Human Resources for Health in Conflict Affected Settings: A Scoping Review of Recent Evidence

Olivier Onvlee, Maryse Kok, James Buchan, Marjolein Dieleman, Mariam Hamza, Christopher Herbst

DOI: https://dx.doi.org/10.34172/ijhpm.2023.7306

Article History:
Received Date: April 4, 2022
Accepted Date: May 20, 2023
epublished Author Accepted Version: May 21, 2023

Copyright: © 2023 The Author(s); Published by Kerman University of Medical Sciences. This is an open-access article distributed under the terms of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.


This PDF file is an Author Accepted Manuscript (AAM) version, which has not been typeset or copyedited, but has been peer reviewed. IJHPM publishes the AAM version of all accepted manuscripts upon acceptance to reach fast visibility. During the proofing process, errors may be discovered (by the author/s or editorial office) that could affect the content, and we will correct those in the final proof.
Manuscript Type: Scoping Review

**Human Resources for Health in Conflict Affected Settings: A Scoping Review of Recent Evidence**

Olivier Onvlee *1, Maryse Kok1, James Buchan2, Marjolein Dieleman1,3, Mariam Hamza4, Christopher Herbst4

1. KIT Royal Tropical Institute, Amsterdam, The Netherlands
2. Faculty of health, WHO collaborating centre, University of Technology, Sydney, NSW, Australia
3. Athena Institute for Research on Innovation and communication in Health and Life Sciences, VU University, Amsterdam, The Netherlands
4. World Bank, Washington, DC, USA

**Correspondence to:** Olivier Onvlee; e-mail: o.onvlee@kit.nl

**Abstract**

**Background:** Conflict has devastating effects on health systems, especially on health care workers (HCWs) working in under-resourced and hostile environments. However, little evidence is available on how policymakers, often together with development partners, can optimize the organization of the health workforce and support HCWs to deliver accessible and trustworthy health services in conflict-affected settings (CAS).

**Methods:** A scoping review was conducted to review the recent evidence (2016-2021) on human resources for health (HRH) in CAS, and critically discuss HRH challenges in these settings. Twenty-four studies were included in the review and results were presented using an adapted version of the health labour market framework.

**Results:** Evidence from CAS highlights that conflict causes specific constraints in both the education sector and in the health labour market, and deepens any existing disconnect between those sectors. While the symptoms of these disconnects bear close resemblance to those in many other low- and middle-income countries, the unique set of societal drivers of conflict, governance dynamics and institutional constraints in CAS ‘multiply’ negative effects on the health workforce. Parallel and inadequate education and performance management systems, attacks on health facilities, and increased workload and stress, amongst other factors, affect HCW motivation, performance, distribution and attrition. Short-term, narrowly focused policy-making also undermines the long-term sustainability and resilience of the health workforce in CAS.
**Conclusion:** HRH policies, programmes and interventions must be aligned with the political and broader societal context, including the stage, severity and other dynamics of conflict. During conflict, it is important to try to monitor in- and outflow of HCWs and provide HCWs the support they need at local level or through remote measures. The post-conflict situation may present opportunities for improvement in HRH, but a clear understanding of political economy dynamics is required to better act on any such a window of opportunity.

**Keywords:** Health Workforce, Health Policy, Health Labour Market, Health Systems, War

**Background**
Globally, the number of conflict-affected settings (CAS) is rising. In 2017, the number of people living in proximity of conflict (defined as within 60km of at least 25 conflict-related deaths) was 220 million: double compared to the number a decade ago. The World Bank estimates that by 2030, two-thirds of the global extreme poor will be living in fragile and conflict-affected situations (1).
Conflict has devastating effects on health systems. It results in destruction of health infrastructure, loss of health care workers (HCWs), and weakening of health governance at all levels. At the same time, demand for health services increases (2, 3). This poses a serious threat to achieving universal health coverage.
The health workforce is the engine of any health system, as all activities and programmes have to be adopted or adapted through them (4). Insecurity and direct attacks lead HCWs to leave or avoid working in CAS. Consequently, small numbers of health workers are left in CAS, working in difficult conditions with often very little support (5, 6). The current Covid-19 pandemic aggravates the situation.
Responding to crises in human resources of health (HRH), including in CAS, requires a systems approach (7). Increasing the availability of HCWs is often difficult in low-income countries and particularly in CAS. Maintaining or enhancing HCWs’ competence, responsiveness and productivity is often also constrained, for example because of disconnection from social and professional support systems, limited supplies and equipment, increased workload and stress (8).
Despite the increasing availability of tools and guidelines on HRH, little evidence is available on how policymakers, often together with development partners, can optimize the organization of the health workforce and support HCWs to deliver accessible and trustworthy health services in CAS. Health systems research (including on HRH) in CAS is scarce because of lack of (financial) support, complex and rapidly changing research environments in terms
of security and access, limited research capacity, difficulties in obtaining ethical clearance, mistrust towards (outside) researchers and a lack of research application (9, 10). Despite this, there is literature available, often based on small-scale studies in particular settings. To date, no attempt has been made to review these studies to obtain an overview of their findings and distract learnings for governments and development partners operating in CAS.

This scoping review aims to describe and critically discuss HRH challenges in CAS. This concerns challenges that HCWs face, constraints that governments and development partners face in managing the health workforce and its required supporting systems, and contextual factors influencing HRH. It takes a broad health labour market (HLM) and health systems lens to address the complex and interconnected nature of these challenges. Based on evidence from the literature, the review provides considerations for policy makers in CAS regarding effective HRH strategies.

**Methods**

In anticipation of a scarcity of studies available and a variety in study designs and topics within the area of HRH we chose to conduct a scoping review (11). This type of review constitutes a “research synthesis that aims to ‘map the literature on a particular topic or research area and provide an opportunity to identify key concepts; gaps in the research; and types and sources of evidence to inform practice, policymaking, and research” (53). The review included English language peer reviewed scientific publications published between 2016 and 2021. We included studies with various study designs. Included studies focussed on HRH policies, programmes and interventions, or factors influencing the HLM in CAS, and had to include dimensions of conflict. We included studies reporting about any type of HCW from countries on the high-intensity or medium-intensity conflict lists of the World Bank (fragile and conflict-affected situations list, financial year 2021). This means we focused on settings (countries or parts of countries) that are currently in conflict or have very recently experienced conflict. Grey literature was explicitly not included to ensure the review reflected the current state of reliable, academic, peer reviewed knowledge.

A three-pronged search strategy was used to identify relevant studies. First, studies from the period 2016-2019 were selected from the systematic review of Bou Karroum et al. (2020) (5). This systematic review comprehensively mapped studies on HCWs in conflict and post-conflict settings, using a wider pool of countries than the current review. Bou-Karroum et al. looked into characteristics of publishing journals, authors, types and funding of the studies (5). Out of a total of 304 studies, 20 studies were included for further assessment based on publication
year and study country. Second, to complement and update this work, a new search was conducted in March 2021 for additional studies that were published in the period after the systematic review (2019-2021) using a PubMed search and an additional scan per country on Google Scholar. This search combined terms (in titles and abstracts) on intervention characteristics with the relevant countries (Table 1). Assessment of study titles (and where unclear, abstracts) resulted in 68 studies being included for further assessment. Third, requests for additional sources were made to key experts in the area of HRH, resulting in no additional studies.

Eighty-eight studies (20 plus 68) were divided among three researchers for abstract reading. Studies that included a focus on all three of the publication characteristics (Table 1) were included. In case of doubt, the full study was read. A second reading was done by another researcher if the article was to be included. This led to 24 studies being included in this scoping review (Figure 1).

Table 1. **Search terms**

<table>
<thead>
<tr>
<th>Publication characteristics</th>
<th>Key words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention characteristics</td>
<td>Human resources for health, HRH, health workforce, health labour market, health [care] workers, cadre, doctors, nurses, midwives, community health workers, physicians</td>
</tr>
<tr>
<td>Countries</td>
<td>Afghanistan, Libya, Somalia, Syrian Arab Republic [Syria], Burkina Faso, Cameroon, Central African Republic [CAR], Chad, Democratic Republic of Congo [DRC], Iraq, Mali, Mozambique, Myanmar, Niger, Nigeria, South Sudan, Yemen</td>
</tr>
<tr>
<td>Dimensions of conflict</td>
<td>Humanitarian, crisis, emergency, fragile and conflict affected [states/settings/situations/countries], post-conflict, conflict</td>
</tr>
</tbody>
</table>
The 24 included studies were read and charted using a data extraction form based on an adapted version of the HLM framework (Figure 2). First developed by Sousa et al. (2013), the HLM framework takes a comprehensive view of the education sector and health labour market dynamics (such as inflows and outflows of HCWs), including market failures, and links these to potential policy interventions. It therefore can be a useful tool for mapping available HRH evidence (12).
Figure 2. Health labour market framework, adapted to emphasise dynamics of conflict and governance

The original HLM framework was adapted by the authors to emphasise important considerations for HRH in CAS – especially to better portray the interaction between the health workforce and the context. For example, security challenges for both patients and HCWs in CAS can influence access to care and can deepen regional and socio-economic disparities. Moreover, conflict can result in significant different care needs (e.g., trauma care and mental health) as well as disruptions in the health systems infrastructure. High rates of gender-based violence (both at the patient and provider level) and inclusion or exclusion of groups based on their characteristics such as race, religion or political views need to be considered when analysing health labour market dynamics in conflict settings.

Our adapted version also expands on the original framework by adding a focus on the institutions (and their dynamics) that give rise to health and HRH policies. For example, in CAS, government fiscal capabilities for HRH may be severely constrained and certain health
system responsibilities might be spread over multiple state and non-state actors (non-governmental organization (NGOs) and others), with development partners often funding or directly employing HCWs. In settings where the state is either unwilling or unable to fulfil the social contract in (parts of) the country, civil society actors may even take over governmental functions.

Three researchers extracted relevant excerpts from the results sections of the included studies and sorted these according to the main elements of the adapted HLM framework (Box 1). We did not conduct quality assessments of the included studies, because this was a scoping review on an under-researched topic in CAS, where the quality of research is often constrained (however, we reflect on this further in the Discussion section).

**Box 1. Main elements of the adapted HLM framework**

1. **Education sector**
   The “new” inflow – or supply – of HCWs coming from education and training.

2. **Labour market dynamics: inflows and outflows**
   The mobility of HCWs to enter and exit the labour market, and the ability of employing organisations to develop and implement policies that can shape and direct that mobility.

3. **Labour market dynamics: performance and motivation**
   Various factors mediating HCWs’ (in)ability to perform, including challenges pertaining to in-service training, supervision, performance management, task divisions and remuneration.

4. **Contextual factors affecting HCWs in CAS**
   Conflict settings impose several additional contextual challenges on HCWs, including security and violence related issues, economic and infrastructural pressures, health status and population movements. Changing dynamics around gender, ethnicity, race, class, ideology and other group dynamics can impact HCWs and patients.

5. **HRH governance**
   The production, deployment, retention and performance of the health workforce are all highly dependent on the (lack of) stewardship by the government and health systems actors – and in CAS institutional capacities and/or political will to fulfil governance functions may be lacking.
Once extracted, discussions between the researchers took place on the findings for each of these main result areas, which were summarized in narratives per results area. A first draft was discussed with two key experts in HRH to further refine the focus of the results and strengthen the Discussion.

Results

Overview of included studies

Details of the 24 included studies are shown in Table 2. The country which was the source of the most studies was Syria (8) followed by the Democratic Republic of Congo (DRC) (5). Fifteen studies were qualitative in nature, six were quantitative and three mixed-methods. They focused on a variety of HCWs.
<table>
<thead>
<tr>
<th>Author, years and citation</th>
<th>Country</th>
<th>Study objective</th>
<th>Study methods</th>
<th>Types of HCWs</th>
<th>Main reported elements of the adapted HLM framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al-Arebi (2019) (13)</td>
<td>Libya</td>
<td>To examine the current Libyan medical education system, look at its positive and negative aspects, and to provide suggestions and recommendations that could help improve the quality of the system</td>
<td>Descriptive/opinion</td>
<td>Medical workforce</td>
<td>Education sector; HRH governance</td>
</tr>
<tr>
<td>Amodu et al. (2021) (14)</td>
<td>Nigeria</td>
<td>To identify structural gaps influencing access to reproductive health care for women displaced by terrorism in Nigeria</td>
<td>Qualitative: critical ethnography</td>
<td>Primary health workers</td>
<td>Labour market dynamics: inflows and outflows, performance and motivation; contextual factors; HRH governance</td>
</tr>
<tr>
<td>Atia et al. (2020) (15)</td>
<td>Libya</td>
<td>To assess the impacts of the accreditation process of the National Center for Quality Assurance and Accreditation (NCQAA) on the quality of education in a private university in Libya</td>
<td>Qualitative: self-study report produced by the NCQAA accreditation committee during 2017-2019, using a standardized instrument</td>
<td>NA. University</td>
<td>HRH governance</td>
</tr>
<tr>
<td>Authors</td>
<td>Country</td>
<td>Objective</td>
<td>Methodology</td>
<td>Role</td>
<td>Sector and Issues</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------</td>
<td>----------------------------------------------------------------------------</td>
<td>----------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Baba et al. (2020a)</td>
<td>DRC</td>
<td>To identify strategies that can help to attract, support and retain midwives in the fragile and rural Ituri province</td>
<td>Qualitative: participatory workshop</td>
<td>Midwives</td>
<td>Education sector; labour market dynamics: inflows and outflows, performance and motivation; HRH governance</td>
</tr>
<tr>
<td>Baba et al. (2020b)</td>
<td>DRC</td>
<td>To understand skilled birth attendants’ availability and distribution in Ituri province, North Eastern DRC from 2013 to 2017, to understand how data can be used to support evidence-informed decisions about nurses and midwives in fragile contexts</td>
<td>Quantitative: review of available routine data and data on local training output at provincial level</td>
<td>Doctors, nurses and midwives (as skilled birth attendants)</td>
<td>Education sector; labour market dynamics: inflows and outflows; contextual factors</td>
</tr>
<tr>
<td>Bdaiwi et al. (2020)</td>
<td>Syria</td>
<td>To explore current initiatives present in the north west of Syria at both the undergraduate and postgraduate level for physician and non-physician HCWs and the challenges faced in providing undergraduate education and postgraduate training during the conflict</td>
<td>Mixed methods: narrative review complemented with brief interviews</td>
<td>Allied health professionals including physiotherapists, nurses, specialist nurses, pharmacists, midwives, dentists, paramedics and emergency or anaesthetic technicians and doctors</td>
<td>Education sector; labour market dynamics: inflows and outflows, performance and motivation; contextual factors; HRH governance</td>
</tr>
<tr>
<td>Buny (2019)</td>
<td>South Sudan</td>
<td>To explore factors contributing to staff turnover and management strategies</td>
<td>Qualitative: interviews and small group</td>
<td>Expatriate humanitarian aid workers</td>
<td>Labour market dynamics: inflows and outflows</td>
</tr>
<tr>
<td>Study</td>
<td>Country</td>
<td>Objective</td>
<td>Methodology</td>
<td>Study Design</td>
<td>Contextual factors</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------</td>
<td>----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Elamein et al. (2017)</td>
<td>Syria</td>
<td>To describe a new system used mainly in areas of Syria with a substantial presence of armed opposition groups since November, 2015, to detect and verify attacks on health care services and describe their effect</td>
<td>Quantitative: based on a Monitoring Violence against Health Care (MVH) alert network via (293-member) WhatsApp and an anonymised online data-entry tool for incident reporting</td>
<td>Various cadres</td>
<td>Labour market dynamics: performance and motivation; contextual factors; HRH governance</td>
</tr>
<tr>
<td>Ferdinand et al. (2019)</td>
<td>CAR</td>
<td>To evaluate the effectiveness of a 10-year CHW programme in CAR</td>
<td>Quantitative: routine case management data from CHWs and structured interviews with beneficiaries, CHWs and health facility managers</td>
<td>Voluntary CHWs</td>
<td>Labour market dynamics: performance and motivation; contextual factors; HRH governance</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Country</td>
<td>Research Objective</td>
<td>Methodology</td>
<td>Cadres</td>
<td>Sector Focus</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Footer et al.</td>
<td>Syria</td>
<td>To explore the complex challenges health workers face in providing care when healthcare services and personnel are themselves subjected to violence and forced to operate in the midst of ongoing human rights violations and war crimes</td>
<td>Qualitative: interviews with health workers</td>
<td>Various cadres</td>
<td>Labour market dynamics: inflows and outflows, performance and motivation; contextual factors; HRH governance</td>
</tr>
<tr>
<td>Fouad et al.</td>
<td>Syria</td>
<td>To focus on four analytical themes: attacks on health-care facilities and targeting of health workers as part of a broader pattern of systematic violations of international humanitarian law, the attrition of health workers, the challenges facing health workers in different areas, and the evolving roles of health workers</td>
<td>Mixed methods: scoping review, expert consultations, testimonials of health workers</td>
<td>Various cadres</td>
<td>Education sector, labour market dynamics: inflows and outflows, performance and motivation; contextual factors; HRH governance</td>
</tr>
<tr>
<td>Hamid et al.</td>
<td>Syria</td>
<td>To explore the impact of the provision of care of forcibly displaced Syrian mental health professionals (MHPs) to Syrian clients in the community, given shared</td>
<td>Qualitative: in-depth interviews with forcibly displaced Syrian MHPs across two cities in Turkey,</td>
<td>Mental health professionals</td>
<td>Labour market dynamics: inflows and outflows, performance and motivation; contextual factors</td>
</tr>
<tr>
<td>Authors</td>
<td>Country</td>
<td>Study Objective</td>
<td>Methods</td>
<td>Sample Description</td>
<td>Contextual Factors</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------</td>
<td>----------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Jinor (2020) (25)</td>
<td>DRC</td>
<td>To explore the lived experiences of secondary trauma for psychological assistants in the DRC</td>
<td>Qualitative: 13 in-depth interviews with psychological assistants</td>
<td>Psychological assistants, a type of lay mental health worker</td>
<td>Education sector; labour market dynamics: performance and motivation contextual factors</td>
</tr>
<tr>
<td>Labat &amp; Sharma (2016) (26)</td>
<td>DRC</td>
<td>To identify potential barriers to patient safety interventions from the perspective of surgical team members working in an operating theatre in Eastern DRC</td>
<td>Qualitative: in-depth interviews with surgical health workers in a teaching hospital</td>
<td>Surgical health workers, both expats and Congolese</td>
<td>Labour market dynamics: performance and motivation; HRH governance; contextual factors</td>
</tr>
<tr>
<td>Lorenzetti et al. (2020) (27)</td>
<td>Afghanistan</td>
<td>To evaluate a health video library intervention, a tablet-based tool to improve health promotion and counselling by CHWs</td>
<td>Qualitative: in-depth interviews with CHWs and CHW supervisors</td>
<td>Voluntary CHWs</td>
<td>Contextual factors</td>
</tr>
<tr>
<td>Miller et al. (2020) (28)</td>
<td>Yemen</td>
<td>To document the challenges to integrated community case management (iCCM) service delivery and to develop strategies for overcoming service delivery bottlenecks in</td>
<td>Qualitative: in-depth interviews and focus group discussions</td>
<td>CHWs</td>
<td>Labour market dynamics: inflows and outflows, performance and motivation; contextual factors; HRH governance</td>
</tr>
<tr>
<td>Authors</td>
<td>Country</td>
<td>Objective</td>
<td>Methodology</td>
<td>Participants</td>
<td>Labour market dynamics:</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------</td>
<td>---------------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Mohamed (2021) (29)</td>
<td>Syria</td>
<td>To estimate the prevalence of violence against resident doctors in Syria, investigate the association between exposure to workplace violence and health-related outcomes in terms of psychological stress, sleep quality, depression, and the overall subjective health of Syrian resident doctors, and suggest approaches to tackle this problem from the resident doctors’ perspectives</td>
<td>Quantitative: cross-sectional survey among resident doctors</td>
<td>Medical doctors</td>
<td>Labour market dynamics: performance and motivation; contextual factors</td>
</tr>
<tr>
<td>Mowafi et al. (2016) (30)</td>
<td>Syria</td>
<td>To identify the number of trauma hospitals operating in Syria and to delineate their capacities</td>
<td>Quantitative: nationwide survey of 94 trauma hospitals</td>
<td>Surgeons, nonsurgical physicians, nurses, other technical staff (both trainees and non-trainees)</td>
<td>Labour market dynamics: performance and motivation; contextual factors</td>
</tr>
<tr>
<td>Mushagalusa et al. (2020) (31)</td>
<td>DRC</td>
<td>To describe the role of staff working in rural health districts in a context of crisis in DRC</td>
<td>Quantitative: cross-sectional survey</td>
<td>Medical, paramedical, administrative, and support staff</td>
<td>Labour market dynamics: inflows and outflows, performance and motivation; HRH governance</td>
</tr>
<tr>
<td>Najafizada et al. (2019a) (32)</td>
<td>Afghanistan</td>
<td>To apply a multi-layered gender analysis to explore</td>
<td>Qualitative: in-depth interviews</td>
<td>CHWs</td>
<td>Labour market dynamics: inflows and outflows, performance and</td>
</tr>
<tr>
<td>Study</td>
<td>Country</td>
<td>Objective</td>
<td>Methodology</td>
<td>Population</td>
<td>Themes</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>-----------</td>
<td>-------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>Najafizada et al. (2019b) (33)</td>
<td>Afghanistan</td>
<td>To offer a descriptive qualitative analysis of how CHWs function as human resources for health in rural Afghanistan, and how they interact with both formal and informal health workers in the Afghan health system</td>
<td>Qualitative: participant observation and in-depth interviews</td>
<td>Voluntary CHWs</td>
<td>Labour market dynamics: inflows and outflows, performance and motivation; contextual factors; HRH governance</td>
</tr>
<tr>
<td>Okunogbe et al. (2019) (34)</td>
<td>Afghanistan and South Sudan</td>
<td>The aim of the study is to examine the specific role of the Global Fund in strengthening HRH in the Eastern Mediterranean Region (EMR). (1) What are the levels and composition of Global Fund investments in HRH in EMR countries? (2)</td>
<td>Mixed methods: EMR-wide on quantitative data, qualitative case studies in Afghanistan and Sudan</td>
<td>Various cadres, such as: national and provincial programme officers, health management information systems officers, medical doctors, nurses, CHWs, community health</td>
<td>Education sector; labour market dynamics: performance and motivation; HRH governance</td>
</tr>
<tr>
<td>Authors</td>
<td>Country</td>
<td>Paragraph</td>
<td>Methodology</td>
<td>Key Challenges</td>
<td>Research Area</td>
</tr>
<tr>
<td>----------------------</td>
<td>------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>---------------------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>Pare Toe &amp; Samuelsen</td>
<td>Burkina Faso</td>
<td>What types of HRH activities have been supported by these investments? and (3) In what ways have these investments contributed to health system strengthening in some of these countries?</td>
<td>Qualitative: anthropological field work, interviews with staff at dispensaries and medical centres</td>
<td>Physicians, assistant-doctors, nurses, assistant-nurses, midwives and laboratory technicians</td>
<td>Labour market dynamics: performance and motivation; contextual factors; HRH governance</td>
</tr>
<tr>
<td>Tang &amp; Zhao</td>
<td>Myanmar</td>
<td>To explore how front-line health workers compensate for the many shortcomings they face and how the difficult working conditions affect their professional identity</td>
<td>Qualitative: in-depth interviews and focus group discussions</td>
<td>Non-specific</td>
<td>Education sector; labour market dynamics: performance and motivation; contextual factors; HRH governance</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Education sector
This part of the HLM framework represents the supply of HCWs coming from education and training. It focuses on the ways in which students are able to access (quality) education to become part of a pool of qualified HCWs eligible to work in the health sector. Disruptions or inefficiencies along this pathway can have adverse effects on the number, quality and recognition of (future) HCWs.

HCWs in CAS are often internally displaced, flee or are victim of violence, while pressure on the health systems only mounts. Some training institutions have to close because of repeated attacks. As a response, the number of new schools and universities increased in several contexts including Libya, Syria and DRC. However, this expansion took place in a context of limited capacity and support systems and de-facto absence of regulation (13, 16, 18). A few studies reported about accreditation of (medical) education, which often lacked quality (13, 23) or were different in various parts on the country (18, 36). Development partners partly and temporarily filled gaps regarding training of HCWs, but these initiatives were also not harmonized in terms of focus, content and quality of training (18).

Fouad et al. (2017) reported that the content of existing curricula and training was inadequate for preparing HCWs to deliver quality of care in times of conflict. The medical training in Syria did not include specialisation in trauma management, intensive care, or emergency medicine, which resulted in HCWs needing to acquire these knowledge and skills on the job (23).

The quality of education was compromised by inadequate infrastructure and limited guidance and mentorship of interns. Al Areibi (2019), in a discussion paper on medical education in Libya, reported that the operation of educational facilities was highly constrained by, amongst others, a lack of physical space, insufficient library resources and inadequate laboratory equipment (13). Footer et al. (2017) reported that in high intensity conflict settings like in Syria, interns and other HCWs in training often had to take on more responsibilities than could normally be expected, whilst at the same time receiving less guidance, supervision and mentorship. This had implications for standards of care and caused significant psychological pressure and increased physical workload (22). Bdaiwi et al. (2020) referred to distance learning being provided by certain institutions in Syria though no details were provided (18).

Labour market dynamics: inflows and outflows
This part of the HLM framework focuses on mobility of HCWs to enter and exit the labour market, and the ability of employing organisations to develop and implement policies that can shape and direct that mobility. A disconnect and imbalance between in- and out-flows of HCWs leads to an inadequate and/or unstable pool of HCWs.
Inflows
The review found that limited recruitment and deployment of HCWs was caused by insufficient numbers of graduates or HCWs to meet demand, and limited motivation of potential or current HCWs to work in areas with high insecurity and workload. Midwives in DRC reported that their heavy workload was created by an overall shortage of HCWs, compounded by difficult working conditions because of limited resources and ongoing conflict, and no provision of salary or rural remote allowance but occasional risk allowance (16).
When it proved not possible to recruit specific cadres or types of HCWs, a common policy response was recruitment and deployment of community health workers (CHWs). CHWs programmes can be effective when CHWs receive appropriate training, supervision and other support, however CHWs, like in many low- and middle- income countries (LMICs), were found to have poor job security and be under-remunerated (14).

Outflows
Conflict often led to the (forced) outflow of HCWs, both in terms of migration to more secure areas within or outside the country and leaving the profession or health sector employment all together. HCWs also risked being attacked while working. Many papers identified security challenges faced by HCWs and patients (17, 19, 20, 22, 23, 25, 26, 28, 30, 32). Elamein (2017) studied attacks against healthcare in 2015-16 in Syria and found that 44% of the hospitals and 5% of primary care clinics experienced mainly aerial bombardment attacks, in areas with substantial presence of armed opposition groups (20). In Syria, some medical students had to transfer to other universities in Syria, because of the risk of arrest by the Government of Syria if they were thought to oppose the government or to have studied at ‘opposition institutions’ (18). Another study from Syria reported that many health workers either fled or voluntarily emigrated, and that whilst this attrition affected the whole of Syria, the situation was very different between government-controlled areas and nongovernment-controlled areas (23). Inadequate data could limit the monitoring of HCW outflow (17).
Besides insecurity, attrition was also caused by poor living and working conditions and in some cases, tension between locals, regional workers and expatriates. This was reported in South Sudan, where HCWs reported about unfavourable government policies towards foreign workers and short-term employment contracts due to stringent donor funding requirements (19). A lack of availability of the necessary equipment may be another factor encouraging HCWs to leave. One study in DRC reported that the equipment at rural health facilities was
limited to tools required for elementary examinations and care, and in some cases, these were in disrepair (35).

The review also found that high workload and mental health issues among HCWs caused attrition. The stress of providing care was partly caused by the scarcity of HCWs, leading to heavy workload, an inability to “switch off” from work, and a feeling of helplessness because of the number of people they could not assist (22). Psychological assistants (lay mental health workers) in DRC were susceptible to secondary trauma, as they may have been exposed, or were afraid to get exposed, to traumatic events their clients had experienced (25). Footer et al. (2017) particularly reported about the stress of health workers providing health care during war in Syria and that in government-controlled areas, health workers were to serve the government forces, with less attention for the civilian population (22). In relation to this, Fouad et al. (2017) found that care to civilians in opposition to the government was criminalized. Fouad (2017) interpreted the many ways in which health and HCWs become active targets as a pattern of ‘weaponisation of health’ (23).

Misdistribution of HCWs was associated with attractiveness of working areas (urban versus rural, stable versus instable/ in conflict). A survey in DRC highlighted that unstable districts had older staff with fewer qualifications than other districts; whilst registered staff (i.e., formally employed professionals) had twice the likelihood of being located in stable districts. The authors concluded that this was because administrative procedures were more likely to be respected in stable districts and that “it is probably due to the context of insecurity leading to both the flight of registered staff and reliance on local available staff who have not yet completed administrative formalities” in unstable districts (31).

Labour market dynamics: performance and motivation

Health labour market dynamics are heavily determined by the inflows and outflows of health workers, yet the effectiveness of the workforce is also dependant on other factors mediating HCWs’ ability to perform. When in-service training, supervision, performance management, task divisions and remuneration are inadequate, HLMs cannot function properly. We found that in-service training, supervision and continuous professional development (CPD) opportunities were disrupted in conflict settings, leading to inequity in access to these job motivators among HCWs and, potentially, patient safety concerns. In CAR, refresher training was organized only irregularly for CHWs, and major discrepancies were found between districts in relation to supervision practices (21). In a study of surgical teams in DRC, all interviewees highlighted the need for continuous medical education while underscoring
inequity in access to training. Some participants highlighted the increased risk of errors due to the lack of ‘supervision’ of inexperienced trainees in surgical care (26).

HCWs often took on tasks and roles that they were not trained for, leading to risks for quality of care and patient and HCW safety. An example was related to junior doctors being hurriedly employed in full service in Syria, and various specialists having to retrain in active conflict areas where HCWs were forced to re-specialise on trauma. In Syria, insufficient numbers of HCWs led to an increased focus on roles of non-physician HCWs and skill substitution. Bdaiwi et al. 2020 reported that specialised dialysis nurses had been taking the roles of renal specialists: this was done with the support of the single remaining renal physician and a team of expatriate renal physicians providing training and advice (18).

The few studies that reported about (supplementary) pay or incentives in CAS showed that HCWs often received little and irregular income, and that this was worse in rural and unstable areas than in urban and more stable areas (16, 17, 31). Health workers reported a need to supplement income, like in Myanmar, through over prescription of certain drugs (36). In Syria and Yemen, public health workers were reported to have shifted to private practice (18, 28) but dual practice was not reported in any of the included studies. A study among local aid workers in South Sudan reported that they may be influenced to continue working in the humanitarian and development sectors, if there is increasing availability of competitive salaries and benefits such as medical insurance and paid time off, training and education opportunities, career progression, performance feedback, effective communication, and staff empowerment opportunities (19). A few studies reported on issues related to staff within the same institution being employed on different contracts, terms and conditions (16, 31, 33). One study focusing on experiences of frontline workers in Burkina Faso highlighted that it was generally considered an advantage to be employed in the public sector compared to the private sector, because it was perceived to be a more secure position and it included a pension system (35).

Contextual factors affecting HCWs in CAS
Conflict settings impose several additional contextual challenges on HCWs, including security-related issues, economic pressures and population movements.

This review found that security challenges required adjustments in the organization of and trust in health care, posing a challenging environment for HCWs. In Syria, the threats to HCWs and patients were so severe that they necessitated a re-organisation of health care
infrastructure and staff. For example, various wards of hospitals were split among different (fortified) positions to reduce risks of targeting and minimise potential for all services being interrupted (23). Field hospitals in homes, schools, basements, mosques, and caves were established to treat casualties before transporting patients to permanent medical facilities (23). Footer et al. (2017) also described a common strategy of placing hospitals underground in Syria, however, it was reported that such hospitals are vulnerable to chemical attacks (22). Mowafi et al. (2016) reported about the problem of transferring patients in need of specialty care between hospitals in active war zones in Syria (30). For CHWs and their supervisors, offering services in areas other than their village of residence became a problem in armed conflict zones in Yemen (28). In Afghanistan, safety on the roads was a problem for particularly female CHWs (33). In DRC, ethnic grouping on either side of the conflict generated patient distrust of HCWs or in each other, which could compromise HCWs’ attitudes towards particular ethnic groups (26). This study also reported about increased corruption, organized crime (where people do not dare to take action because of their own safety), a lack of accountability of hospital management towards national health authorities, and patronage in human resource management (where people supportive of authorities are at higher levels) (26).

We found that female health workers may be more vulnerable in conflict areas. Mushagalusa et al. (2020) reported that men were twice as likely to be working in unstable districts as women in DRC, because they are potentially less vulnerable to violence than women (31). Another study in DRC found that less than one third of nurses in rural health districts were female, while in the urban health district they made up 61% of the nurses (17). This can be problematic, particularly in settings where certain cadres are underrepresented by one of the genders or where communities have a preference to receive care by one of the genders. For the predominantly female lay mental health workers in DRC, gender-based violence was a fear, as well as one of the biggest reasons for secondary trauma (25).

HRH governance
The production, deployment, retention and performance of the health workforce are all highly dependent on the (lack of) stewardship by the government – and in CAS institutional capacities and/or political will to fulfil health workforce governance functions may be lacking. Available evidence suggests significant gaps and fragmentation in leadership, HRH governance and regulation at national and regional levels. Several studies highlighted that
inter-sectoral coordination was weak. Of particular note was the often dysfunctional relationship between the Ministry of Health and the Ministry of (higher) Education (13, 33), that have shared responsibility for health sector education and/or accreditation. Bdaiwi et al. (2020) reported that in Syria, the de-facto autonomy of the Kurdish and rebel held areas spurred a fragmentation of HRH governance functions like regional health care workforce planning (18). Several papers reported on regulatory frameworks for HCWs that faced challenges. Mushalugalusa et al. (2020) reported that in the DRC, regulation of health professionals was only practised in stable parts of the system as supervision and field visits were not compromised by security issues, with HCWs in conflict affected settings being left out (31). In Nigeria, patent and proprietary medicine vendors – small owner operated drug retailers – provided services that went far beyond the role that was outlined by the pharmacy council of Nigeria (14).

Development partners are often major funders and implementers in conflict zones. Coordination between the national level government and United Nations agencies and other development partners on health, including HRH, can be limited and uneven in CAS, as shown in the case of Nigeria (14). In the most unstable (humanitarian) settings, the de-facto absence of government capacity in the health sector has created a scenario in which INGOs, faith-based organisations and non-profits have taken on increased responsibilities. Risk of parallel services was identified in some papers, as was donor rigidity in approach when more flexibility is required (14, 18, 32, 34).

We found that HRH policy development capacity was low, and implementation (and financing) of existing policies was constrained. In DRC, the Ministry of Public Health developed national strategies to attract and retain different categories of HCWs. Strategies included improving living and working conditions, increasing financial incentives, registration of health workers, and introducing rural placement allowances.

However, many of these strategies were either not implemented or only poorly implemented. The Provincial Health Office had limited control over the recruitment and deployment of health workers, which may be partly attributed to the HRH information system being unreliable. This resulted in inequitable distribution of HCWs across the districts (16, 17). Policy implementation gaps were also reported in a study from Burkina Faso (35), where implementation of a national-level policy on free prenatal consultations and provisions for obstetric emergencies was launched before the technical management and communication plan was ready. Not only did this prove problematic for attaining the policy goals, it also put HCWs in a difficult position where they were expected by patients to deliver on the promises
of the policy, without the funding and resources to provide services. Amodu et al. (2021) reported on low budgetary provisions for health in conflict affected areas of Northern Nigeria. The same study also highlighted a gap between budget allocation and actual release of the budget in CAS. Funding for internally displaced persons (IDP)-related (health) concerns was lower than expected and insufficient to carry out the numerous activities that implementing agencies were saddled up with. The study identified links to “[broad]er issues with trust, equity, transparency in the government and health system especially where it concerns funding management.” (14).

Non-state conflict actors, such as insurgent groups or rebel movements, are an actor group unique to CAS and bring with them serious ramifications for the health workforce. Bdaiwi et al. (2020) report that in Syria, both opposition-held as well as ISIS-held areas saw significant focus on attracting/retaining HCWs within a provisional health system (18). Another example is the case of Myanmar’s ethnic regions, which saw the emergence of a parallel, overlapping health systems model where national and more localised ethnic public models coexisted under a sustained cease-fire. In these regions, ethnic health organisations (EHOs) were the de-facto actors organising the formal health system, though other parallel structures also existed: some facilities from the central level Ministry of Health and Sports, international organisations and private providers. While the EHOs were trusted more than central ministry-led facilities, big concerns about quality issues persisted with regard to training of HCWs, poor financial protection mechanisms, resources and regulation (36).

A few studies reporting on Syria showed that professional associations or expatriate groups took on governance functions in non-government-controlled areas. Various domestic and Syrian expatriate groups were set up to fill in a number of health governance functions no longer provided by the Syrian government, such as coordination of relief efforts. Bdaiwi et al. (2020) highlighted the role of the Syrian Board of Medical Specialists (SBOMS, a body composed of both in-country HCWs and diaspora specialists who had aligned themselves with the Syrian interim government), who actively took on roles beyond those normally taken by professional boards, e.g., the coordination and certification of education programmes in the rebel held territories (18). The dominant presence of non-state actors in Syria, such as NGOs/donors/humanitarians/diaspora has led in some instances to a focus on empowering HCWs, facilitating them to become potential advocates for peace and using health care as a potential avenue for peacebuilding after conflict, as well as emphasising the responsibility of governments to guarantee health worker safety (22, 23). Table 3 presents a summary of main review findings.
Table 3. Summary of main review findings

<table>
<thead>
<tr>
<th>Main elements of the adapted HLM framework</th>
<th>Main review findings</th>
</tr>
</thead>
</table>
| **Education sector**                     | • Conflict resulted in a higher demand for HCWs and sometimes in increased numbers of schools and establishment of new universities, which often provided sub-standard training  
• A lack of, outdated or parallel accreditation mechanisms led to divergence in quality of services delivered by HCWs and non-recognition of trained HCWs  
• The content of existing curricula or training could, in certain cases, be inadequate for preparing HCWs to deliver quality of care in times of conflict  
• The quality of education was compromised by inadequate infrastructure and limited guidance and mentorship of interns |
| **Labour market dynamics: inflows and outflows** | • Limited recruitment and deployment of HCWs was caused by insufficient numbers of graduates or HCWs to meet demand, and limited motivation of potential or current HCWs to work in areas with high insecurity and workload  
• When it proved not possible to recruit specific cadres or types of HCWs, a common policy response was recruitment and deployment of community health workers (CHWs)  
• Conflict often led to the (forced) outflow of HCWs, both in terms of migration to more secure areas within or outside the country and leaving the profession all together  
• Besides insecurity, attrition was also caused by poor living and working conditions and in some cases, tension between locals, regional workers and expatriates  
• High workload and mental health issues among HCWs caused attrition  
• Misdistribution of HCWs was associated with attractiveness of working areas (urban versus rural, stable versus unstable/ in conflict) |
| **Labour market dynamics: performance and motivation** | • In-service training, supervision and continuous professional development (CPD) opportunities were disrupted, leading to inequity in access to these job motivators among HCWs and, potentially, patient safety concerns  
• HCWs often took on tasks and roles that they were not trained for, leading to risks for quality of care and patient and HCW safety |
| Contextual factors affecting HCWs in CAS | • HCWs needed and/or requested more remuneration and other benefits than they were offered, and there was some evidence about unequal payment of HCWs with similar functions, leading to demotivation and reduced performance |
| Contextual factors affecting HCWs in CAS | • Security challenges required adjustments in the organization of and trust in health care, posing a challenging environment for HCWs |
| Contextual factors affecting HCWs in CAS | • Conflict can intensify corruption, which can demotivate HCWs and compromise quality of care |
| Contextual factors affecting HCWs in CAS | • Female health workers may be more vulnerable in conflict areas |
| HRH governance | • There were significant gaps and fragmentation in leadership, HRH governance and regulation at national and regional levels |
| HRH governance | • Development partners’ short timelines of support and specific focus on certain activities or cadres, which might not be in line with government’s priorities, can disrupt HCWF composition over the medium to long term |
| HRH governance | • HRH policy development capacity was low, and implementation (and financing) of existing policies was constrained |
| HRH governance | • Non-state conflict actors, such as insurgent groups or rebel movements, are an actor group unique to CAS and bring with them serious ramifications for the health workforce |
| HRH governance | • A few studies reporting on Syria showed that professional associations or expatriate groups took on governance functions in non-government-controlled areas. |

**Discussion**

The evidence from the different settings and countries presented in this review highlights that conflict causes specific constraints in both the education sector and in the health labour market, and deepens any existing disconnect between those sectors, leading to further weakening HRH in CAS. While the symptoms of these disconnects in the education sector and health labour market bear close resemblance to those in many other LMICs, the unique set of societal drivers of conflict, governance dynamics and institutional constraints in CAS ‘multiply’ negative affects to the health workforce.

Long-term HRH planning efforts in CAS are constrained by a lack of (financial and human) resources, instable institutions with limited capacity (and sometimes willingness) to implement, relatively strong but unpredictable donor influence, data limitations and by the
uncertainties and disconnections between (systems in) geographical areas created by ongoing conflict. While not explicitly discussed in the studies included in this review, health is often not a priority of governments in CAS (37) and countries’ constrained economic situations and increased population movements make long-term planning difficult. Filling immediate service gaps as a short-term approach to health systems relief appears to be a common trait of HRH policies and programmes in CAS. While this makes sense given the contextual challenges and urgency of the situation, it results in a lack of focus on sustaining quality of care and building and sustaining community trust. Short-term or too narrowly focused policy-making also undermines the long-term sustainability and resilience of the health workforce, because HRH policy decisions (especially those focused on training and deploying new cadres, changing skills mix and distribution) have long-term impact and are not easily corrected. Based on our review findings, we discuss a number of considerations for HRH policy-making in CAS.

Implications for HRH policy-making in CAS

HRH policies, programmes and interventions are embedded in, and have an impact on, the political and broader societal context (38, 39). Therefore, HRH policies must take into account the context, including the stage, severity and other dynamics of conflict. Depending on the dynamics of conflict, this highlights the health workforce as visible representatives of the state (requiring protection), and the responsibility of governments to provide access to services to all its citizens (avoiding misdistribution of HCWs between favoured and non-favoured regions). Moreover, the effects of health workforce reforms on larger reconciliation and mid-to-long term reconstruction efforts needs to be considered. As little discussion has taken place on what HRH policy options work ‘best’ in CAS in general, or in specific CAS, feasibility assessments and a policy dialogue on how to best spend available resources are necessary first steps.

One emerging issue from the literature, which goes beyond documenting the challenges in CAS, is the potential to increase ‘value for money’ of HRH investments through strengthening financing and decision-making authority at sub-national levels to facilitate local training, recruitment, and support to HCWs (40). Various studies from different CAS reported examples both of more central-level control, and of more local-level policy development or coordination. The latter model may offer opportunities for improved governance in CAS settings where the national level may be unable or unwilling to act.
Partly as a result of less central-level control, however, this review found parallel systems in education sector as well as in deployment and management of the health workforce in CAS. The policy implications for how governments should deal with the existence of a health workforce controlled by non-state actors are not straightforward. On the one hand, tacit support (e.g., through continuation of certification or access to training) may strengthen the legitimacy of non-state actors through increased capacity to provide services to the population under their control. However on the other hand, active obstruction of HCWs undermines the obligation of the government to protect the right to health of all of its citizens. In the post-conflict period, attention should be paid to harmonizing the regulatory divergence or duplication and promoting integration those HCWs who did not have the ‘right’ qualifications or allegiance (41). A failure to adequately approach this may have implications for community trust in, and access to, services.

Labour markets are dynamic in all countries and contexts, with changing patterns of HCW mobility being an ever-present factor that must be accounted for. In addition, in CAS, labour markets are likely to be more unstable and fractured. The evidence on HCW outflow within and out of CAS highlights the need for improved monitoring to understand variations in HCW mobility patterns between areas regarded as relatively more or less safe. In addition to geographic mobility, there can be sectoral mobility, with HCWs moving to NGO employment if this is perceived to be more attractive (42). A secondary issue related to outmigration is the potential to harness capacity support from HCW diaspora working in other countries (43). The evidence emphasises the need to address retention challenges with a co-ordinated policy response, using a bundle of different policy interventions. A systematic assessment is required to pinpoint which mix of interventions is likely to be most effective at supporting staff retention.

The recently updated WHO Retention guidelines (2021) outline that community support in assuring security, housing and other livelihoods can improve HCWF retention (44). Though little comprehensive evidence is available on this in CAS, the role of community protection to support HCWs to practice safely and remain in CAS seems important to focus on in policy development. Moreover, trust of communities in HCWs is an especially important focus for ensuring access to care (45).

The evidence highlights that the combination of under-resourcing, widespread societal trauma, and the (fear for) security threats facing facilities exacts a heavy toll on HCWs, highlighting the need for investments in mental health support services (46). In addition, the expansion of active monitoring of security incidents involving HCWs and patients’ needs to be supported to ensure perpetrators of violence are held to account (47). Particular attention must be paid
to HCWs from different genders, ethnicities, ages and other intersecting characteristics that may increase vulnerability to violence (54). Further research on this is needed.

Limitations of available workforce data constrain monitoring, planning and policy-making. Whilst this is not unique to CAS, the disruption and fragmentation of existing HRH information systems in CAS should be addressed. Where feasible, labour market analysis, underpinned by surveys of HCWs should be undertaken (48). The provision of digital HRH information systems is often part of donor-led post conflict re-building, and there is a need to ensure that the choice of systems is driven by user needs and policy priorities, and that local capacity to sustain the system is considered, with an emphasis on local “user” involvement during development, and on training of local operatives.

To enhance HCW motivation and performance, the use of technology has been progressing rapidly, accelerated by COVID-19, and needs full consideration within CAS; e.g., m-health; paying staff via mobile phones, internet access as a method of keeping in touch, online continuous professional development and performance appraisal (49-51). However, this review shows that there is little documented evidence on how technology could support HCWs in CAS, which could partly be because of problems with infrastructure and connectivity.

Obviously, investments in the health workforce will not be effective if not accompanied by investments in other elements of the health system. Effective governance is required to effectively implement the best HR interventions and to co-ordinate across the other health system elements. The literature on health systems recovery after conflict often highlights that the immediate post-conflict period provides a unique opportunity for the government and development partners to increase efforts to rebuild health systems within the context of larger peace building efforts. The length, nature and challenges of a specific conflict – in addition to the specifics of the process of conflict resolution – all impact the likelihood and timing of such a window of opportunity (37). The implication for policy and strategy development processes is that this post-conflict opportunity cannot simply be presumed, and a clear understanding of political economy dynamics is required to better identify – and increase the chances of acting on – a window of opportunity. This is also an area that needs further research.

Limitations and considerations for further research
The main limitation of the review is the relative lack of good quality, broad based and policy relevant evidence. Generally, research gaps exist related to all elements of the health labour market in CAS, and context specific dynamics of conflict and their interaction with the socio-cultural context and labour market further complicate relevance of findings across settings.
But an even more important research gap is an absence of evidence taking a 'long-term and broad-based view' on the HLM dynamics in CAS. Most studies take a narrower entry point, and have a shorter horizon for their examination, such as a specific aspect of retention of one cadre in a localised area or region. The broader HLM dynamics and the connections between different labour market characteristics are usually not considered. Political economy analysis and related approaches could help to build a better understanding of power dynamics between stakeholders influencing these dynamics – and contextualise current market failures. Furthermore, studies that focus on HCWs in CAS usually focus on those workers who have stayed, not those who have left. The evidence available may therefore not fully represent considerations relevant for all HCWs, which in turn has implications for developing effective HRH policies. Moreover, there is a scarcity of evidence adequately considering gender and equity considerations in the health workforce in general (54), but this is even more so the case for CAS. In addition, this review did not yield evidence on the impact of COVID-19, but the implications of the pandemic on HRH in CAS are important to consider. Some initial evidence describes enormous destabilising effects of the pandemic on health services in Yemen, where a perfect storm of intensifying conflict, a cholera epidemic linked to lack of services and COVID-19 threaten systems collapse (52). Whether COVID-19 becomes a new dimension of fragility or a test of the resilience of a health workforce already under pressure is something which needs further exploration. Future research could also consider including (quality assessed) grey literature.

**Conclusion**

Against a backdrop of growing conflict across the world, this scoping review has identified progress in generating evidence on HRH aspects of health and care systems in CAS. It has also identified continued gaps in knowledge, which limit the scope to identify and implement evidence-based policies. Whilst the HRH challenges may resemble those in many other LMICs, the unique set of societal drivers of conflict, governance dynamics and institutional constraints in CAS ‘multiply’ negative affects to the health workforce. Moreover, active conflict brings a set of additional HRH challenges, including the targeting of HCWs by combatants and effects of widespread societal trauma on the mental health of HCWs. HRH policies, programmes and interventions must be aligned with the political and broader societal context if they are to be successful. The post-conflict situation may present opportunities for improvement in HRH, but a clear understanding of political economy dynamics is required to better act on any such a window of opportunity.
**Funding**
This paper is an output of the Libya Health Sector Support Grant (P163565) program between the WB and Libya.

**Acknowledgements**
This paper is an output of the Libya Health Sector Support Grant (P163565) program between the WB and Libya. Christopher H. Herbst, Mohini Kak, (WB) task led the overall work program. The team would also like to thank World Bank peer reviewers, Mickey Chopra (Lead Health Specialist) and Aarushi Bhatnagar (Economist). Moreover, the team would like to thank Jo Raven and Tim Martineau from LSTM for their critical reflections.

**Authors’ contributions**
Conception and design: OO, JB, MD
Acquisition of data: OO, MD, JB
Analysis and interpretation of data: OO, MK, JB MD
Drafting of Manuscript: OO, MK, JB
Critical revision of the manuscript for important intellectual content: MD, MH, CH
Obtaining funding: CH
Administrative, technical or material support: MH
Supervision: CH

**References**


19. Buny AA. Exploring factors influencing the decisions of professional aid workers to leave or stay in the humanitarian and development NGOs operating in War-torn societies: A Lesson from South Sudan. Journal of Contemporary Scientific Research (ISSN (Online) 2209-0142).3(10).
44. World Health Organization. WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas. WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas 2021.


54. WHO, 20xx; DELIVERED BY WOMEN, LED BY MEN: A GENDER AND EQUITY ANALYSIS OF THE GLOBAL HEALTH AND SOCIAL WORKFORCE

Annex 1 – Search string PubMed
((((((((((((((((human resources for health[Title/Abstract])) AND (Afghanistan[Title/Abstract])) OR (Libya[Title/Abstract])) OR (Somalia[Title/Abstract])) OR (Syria[Title/Abstract])) OR (Burkina Faso[Title/Abstract])) OR (Cameroon[Title/Abstract])) OR (Central African Republic[Title/Abstract])) OR (Chad[Title/Abstract])) OR (Democratic Republic of Congo[Title/Abstract])) OR (Iraq[Title/Abstract])) OR (Mali[Title/Abstract])) OR (Mozambique[Title/Abstract])) OR (Myanmar[Title/Abstract])) OR (Niger[Title/Abstract])) OR (Nigeria[Title/Abstract])) OR (South Sudan[Title/Abstract])) OR (Yemen[Title/Abstract]))