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Understanding the trends, and drivers of emigration, migration intention and non-migration of health workers from low-income and middle-income countries: protocol for a systematic review

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ABSTRACT

Introduction The WHO estimates a shortage of 18 million health workers (HWs) by 2030, primarily in low-income and middle-income countries (LMICs). The perennial out-migration of HWs from LMICs, often to higher-income countries, further exacerbates the shortage. We propose a systematic review to understand the determinants of HWs out-migration, intention to migrate and non-migration from LMICs.

Methods and analysis This protocol was designed in accordance with the Preferred Reporting Items for Systematic Review and Meta-analysis Protocols guideline for the development and reporting of systematic review protocols. We will include English and French language primary studies (quantitative or qualitative) focused on any category of HWs; from any LMICs; assessed migration or intention to migrate; and reported any determinant of migration. A three-step search strategy that involves a search of one electronic database to refine the preliminary strategy, a full search of all included databases and reference list search of included full-text papers for additional articles will be employed. We will search Ovid MEDLINE, EMBASE, CINAHL, Global Health and Web of Science from inception to August 2022. The retrieved titles will be imported to EndNote and deduplicated. Two reviewers will independently screen all titles and abstract for eligibility using Rayyan. Risk of bias of the individual studies will be determined using the National Institute of Health study quality assessment tools for quantitative studies and the 10-item Critical Appraisal Skills Programme checklists for qualitative studies. The results will be presented in the form of narrative synthesis using a descriptive approach

Ethics and dissemination We will not seek ethical approval from an institutional review board, as this is a systematic review. At completion, we will submit the report of this review to a peer-reviewed journal for publication. Key findings will be presented at local and international conferences.

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STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The review will track the temporal trends in the determinants of health worker (HW) migration, and compare them between and across WHO regions and the various cadres of HWs.
⇒ Unlike the existing reviews on this topic, the proposed review will study the determinants of non-migration to understand why some HWs stay back in their home countries.
⇒ This review will adopt a policy-relevant conceptual framework to explain and describe the determinants of HWs migration.
⇒ Due to the anticipated heterogeneity in the eligible studies with regard to their study design, population and the outcome of interest, a meta-analysis may not be conducted.

BACKGROUND

The shortage of human resources for health (HRH) is an overwhelming problem globally.[1 2] The WHO estimates a shortage of 18 million health workers (HWs) by 2030, primarily in low-income and middle-income countries (LMICs), which will further widen the global disparities in high-quality healthcare.[1] Although the population of LMICs is increasing, there is no commensurate increase in the number of healthcare workers needed to serve the growing population. South-East Asia and Africa have the largest needs-based shortages in HWs at 6.9 million and 4.2 million, respectively, but taking the population size of these regions into account, the HW shortages in Africa are critical.[1]

The perennial out-migration of HWs from LMICs, often to higher-income countries (HICs), further exacerbates the HW shortage problem in LMICs.[3–5] Insufficient number of medical schools, low salaries of the existing health workforce, poor working conditions, lack of supervision, low morale and motivation and lack of infrastructure in the source countries are prominent causes for the loss of health professionals from these countries. On the other hand, higher remuneration, professional development opportunities and better living and working conditions at destination countries incentivise HWs migration to these countries.[3–8] The top destinations for HWs' migration are the UK, USA, Canada, New Zealand and Australia where the percentage of foreign-trained doctors and nurses working in these countries ranges between 20%–25% and 8%–16%, respectively.[9–12]

Often, the need to meet the growing demand for HWs in these countries outweighs their commitment to human rights and the ethics of recruiting health professionals from resource-poor countries.[13] This fact was especially apparent during the COVID-19 pandemic when the foreign-trained HWs played a significant role in front-line pandemic response in these countries.[12 14] To manage the crisis associated with out-migration of HWs, policy-makers in source countries have resorted to different strategies to ensure appropriate supply and distribution of health resources.[15] These strategies include financial incentives such as pay rise, and non-financial measures including task shifting, extension of roles, continuing education strategies and improvement in infrastructure and work environment.[16–18] Nevertheless, the effectiveness of these measures in the retention of HWs remains unclear.

Systematic reviews on migration of HWs are sparse. The existing reviews have a limited scope, hence the need for a more comprehensive and updated review. Previous reviews have limited their focus to specific cadre of HRH such as nurses, physicians or dentists.[19] Others have limited their scope to specific regions or countries, with no previous review exclusively studying all LMICs.[20 21] Importantly, the existing reviews have not considered factors driving the non-migration of those HWs who stay behind in source countries. Similarly, there is no systematic review documenting the temporal trend in the drivers or determinants of HWs' migration from LMICs in the past.

Research aim and objectives

To bridge the identified research and evidence gaps, we therefore aim to conduct a systematic review, to understand the determinants of out-migration, intention to migrate and non-migration of HWs from LMICs. The specific objectives of this review are:

1. To document the publication trends, the cadres of HWs that have been studied, the source countries they migrated from and the destination countries.
2. To categorise the drivers or determinants of HW's out-migration, intention to migrate and non-migration from LMICs using an action-oriented, policy-relevant conceptual framework.

3. To conduct trend analysis to determine if there have been changes in the determinants of HWs' out-migration or intention to migrate from LMICs over the past decades.
4. To compare the determinants between HWs with the intention to migrate and those who already migrated, between cadres of the health workforce and between geographic regions in LMICs.

METHODS/DESIGN

Protocol design, registration and reporting

This review protocol was designed and written in accordance with the Preferred Reporting Items for Systematic Review and Meta-analysis Protocols (PRISMA-P) guideline for the development and reporting of systematic review protocols (online supplemental additional file 1).[22] The protocol was prospectively registered in PROSPERO, a platform for the international prospective registration of systematic reviews.[23] The PROSPERO registration number is CRD42022334283 (Available from: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42022334283). Registration of a research protocol reduces the likelihood of duplication of the research question, minimises reporting bias and ensures the transparency in the review process.[24] The systematic review output will be reported according to the reporting guidance provided in the PRISMA statement.[25] Any deviations from the protocol during the review conduct will be described in the publication of the final report.

Eligibility criteria

All primary studies, including quantitative, qualitative or mixed methods studies that have the following characteristics will be included: (a) focused on any category of HWs from any LMICs country (low-income, lower-middle-income and upper-middle-income economies) based on the 2021 World Bank classification[26]; (b) assessed HWs' migration, intention to migrate or non-migration; (c) reported any determinant of HW migration; and (d) published in English or French languages. We would elicit additional drivers of non-migration from included studies on HW's migration or intention to migrate reporting data on the population of HWs who have not migrated, and stated the determinants, drivers or the reasons behind their non-migration. There will be no date restriction for the included studies to provide us with a sufficient timeframe for the analysis of demonstrable change in the determinants of HWs' migration, intention to migrate, or non-migration. This review will be focused on HWs from LMICs due to the shortages of HWs, and the need to understand the trends and drivers of HW migration from this region to HICs.

We will exclude systematic or scoping reviews, modelling studies, journal correspondences or commentary on HW emigration. Also, studies reporting data on HWs of LMIC descent who trained and have only worked in HICs will be excluded because their experience might not

reflect those of their colleagues that trained or worked in LMICs.

Data sources

We will conduct an extensive electronic search for peer-reviewed literature on the following databases: Ovid MEDLINE, EMBASE, CINAHL, Global Health and Web of Science. We will conduct grey literature search on the Google search engine using selected search terms from the search strategy. We would adopt a snowball approach to examine the reference list of the retrieved items to further identify additional relevant articles.

Search strategy

A preliminary search strategy (online supplemental additional file 2) was developed by the authors and will be refined based on inputs from an information specialist. The search strategy was developed based on several variants of the key concepts from the study aim: HWs, LMICs and migration. To ensure the comprehensiveness of the search, text words will be truncated, and wildcards will be applied to enable the retrieval of relevant articles that might have used different spellings for the same word. The text words and Medical Subject Headings terms will be combined using Boolean operators. The final search strategy will be developed, refined and implemented using a three-stage approach. In the first stage, a preliminary search of one electronic database will be conducted using several key concepts. The preliminary search terms will be refined based on other text words used to describe the key concepts from the title of the retrieved items, and the indexing terms used in describing the articles. In the second stage, the refined search strategy will be implemented on all the databases. In the third stage, we will search the reference list of included full-text papers for additional articles not identified from the database search. An example of the preliminary search strategy and terms used in MEDLINE is included as online supplemental additional file 2.

Study selection

The retrieved titles will be imported to EndNote and deduplication will be done. After this process, two reviewers will independently screen all titles and abstracts using Rayyan (a web-based application for screening articles of systematic review) to identify articles that meet inclusion criteria.[27] The included titles will be exported back to EndNote for full-text screening. At this stage, one of the two reviewers will extract the relevant data from all included papers, while the second reviewer will verify the extracted data. Any studies that do not meet the prespecified inclusion criteria at this stage will be excluded and the reasons for exclusion documented. If there are disagreements regarding inclusion of studies, it will be resolved by consensus, after discussion by the two reviewers. A third member of the research team will be consulted to resolve the disagreements if the two initial reviewers fail to reach a consensus. The process of screening, inclusion and

Table 1 List of items and variables to be extracted from the included studies

Items	Variables
Study characteristics	Author (First author's surname *et al*)
	Journal published
	Year of publication
	Year or period of study
	Study design (quantitative, qualitative or mixed methods study)
	Country or countries the research is focused on
Population characteristics	Sample size
	Cadre of health workers (doctors, nurses, pharmacist, physiotherapist, etc)
Outcome of interest	The dimension of health worker migration studied (ie, already migrated, intention to migrate or non-migration?)
	Determinants of migration, intention to migrate or non-migration of health workers studied
	Source low-income and middle-income country of health workers
	Destination country of health workers who already migrated or with intention to migrate

exclusion of articles will be illustrated using the PRISMA flow chart for reporting items for systematic reviews.

Data extraction

Data extraction will be conducted using a standardised data abstraction form, which was developed to reflect the sequence of variables required from the included studies. The key items and variables to be extracted from the included studies are outlined in table 1. Two authors will independently conduct pilot-testing of the data extraction form using 10 randomly selected full-text articles. The form will be refined based on feedback from this pilot testing process.

Risk of bias of individual studies

Two independent reviewers will conduct critical appraisal to assess the methodological quality of the included studies. For quantitative studies (cross-sectional, case–control, cohort studies, etc), we will use the National Institute of Health (NIH) study quality assessment tools.[28] We adopted the NIH tool because we considered it more comprehensive, thus will enable us conduct an exhaustive assessment of the quality of the included studies. The overall quality of each included will be scored as good, fair or poor. For qualitative studies, we will use the 10-item Critical Appraisal Skills Programme checklists for qualitative studies.[29] The narrative description of the overall critical appraisal of the qualitative studies will be presented. We will not exclude any study from the systematic review based on the assessment from the critical appraisal.

Data synthesis

Due to the anticipated heterogeneity in the eligible studies with regard to their study design, population and the outcome of interest, a meta-analysis may not

be conducted. The results will be presented in the form of narrative synthesis using a descriptive approach, according to the objectives of the systematic review. Detailed descriptive table showing the characteristics of the included studies will be presented. To aid the visualisation of the key findings, the results will be presented using charts, graphs and maps. This review will adapt two conceptual frameworks to categorise the drivers or determinants of HWs emigration or intention to migrate. The first framework is built on immigration theory of push and pull factors, which refer to factors that incentivise people to leave their home country and factors that attract them to a foreign country, respectively.[30] Based on a second conceptual framework of health professionals migration, the push and pull factors will be further categorised into three levels: macro-(national factors), meso-(professional factors) and micro-(personal factors) levels.[19 31]

Patient and public involvement

No patient will be involved as this is a systematic review of already published studies.

DISCUSSION

The proposed systematic review will explore the drivers of HWs emigration or intention to migrate from LMICs to HICs. To better understand the problem, and ensure the generation of policy-relevant evidence, the potential drivers or determinants will be summarised according to a priori categories adopted from two conceptual frameworks.[32] The fact that our study will adopt two conceptual frameworks to explore a complex phenomenon, hopefully will make it more relevant in policy formulation when compared with previous research on this topic. To the best of our knowledge, this review is potentially the most comprehensive on this topic, because it will include data spanning several decades, and cover all countries which are categorised as low-income or middle-income economies. Furthermore, this review has the ability to identify trends and changes in the determinants of emigration and compare them across decades. These characteristics, in addition to its focus on several professional cadres of HWs potentially make the proposed review relevant to a wide variety of health systems actors, policy-makers, development partners and governments in LMICs.

We foresee that there may be limited studies that have reported data on the drivers of migration for HWs who have already emigrated, and other cadre of HWs other than doctors or nurses. Based on our preliminary search, most previous studies have focused on doctors, nurses and the intention to migrate, rather than those who have already migrated or other cadre of HWs. This situation might limit the proposed plan to conduct subgroup analysis and compare the determinants between the various subgroups of HWs. The fact that we plan to search multiple databases, and conduct screening of the reference list of the included full-text papers for relevant articles has the potential to increase the number of studies that may have

reported on these subcategories. Although the proposed systematic review will focus on all LMICs, we foresee a situation where there might be over-representation of data from certain countries. Despite this potential limitation, this review may identify research gaps, including countries with little or no data on the topic, thus, future empiric research can be planned to bridge the identified gaps. Furthermore, country income level categorisation by the World Bank for each country may change across years or decades. Some countries which were categorised as low income would have moved to middle-income or even high-income countries after some years as their economies improved. Using the World Bank 2021 income categories to decide which countries are LMICs may potentially exclude data from countries which were previously LMICs but are now high-income countries. While we acknowledge this as a potentially limitation of our study, our approach is pragmatic and have been routinely adopted by previous systematic and scoping reviews that reported data spanning several years or decades.

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Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

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