	To provide some clarity on the design and implementation of programs aimed at supporting primary healthcare workers in LMICs.	health associate professionals	Systematic literature review	Performance, quality improvement		Responsiveness	Supervision, mentoring
9981 [87]	Canada	To determine the feasibility of routine use of information from databases by regulatory authorities to screen the quality of care provided at community pharmacies	health professionals - allied pharmacists	Longitudinal study	Performance	Quality of care	Productivity	Electronic health record, claim data, quality of care
10072 [88]	Sierra Leone	To investigate the importance of different motivation factors in rural areas in Sierra Leone and thus to contribute to better decisions on financial and non-financial incentive packages, here and in similar contexts.	mix	Qualitative interview study	Retention		Availability	Retention
10142 [89]	Burkina Faso	To determine an incentive package that can attract and retain health personnel recruited by the regionalization policy in underserved areas.	mix	Discrete choice experiment	Preferences for incentive package, motivation, attraction, retention		Availability	Attraction, retention, incentives
10149 [90]	China	To examine the negative association between perceived stress and clinical performance among practice nursing students, and to determine whether professional values play a moderating role in the relationship between perceived stress and clinical performance among Chinese practice nursing students.	health professionals - nurse	Cross-sectional study	Clinical performance		Responsiveness	Stress, Professional values
10355 [91]	Kenya	To estimate the cost-effectiveness of text-message reminders sent regularly to health workers' personal mobile phones to improve the management of paediatric outpatients in accordance with national malaria guidelines.	health professionals	Cost-effectiveness	Management in accordance with guidelines	Appropriateness of care in respect to guidelines	Responsiveness, productivity	Communication, adherence to guidelines
CIT_3 [92]	Europe	To explore the experience and expectations of European employers of public health professionals with regard to competences.		Survey	Judgement on professional competences		Competence	
CIT_4[93]	Guatemala	To examine the views of actors from different levels of a regional health system in rural Guatemala on actions to support the performance of auxiliary nurses, in order to identify locally relevant strategies for strengthening performance	health professionals	Conceptual	Organizational climate of support, motivation through recognition, professional development, skills		Availability, competence, productivity, responsiveness	Communication, environment, motivation
CIT_5[94]	EU	To identify and prioritize the actions needed to develop the IT skills	mix	Questionnaire	IT skills competence		Competence	

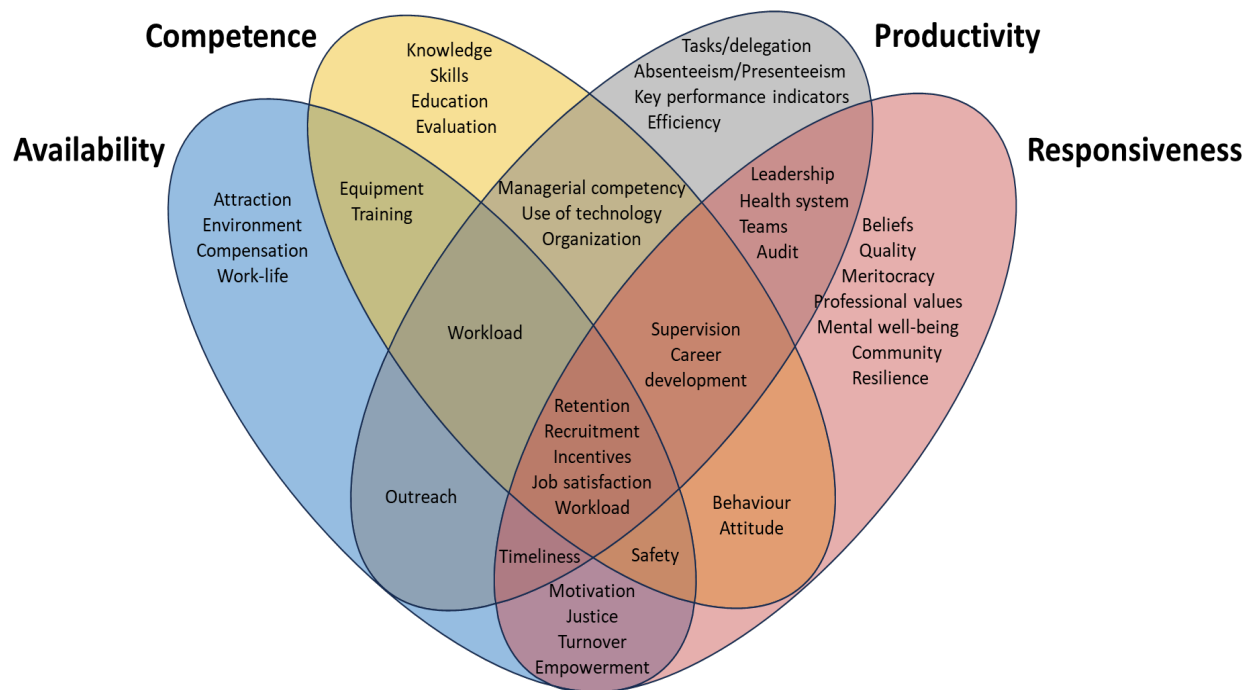
competence among healthcare workforce							
CIT_6 [95]	LMIC	To develop a framework that defines the minimum health information competencies required by health workers at various levels of a health system	mix	Delphi study	health information competencies	Competence	
CIT_7 [96]	Africa	To identify the need for a structure for the digital health curriculum for the African region.	mix	Scoping review	Competence on digital health (IT literacy, communication skills, data analytical skills, privacy skills, implementation skills)	Competence	
CIT_8 [97]	Africa	To overview health worker resourcing in African countries in relation to Universal Health Coverage.	mix	Conceptual	Resourcing: motivation, skill mix and training, teams, optimization	Availability, competence, responsiveness	
CIT_9 [98]	LMIC	To examine interventions (or packages of interventions) used to improve health worker performance in delivering Adolescent-friendly health services	mix	Review	Quality of training and supervision, availability of medicines and supplies, utilization, and distribution of SRH services	Patient satisfaction, biologic outcome	Performance, competence, availability
OTH001 [99]	The Netherlands	To evaluate the comparative cost-effectiveness of two strategies to promote work functioning among nurses by reducing symptoms of mental health complaints.	health professional s - nurse	Economic evaluation alongside RCT	Work functioning: Cognitive aspects of task execution, Causing incidents at work, Avoidance behaviour, Conflicts and irritations with colleagues, Impaired contact with patients and their family, Lack of energy and Motivation	Productivity, responsiveness	Screening, medical errors, mental health, motivation
OTH002 [100]	Turkey	To determine the associations between sickness presenteeism and socio-demographic factors, perceived health status and health complaints among hospital staff and to calculate the cost burdens and productivity losses attributed to presenteeism.	health professional s	Cross-sectional study	Productivity loss	Productivity	Presenteeism, productivity
CIT-10 [101]	LMIC	To review literature about remuneration in low-income settings and the health workers' financial incentive environment	mix	Review and conceptual	Motivation, performance	Availability, responsiveness	Recruitment, retention, motivation,
CIT-11 [102]	Europe	To provide an overview of processes, tools and actors for strengthening health workforce competencies	mix	Review and conceptual		Competence	Environment, evaluation, continuing professional development, organization
JP1 [103]	LMIC	To improve the work environment as an important approach to increase CHW productivity, and ultimately the overall effectiveness of community-based strategies.	health associate professional s - community health	Review	Productivity, work environment	Productivity	Workload, supervision, organization, work environment, availability of equipment, respect

			workers				
JP2 [104]	Ethiopia, Kenya, Malawi and Mozambique	To assess the effect of an intervention to train supervisors on community health workers motivation and perceptions.	health associate professionals - community health workers	Mixed methods	Supportive supervision, motivation, teamwork, cross-learning, and skill sharing	Responsiveness	Supervision, motivation

Table S2. Summary of the studies

Study characteristics	N (%)
Year of publication	
2007–2011	16 (15%)
2012–2016	35 (34%)
2017–2021	53 (51%)
Income	
High income	44 (42%)
Lower-middle income	21 (20%)
Upper-middle income	12 (12%)
Low income	10 (10%)
Mixed	10 (10%)
Lower-middle income	2 (2%)
Mixed (low and lower-middle income)	2 (2%)
Mixed (high and low income)	1 (1%)
Mixed (high and lower-middle income)	1 (1%)
Mixed (lower-middle and upper-middle income)	1 (1%)
Location	
Sub-Saharan Africa	25 (24%)
Mixed	24 (23%)
Europe & Central Asia	16 (15%)
East Asia & Pacific	15 (14%)
North America	14 (13%)
Middle East & North Africa	6 (6%)
Latin America & Caribbean	2(2%)
South Asia	1(1%)
Type of study	
Survey	21 (20%)
Systematic review	16 (15%)
Cross-sectional	10 (10%)
Other	57 (55%)
Health workforce	
<i>Health professionals</i>	45 (43%)
Medical doctors	7
Nursing	10
Pharmacists	11
Allied	5
Other	12
<i>Health associate professionals</i>	13 (13%)
Community health workers	8
Other	5
<i>Mixed</i>	46 (44%)

Figure S1 -: Mapping of performance dimensions and emerging elements



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