Study Protocol

Mapping the occupational therapy workforce research worldwide: Study protocol for a scoping review

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Abstract.

BACKGROUND: Human Resources for Health (HRH) research informs the development of evidence-based, population-centered HRH policies and practices. Occupational therapists are key human resources for meeting the health, rehabilitation, and occupational needs of the population worldwide. Yet, the global status of the occupational therapy workforce research remains unchartered.

OBJECTIVES: This study protocol depicts the methods to map out and synthesize the occupational therapy workforce research worldwide.

METHODS: Six scientific-literature databases and key international institutional websites will be systematically searched, complemented by snowballing searches and recommendations from key global, regional, or national representatives of the World Federation of Occupational Therapists. Two independent reviewers will screen titles-and-abstracts and then full-texts against the eligibility criteria, e.g., 10 categories of workforce research. Educational research, non-empirical papers, and papers (or their summaries) not available in English, Spanish or Portuguese are excluded. Data extraction (e.g., methods, geographies, aims, key findings) will be conducted by one author and fully verified by another. The extracted data will be computed as well as subject to content analysis to provide quantitative map of the literature and of the contents addressed, e.g., per inclusion category.

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CONCLUSION: The results of this review can inform wide consultation processes and strategic, concerted local and global developments of the occupational therapy workforce.

Keywords: Health personnel, human resources for health, occupational therapists

1. Introduction

Human Resources for Health (HRH) include all people engaged in actions whose primary aim is to enhance health [1]. HRH are considered a key 'building block' of health systems [2]. Furthermore, advances in HRH contribute to universal health coverage and global health [3, 4], global development policies (e.g. the United Nations' sustainable development goals) [5–7], and employment and economic growth, in addition to population health [7, 8].

In this context, systematic, cross-sectorial developments in the HRH field increasingly have been necessary [5, 6, 9, 10], often following the guidance of the World Health Organization (WHO)'s Global Strategy on the Human Resources for Health [10]. Nonetheless, there are increasing calls for advancing the science behind HRH developments, as HRH research informs the development of evidence-based, population-centered HRH policies and practices. And, in the other way around, current HRH policies and practices benefit from HRH research toward enabling their evaluation [5, 6, 11]. Research in the HRH field is essential for achieving a fit-for-purpose, resilient, capable, motivated, and productive health workforce [3, 5, 6, 12].

Occupational therapists are key professionals for meeting the health, rehabilitation, and occupational needs of the population worldwide. According to the World Federation of Occupational Therapists (WFOT), "occupational therapy is a client-centered health profession concerned with promoting health and well being through occupation. The primary goal of occupational therapy is to enable people to participate in the activities of everyday life. Occupational therapists achieve this outcome by working with people and communities to enhance their ability to engage in the occupations they want to, need to, or are expected to do, or by modifying the occupation or the environment to better support their occupational engagement" [13]. Occupational therapists are the primary providers of occupational therapy services and must meet government regulatory or registration requirements to practice in 82% of member countries represented by WFOT [14].

Occupational therapy workforce developments are among those needed for the scaling-up and strengthening of rehabilitation services worldwide promoted by the WHO [15, 16]. This occurs with a backdrop of global population ageing, an increasing burden of non-communicable conditions, and an increasing burden of disability [17–22]. For example, a recent study published in *The Lancet* estimates that, in 2019, as many as 2.41 billion individuals had conditions that would benefit from rehabilitation, representing a rise in absolute rehabilitation needs of 63% from 1990 to 2019 [22]. These numbers are aligned with previous works which showed a 17% increase in the world's physical rehabilitation needs in per capita values (discounting the effect of population growth) [21, 23]. The high and increasing burden of disability, together with the undersupply of occupational therapy and broader rehabilitation human resources, result in substantial unmet needs [24–26].

The need for occupational therapy, however, includes varying types of population needs, other than rehabilitation needs. Occupational therapists increasingly perform health promotion roles [27] and address health, human rights, and occupational injustices arising from socio-environmental and factors [28–30], regardless the prevalence of any disease or disability. Hence, the need for occupational therapists goes beyond the demand created by population increases in disease or disability rates [31].

Within the existing occupational therapy workforce, significant disparities are evident in the geographical distribution at various levels. For example, the data from the human resources project of the WFOT shows that 61% of responding WFOT member organizations (54 out of 89) had 1 or less occupational therapists per 10 000 population (minimum 0.001), while the maximum was 22 for Denmark, i.e. up to 22 000 times the difference [14]. Data from the same project also shows that while many countries with a lower supply of occupational therapists are low- or middle-income, as classified by the World Bank, several are high-income countries. For example Italy and the Czech Republic had less than one-tenth of the Denmark's figures [14].

By the same token, a recent study across 35 high-income countries combined occupational therapy and physical therapy workforce supply data to find that no significant relationship existed among the supply of the workforce and an aggregative indicator of population need, when adjusted for socio-economic covariates [32]. Additionally, the same study found that the physical therapists-occupational therapists distribution varied greatly from a relatively equitable supply of the two professions (e.g., 55%-45% in Israel) to remarkable disproportions (e.g., 98%-2% in Italy) [32].

In addition to supply-need disparities across nations, occupational therapy workforce research has shown uneven distributions of occupational therapists within areas (e.g., rural or remote), services, or sectors (e.g. public or private) of the same country [14, 33, 34]. Finally, the WFOT's human-resources data shows that Continuing Professional Development activity is only required to be reported for renewal of practice registration/license in a minority (i.e., 38%) of the surveyed countries [14].

Overall, to address the health and occupational needs of populations, within and across jurisdictions, the occupational therapy workforce needs to be of sufficient size to meet population needs, adequately distributed per geographies and service levels, and finally meet competency standards to assure that professional roles can be fulfilled. Therefore, explicit occupational therapy workforce policies, planning, and underlying research activities are required to identify and reduce workforce disparities, thereby to improve access to occupational therapy [35].

However, despite the outlined need for systematic developments in the occupational therapy workforce worldwide, the global status of the underlying occupational therapy workforce research remains unchartered. To the best of our knowledge, there is a lack of synthesized data about the amount, characteristics, locations, topics, findings, barriers, limitations, and future recommendations – or any coverage gaps within any of the above – for the broader scope of the occupational therapy workforce research. This study protocol aims to depict the methods to map out and synthesize the existing occupational therapy workforce research worldwide, to inform further strategic developments.

2. Methods

A scoping review will be used [36–39]. As a method, scoping reviews often address exploratory research questions toward mapping key concepts, types of evidence, and gaps in research related to a given area or field, frequently include an examination of the extent, range, and nature of research activity in a broad or complex topic, and finally may be coupled with a synthesis of the main content, topics or themes covered, to inform further policy, research, and practice [36–39].

In this scoping review, we will apply Arksey and O'Malley's framework [40] and subsequent refinements [36, 37], the Joanna Briggs Institute's guidance for the conduct of scoping reviews [41], and the recent Preferred Reporting Items for Systematic Reviews and Meta-Analysis – Extensions for Scoping Reviews (PRISMA-ScR) as reporting guidelines [38]. Finally, for the report of this study protocol, we will follow the applicable items of the PRISMA Protocols (PRISMA-P) [42]. This study protocol was not registered in the PROSPERO database (i.e., a common database for the register of systematic reviews [43, 44]), as the database is not open to the register of scoping reviews.

2.1. Identifying the research question

In scoping reviews, the definition of the research question is an essential first step which provides the rationale for decision-making in the review design, conduct, and reporting [36, 37, 40]. For this study, we developed the following research questions:

1) What is the amount and characteristics (e.g., geographies and timings addressed, methods and data used, purposes, publication venues, stakeholders involved) of the occupational therapy workforce research?
2) What are the topics addressed by the occupational therapy workforce research, and what type of results have been reported?
3) What are the reported barriers or limitations for the strengthening of the occupational therapy workforce and of the occupational therapy workforce research?
4) What are recommended developments for the strengthening of the occupational therapy workforce and of the occupational therapy workforce research?
5) What is the relative coverage of the occupational therapy workforce research, and any gaps, in terms of topic, study questions, geographies, or study types?

2.2. Identifying relevant studies (developing the search)

Six scientific-literature databases (Medline/PubMed, Web of Science – Core Collection, Scopus, CINAHL, PDQ-Evidence for Informed Health Policymaking; OTseeker) will be systematically searched using a combination of indexed terms and free-text key words. Among these, the Web of Science – Core Collection and the Scopus database cover multidisciplinary literature beyond the health sector, which accommodates the fact that occupational therapists can work in diverse practice fields above and beyond the health sector (e.g., the educational, social, and work sectors). In turn, the EMBASE is not included as the database typically adds to Medline/PubMed essentially in the biomedical and biochemical literature, which is not relevant for this scope. Finally, we will not search the PROQUEST database, which is a database of unpublished literature such as dissertations. This decision relates to our eligibility criteria (detailed in the section below), under which we will only the research or systematic analyses published in peer-reviewed journals or in official institutional venues. Should a dissertation or work derived from a dissertation be published in peer-reviewed venue, it will likely be included in this review through searches of the other databases.

The Peer Review of Electronic Search Strategies (PRESS) guidelines was used to build, review, and calibrate the search strategy in the PubMed/Medline database. See the Appendix 1 for a complete search strategy in the PubMed/Medline database. The strategy will be then translated to the search facilities of the other electronic databases. The process will be run by a researcher (TJ) with an extensive track record of conducting rehabilitation scoping reviews and designing search strategies for locating rehabilitation-related and/or health workforce content in scientific databases [26, 45–56]. Snowballing search strategies (e.g., references lists search, citation tracking, author tracking) over included articles will also be conducted as a means to identify any additional references.

The grey literature will be specifically searched through the screening and key-word searches in selected, international institutional websites: WFOT; WHO – for the rehabilitation and health workforce subsections; Health Workforce Research section of the European Public Health Association; and regional groups of WFOT: Asia Pacific Occupational Therapists Regional Group (APOTRG), Association

of Caribbean Occupational Therapists (ACOT); Confederacion LatinoAmericana de Terapeutas Ocupacionales (CLATO); Council of Occupational Therapists for the European Countries (COTEC) and the Occupational Therapy Africa Regional Group (OTARG). In addition to providing any relevant papers themselves, the search in these international websites can help identify any relevant national-level information through a snowballing process. Key informant interviews will also be used to facilitate the use of this snowballing technique. Supplied with a preliminary list of included papers, key global, regional, or national representatives of the WFOT will be consulted, as key informants, about any additional, likely relevant reference which potentially fit the eligibility criteria, and were missed from the combination of the search strategies above. Whenever potentially included studies are not in English, Portuguese, or Spanish, which are the languages the researchers can handle, a translated version, of the full text or a summary of it, will be sought or developed, possibly with the contribution of the informing source.

2.3. Study selection (eligibility criteria)

We will include occupational therapy workforce research or broadly any systematic analysis of Occupational Therapy workforce data used or amenable to be used to inform of workforce policies, planning, or development activities.

As for methods, we will include original occupational therapy workforce research that involves primary data collection, original secondary analyses of existing datasets, case studies, any systematic or scoping reviews, and broadly any systematic analysis of occupational therapy workforce data. By data, we mean quantitative, qualitative or mixed-methods data. To be included, the research or systematic analyses need to be published in the scientific literature (i.e., in peer-reviewed journals) or in official institutional venues, such as available from the official websites from representative occupational therapy organizations, UN agencies, International Non-Governmental Organizations (INGOs), or official government bodies at global, regional, national, or provincial level. These *grey literature* reports are only included, though, if they provide a systematic analysis and/or report of occupational therapy workforce data explicitly aiming to inform policy, planning, or other occupational therapy workforce developments.

Whenever the scientific or *grey literature* have multiple waves of reports (e.g., with updates) for the similar scope and geographies over time, only the most recent report (i.e., current gold standard) is included. Furthermore, a temporal cut-off may be applied *a posteriori* for the inclusion of papers such as those from the grey literature, in face of an appraised qualitative saturation from the most recent papers. Any *a posteriori* cut-off decision should be taken through consensus among the authors and reported in the final paper. Finally, papers reporting in English, Spanish, or Portuguese are included, which refer to languages that we can cover with our team. Although the research team will attempt to obtain translated versions of documents published in other languages, the ability to review only in the three languages is a study limitation, which will be emphasized in the final report.

Exclusion criteria for publication types include editorials, letters to the editor, conference abstracts or posters (without full texts), study protocols, and peer-reviewed papers without an abstract. Perspective, conceptual, historical, narrative, or other forms of non-systematically reviewed or analyzed material also will be excluded, on the grounds of not being research or systematic, data-based analyses. Finally, we will exclude raw data in databases, reports, or any repositorium per se, i.e., without further processing, analysis, and implications stated for the occupational therapy workforce research, policy, planning, or professional developments. This will be applicable to both the peer-reviewed and grey literature.

In terms of workforce topics covered, we will only include research papers or systematic analyses with a clear, explicit, and data-based (quantitative, qualitive or both) emphasis on at least one the 10 inclusion categories, displayed in the Table 1 below.

The design of the inclusion categories was informed by key documents such as a WFOT position statement [35], a recent critical review of the rehabilitation workforce literature [26], the Global Strategy on the HRH [10], and a recent reader of health policy, systems and services research falling into the HRH realm [5].

Table 1
Inclusion categories for the content of the workforce research

Inclusion category #	Category type	Examples of topics included
1	Workforce supply	Practicing occupational therapists, or related occupational therapy supply profile – including gender and demographics
2	Workforce production (i.e., number of those entering into practice and entry-level requirements)	New graduates per year, number and distribution of education programs; accreditation of occupational therapy education programs – number or characteristics, required entry-level credentials for the occupational therapy profession
3	Workforce needs or demands, in the past, present, or forecasted	Systematic determination of the occupational therapy workforce requirements for HRH policy and planning purposes; determination of occupational therapist supply-need gaps or forecasting endeavors on the future shortages or surplus of occupational therapists
4	Employment trends	Employment/unemployment rates, filled versus unfilled vacancies, underemployment, dual practices, joint appointments, career breaks, or employment trajectories
5	Workforce distribution	Distribution (e.g., number or percentage of the workforce) by geographical areas, sector, service-level, practice area, or public versus private roles
6	Workforce mobility	International and within-country migration; mobility across sectors; factors affecting mobility
7	Career attractiveness and factors affecting recruitment and retention	Remunerations or career progression, rewards or disincentives, career choice, attrition – career shifts or dropouts, return to the profession, professional development opportunities, recruitment and retention rates or determinants, including in underserved sectors or rural and remote locations
8	Management, performance, and productivity of occupational therapy staff	Human resources management and leadership practices – including recruitment practices, staffing and scheduling, productivity and workload, professional burnout or work-related stress associated to staff management practices, performance, productivity, absence, or attrition
9	Credentialing, regulation, certification, and licensing requirements, under a policy, reimbursement or legal framework	Continuing education requirements, task-shifting or changes in the scope of practice or delegation, acquisition of new practices – enacted into law, health policies, or professional standards or broader research- or data-based processes evaluating or developing any of these
10	Systems-based or systematic analysis of workforce policies	Research on or data-based analysis of the occupational therapy workforce policies, plans, governance, management, or any related research

It is noteworthy that we will include papers addressing any of topics above if only partly, yet explicitly, focused on or using data from occupational therapists. For example, papers focused on related workforces with broader scope (e.g., broader physical rehabilitation or mental health workforce) are included, as long as occupational therapy-specific data or implications are explicitly used or reported. Although the main focus of the review is on occupational therapy professionals, research on formal occupational therapy assistants and support workers will be included; any strategic workforce developments for the occupational therapy profession, informed by this scoping review, would need to account for the role of associated providers.

Exclusion criteria, in terms of workforce topics for the context of this study, include:

a) Occupational therapy education, continuing education, or in-service training topics when focused on pedagogical terms, e.g., when not explicitly framed within wider, systems-based assessments or strengthening plans for the occupational therapy workforce (e.g., for the scale up, equitable distribution, or task-shifting), and when not addressing workforce production (e.g., new graduates per year), or regulatory or accreditation requirements. While it is acknowledged that education of occupational therapy students generally contributes to workforce development, the scoping review is focused more specifically on HRH issues outlined in the inclusion criteria. The educational research field is gigantic, has issues of its own, and would require several scoping reviews for itself.

b) Revisions on the scope of practices or professional skills are also excluded, unless these are explicitly framed as part of a broader policy development and/or involving legal changes within a jurisdiction.

c) Studies of occupational health (e.g., prevalence of burnout; strategies and intervention to prevent or reduce burnout, predictors of burnout [57]) with no direct and explicit association to (i.e., actual study of) any tangible human resources policies, practices or variables such as workforce productivity, performance, or retention/attrition.

d) Recruitment of students to occupational therapy educational programs are excluded unless part of a broader and explicit policy or program to close identified shortages, suboptimal

career attractiveness, or maldistribution such in as rural or remote locations.

Using the criteria above, two independent reviewers (TJ and KM) will conduct titles-and-abstracts screening first, and then full-text reviews for determining eligibility. However, the screening process at any of these stages will be fully conducted only when an 80% or greater agreement among the independent reviewers is achieved in pilot tests on at least 5% of the references – which may lead to further training or specification of the eligibility criteria. For the full screening process, discussions among the reviewers will occur toward a consensus on any disagreement. Any remaining disagreements will be resolved (i.e., decided) by a third author (SK or SB). As typical in scoping reviews [53, 58], quality appraisals (i.e., risk of bias assessment) will not be performed.

2.4. Charting the data (data extraction)

On the methodologies used (e.g., study design; participants – number and type; data sources; data types; data collection procedures; primary outcome or dependent variable; analytical process such as the inclusion of inferential statistics or not for quantitative or mixed-methods studies) and other formal elements addressed by the included references (e.g., stated aim, geographies; existence of funding support and by whom), one reviewer (TJ) will extract the information, fully verified by another researcher (either KM, SK, or SB). A custom-built data extraction table will be used for this process, after a pilot test with 10% of the included references. Citation elements such as publication venues or date will be directly extracted from the references manager software.

In turn, on the content matters (e.g., occupational therapy workforce topics; types of findings; key findings – for the scope of the paper inclusion categories; any stated limitations; and recommendations for the workforce study or development), one experienced reviewer and workforce specialist (TJ) will extract key data or text quotations. The extractions also will be fully verified by another researcher (either KM, SK, or SB).

2.5. Collating, summarizing and reporting the results

The findings will incorporate a summative description of the extent and range of the related literature.

A quantitative map of the literature (e.g., distribution by geographies; timings covered; publication venues, dates and type; stakeholders involved) will be provided with the use of descriptive statistics, which will be computed. For the methods used, a summative and directive form of content analysis [59] will be applied over the extracted information, with the use of a pre-determined coding structure elaborated by the research for any particular research step (e.g. design, data collection, analysis).

In turn, on subjects or topics addressed, a conventional type of content analysis [59] will be applied for the content (e.g. type of findings, stated limitations or recommendations) falling into any of the 10 inclusion categories for occupational therapy workforce topics defined above. A narrative reporting of the review findings per inclusion category might provide relevant variables of context and methods, as well. Altogether, the scoping review findings will be clustered and reported against our five research questions, in order to provide direct responses to them.

As qualitative, quantitative, and mixed-methods data will be synthesized within each topic, we will apply a convergent synthesis approach, notably a data-based convergent synthesis design, in which all types of data are synthesized under the same method; here, quantitative or mixed-methods data will be synthesized qualitatively [60–63]. No form of meta-analysis will be used to synthesize quantitative data, as data will come from a variety of contexts, topics, research questions, and study designs, as well as due the lack of quality appraisal. Any specific finding reported, essentially for illustrative purposes, will be contextualized by the method used, timing, and context addressed.

3. Ethics and dissemination

This study refers to a scoping review of literature and hence will not involve ethics approval.

Our dissemination plan includes publishing the scoping review results in the scientific, peer-reviewed literature. Furthermore, the findings from the scoping review can also be presented at relevant international conferences, most notably the WFOT congress in 2022. Additionally, during that process, we plan to develop a formal consultation of the WFOT delegates to validate the findings and develop strategies to address the issues identified in this review. Hence, the scoping review results, alongside any other research or development activities that may follow

(e.g., stakeholders' consultation on recommended actions to take) can be compiled and translated into a fully-fledged institutional report, executive summary, or policy briefs for dissemination through various stakeholders' groups.

4. Conclusion

The results of this review can inform wide consultation processes and strategic, concerted local and global developments of the occupational therapy workforce.

Conflict of interest

The authors declare no conflicts of interest.

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Appendix 1: Complete search strategy in PubMed

("Health Workforce" [Mesh] OR "Professional Autonomy" [Mesh] OR ("Professional Competence" [Major] AND "Credentialing" [Mesh]) OR "Staff Development" [Major] OR (("Education, Continuing" [Major] OR "Inservice Training" [Major]) AND "Credentialing" [MeSH]) OR ("Personnel Management" [Major] AND "Health Personnel" [Major]) OR "Delegation, Professional" [Mesh] OR "Foreign Professional Personnel" [Mesh] OR "Personnel Selection" [Mesh] OR "Credentialing" [MeSH] OR "Burnout, Professional" [Major] OR "Workforce" OR "Human Resources") AND ("Occupational Therapists" [Mesh] OR "Occupational Therapy Department, Hospital" [Major] OR "Occupational Therapy" [Mesh] OR ("Occupational Therap*" NOT "Occupational Therapy" [AD])) AND ("Study Characteristics" [Publication Type] OR "Data Collection" [Mesh] OR "Guideline" [Publication Type] OR "Empirical Research"[MeSH] OR "Epidemiologic Methods"[MeSH] OR (Review[ptyp] AND systematic[tw] AND systematic[sb]) OR "systematic review"[Publication Type] OR "Cochrane Database Syst Rev"[Journal] OR ("systematic review"[ti] OR "scoping review"[ti] OR "realist review"[ti]))