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REVIEW ARTICLE

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How can intersectoral collaboration and action help improve the education, recruitment, and retention of the health and care workforce? A scoping review

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Abstract

Inadequate numbers, maldistribution, attrition, and inadequate skill-mix are widespread health and care workforce (HCWF) challenges. Intersectoral—inclusive of different government sectors, non-state actors, and the private sector—collaboration and action are foundational to the development of a responsive and sustainable HCWF. This review presents evidence on how to work across sectors to educate, recruit, and retain a sustainable HCWF, highlighting examples of the benefits and challenges of intersectoral collaboration. We carried out a scoping review of scientific and grey literature with inclusion criteria around intersectoral governance and mechanisms for the HCWF. A framework analysis to identify and collate factors linked to the education, recruitment, and retention of the HCWF was carried out. Fifty-six documents were included. We identified a wide array of recommendations for intersectoral activity to support the education, recruitment, and retention of the HCWF. For HCWF education: formalise intersectoral decision-making bodies; align HCWF education with population health needs; expand training

capacity; engage and regulate private sector training; seek international training opportunities and support; and innovate in training by leveraging digital technologies. For HCWF recruitment: ensure there is intersectoral clarity and cooperation; ensure bilateral agreements are ethical; carry out data-informed recruitment; and learn from COVID-19 about mobilising the domestic workforce. For HCWF retention: innovate around available staff, especially where staff are scarce; improve working and employment conditions; and engage the private sector. Political will and commensurate investment must underscore any intersectoral collaboration for the HCWF.

KEYWORDS
health workforce, health workforce education, health workforce recruitment, health workforce retention, universal health coverage

Highlights

- A robust HCWF contributes to the SDGs, facilitating cross-sector co-benefits
- Intersectoral data-generation and sharing must inform HCWF decision-making
- Clarity of roles and good communication are needed across stakeholders
- Political will and investment in HWCF intersectoral collaboration are essential

1 | INTRODUCTION

Although projections around the global health workforce suggest an estimated growth of 29% between 2020 and 2030, there will still be an anticipated shortage of 10 million healthcare workers (HCWs), especially in the lowest-income regions of the world.[1] Shortages in HCWs are due to an inadequate capacity across many countries to recruit, train, and retain the health and care workforce (HCWF). This deficit also extends to the challenge of allocating and distributing the appropriate numbers and skills mix of personnel.[2,3] The over- and under-production of specific cadres is a recurrent issue across health systems, often due to gaps in health workforce information systems, disconnect between education and health policies and plans, and barriers to forecasting.[4–8] Even where numbers of graduates are adequate, there are persistent challenges, globally, in terms of absorption and recruitment; the HCWF is much more likely to be concentrated in urban (vs. rural) settings.[9–11] The emergence of COVID-19 intensified these shortages and imbalances.[12,13]

There are a myriad of 'push' factors prompting HCWs to leave their current practice, including heavy workload, poor working conditions, a lack of professional development opportunities, and inadequate remuneration.[14,15] Where these shortages are exacerbated by migration patterns, we find a net flow of health professionals from lower-resource settings to higher-resource settings, which have 6.5 times the number of HCWs.[1] HCWs, as any

others, have the right to movement and to seek out employment and living opportunities that are aligned with their needs and interests. However, in doing so, the right to healthcare for many is inevitably compromised.[16] Without adequate staffing, there are a wide range of negative consequences. Patient outcomes are worse, care is less efficient, working conditions decline, and staff morale is affected.[17,18] The World Health Organization has championed guidance around fair migration, and has noted the importance of higher-income settings producing, mobilising, and recruiting their own HCWF as opposed to recruiting internationally, especially from countries with low HCWF density.[19]

The challenges that we have highlighted here cannot be overcome by the Ministry of Health alone. They are complex and multidimensional, often necessitating multifaceted solutions that cross sectors, with cross-cutting benefits.[20] For instance, mobility and migration are inevitable, driven by the choices individuals make. Intersectoral collaboration and action can help shape migration in ways that benefit the training, retention, and development of HCWs in all settings.

Intersectoral collaboration—which we define here as collaboration between sectors, engaging representative stakeholders around a common goal[21]—and action is essential to the strengthening of the HCWF across contexts.[22,23] Outside of the health sector, at a minimum, the education and finance sectors are essential partners for HCWF development. Additionally, partners should include the private sector, regulatory bodies, professional associations, trade unions representing different HCWs, and, for many countries, non-governmental organisations and global health initiatives.[20,24] However, there is no one-size-fits-all model of intersectoral governance, and the arrangement and capacity of the actors involved will be context-specific. Elsewhere, we have published on the many different mechanisms that can be used to foster intersectoral collaboration.[20] An 'intersectoral health workforce agenda' has been specifically advocated for in the World Health Organization's (WHO's) Global Strategy on Human Resources for Health: Workforce 2023.[23]

Investment from across sectors in the HCWF pays dividends, especially in terms of social development. If we take the Sustainable Development Goal (SDG) 8 (promoting work and economic growth) and focus this on health systems, then a strong and resilient HCWF results in better health and well-being for all (SDG 3), as well as a strong economy. The HCWF is a significant contributor to economic outputs, and a healthy populace supported by a robust HCWF is more economically active (SDG 8).[25–27] These benefits are particularly relevant for women, as two-thirds of those employed in the health sector are female (SDG 5).[25,28]

In this article we aim to synthesise evidence from the global HCWF literature, specifically focusing on intersectoral collaboration and action and its role in educating, recruiting, and retaining the HCWF. It seeks to draw out good practices, challenges, and recommendations prevalent in this domain. These are presented throughout our results and then discussed to derive concluding recommendations that emerged across this body of literature.

2 | METHODS

We carried out a scoping review[29] to identify journal articles and grey literature with a broad focus on identifying intersectoral activities for HCWF strengthening—specifically those related to improving HCWF education and training/professional development (which we refer to throughout as 'HCWF education'), recruitment, and retention.

Our scoping review had three steps. Firstly, we built upon a previously published review article by Martineau, Ozano, Raven et al. (2022)[30] and members of the study team (JR, MC) on intersectoral mechanisms for HCWF governance. Journal articles were found by searching PubMed/MEDLINE and Google Scholar using the string searches listed in Table 1.

TABLE 1 String searches for journal articles.

1	Coordination OR collaboration OR partnership OR stakeholder* OR committee OR "technical working group"
2	Unit OR department OR section OR division OR office
3	Governance OR management
4	(#1) OR (#2) OR (#3)
5	(#4) AND ("human resources for health" OR "health workforce" OR "health personnel" OR "health staffing")
6	From 2004 to 2021

Grey literature was found by carrying out site-specific searches in Google. For example:

- site:who.int [coordination OR collaboration OR partnership OR stakeholders OR committees] AND ["human resources for health" OR "health workforce" OR "health personnel" OR "health staffing"]

We searched organisation websites of the following:

- WHO headquarters and regional offices
- Global Health Workforce Network (and its predecessor the Global Health Workforce Alliance)
- Regional HCWF organisations: Asia Pacific Action Alliance on Human Resources for Health
- Contemporary global HCWF projects: CapacityPlus and HCWF2030
- World Bank

We screened the documents included in this review article using the following inclusion criteria:

- Must focus on intersectoral collaboration/engagement/activity for the HCWF
- Must involve intersectoral activities for education, recruitment, employment, retention, or sustainability of the HCWF

Secondly, we included key HCWF grey literature generated through discussion with subject experts, including those from the European Observatory on Health Systems and Policies and the World Health Organization (WHO).

Finally, as gaps in literature emerged, we carried out targeted searches, using key terms in both PubMed/MEDLINE and Google Scholar. For example:

- [training OR education OR “capacity strengthening” OR “capacity building”] AND [“health and care workforce” OR “health workforce” OR “healthcare workers” OR “health workers”] AND [“cross-sectoral” OR multisectoral OR intersectoral]

We carried out a framework analysis[31] to extract data that had examples or recommendations for intersectoral practices supporting the education, recruitment, and retention of the HCWF. We then synthesised key themes, worded as recommendations throughout our results, with examples of good practices and challenges embedded.

As a scoping review engaging only with secondary data, this study was exempt from institutional ethics review.

The results that follow begin with characteristics of included documents in the review, followed by synthesised recommendations derived from our analysis for HCWF education, training, and professional development, HCWF recruitment, and concluding with HCWF retention.

3 | RESULTS

3.1 | Document characteristics

This scoping review identified 56 documents that contained information about both intersectoral collaboration/activity and HCWF education, recruitment, or retention. 42 (75%) were journal articles and 14 (25%) were grey literature. Of these, 11 were published from 2008 to 2013, 23 from 2014 to 2019, and 22 from 2020 to 2022 onwards. The characteristics of the documents included are found in Table 2.

Overall (see Figure 1), 16 had a global focus and four were from low- and middle-income countries. The remainder focused on at least one country from the following regions: 14 from Sub-Saharan Africa; nine from Europe; 11 from Asia (South and Southeast); two from the Americas (North and South); and one paper was from the Middle East. One document encompassed examples from both Asia and Africa.

3.2 | Health and care workforce education, training, and professional development

3.2.1 | Formalise intersectoral decision-making bodies for educating health professionals

Having a joint ministry or secretariat with a shared vision around promoting HCWF education that is aligned with population needs and with decision-making space is important. For example,: the Secretariat of Labour and Education Management in Health in Brazil[37]; the Ministry of Health and Medical Education in Iran[63]; the Joint Health Sciences and Education Committee in South Africa[73]; and the joint agreement between the Ministry of Health, the Ministry of Home Affairs, and the Ministry of Education and Culture in Indonesia.[61]

In Iran, the Ministry of Health and Medical Education determines educational needs and capacities of all clinical training institutions. HCWF training policies and content are updated regularly through national and provincial meetings, in response to both changing health needs and increasing levels of literacy amongst the trainees.[52] However, a limitation of this platform is that there is little consultation of the private sector, civil society, and other stakeholders.[63] Brazil has had success scaling up the HCWF across the country by improving the quality of their education through a multifaceted approach. This included providing funding incentives to the Ministry of Education to promote curricular change in the undergraduate courses that were also targeted for curricular reform by the Ministry of Health.[37]

In South Africa, HCWF training is shared by universities, academic health complexes, nurse training institutions, and the Joint Health Sciences Education Committee. This is a joint committee with representation from the National Department of Health and the Department of Higher Education and Training with the National Treasury as a participating member, established in 2014 to coordinate and align policy with financing within health science education. However, although intersectoral collaboration exists, poor communication and coordination between the professional councils, the National Department of Health, the Department of Higher Education and Training, and higher education institutions (medical schools, nursing colleges, etc.) has made it very difficult to ensure responsive HCWF education based on population needs, especially for nurses.[73]

3.2.2 | Align HCWF education with population needs and health system requirements

There can be disconnect and mismatch between health worker production and HCWF demand, with over- or under-production of specific cadres.[83] For example, in Southeast Asia, many graduating doctors and nurses are not able to find jobs in the health sector, and there is a maldistribution of healthcare workers throughout the region.

TABLE 2 Document characteristics.

Authors	Title	Year of publication	Type of publication	Country/ies or regions of focus
Abuagla and Badr[32]	Challenges to implementation of the WHO global code of practice on international recruitment of health personnel: The case of Sudan.	2016	Journal article	Sudan
Alonso-Garbayo et al.[33]	Decision space for health workforce management in decentralised settings: A case study in Uganda	2017	Journal article	Uganda
Ayanore et al.[34]	Towards resilient health systems in sub-Saharan Africa: A systematic review of the English language literature on health workforce, surveillance, and health governance issues for health systems strengthening	2019	Journal article	Sub-Saharan Africa
Bailey and Dal Poz[35]	Building the public health workforce to achieve health-related development goals: Moving forward in collaboration	2010	Journal article	Sub-Saharan Africa
Barbazza et al.[36]	Health workforce governance: Processes, tools and actors towards a competent workforce for integrated health services delivery	2015	Journal article	Europe
Buchan et al.[37]	Continuity and change in human resources policies for health: Lessons from Brazil.	2011	Journal article	Brazil
Capaciteits Orgaan[38]	Recommendations 2021–2024: Advisory committee on medical manpower planning main Report: Concerning the intake in medical, clinical, technological, dental, mental healthcare, FZO (hospital training programmes fund), physician assistant, nurse practitioner and related initial degree and postgraduate programmes	2019	Grey literature	The Netherlands
Cometto et al.[39]	Developing the health workforce for universal health coverage	2020	Journal article	Global

TABLE 2 (Continued)

Authors	Title	Year of publication	Type of publication	Country/ies or regions of focus
Cometto et al.[40]	Analysing public sector institutional capacity for health workforce governance in the South-East Asia region of WHO	2019	Journal article	South-East Asia
Deussom et al.[41]	Putting health workers at the centre of health system investments in COVID-19 and beyond	2022	Journal article	Global
Dieleman and Hilhorst[42]	Governance and human resources for health	2011	Journal article	Global
Dieleman et al.[43]	Improving the implementation of health workforce policies through governance: A review of case studies	2011	Journal article	Low- and middle-income countries
Dodd et al.[44]	Paris on the mekong: Using the aid effectiveness agenda to support human resources for health in the Lao People's Democratic Republic	2009	Journal article	Laos
Dubois and Singh[45]	From staff-mix to skill-mix and beyond: Towards a systemic approach to health workforce management	2009	Journal article	Global
Effa et al.[46]	Human resources for health governance and leadership strategies for improving health outcomes in low- and middle-income countries: A narrative review	2021	Journal article	Low- and middle-income countries
Farrenkopf and Lee[47]	Mapping health workforce development strategies across key global health agencies: An assessment of objectives and key interventions.	2019	Journal article	Global
Federal Ministry of Health[48]	Public private partnership in health: Strategic framework for Ethiopia	2013	Grey literature	Ethiopia
Frenk et al.[49]	Challenges and opportunities for educating health professionals after the COVID-19 pandemic	2022	Journal article	Global

(Continues)

TABLE 2 (Continued)

Authors	Title	Year of publication	Type of publication	Country/ies or regions of focus
Garg et al.[50]	Implementing a health labour market analysis to address health workforce gaps in a rural region of India	2022	Journal article	India
Godue et al.[51]	Capacity building in human resources for health: The experience of the region of the Americas	2016	Journal article	The Americas
Gopinathan et al.[52]	Implementing large-scale programmes to optimise the health workforce in low- and middle-income settings: A multicountry case study synthesis	2014	Journal article	Low- and middle-income countries
Greer et al.[53]	From health in all policies to health for all policies	2022	Journal article	Global
Hazarika[54]	Health workforce governance: Key to the delivery of people-centred care	2021	Journal article	Global
Kanchanachitra et al.[55]	Human resources for health in southeast Asia: Shortages, distributional challenges, and international trade in health services	2011	Journal article	South-East Asia
Kaplan et al.[56]	Human resource governance: What does governance mean for the health workforce in low- and middle-income countries?	2013	Journal article	Low- and middle-income countries
Kigume and Maluka[57]	Health sector decentralisation in Tanzania: Analysis of decision space in human resources for health management	2019	Journal article	Tanzania
Kuhlmann et al.[58]	Why we need multi-level health workforce governance-Case studies from nursing and medicine in Germany	2015	Journal article	Germany

TABLE 2 (Continued)

Authors	Title	Year of publication	Type of publication	Country/ies or regions of focus
Kuhlmann et al.[59]	A call for action to establish a research agenda for building a future health workforce in Europe	2018	Journal article	Europe
Kuhlmann and Larsen[60]	Where health workforce governance research meets health services management	2016	Journal article	Europe
Kurniati et al.[61]	Strengthening Indonesia's health workforce through partnerships	2015	Journal article	Indonesia
Mahato et al.[62]	Human resources for health in major national policies and plans of Nepal	2013	Journal article	Nepal
Manafi et al.[63]	Assessing the governance of human resources for health in Iran: A qualitative study	2019	Journal article	Iran
Munywoki et al.[64]	Tracking health sector priority setting processes and outcomes for human resources for health, 5-years after political devolution: A county-level case study in Kenya	2020	Journal article	Kenya
Osei Afriyie et al.[65]	The state of strategic plans for the health workforce in Africa	2019	Journal article	Sub-Saharan Africa
Paina et al.[66]	Implementing the Code of practice on international recruitment in Romania–exploring the current state of implementation and what Romania is doing to retain its domestic health workforce	2016	Journal article	Romania
Plotnikova[67]	The role of bilateral agreements in the regulation of health worker migration.	2014	Grey literature	Europe
Qian et al.[68]	Challenges for strengthening the health workforce in the Lao People's Democratic Republic: Perspectives from key stakeholders	2016	Journal article	Laos

(Continues)

TABLE 2 (Continued)

Authors	Title	Year of publication	Type of publication	Country/ies or regions of focus
Tangcharoensathien et al.[69]	Health workforce contributions to health system development: A platform for universal health coverage.	2013	Journal article	Thailand
Te et al.[70]	The impact of ASEAN economic integration on health worker mobility: A scoping review of the literature	2018	Journal article	South-East Asia
Thuku et al.[71]	Coordinating health workforce management in a devolved context: Lessons from Kenya	2020	Journal article	Kenya
van de Pas et al.[72]	Health workforce development and retention in Guinea: A policy analysis post-Ebola	2019	Journal article	Guinea
Van Ryneveld et al.[73]	Looking back to look forward: A review of human resources for health governance in South Africa from 1994 to 2018	2020	Journal article	South Africa
Waithaka et al.[74]	Prolonged health worker strikes in Kenya- perspectives and experiences of frontline health managers and local communities in Kilifi County	2020	Journal article	Kenya
Witter et al.[75]	Evolution of policies on human resources for health: Opportunities and constraints in four post-conflict and post-crisis settings	2016	Journal article	Cambodia, Sierra Leone, Uganda, Zimbabwe
World Health Organization[23]	Global strategy on human resources for health: Workforce 2030	2016	Grey literature	Global
World Health Organization[76]	Health labour market analysis guidebook	2021	Grey literature	Global
World Health Organization[77]	A review of the relevance and effectiveness of the 5-year action plan for health employment and inclusive economic growth (2017–2021) and ILO-OECD-WHO working for health programme	2021	Grey literature	Global

TABLE 2 (Continued)

Authors	Title	Year of publication	Type of publication	Country/ies or regions of focus
World Health Organization[9]	WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas	2021	Grey literature	Global
World Health Organization[78]	Human resources for health leadership and management: A prototype curricula package: Overview	2022	Grey literature	Global
World Health Organization[79]	Skill-mix innovation, effectiveness, and implementation: Improving primary and chronic care	2022	Grey literature	Global
World Health Organization[80]	Strengthening the collection, analysis and use of health workforce data and information: A handbook	2022	Grey literature	Global
World Health Organization[81]	Working for health action plan 2022–2030	2022	Grey literature	Global
World Health Organization Regional Office For Africa[82]	Health workforce recruitment and retention for COVID-19 emergency management	2021	Grey literature	Sub-Saharan Africa
World Health Organization Regional Office For Europe[83]	Health and care workforce in Europe: Time to act	2022	Grey literature	Europe
World Health Organization Office for South-East Asia[84]	Decade for health workforce strengthening in the South-East Asia Region 2015–2024; Mid-term review of progress, 2020	2020	Grey literature	South-East Asia
Zapata et al.[85]	The health workforce: Central to an effective response to the COVID-19 pandemic in the European Region	2021	Journal article	Europe

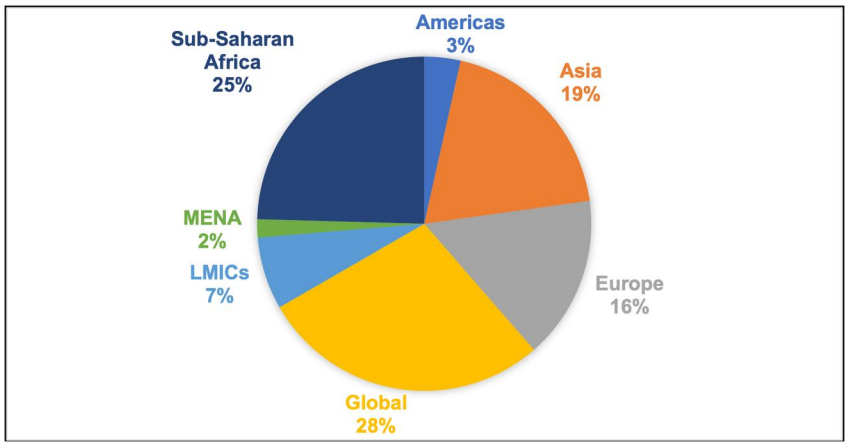

FIGURE 1 Regional distribution of included documents. LMICs, low- and middle-income countries; MENA, Middle East and North Africa.

This problem highlights the need to strengthen the link between production and deployment of the HCWF through health workforce planning and effective collaboration with medical education providers.[55,68]

To ensure responsiveness to emerging health needs, competency-based recruitment and training of HCWF is recommended, which necessitates intersectoral collaboration across patient and professional associations and training institutions alongside the Ministry of Health.[39] For example, in the Netherlands, the Ministry of Health, Welfare and Sport-funded Advisory Board on Medical Manpower Planning advises the government on intakes of health professionals into training programmes. It uses a forecasting model that assesses a range of factors, including demographics, epidemiology, sociocultural developments, policy initiatives and studies conducted by external experts, to provide the evidence for the formulation of the intake recommendations.[38]

Within rural areas, which are historically under-served, working with communities to ensure the alignment of education curricula with community needs, targeted rural student selection into training, and expansion of teaching faculty in rural training institutions have been shown to also increase rural recruitment.[9]

3.2.3 | Expand training capacity

Expanding training capacities can be achieved by investing in infrastructure and staffing for additional training institutions to support equitable geographic distribution. Intersectoral platforms may be leveraged to support this. For example, a key focus of the Sudan intersectoral HCWF committee and the Human Resources for Health Observatory was on the expansion of training capacity, which contributed to the establishment of new health training institutions and staffing, leading to improved supply and deployment of HCWs.[36,50]

Training can also be expanded through accrediting new or existing public or private institutions, or by effectively mobilising existing resources for training purposes. Involving health professional regulatory and accreditation bodies is key to ensuring that effective regulatory frameworks are in place to accredit, monitor, and assure the quality of health education and training institutions.[39,77] In Thailand, HCWF training institutions have more than doubled over the past 40 years, and for nursing colleges in particular, with more than a quarter of newly accredited institutions being private.[69]

Capitalising on available training resources may inevitably require intersectoral collaboration. For example, expanding Ethiopia's Health Services Extension Programme occurred through a strategy in which theoretical

training was offered through Ministry of Education-run training institutions, while practical training was offered at health centres supported by the Ministry of Health or by private institutions.[48]

3.2.4 | Engage and regulate private sector training institutions

Rapid expansion of private-sector HCWF education and training institutions in many settings necessitates collaboration with the private sector.[46,49] These training institutions represent a significant source of HCWF training infrastructure. Positive engagement with the private sector in Tanzania—for instance, government-funded scholarships and grants to private institutions—has generated training opportunities.[46]

As for public institutions, poor regulation of private training may contribute to the overproduction of HCWs with poor employment prospects—there is a need to regulate these institutions.[55] Regulatory and accreditation bodies need adequate investment to ensure that they can carry out their roles and functions effectively.[49]

Privatisation of health education needs to align with HCWF needs, labour market dynamics, and broader health system goals.[65,72] Health Labour Market Analysis, which has been conducted with intersectoral involvement in a number of countries, has highlighted the importance of mitigating the overproduction and non-absorption of certain cadres.[50,77]

3.2.5 | Seek international training opportunities and support

The WHO established the 'WHO Academy' in 2020, in partnership with the French government's Ministry for Europe and Foreign Affairs as a core investor. The Academy is committed to innovative, responsive HCWF education that supports the delivery of high-quality, evidence-based care, globally. It has a learning centre in France, but has regional 'spokes' and an expansive repertoire of online offerings.[35,81]

There have been many partnerships between local and international medical education institutions, universities, and donors. For instance, Anglophone HCWF education opportunities led by the University of the Western Cape and funded by the Bill and Melinda Gates Foundation and Lusophone training opportunities led by the Institute of Hygiene and Tropical Medicine at New University in Lisbon and funded by the European Commission.[35] Global health partnerships, agencies, and initiatives can also support capacity-strengthening, often through building/expanding medical schools, faculty development, or the design and delivery of training curricula and eLearning modules and materials.[47]

The WHO Regional Office for Europe has committed to supporting training institutions in reviewing and updating their HCWF curricula, and developing and strengthening their regulation and accreditation.[83] It has highlighted that, if it is recognised that specific training needs cannot be met due to an absence of a critical mass of educators in certain health specialities, for example, international cooperation to 'share educators' would be beneficial.[83]

3.2.6 | Innovate in training: Leverage digital technologies

Harnessing and leveraging digital health technologies—and private sector engagement to support this—was pronounced during the COVID-19 pandemic and will likely be of growing importance.[83,85] Digital tools provide opportunities to expand the reach of competency-based and trans-professional health worker education, especially in more remote areas.[49] Intersectoral cooperation between government and the private/technology sector could strengthen information technology infrastructure and uptake of digital technologies, improving HCWs' access to

and utilisation of eLearning opportunities. Further, such tools may increase adoption of 'education for life' models for continuing professional development, especially in remote and rural areas where these are hard to access.[49]

In addition, existing open access medical education platforms, such as DigitalMEdIC from Stanford University in the United States, Free Open Access Medical Education, NextGenU, and ScholarRx Consortium, collate or curate free or low-cost online educational resources for HCWs. The People's Open Access Education Initiative in 2008 and OxPal MedLink166 in 2011 are specific resources for low-resource settings. Leveraging open access and online platforms for training may be of increasing value in the future.[49]

3.3 | Health and care workforce recruitment

3.3.1 | Ensure there is intersectoral clarity and cooperation around HCWF recruitment

A range of ministries and government agencies at national and sub-national levels may all play a role in advertising, selecting, hiring, processing, and financing new recruits. If communication and decision-making space is not effective across sectors, this can lead to inefficiencies and gaps in recruitment.[33,57] Further, budgets held at the central-level may mean that sub-national levels are unable to adequately forecast and meet their needs.[56] For example, in Uganda, the responsibility of forecasting staff needs at district level lies with the District Service Commission, which works closely with the District Health Management Team to assess the expected needs. However, District Health Management Team-identified staffing requirements do not always translate into positions due to financial constraints.[33] In Kenya, after devolution, the County Public Service Board and County Department of Health both carried out HCWF recruitment. To support integration of these parallel systems, an Office of the Human Resource Manager was seconded from the County Public Service Board to the County Department of Health to increase clarity in HCWF roles and responsibilities. This office can also liaise with the Human Resources Advisory Council in each County Department of Health, advising the County Health Management Team.[64]

3.3.2 | Ensure bilateral agreements are ethical and, where possible, reciprocal

Bilateral agreements are arrangements, typically between countries or regions, outlining the recruitment and employment of foreign workers. These often involve multiple ministries, including ministries of trade or employment, ministries of foreign affairs, ministries of finance, and ministries of health.[67] Bilateral agreements can curtail excessive out-migration of HCWs from low-resource settings,[32,39] mediated through WHO support around regulatory frameworks for ethical recruitment and compliance with the WHO Global Code of Practice on the International Recruitment of Health Personnel.[59] These frameworks are an important mechanism for greater fairness in HCWF migration, including insistence on *no* recruitment from countries on the 'Health Workforce Support and Safeguard List'.[61,83] However, there are still considerable issues with the Code's impact, including persistent gaps in implementation and in capturing HCWF migration data across contexts.[32,39,59] Stronger political commitment and responsive trade and immigration policies are needed to overcome these barriers and mitigate negative effects on source countries and on migrant HCWs.[44,55,70]

Where bilateral agreements are used, these should have reciprocal benefits beyond the acknowledgement of remittances sent by migrating HCWs back to their home countries. These agreements need to be clear on numbers and types of HCWs to be recruited—for instance, some agreements specify that senior staff will not be recruited, only unemployed HCWs—and for how long. Recruited HCWs need full support in integrating into their destination country and need decent work, fair pay, and ethical treatment. There may also be specifications for these workers to return home after a period of time, which brings added benefits of sharing of

capacities acquired from working in a different context.[85] Engaging the diaspora may support health worker integration in the destination country, helping them to maintain links with their home countries, enhancing circular migration.[86]

3.3.3 | Generate and use quality data to inform recruitment

We have published elsewhere about the importance of improvements in HCWF forecasting through intersectoral HCWF information systems and data sharing.[20] As an example of this, in Iran, the Ministry of Health and Medical Education has launched a website to facilitate HCWF management, providing information about employees' age, sex, place of employment, work experience, and field of study. This is used to support the design of a distribution system, supporting balance of both physician and non-physician distribution, with support from the Management and Planning Organization of Iran. The Ministry of Health and Medical Education also uses this information to allocate recruitment licences among medical science universities, who are then free to employ permanent employees based on their licences for their affiliated hospitals and health facilities.[63]

The WHO Regional Office for Europe, Eurostat, and the OECD have collaborated to develop a questionnaire that includes sections on the HCWF, including health employment and education and health workforce migration. Such data strengthens the availability and reliability of monitoring and data collection on the health workforce dynamics for health workforce recruitment.[39]

3.3.4 | Learn from the COVID-19 pandemic

It is essential to mobilise the domestic HCWF, without relying predominantly on international recruitment, which may further disadvantage lower-resource settings.[82] There have been examples throughout COVID of how this may be achieved, for example, increasing skill mix by concentrating on including mature 'second career' former HCWs who are working in other sectors of the economy, deploying students in care settings, re-hiring retired and inactive workers, using volunteers, changing working patterns, changing or postponing registration and revalidation requirements for physicians, and mobilising medical professionals from the military, non-governmental organisations, and private sector workforce.[82,83,85] Efforts should be made to incorporate previously overlooked labour markets such as older health professionals and migrants, where widespread strategies like the fast-tracking of foreign-trained professionals were undertaken. However, robust workforce planning and quality HCWF data are essential to build this surge capacity.[59,82,83]

3.4 | Health and care workforce retention

3.4.1 | Innovate around available staff, especially where staff are scarce

Interventions developed though cooperation between the education, health, and employment sectors are likely to yield the systemic changes that are needed to improve HCWF retention on a large scale.[58]

Skills mix interventions such as task shifting (expanding the roles or responsibilities of a cadre to those that might traditionally be undertaken by a different cadre), substitution (substituting responsibilities of one cadre for another), or reskilling and repurposing have been found to be cost-effective ways to address staffing gaps whilst offering professional development opportunities that support retention.[55,79] Successfully implementing these solutions may require intersectoral cooperation with, at minimum, training institutions and professional regulatory bodies.

Sustained retention of the HCWF in rural settings is more likely when a bundle of interventions, developed through intersectoral collaboration and action and adapted to the local context, is implemented, including financial compensation, support for continuous professional development, access to mentoring and coaching, attractive working and living conditions, and flexible working conditions adapted to the needs of women and older workers.[83]

3.4.2 | Improve workplace and employment conditions

During the COVID-19 pandemic, various strategies such as providing financial incentives, offering medical education credits, and keeping schools and childcare facilities open for the HCWF were all used to keep people in employment. These methods underscore the need for intersectoral cooperation across multiple domains.[82,83] In order to understand incentives and how they might function, it is essential to engage with HCWs and the professional associations and trade unions who represent the HCWF.

Health professional associations and unions can be engaged alongside government sectors and ministries responsible for labour relations. Improved management of labour relations through intersectoral action can facilitate improved working conditions, and also mitigate the impact of industrial action and strikes.[39,40,74] For example, in Slovenia, working conditions are defined through the 'Regulation on Continuous Health Care', generated through agreements with trade unions representing the HCWF.[83] However, despite intersectoral engagement, there must be commitment to respecting and upholding recommendations made. For example, in Germany, as elsewhere, there is an increasing proportion of female doctors, including in specialist roles. Extensive recommendations made by the Women's Medical Association to reform specialist training to be more responsive to the demands of the female HCWF, particularly around childcare support, have been ignored and not implemented. Failure to develop gender equality approaches, especially in the HCWF, which is dominated by women, negatively impacts organisations.[60]

However, COVID also highlighted the criticality of supporting the mental health and wellbeing of the HCWF[12] and ensuring flexible and practical help to enable them to remain in the health system.[82,83,85] To this end, the WHO Regional Office for Europe has recommended creating working conditions that promote a healthy work-life balance and ensure that the mental health and wellbeing of the HCWF are protected.[83]

3.4.3 | Engage the private sector

Engaging the private sector—including through collaboration with international non-governmental organisations and global health agencies—in alignment with health system's goals and priorities can expand and optimise available HCWF for service delivery. As seen during COVID-19, the private sector may be a source of facility leadership and management, mentorship, supportive supervision, and task shifting, all of which may enhance HCWF motivation and retention.[34,41–43,46,49] Diaspora networks can also be utilised to provide care to migrants from their home countries in the host country to fill gaps in the availability of health and care workers, easing some strain on the HCWF.[86]

However, there is a need for harmonised conditions of service across the public and private sectors,[75] developed through trust-building and evidencing co-benefits.[83] To optimally benefit from private sector expertise and engagement to support better working conditions and staff retention, among others, quality assurance processes will require adaptation of regulations and systems, especially where the focus has been entirely on public sector systems.[56] As for training institutions, private health facilities also need to be both accredited and regulated to ensure they meet specific standards and can contribute to national goals.[56]

4 | DISCUSSION

4.1 | Summary of main findings

Across an expansive body of literature included in this scoping review, there emerged several key findings, organised as top-line, often complementary, recommendations.

HCWF education:

- formalise intersectoral decision-making bodies, especially through joint ministries or secretariats, and ensure that the Ministry of Education is incentivised to engage;
- align HCWF education with population and health system's needs, especially through improved sharing of HCWF data and forecasting to inform training requirements, integrating competency-based HCWF training, and making special considerations for training in remote areas;
- expand training capacity through building, accrediting and quality assuring training institutions and mobilising existing training platforms and resources across sectors;
- engage regulated and accredited private sector training institutions by strengthening public-private partnerships and using legal and regulatory frameworks to ensure alignment with population needs and health systems goals and priorities;
- seek international training opportunities and support, capitalising on pre-existing international training networks; and
- innovate in training by leveraging digital technologies by working with private sector experts to strengthen information technology infrastructure and expand digital education platforms.

HCWF recruitment:

- ensure there is defined, complementary intersectoral cooperation in HCWF recruitment and sufficient decision space and resources at decentralised levels;
- ensure bilateral agreements are ethical and reciprocal by, for example, implementing frameworks like the "WHO Global Code of Practice on the International Recruitment of Health Personnel";
- generate and use data and forecasting to inform recruitment, drawing from standardised tools where possible; and
- learn from COVID-19, especially around mobilisation of the domestic HCWF.

HCWF retention:

- innovate around optimising available staff and bundling interventions, working across sectors, especially for staffing remote areas;
- improve workplace and employment conditions by understanding and supporting HCWF needs and improving HCWF work-life balance and mental health and well-being; and
- engage the private sector in the implementation of interventions, including supportive supervision and mentorship.

As outlined in Figure 2 and highlighted throughout the results, there is a wide range of actors that have a role in supporting intersectoral collaboration for the education, recruitment, and retention of the HCWF. This figure, however, is not exhaustive, and would need adaptation to each specific country context. Many platforms and mechanisms exist to enable collaboration between these different stakeholder groups.[20]

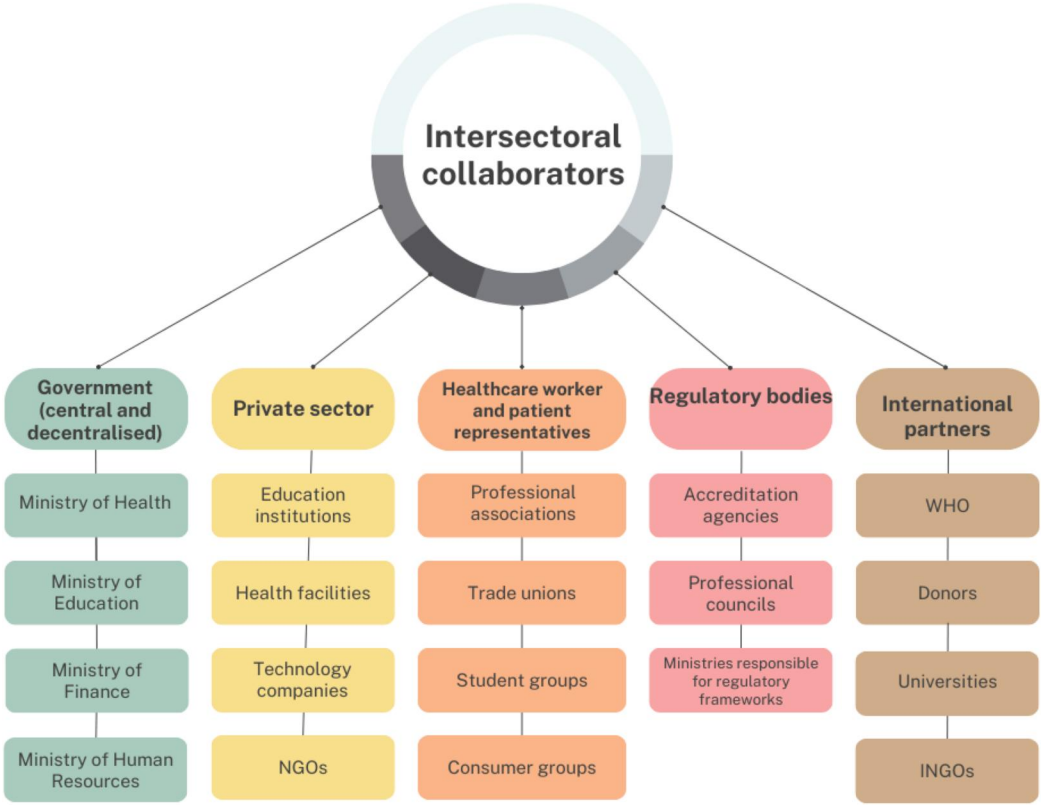

FIGURE 2 Different stakeholder groups to be targeted for intersectoral collaboration and action for the education, recruitment, and retention of the HCWF. INGOs, international non-governmental organisation; WHO, World Health Organization.

4.2 | Facilitators of intersectoral collaboration

A strengthened HCWF contributes to many positive outcomes in terms of economic and social development—other sectors therefore recognising these co-benefits may stimulate further investment and involvement.[87]

No intersectoral activities will be successful without political will. Stakeholders, particularly those with power and resources, need to be invested in intersectoral engagement, and all parties must recognise benefits in doing so.[88] It will be essential to expand the scope of intersectoral collaboration and to invest in intersectoral mechanisms. Further, there must also be: interest in directing political will towards improving the HCWF; sound HCWF policies that different sectors can support; and sufficient coordination and participation of different stakeholders for intersectoral collaboration to yield positive outcomes.[89]

4.3 | Barriers to intersectoral collaboration

From the challenges expressed across our results, some key learning has emerged about what it takes for intersectoral collaboration and action to be successful. These include: having a shared vision between stakeholders; clear lines of communication between collaborators; HCWF literacy[90]; clarity in roles and responsibilities; and to ensure that engagement with different sectors is meaningful and not tokenistic, leading to tangible outputs.

Further, to be successful, intersectoral collaboration necessitates leadership capacity for HCWF governance and planning—all partners must have the skills and competencies to engage fully. Not only may this engagement be constrained by an absence of such skills, but by the hierarchies and naturally existing boundaries between different sectors and stakeholder groups.[27,91,92] Political leaders who are willing and can work across party lines and boundaries are instrumental in this respect.[93] For example, in Ireland, ministers from different parties were successfully brought together to develop and support implementation of plans to further universal single-tier healthcare (Sláintecare), which has resulted in widespread improvements in HCWF recruitment.[94,95]

Finally, there is a need to evaluate intersectoral collaboration and to learn from successful approaches—what works, for whom, and under which conditions? To this end, both research and good quality monitoring and evaluation may be beneficial.[20]

4.4 | Study limitations

A key limitation of this work is that many examples given may describe intersectoral collaboration, but place less emphasis on what they have achieved, especially in the longer-term. More work needs to be done to develop appropriate metrics for evaluating intersectoral collaboration that improves understanding of structures and processes required and generates evidence of benefits and impact. Further, given that the majority of the HCWF is comprised of women,[96,97] there was little evidence emerging about the unique needs of a majority-female workforce and how these may be considered and accommodated. These analyses should be recurring, reflecting the dynamism of health systems with ever-changing population and HCWF needs. Another limitation is that our search strategy only included documents written in English, which constrained inclusion of documents from many regions of the world that publish predominantly in other languages. Finally, as a scoping review with a broad focus, we were likely not exhaustive in finding all possible documents pertaining to our topic of interest, and some relevant materials may have been missed.

5 | CONCLUSION

There are many opportunities for intersectoral collaboration across a wide range of stakeholders to improve the education, recruitment, and retention of the HCWF. However, for these to be fully realised, clear communication between stakeholders, a shared vision, clarity around roles, meaningful engagement, and requisite capacities for intersectoral collaboration must exist. Further, political will and commensurate investment in HCWF education and development must underscore intersectoral HCWF collaboration and action.

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CONFLICT OF INTEREST STATEMENT

The authors declare that we have no conflicting interests.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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