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Review

Health-care worker retention in post-conflict settings: a systematic literature review

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Abstract

Conflicts affect health-care systems not only during but also well beyond periods of violence and immediate crises by draining resources, destroying infrastructure and perpetrating human resource shortages. Improving health-care worker (HCW) retention is critical to limiting the strain placed on health systems already facing infrastructure and financial challenges. We reviewed the evidence on the retention of HCWs in fragile, conflict-affected and post-conflict settings and evaluated strategies and their likely success in improving retention and reducing attrition. We conducted a systematic review of studies, following PRISMA guidelines. Included studies (1) described a context that is post-conflict, conflict-affected or was transformed by war or a crisis; (2) examined the retention of HCWs; (3) were available in English, Spanish or French and (4) were published between 1 January 2000 and 25 April 2021. We identified 410 articles, of which 25 studies, representing 17 countries, met the inclusion criteria. Most of the studies (22 out of 25) used observational study designs and qualitative methods to conduct research. Three studies were literature reviews. This review observed four main themes: migration intention, return migration, work experiences and conditions of service and deployment policies. Using these themes, we identify a consolidated list of six push and pull factors contributing to HCW attrition in fragile, conflict-affected and post-conflict settings. The findings suggest that adopting policies that focus on improving financial incentives, providing professional development opportunities, establishing flexibility and identifying staff with strong community links may ameliorate workforce attrition.

Keywords: Health-care workers, conflict-affected areas, retention, attrition

Key messages

- Improving health-care worker retention is critical to limiting the strain placed on health systems already facing infrastructure and financial challenges.
- This systematic review observed four main themes: migration intention, return migration, work experiences and conditions of service and deployment policies. Using these themes, we identify a consolidated list of six push and pull factors impacting health-care worker attrition in fragile, conflict-affected and post-conflict settings. The findings, which can be categorized into push and pull factors impacting health-care worker attrition, suggest that adopting policies that focus on improving financial incentives, providing professional development opportunities, establishing flexibility and identifying staff with strong community links may ameliorate workforce attrition.

Introduction

Conflicts, especially protracted conflicts, affect multiple issue areas—including economic and health areas—not only during but also well beyond the period of violence and immediate crises and emergencies. Conflict-affected populations face many key health-care challenges, including limited access to care, difficulty resourcing care and swelling incidence, as well as the magnitude of non-communicable disease and mental illness (Thompson and Kapila, 2018). The destruction of infrastructure and violence-induced human resource shortages often lead to severe and lasting damage to health-care systems. Such settings lack standardized packages of services and face a loss of public trust (Thompson and Kapila, 2018). The need for health system strengthening to continue to provide care and serve populations in these settings is only heightened given the burden of trauma—both physical and mental—that accompanies periods of violence and conflict.

Health-care workers (HCWs) are individuals with formal training or experience who provide care and services to the sick or ailing. These skilled workers include doctors, nurses, midwives, paramedics, medical or nursing students and laboratory technicians. These professionals play a critical role in health system functions and the delivery of health-care interventions. However, the distribution and supply of HCWs are uneven around the world, with dreadful need-based shortages in fragile and conflict-affected regions (Bhatt *et al.*, 2012; World Health Organization, 2016). Furthermore, HCWs are migrating internationally, and a loss of skilled labour to migration, also known as 'brain drain', depletes the capacity of health-care systems to deliver care (Stilwell *et al.*, 2003).

The factors that contribute to individual reasons for migration are complex and interact with both internal and external pressures. The socioecological framework considers the dynamic integrations between environmental and personal factors in understanding how one level may affect another and in turn affect the individual. The push–pull theory of migration posed by Lee (1966) argues that factors that enter into the decision to migrate can be categorized as either push or pull (Lee, 1966). Push factors are conditions that encourage individuals to leave a place or activity, while pull factors include elements that attract an individual to a location of activity. Understanding how these factors interact to influence the choice of migration is essential to determining adequate policies to curb the attritions of highly skilled workers.

Improving retention—especially within-country retention (as opposed to simply rural retention)—is critical to limiting the strain placed on health systems already faced with infrastructure and financial challenges in a post-conflict and fragile setting—when HCWs may be more likely to consider leaving a country (rather than relocating within a country). Reducing the attrition of HCWs improves patient care and minimizes costs associated with replacing employees—both of which contribute to an overall higher quality of health care (Serour, 2009; Buchan, 2010). Health needs in conflict-affected and post-conflict settings cannot be met without an adequate health workforce (Chandran and Ivanovic, 2016). The causes and solutions for reducing attrition are complex; however, these causes and solutions, as well as related push and pull factors, can be addressed by looking at the elements of the operating environment, ranging from context to policies and support systems (Egger *et al.*, 2000). Sophisticated human resources for health policy development and implementation, which incorporate a robust body of evidence, could address these various factors.

There exist many published studies on HCW retention in rural areas and low- and middle-income settings, but there is a lack of evidence related to retention within country (as opposed to retention in rural areas) and in fragile and post-conflict settings (Mbemba *et al.*, 2016; Haskins *et al.*, 2017; Kiwanuka *et al.*, 2017; Khalil and Alameddine, 2020; Kolie *et al.*, 2021). Understanding HCW retention—including push and pull factors related to migration—in fragile and post-conflict settings may contribute to strategic policy planning during times of rehabilitation and reconstruction. Through a systematic literature review approach, this study aims to determine the availability of evidence related to the retention of HCWs in fragile and post-conflict settings and evaluate what actions might be successful in improving retention and reducing attrition.

Table 1. The key definitions used in a systematic review of health-care worker retention research in post-conflict settings, published 2000–20

Term	Definition
Health-care worker (HCW)	Any individual providing care and services, either directly or indirectly, to the sick or ailing based on formal training or experience.
Retention	Practices, policies and overall strategies to retain staff, reduce attrition and prevent attrition.
Post-conflict	A transitional period, characterized by destabilization, where past war or conflict exists on one end and a future period of peace on the other, often most associated with a period of rebuilding and reconstruction.

Methods

Study design

A systematic literature review was performed to identify relevant articles on HCW retention in post-conflict settings. OVID MedLine, Web of Science, Embase, Scopus, CINHAL and Google Scholar databases were searched in April 2021. The search strategy used context-specific keywords—'post-conflict', 'post war' and 'fragile state'—in combination with topic-related keywords related to health-care personnel and retention. The full search strategy, combining relevant keywords using Boolean operators, can be found in Supplementary 1.

Eligibility criteria

Studies were eligible for inclusion if they described the retention of HCWs in a fragile or post-conflict setting; were available in English, Spanish or French; and were published between 1 January 2000 and 25 April 2021. We restricted our review to the most recent two decades to capture data best equipped to inform contemporary decision-making. Conference abstracts and posters were not included in our review. Because of the sparsity of data, no articles were excluded based on the study design. The key terms (1) 'health care worker', (2) 'retention' and (3) 'post-conflict' were critically defined, and the definitions were closely followed in determining the eligibility of studies (Table 1). However, as the transition between war and peace can be difficult to pinpoint and there is no formally defined time frame that determines post-conflict, we relied on explicit verbal identifiers from study authors to include or exclude papers on this criteria. For example, studies were excluded from the review if the study author(s) did not explicitly include details of conflict, crisis or war as a feature of the context of the study; such studies were excluded even when the reviewers were aware that conflict had existed in the area. Unpaid caregivers—who often provide care and services to sick or ailing individuals—were not considered HCWs because of their lack of formal training and experience, and therefore were not included in our review. Furthermore, to be included, studies needed to address issues related to retaining HCWs within a fragile and conflict-affected country and reducing attrition and migration abroad; studies that examined only retention in rural and

urban settings for issues of internal migration were excluded. Consequently, studies that evaluated migration intention and international brain drain were included in our review, while studies that focused exclusively on internal migration or strategies to retain staff in rural areas were not included. Furthermore, we considered the study to be about a post-conflict setting based on the country of origin of the HCWs. For example, Mody (2018) documented post-war British medical graduates who had migrated to Australia (Mody, 2018). The country in which the HCWs settled, Australia, would not be considered a post-conflict setting at the time; however, the graduates experienced pull and push factors, which led to their migration away from Britain during a post-conflict period after the Second World War. Therefore, the study was considered in our review.

Duplicates were removed using Microsoft Excel version 16.51 (Microsoft Corporation, Redmond, Washington, USA) Microsoft Corp (2019). Following PRISMA guidelines, two reviewers first independently assessed studies for eligibility by title and abstract, removing those that did not meet the inclusion criteria. Full texts of the remaining articles were then retrieved and screened again using the inclusion criteria. Reviewers checked all within-publication references to identify additional sources. As a desk-based review, no ethical approval was sought.

Data extraction and analysis

Data were extracted from included full-text articles using a predefined 13-item extraction sheet that was pre-tested among the review team by a single reviewer. Details from the studies, including country(s), author(s), year of publication, aims, population, type of HCW, study design, study results and conflict-related attrition, were recorded in Microsoft Excel version 16.51 Microsoft Corp (2019).

Each of the two reviewers conducted a descriptive analysis of key characteristics of the included publications by identifying patterns based on key words and text related to HCW retention. Consensus was reached on key themes through dialogue between both reviewers. Themes were then grouped within a socioecological model to consider the interplay between intrapersonal, organizational and policy and community level themes and how factors on one level influence factors on another. Finally, the reviewers used a push and pull factor framework to categorize the drivers of HCW migration identified in our review. High heterogeneity between the type of interventions, duration and study design methodology of included studies, as well as a lack of quantitative data from the studies, did not allow for statistical meta-analysis; therefore, we conducted a narrative synthesis.

Limitations

The potential for settings to lapse and relapse into situations of conflict makes the term 'post-conflict' limiting. The lack of a standard definition or the ability to pinpoint the exact moment at which a setting is fragile, post-conflict, during conflict or recovered means that other countries may have been included if a different set of criteria were applied to the review. To ensure consistency and transparency, we defined the scope of our search by following the strict definition indicated in Table 1. Given the heterogeneity of the included studies, we were unable to employ statistical methods to evaluate the results. However, this review provides an up-to-date summary of study findings that examined HCWs' retention in fragile and post-conflict settings. This review did not exclude studies based on the quality of methodology and study design. The findings showcase a range of protocols, policies and strategies deployed in post-conflict settings, but evaluation of the effectiveness of interventions should be systematically documented and evaluated in future studies.

Results

A total of 410 papers were identified in our search (Figure 1); 97 duplicates were removed. During screening, 238 papers were excluded based on title and abstract review. Full-text screening for eligibility was conducted on 75 full-text articles. Two papers were not available in any included languages, five were available only as a book or abstract, 23 articles were not related to retention specifically, 17 were not conducted in post-conflict settings, six discussed only rural vs urban retention and two were not specific to HCWs. Snowball methods were used to search reference lists for all articles included after full-text review, adding five articles. The process resulted in 25 articles that were included in our final review.

Study characteristics

In the final synthesis, 17 countries were represented. Uganda was reported with the highest frequency ($n = 10$), followed by Zimbabwe ($n = 6$), Sierra Leone ($n = 5$) and Cambodia ($n = 4$). Four articles reported on the same multisite research consortium that covered Uganda, Zimbabwe, Cambodia and Sierra Leone. The sub-Saharan African region was the most highly represented, with 18 articles featuring data from at least one country in the region. Data from the Middle East-North African region was represented in five articles. Six articles discussed HCW retention in the post-conflict setting in Asia, four articles are from the East Asian Pacific region and two articles are from the South Asian region.

Nearly all studies used observational study designs and qualitative methods to conduct research ($n = 22$). Three of the 25 included articles were literature reviews (Roome *et al.*, 2014; Miyake *et al.*, 2017; Bdaiwi *et al.*, 2020). Six studies included in our final review used life history or key informant interviewing techniques exclusively (Finlay *et al.*, 2011; Namakula and Witter, 2014a; Namakula *et al.*, 2016; Martineau *et al.*, 2017; Witter *et al.*, 2018; Baba *et al.*, 2020)—one of these utilized a combination of interviewing and focus groups (Akl *et al.*, 2007) and another employed a case study design (Varpilah *et al.*, 2011). Eight of the 25 articles used mixed method efforts that triangulated interviews with a document or records review (Wood *et al.*, 2013; Chirwa *et al.*, 2014; Witter *et al.*, 2016; 2017c; 2017d; Mody, 2018; Mangwi Ayiasi *et al.*, 2019; Mashange *et al.*, 2019). Five studies utilized survey methodologies (Nguyen *et al.*, 2008; Hagopian *et al.*, 2009; Witter *et al.*, 2016; 2017c; 2017d) and four studies used routine human resource data for analysis (Akl *et al.*, 2008; Witter *et al.*, 2016; 2017c; 2017d).

Many of the included studies ($n = 15$) assessed a variety of cadres, although three studies focused exclusively on midwives, three exclusively on medical doctors, two on nursing or medical students, one on nurses and one on mental health professionals. In one instance, health planners and managers were

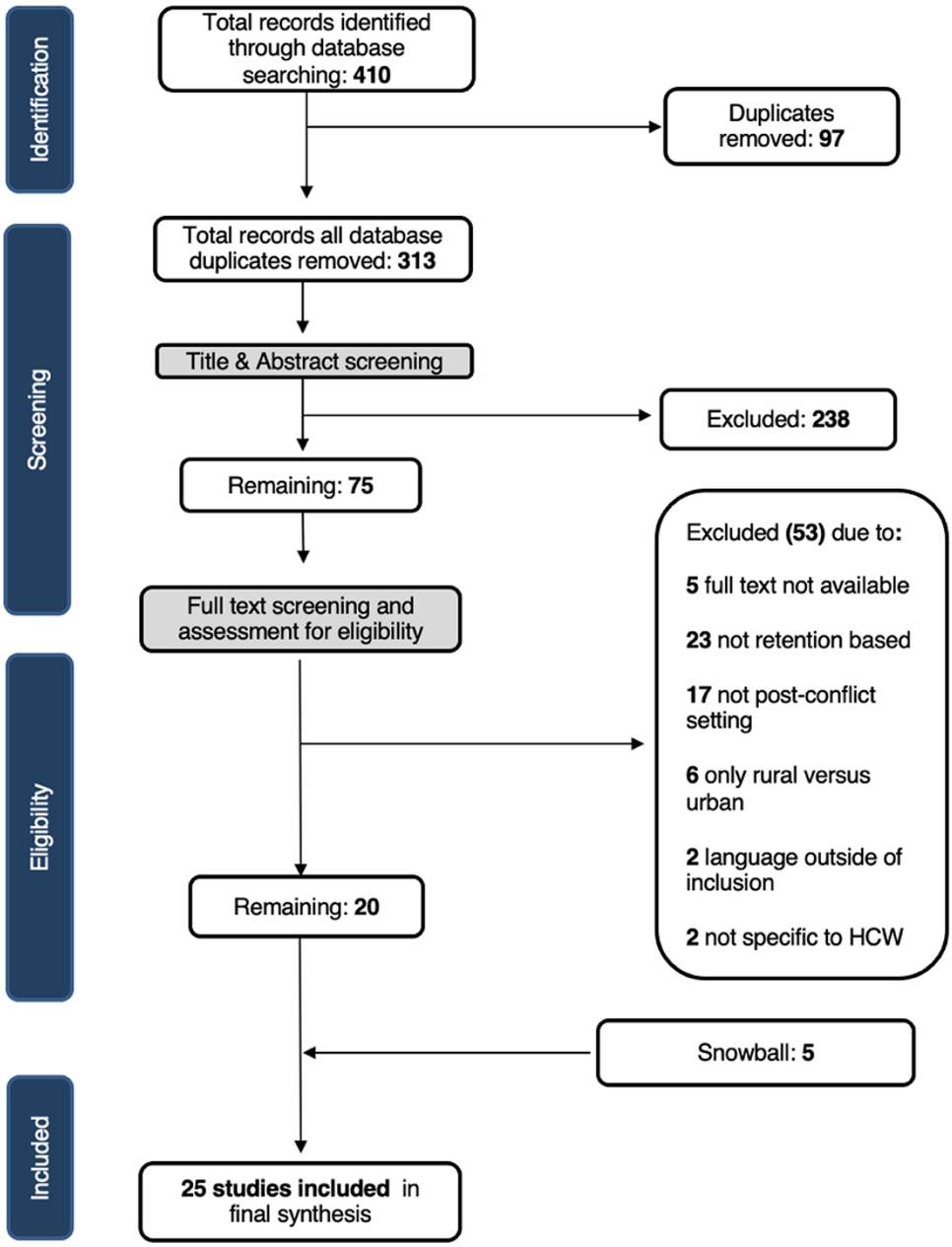

Figure 1. PRISMA diagram of included studies

interviewed to understand policies supporting health workers. Details are shown in Table 2.

Issues covered in the included studies involved a range of topics that fall into four main themes. We categorized each theme within a socioecological framework to better recognize the interrelated levels, which the literature highlighted as influencing retention (see Figure 2). The most micro-level is the intrapersonal level, which includes the themes of migration intention and return migration. The second area is the organizational level, which includes the themes of work experiences and conditions of service. The broadest area of the framework is the policy and community level, which includes the theme of deployment policies. Further details of the results reported for each theme are provided in Table 3.

Intrapersonal factors

Migration intention

Ten studies sought to better understand the migration intentions of HCWs in post-conflict settings (Akl *et al.*, 2007; Nguyen *et al.*, 2008; Hagopian *et al.*, 2009; Wood *et al.*, 2013; Namakula and Witter, 2014b; Namakula *et al.*, 2016; Witter *et al.*, 2017c; 2018; Mody, 2018; Okolo and Iruo, 2021). Primarily, studies oriented their research approach to look for push factors, researching the motivations behind HCWs with plans or intention to migrate or who had already migrated to another country. A wide range of research methodologies were employed in these studies, including quantitative survey data analysis, life histories, case studies, individual interviews and focus group interviews.

Table 2. Papers included in a systematic review of health-care worker retention research in post-conflict settings, published 2000–20

Study title	Author (year)	Country origin of data	Data collection strategy	Type of health-care worker	Sample size
Why are you draining your brain? Factors underlying decisions of graduating Lebanese medical students to migrate	Akl *et al.* (2007)	Lebanon	Interviews and focus groups	Medical students	23
Did the post war repatriation of Lebanese physicians drive recent Lebanese medical graduates to emigrate? An observational study	Akl *et al.* (2008)	Lebanon	Routine HR data	Medical graduates and physicians	10 918
'Being a midwife is being prepared to help women in very difficult conditions': midwives' experiences of working in the rural and fragile settings of Ituri Province, Democratic Republic of Congo	Baba *et al.* (2020)	Democratic Republic of Congo	Interviews	Midwives	32 Life history interviews and 22 focus group participants
Challenges of providing health-care worker education and training in protracted conflict: a focus on non-government controlled areas in north west Syria	Bdaiwi *et al.* (2020)	Syria	Literature review	Various (both non-physicians and physicians)	N/A
Understanding health worker incentives in post-crisis settings: policies to attract and retain health workers in rural areas in Zimbabwe since 1997, a document review	Chirwa *et al.* (2014)	Zimbabwe	Document review		76
Rehabilitation services in Benghazi, Libya: an organizational case study	El Sahly and Cusick (2016)	Libya	Case study	Nursing staff, physical therapists, prosthetic technicians and administrative staff	72
'Garang's seeds': influences on the return of Sudanese-Canadian refugee physicians to post-conflict South Sudan	Finlay *et al.* (2011) Baba *et al.* (2020)	South Sudan	Interviews	Medical doctors	15
Job Satisfaction and morale in the Ugandan Health Workforce: the Ministry of Health must focus on ways to keep health care workers from leaving their jobs—or leaving the country altogether	Hagopian *et al.* (2009)	Uganda	Survey	Doctors, nurses, allied health professionals and pharmacy staff	641
Perceived determinants of brain drain among mental health care professionals in specialist health care facilities in Benin City	Okolo & Iruo (2021)	Nigeria	Survey	Mental health-care professionals in specialist health-care facilities	371
Posting policies don't change because there is peace or war: the staff deployment challenges for two large health employers during and after conflict in Northern Uganda	Mangwi *et al.* (2019)	Uganda	Interviews	Doctors, clinical officers, nurses and midwives	58 Interviews
Leaving no one behind: lessons on rebuilding health systems in conflict- and crisis-affected states	Martineau *et al.* (2017)	Uganda, Zimbabwe, Cambodia and Sierra Leone	Interviews		N/A
Flexibility of deployment: challenges and policy options for retaining health workers during crisis in Zimbabwe	Mashange *et al.* (2019)	Zimbabwe	Document review and key informant interviews	Various	76 Documents and 17 key informant interviews
Community midwifery initiatives in fragile and conflict-affected countries: a scoping review of approaches from recruitment to retention	Miyake *et al.* (2017)	Sudan, Afghanistan, Mali, Yemen, South Sudan and Somalia	Literature review	Community midwives	23
Revisiting post-war British medical migration: a case study of Bristol medical graduates in Australia	Mody (2018)	England	Mixed methods	Doctors	16

(continued)

Table 2. (Continued)

Study title	Author (year)	Country origin of data	Data collection strategy	Type of health-care worker	Sample size
Policies to attract and retain health workers in Northern Uganda during and after conflict: findings of key informant interviews	Namakula and Witter (2014b)	Uganda	Interviews	Health planners, HR managers, representatives of professional associations, faith based orgs and development partners conducting activities	25
Health worker experiences of and movement between public and private not-for-profit sectors-findings from post-conflict Northern Uganda	Namakula *et al.* (2016)	Uganda	Interviews	Clinical officers, nurses, nursing assistants, midwives and others	26
Living through conflict and post-conflict: experiences of health workers in Northern Uganda and lessons for people-centred health systems	Namakula and Witter (2014a)	Uganda	Interviews	Mid-level health cadres	26
Intent to migrate among nursing students in Uganda: measures of the brain drain in the next generation of health professionals	Nguyen *et al.* (2008)	Uganda	Survey	Nursing students	158
Human resource management in post-conflict health systems: review of research and knowledge gaps	Roome *et al.* (2014)	N/A	Literature review		56 Publications
Rebuilding human resources for health: a case study from Liberia	Varpilah *et al.* (2011)	Liberia	Case Study	Nurses	N/A
The free health care initiative: how has it affected health workers in Sierra Leone?	Witter *et al.* (2016)	Sierra Leone	Routine HR data and survey	Maternal and Child Health Aide, State Enrolled Community Health Nurse, Environmental Health Officer, Community Health Assistant, Community Health Officer (CHO), State Registered Nurse, midwives, pharmacists, laboratory technicians and doctors	23 Life histories, 23 key informant interviews and 312 survey responses
How do health workers experience and cope with shocks? Learning from four fragile and conflict-affected health systems in Uganda, Sierra Leone, Zimbabwe and Cambodia	Witter *et al.* (2017d)	Uganda, Sierra Leone, Cambodia and Zimbabwe	Routine HR data and survey	Doctors, midwives, nurses, medical officers, CHWs/CHOs, medical assistant, nursing assistants and environmental health practitioners	128 In-depth interviews
The gendered health workforce: mixed methods analysis from four fragile and post-conflict contexts	Witter *et al.* (2017c)	Uganda, Sierra Leone, Cambodia and Zimbabwe	Routine HR data and survey	Doctors, midwives, nurses, medical officers, CHWs/CHOs, medical assistant, nursing assistants and environmental health practitioners	95 Key informant interviews, 102 in-depth interviews and 537 surveys
Why do people become health workers? Analysis from life histories in 4 post-conflict and post-crisis countries	Witter *et al.* (2018)	Uganda, Sierra Leone, Cambodia and Zimbabwe	Interviews	Doctors, midwives, nurses, medical officers, CHWs/CHOs, medical assistant, nursing assistants and environmental health practitioners	103
Factors influencing the retention of midwives in the public sector in Afghanistan: a qualitative assessment of midwives in eight provinces	Wood *et al.* (2013) Chirwa *et al.* (2014)	Afghanistan	Interviews and focus groups	Midwives	53 Interviews and 38 focus group participants

Papers retrieved through a literature search strategy described by Lin *et al.* (2022).

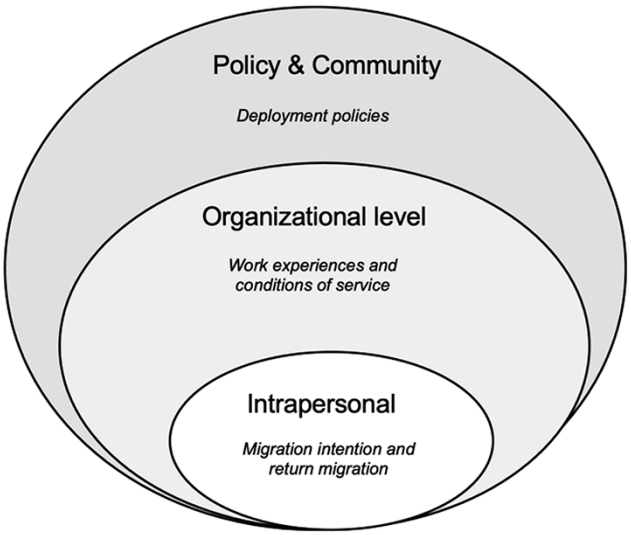

Figure 2. Socioecological framework of HCW retention
Source: Adapted from Urie Bronfenbrenner's Ecology of Human Development: Experiments by Nature and Design (Bronfenbrenner, 1979).

Surveys were used to better understand the determinants of brain drain among mental health professionals in Benin (Okolo and Iruo, 2021). The study analysed survey data quantitatively and found that migration intentions are statistically and significantly associated with conditions of service, professional development opportunities and foreign technology. The authors draw from their conclusions in Benin and suggest that improved conditions of service and other incentives may improve the retention of mental health-care specialists.

Interviewing and focus groups were the primary techniques used to elicit information from HCWs who were working in conflict or post-conflict systems and were considering the opportunity to migrate. Specific subgroups of HCWs were interviewed, such as midwives in Afghanistan (Wood *et al.*, 2013), nursing students in Uganda (Nguyen *et al.*, 2008) and mental health professionals in Benin (Okolo and Iruo, 2021). Hagopian (2009) evaluated HCWs' motivation and intention to stay in current facilities in Uganda and found that 26% of respondents would like to leave their jobs soon, with 11% of that group desiring to leave Uganda and the health sector entirely (4%) (Hagopian *et al.*, 2009). The author concluded that active involvement in the facility, manageable workloads, flexibility in personal life and work balance and better opportunities for promotion were factors that reduced the odds of leaving.

Namakula *et al.* (2016) sought to understand factors for HCWs who had moved between public and private not-for-profit sectors (Namakula *et al.*, 2016). The authors found that the private not-for-profit sector was better able to provide support, offered higher-quality training experience and functioned more effectively during conflict; however, the public sector offered a better package post-conflict. This difference between the private not-for-profit sector and the public sector provided a preliminary explanation for why HCWs move from the private not-for-profit sector to the public sector post-conflict. The pattern highlighted by Namakula *et al.* is an important one to consider from a health system strengthening perspective (e.g. how to fund and/or coordinate health systems in different sectors). Akl (2007) assessed the determinants of Lebanese medical students to train abroad and concluded that civil instability and a need to gain competitive advantage in the oversaturated labour market in Lebanon were the chief motivators to move abroad (Akl *et al.*, 2007). In a case study examining the reason that British medical graduates migrated to Australia during the post–World War II era, the author found that the challenges associated with the conditions of the early National Health Services (NHS) in the United Kingdom drove doctors to migrate to another country, where their formal training and experience were valued (Mody, 2018).

Four of the eight studies took an alternative approach and identified 'positive deviants', or individuals who specifically chose to stay in service during challenging times. Two articles from the same multisite study gathered data from interviews of positive deviants in Uganda, Sierra Leone, Cambodia and Zimbabwe (Namakula and Witter, 2014a; Witter *et al.*, 2018). Common reasons to remain in a post-conflict setting included a personal calling to the work, personal connections and community support and appreciation, underlining the importance of attracting HCWs with local social ties to improve retention. In addition, effective working conditions—including good leadership and communication, regular and adequate pay and employment benefits, formal promotions and the opportunity to learn and develop new skills—were noted as motivators to remain in service.

Witter *et al.* (2017c) found that the influence of shocks and coping strategies are similar between conflict/post-conflict and epidemic context and that the health-care workforce who continued to work through conflict were typically female and of mid- and lower-level cadres. Concomitantly, retaining female workers in the least-developed areas with limited road connections posed a challenge because of safety risks (Witter *et al.*, 2017c).

Return migration

Only two of the 25 studies assessed the flipside of these labour movements to better understand the drivers of HCW populations who return to work in post-conflict health systems (Akl *et al.*, 2008; Finlay *et al.*, 2011). One study evaluated the effect of repatriating Lebanese physicians educated abroad on the migration of recent graduates. The study identified that the high number of returning Lebanese physicians who were trained abroad was associated with an increased volume in out-migration of recent Lebanese medical graduates (Akl *et al.*, 2008). Factors motivating the return of Sudanese physicians were the desire to reunite with family, contribute to rebuilding the country, repay and honour those left behind and fulfil a desire to practise medicine again in the case where accreditation abroad had not been gained (Finlay *et al.*, 2011). The return of migrants consequently oversaturates the health labour market, driving more recent graduates to migrate abroad.

Organizational factors

Work experiences and conditions of service

Eight studies explored the working experience and challenges of HCWs (Varpilah *et al.*, 2011; Roome *et al.*, 2014; El Sahly and Cusick, 2016; Martineau *et al.*, 2017; Miyake *et al.*, 2017; Witter *et al.*, 2017d; Baba *et al.*, 2020; Bdaiwi *et al.*, 2020). These studies focused on midwives in the Democratic Republic of the Congo (Baba *et al.*, 2020); the adaptive capacity of health staff in Uganda, Sierra Leone, Cambodia

Table 3. Reported results by main themes of a systematic review of health-care worker retention research in post-conflict settings, published between 2000–20

	Theme	Results
INTRAPERSONAL	Migration intention	• 70% Of nursing students express their intention to emigrate and identify financial renumeration as the most important factor for that intention (Hagopian *et al.*, 2009).
	Rationale for leaving	• Reasons to leave include lack of opportunity for higher income, desire to increase quality of life for family, dissatisfaction with general practice and reluctance to wait for consultant posts (Kiwanuka *et al.*, 2017). • Fear of civil instability and need to gain competitive advantage in oversaturated job market play role in decision to migrate (Witter *et al.*, 2018). • Reasons to leave include low salary, lack of continuing education, being overburdened and poor or absent equipment in health facilities (Chirwa *et al.*, 2014). • Significant relationship is found between condition of service, professional development and foreign development and migration intentions (Namakula and Witter, 2014b). • Perceived better benefits, better job security and public incentives, more flexible leave entitlement and dual practice rules contributed to shift from private not-for-profit to public sector (Namakula and Witter, 2014a).
	Rationale for staying in service	• Reasons to stay include lower importance of salary to the HCW, active involvement in facility, manageable workload, flexibility to balance demands of workplace and personal life and better opportunities for promotion. Older respondents are less likely to indicate desire to leave job and doctors most likely to report interest in leaving (Wood *et al.*, 2013). • Reasons to stay include community support, appreciation, effective working conditions, learning/developing skills, formal promotions, employment benefits, good leadership and communication, regular and adequate pay and flexible working (Martineau *et al.*, 2017). • Reasons to stay include personal calling, personal connections, prosocial motivations and local ties (Witter *et al.*, 2017b). • Workforce who lived through conflict and continued to work, usually mid- and lower-level cadres, are heavily female-dominated (Witter *et al.*, 2017d).
	Return migration	• Repatriation of physicians educated abroad contributes to international emigration of recent medical graduates due to an oversaturation of the labour market (Nguyen *et al.*, 2008). • Reuniting with family and completing the 'mission' of contributing to rebuilding the country are key pull factors for return migrants (Baba *et al.*, 2020).
ORGANIZATIONAL	Work experiences	• Workforce attributes of being locally employed, longevity of tenure, lack of qualification mobility and monolingual status may enhance retention (Okolo and Iruo, 2021). • Poor working conditions, including shortages of qualified health workers, lack of equipment supplies and professional support and not receiving monthly salary negatively impact retention (Miyake *et al.*, 2017). • Conflict negatively impacts retention as HCWs afraid to go to work leave the country, or leave posts to seek refuge elsewhere (Witter *et al.*, 2016). • Providing relevant opportunities, accreditation and recognition could lead to retention (Microsoft Corp, 2019).
	Conditions of service	• Health workers are specifically targeted, leaving lasting trauma while also carrying out roles above their station. Human resource management and information systems collapse including the fragmentation of renumeration and incentives packages linked to multiple actors (Finlay *et al.*, 2011). • Insufficient supportive supervision, delayed or insufficient provision of necessary equipment and supplies, poorly functioning referral systems, lack of continuing education opportunities and contested or undervalued professional status negatively impact retention (Roome *et al.*, 2014). • Attacks against health workers and political challenges contribute to the flight of health workers in post-conflict settings (Bdaiwi *et al.*, 2020). • Training opportunities, salary incentives and technical assistance, standardizing NGO salaries to match government pay to prevent outflow and reopening training institutions contributed to increasing the number of nurses and midwives (Akl *et al.*, 2007).
POLICY & COMMUNITY	Deployment policies	• Inflexible, strict, no change in deployment for a long time leads to attrition (Varpilah *et al.*, 2011). • Flexibility in deployment policies improves retention (Mangwi Ayiasi *et al.*, 2019). • Inability to sustain staff formerly employed by NGOs that depart, the inability to retain staff who did not originate from the region, brain drain to nearby nations for attractive salaries, fear that conflict will recur and lack of social amenities for health workers and their families in their current districts or places of work worsens retention. Recruitment and retention of HCWs (doctors and skilled cadres) is a greater challenge than lower cadres (nursing assistants) (Bronfenbrenner, 1979). • Salary uplift contributed to better retention, especially for higher-level staff (Mashange *et al.*, 2019). • Remuneration is the single most important factor influencing health worker's behaviour related to attrition (Witter *et al.*, 2017c).

and Zimbabwe (Witter *et al.*, 2017d) and disability rehabilitation service workers in Libya (El Sahly and Cusick, 2016). These studies found that intrinsic motivations for being an HCW (Baba *et al.*, 2020), being monolingual, having longevity in service (El Sahly and Cusick, 2016) and coping mechanisms such as alternative income-generating strategies and psychosocial support (Witter *et al.*, 2017d) improved retention. Bdaiwi *et al.* (2020) explored the challenges in providing education and training to HCWs in Syria, where conflict has limited training capacities (Bdaiwi *et al.*, 2020). Those authors found that strategic partnerships with international institutions may help provide the relevant opportunities for accreditation and lead to retention. Resource shortages, staff shortages and deteriorating training and management standards were commonly reported across multiple settings (Wood *et al.*, 2013; Miyake *et al.*, 2017; Witter *et al.*, 2017b). These studies underscored the finding that inadequate resources were demotivating factors leading to attrition and that adequate resources and conditions of service are critical for retaining clinical workers during and after conflict.

Four of the eight studies summarized key lessons and successes from existing approaches and interventions to retain HCWs (Varpilah *et al.*, 2011; Roome *et al.*, 2014; Martineau *et al.*, 2017; Miyake *et al.*, 2017). Approaches to community midwifery deployment resulted in additional HCWs, but these additional HCW were reported to have insufficient supportive supervision and lacked necessary equipment, supplies and continuing education opportunities (Miyake *et al.*, 2017). Lack of resources is a demotivating factor that may lead to attrition of the HCWs that were recruited in a conflict-affected setting. Roome *et al.* (2014) summarized published research on human resource management in post-conflict settings and identified attacks against HCWs and political challenges as a significant demotivating factor, contributing to the departure of HCWs from post-conflict settings (Roome *et al.*, 2014). Conversely, on improving retention, the authors found that paid incentives and recruitment from within communities increased retention in five of the six fragile and conflict-affected states studied. These paid incentives include salary, bonuses and resources for training. Similarly, in assessing the success of the *Emergency Human Resources Plan 2007–2011* in Liberia, Varpilah *et al.* (2011) found that increasing and standardizing salaries and opening training institutions attracted workers, prevented the outflow of workers and increased the pool of total workers.

Policy and community factors

Deployment policies

Five studies assessed deployment policies and practices both during and after conflict in Uganda (Namakula and Witter, 2014b; Mangwi Ayiasi *et al.*, 2019), Zimbabwe (Chirwa *et al.*, 2014; Mashange *et al.*, 2019) and Sierra Leone (Namakula *et al.*, 2016). This assessment was primarily conducted through document reviews. One exception is a study in which interviews were conducted with health planners, human resource managers and representatives of professional associations to understand the evolution of policies during and after conflict in Northern Uganda (Namakula and Witter, 2014b). Mangwi Ayiasi *et al.* (2019) investigated deployment policies and practices during and post-conflict in Uganda. The authors found that there was no evidence of directives to change deployment policies during conflict; however, decentralization that commenced during the conflict impacted local government employers. They then conclude that it may not be appropriate to change the deployment policies during or immediately after conflict, but local government should be given the resources and autonomy to adapt in crises situations. Mashange *et al.* (2019) conducted similar work in Zimbabwe before, during and after the crisis (Mangwi Ayiasi *et al.*, 2019; Mashange *et al.*, 2019). The authors documented that during the crisis, the government froze recruitment in all sectors, which then lead to workers deployment. Both teams of authors discovered that a lack of flexibility in the policies is a demotivating factor that negatively affected retention of HCWs. The authors conclude that flexibility and autonomy in implementing policies related to deployment during crisis settings may increase the resilience of the health system and contribute to HCW retention.

Discussion

This study describes and summarizes the body of literature pertaining to HCW retention in post-conflict settings. Despite the growing literature related to human resources for health challenges in post-conflict settings, few studies were found to quantitatively analyse the issue of retention. Identified studies that met the inclusion criteria were primarily qualitative, conducting exploratory interviewing with HCWs to document their views and experiences in post-conflict or fragile settings. This finding no doubt reflects the challenges inherent in conducting systematic, quantitative research in post-conflict settings where there is often a lack of reliable human resource data. Nevertheless, leveraging qualitative research, current studies in the literature allowed this review to emphasize the push and pull factors incentivizing HCWs to migrate as well as strategies to ameliorate attrition and improve retention. These findings may inform policy-making and boost retention.

In a post-conflict setting, it is unsurprising that studies found that HCWs expressed their interest and intention to migrate out of their current role—this came to as many as 70% of nursing students surveyed in Uganda (Nguyen *et al.*, 2008). The literature provides a picture of HCWs' internal state and feelings on issues related to migration, often from their own point of view. For example, Witter *et al.* (2017d) highlighted the feelings of vulnerability and fear of going to work that were experienced by HCWs on a regular basis (Witter *et al.*, 2017d). HCWs also spoke of a lack of amenities for themselves and their families in their current places of work (Namakula and Witter, 2014a). Among the studies that met our inclusion criteria, we also found cadre-specific attrition and retention factors. In Uganda, e.g., doctors were found to be the cadre most likely to report an interest in leaving as compared to other cadres (Namakula and Witter, 2014b). This is logical considering this cadre's highly transferable skill set and higher income. Other studies echoed these findings, reporting that retaining highly skilled cadres (including doctors) posed a greater challenge than retaining lower cadres (Namakula and Witter, 2014b).

Despite the lack of quantitative evidence, findings generated from the current literature allowed us to identify and provide a consolidated list of push and pull factors impacting HCW attrition in post-conflict settings (see Table 4).

Table 4. Pull and pull factors for migration among HCWs identified in a systematic review of health-care worker retention research in post-conflict settings, published 2007–20

Push factors	Pull factors
Fear (Bronfenbrenner, 1979; Finlay *et al.*, 2011; Witter *et al.*, 2016; Martineau *et al.*, 2017; Witter *et al.*, 2017b; Witter *et al.*, 2017d; Witter *et al.*, 2018; Mashange *et al.*, 2019; Bdaiwi *et al.*, 2020)	Remuneration and salary (Bronfenbrenner, 1979; Akl *et al.*, 2007; Hagopian *et al.*, 2009; Namakula and Witter, 2014a; Kiwanuka *et al.*, 2017; Witter *et al.*, 2017c; Bou-Karroum *et al.*, 2020)
Deteriorating work environment (Wood *et al.*, 2013; Chirwa *et al.*, 2014; Roome *et al.*, 2014; Namakula and Witter, 2014b; Kiwanuka *et al.*, 2017)	Licensure, acceptance and respect (Chirwa *et al.*, 2014; Roome *et al.*, 2014; Kiwanuka *et al.*, 2017)
Health labour market demand–based surplus (Nguyen *et al.*, 2008; Namakula and Witter, 2014a)	
Lack of continuing education or skills development opportunities (Akl *et al.*, 2007; Roome *et al.*, 2014; Namakula and Witter, 2014b; Microsoft Corp, 2019)	

Push factors

Fear and insecurity

The negative impact of conflict on HCWs' personal safety, and the subsequent fear that HCWs experienced when going to work, drove many HCWs to leave the health-care job market or their home country. HCWs seek refuge in a manner similar to the populations they serve in conflict-affected settings, evacuating from areas where they feel under siege. However, while 'direct attacks and insecurity' have been cited in the broader literature as a driver of HCW migration (Bou-Karroum *et al.*, 2020), only one of the 25 studies identified direct attacks upon HCWs as a key issue (Roome *et al.*, 2014); the lack of mention may be because insecurity and violence are inherently part of a conflict-affected setting and implicitly assumed to be present in these studies. Our findings indicate that the uncertainty of whether the situation would improve or deteriorate was prevalent in HCWs' decision-making process in general. Fear of instability was a commonly cited reason for decisions to emigrate or train abroad (Akl *et al.*, 2007; Roome *et al.*, 2014). Again, however, insecurity and violence may be the root of the aforementioned uncertainty and fear of instability in these contexts. This study did not obtain evidence to disentangle these elements but reasoned that it is noteworthy to underline their connections.

Deteriorating work environment

Studies highlighted that the conditions in post-conflict settings pushed HCWs to migrate and found that there was a significant relationship between condition of service and intention to migrate (Okolo and Iruo, 2021). Poor or absent equipment in facilities, an overburdening of responsibilities and unmanageable workloads were noted in multiple countries (Hagopian *et al.*, 2009; Wood *et al.*, 2013). One such case is the Bristol HCW group's challenging experience with the post-war NHS in its infancy. The HCWs' frustration with the early NHS incentivized their decision to migrate (Mody, 2018). A lack of necessary equipment and supplies, along with poorly functioning referral, also created an extremely challenging work environment, which led to poor retention of midwives in many conflict-affected countries (Miyake *et al.*, 2017).

Health labour market demand–based surplus

Health labour market demand is the willingness of providers, such as the government or non-governmental organizations (NGOs), to pay for health workers and absorb them into the health system (Bruckner *et al.*, 2016). *Health labour market supply* captures the number of HCWs with the appropriate skills and qualifications who are willing to accept jobs in the health sector (Bruckner *et al.*, 2016). When demand exceeds supply, there is a demand-based shortage of HCWs; when supply exceeds demand, there is a demand-based surplus of HCWs. Numerous studies pointed to an imbalanced health labour market in post-conflict settings. Moving from a period of conflict to one of post-conflict changes structures of employment. Such changes may lead to labour market disequilibrium, generating demand-based surplus of workers in some labour market sectors and demand-based shortages in others. In the health sector, HCWs, employed by NGOs during conflict, are reported to compete for a more limited number of positions available within the country post-conflict, because then many of the NGOs cease to function in that capacity. For example, Namakula and Witter (2014a) found that the departure of NGOs from Northern Uganda resulted in HCWs formally employed by the NGOs exiting the health labour market in Uganda (Namakula and Witter, 2014a). This exit is because the labour market demand for and ability to afford HCWs withered—with the weakened Ugandan economy and health system and the remaining NGOs unable to afford and sustain the health workforce who were hired during the conflict. In another case, in Lebanon, the return of migrants led to a health labour market demand–based surplus and a highly competitive health labour market, driving newer graduates to migrate (Akl *et al.*, 2008). Carefully considering how migration and vacancies may change as countries move beyond periods of conflict is critical to managing HCWs in these settings.

Lack of continuing education or skills development opportunities

Insufficient education and skills development opportunities were indicated as reasons pushing HCWs to leave their posts and migrate to another country. Bdaiwi *et al.* (2020) found that a lack of training and education—at both undergraduate and post-graduate levels for HCWs in northwest Syria—resulting from closures due to conflict contributed to HCWs' desire to leave the country (Bdaiwi *et al.*, 2020). Similarly, community midwives in fragile states perceived the lack of continuing education as a reason to migrate (Miyake *et al.*, 2017). The literature underscores the implication that guaranteeing more training opportunities and accreditation could lead to improved retention. Evidence from Liberia provides support for such a strategy: the Liberian government strategically used funds for training opportunities, technical assistance and reopening training institutions. It credited this strategy for doubling the number of available nurses from 2006 to 2010 (Varpilah *et al.*, 2011).

Pull factors

Remuneration and salary

Attractive salaries in other labour markets were commonly noted as a factor in HCWs' intention to migrate. This attribute is underlined by Namakula and Witter (2014b); HCWs in Uganda found more attractive HCW salaries in neighbouring South Sudan and thus considered migrating (Namakula and Witter, 2014b; Namakula *et al.*, 2016). Mody (2018) found that a lack of opportunity for higher incomes in the United Kingdom is one of the reasons that drove British medical graduates to emigrate to Australia. NGOs functioning in the field help fulfil urgent gaps in the provision of care needs, but the discrepancy between NGO salaries and those in the public sector may incentivize and pull HCWs to migrate both in the country and across borders (Namakula *et al.*, 2016). Consequentially, HCWs may shift from roles in public service to the NGO sector, in roles that do not cover the same clinical functions for local public health services. In Nigeria, Okolo and Iruo (2021) found a significant relationship between foreign development and migration intentions (Okolo and Iruo, 2021).

Licensure, acceptance and respect

One of the documented pull factors is respect and acceptance in terms of licensure to practice in the receiving country. HCWs in post-conflict Britain were attracted to Australia as a receiving country because their training and experience were valued and they were respected in that country. A less competitive labour market was also cited as a reason that pulled HCWs to migrate—with HCWs' perspective that training or moving abroad would help them gain a competitive advantage in tough labour markets (Akl *et al.*, 2007).

Retention strategies

Given the push and pull factors for migrating out of fragile and post-conflict settings, our study spotlights several strategies that may be effective in ameliorating attrition. These strategies include financial incentives such as remuneration and salary increase and other paid incentives, and non-financial incentives such as the intrinsic motivation to provide care for communities, the desire for professional development and support from NGOs to increase stabilization.

Financial incentives

Remuneration and salary increases are noted to incentivize retention (Chirwa *et al.*, 2014). For example, HCWs in the Democratic Republic of the Congo stayed in their roles hoping for better salaries and employment opportunities (Baba *et al.*, 2020). Financial incentive policies, such as the *Emergency Human Resources Plan 2007–2011* in Liberia and the *Free Health Care Initiative* in Sierra Leone, were reported to increase retention, especially among higher-level staff, by providing salary incentives and uplifts and standardizing salaries across sectors (Varpilah *et al.*, 2011; Witter *et al.*, 2016).

Non-financial incentives

Numerous studies documented important incentives that exist beyond those that are salary and financially based. For example, Okolo and Iruo (2021) found a significant relationship between professional development and migration intention (Okolo and Iruo, 2021). Two studies, Witter *et al.* (2017a) and Namakula *et al.* (2016), indicated that formal promotions were highly important to HCWs in Uganda and contributed to retention (Namakula and Witter, 2014b; Namakula *et al.*, 2016). Concomitantly, HCWs were more likely to consider migrating to another country when they felt that opportunities to develop their skills in their home country were limited.

In examining the implementation of deployment policies across various settings, findings showed that policies should be extremely sensitive to the psyche of HCWs; otherwise, these deployment policies may induce attrition. Inflexible and strict policies that have not been amended over long periods of time or adjusted to the needs of HCWs in conflict were found to increase attrition (Mangwi Ayiasi *et al.*, 2019). More specifically, our systematic literature review found evidence to suggest that deployment flexibility may improve retention (Mashange *et al.*, 2019).

A strong association between an individual HCW and that HCW's assigned catchment area and community was found to improve retention. Reasonably, recruiting HCWs from within communities was found to improve retention, as these HCWs are more likely to have strong associations already formed with the assigned community (Miyake *et al.*, 2017). Efforts to recruit and hire HCWs who originated from the community of their designated post may play a critical role in minimizing attrition. Our review focused on formally trained, highly skilled, HCWs to best inform retention-related policies of this cadre and therefore excluded literature specific to community health workers (CHWs). However, it is well documented that in post-conflict settings where human resource shortages are acute, CHWs function as an essential part of health-care delivery. Mechanisms of recruitment and motivation of CHWs in post-conflict settings are unique from that of formally trained HCWs and deserve exclusive attention in future research.

In many studies, recognition for HCWs' work and performance formed an important part of HCWs' desire to remain in a post-conflict setting. Namakula *et al.* (2014) found that community support and recognition were motivators for HCWs in Uganda to stay in service (Namakula and Witter, 2014a). Similarly, another important factor that incentivized HCWs to remain in their health-care posts in a post-conflict setting was the cultivation of the feeling of support for HCWs in the form of supportive supervision (Miyake *et al.*, 2017) through good leadership and communication (Namakula and Witter, 2014a).

The sparsity of data collection systems in post-conflict settings—evident in the disproportionate number of studies that utilized qualitative rather than quantitative methodologies—poses a challenge to understanding the true extent of HCW attrition. Both qualitative and quantitative methodologies contribute to evaluating these difficult settings, and both types of data are needed. Given the current state of the literature, strengthening human resources for health monitoring and surveillance may improve the availability of routine data regarding HCW attrition and retention. To better evaluate the relationship between the push and pull factors and retention, more robust research using qualitative, quantitative and/ or mixed methods research designs is needed.

Conclusion

This study provides an overview of the published literature related to the retention of HCWs in post-conflict settings.

The literature is overwhelmingly exploratory and descriptive in nature. Few specific policies or interventions were identified in our review. The main themes observed in the literature included migration intention, return migration, work experiences and conditions of service and deployment policies. Employing these themes, we identify a consolidated list of push and pull factors contributing to HCW attrition in post-conflict settings, including fear, deteriorating work environment, lack of continuing education or skills development opportunities, oversaturated market for employment, poor renumeration and salary and lack of licensure, acceptance and respect. Consequently, we spotlight potential policies that may be successful in reducing attrition and improving retention.

The results show an early indication that policies should be adopted that focus on improving financial incentives, providing professional development opportunities, establishing flexibility in work and identifying staff with strong community ties. However, the exploratory nature of the data points to a need for further research to be conducted to quantify the themes observed here. These policies warrant further investigation and examination before large-scale deployment. Quantitative methods such as surveys, discrete choice experiments and mixed methodologies such as Q-methodology may be especially useful in understanding HCW retention. We are cognizant of the difficulties in conducting research and publishing results from these settings, as well as the sensitivities and political considerations that may otherwise not be present. The documented violence against HCW further underlines the difficulty and importance for additional evaluations (Mahase, 2019). It is crucial for international organizations and governing bodies to support further researchers studying these settings.

Supplementary data

Supplementary data is available at *Health Policy and Planning* online.

Data availability

The data underlying this article are available in this article and in "Supplementary data" section.

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Author contribution

T.K.L. and K.W. were responsible for conception or design of the work, data collection, analysis and interpretation, drafting the article, critical revision of the article, and final approval of the version submitted. M.K. was responsible for conception or design of the work and final approval of the version submitted. C.H.H. was responsible for conception or design of the work, critical revision of the article, and final approval of the version submitted.

Reflexivity statement

The authors include three females and one male and span multiple levels of seniority. Three of the authors specialize in health, nutrition and population in the Middle East-North African and South Asian regions, and one author specializes in emergency care systems in the sub-Saharan African region. This paper covers a variety of these regions, including those to which named authors are affiliated.

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