

BMJ Open Diversity in health professional education scholarship: a document analysis of international author representation in leading journals

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ABSTRACT

Objectives The global distribution of health professionals and associated training programmes is wide but prior study has demonstrated reported scholarship of teaching and learning arises from predominantly Western perspectives.

Design We conducted a document analysis to examine authorship of recent publications to explore current international representation.

Data sources The table of contents of seven high-impact English-language health professional education journals between 2008 and 2018 was extracted from Embase.

Eligibility criteria The journals were selected according to highest aggregate ranking across specific scientific impact indices and stating health professional education in scope; only original research and review articles from these publications were included for analysis.

Data extraction and synthesis The table of contents was extracted and eligible publications screened by independent reviewers who further characterised the geographic affiliations of the publishing research teams and study settings (if applicable).

Results A total 12 018 titles were screened and 7793 (64.8%) articles included. Most were collaborations (7048, 90.4%) conducted by authors from single geographic regions (5851, 86%). Single-region teams were most often formed from countries in North America (56%), Northern Europe (14%) or Western Europe (10%). Overall lead authorship from Asian, African or South American regions was less than 15%, 5% and 1%, respectively. Geographic representation varied somewhat by journal, but not across time.

Conclusions Diversity in health professional education scholarship, as marked by nation of authors' professional affiliations, remains low. Under-representation of published research outside Global North regions limits dissemination of novel ideas resulting in unidirectional flow of experiences and a concentrated worldview of teaching and learning.

BACKGROUND

The global distribution of health professionals and associated training programmes is wide. Eight countries (the USA, Mexico, Brazil, Russia, India, Pakistan, China and

Strengths and limitations of this study

- The present document analysis was based on a systematic process of extraction, screening, coding and verification typified by this qualitative approach.
- There was evidence of limited geographically diverse research, as marked by authorship affiliation, in the publications of high-impact English-language health professional education journals.
- We acknowledge the construct of 'high impact' to characterise the content of journals under evaluation is subject to ongoing debate, but we used it as a means to situate our screening of a data population within current explicit parameters.
- Our data indexing the geographic sources of health professional education scholarship through declared author affiliations do not account for other forms of research diversity.

Japan) are home to nearly half of all medical schools and over 2000 pharmacy programmes are concentrated across these same nations.^{1,2} Internationally, there are almost 22 million trained nurses, half of whom are in the workforce in countries outside North America and Europe.³ The proliferation of health professional training programmes in low and middle-income and transitional countries has been bolstered by increasing healthcare demands of their populations coupled with economic growth and access to a sizeable student base.⁴ However, while the educational opportunities for these and other disciplines continue to proliferate worldwide, the reported scholarship of teaching and learning typically predominantly arises from Western perspectives of the Global North.

Efforts to adequately characterise the origins of health professional education (HPE) research have assumed a variety of approaches and concentrations. Among indexed English-language literature, Tutarel



was first to focus on two high-impact medical journals between 1995 and 2000 finding authorship of articles was overwhelmingly of North American, British or Australian origin.⁵ Rotgans similarly targeted six specific medical journals in their examination of publications from 1988 to 2012. While seeking to extract and characterise the subject matter of nearly 11 000 titles, he additionally identified the research was most often affiliated with universities from the UK, Netherlands, the USA or Canada.⁶ Expanding to a 40-year time period (1974–2014), Doja *et al* developed a network diagram of relative productivity among medical schools where the UK, Netherlands, the USA and Canada (along with New Zealand) again were ranked highest.⁷ When Thomas compared 1 year (2015–2016) of medical education research with the scholarly output of other biological sciences discipline, a higher proportion of authors were North American, British or Australian than any other field.⁸

The relative dearth of published English-language HPE research from outside the Western perspectives of North America and Europe has been attributed to a number of factors. Logistically, the necessary funding may not be available.⁹ While this may be safely considered a global phenomenon, special emphasis in resource-constrained settings may rest instead on healthcare provider training and patient care delivery itself. Local research priorities may abet limited funding to efforts in developing and deploying interventions to address local healthcare needs and structuring health and public policies.^{10–13} Practically, authors may opt to submit their work to regional journals published in their native language thereby ensuring an audience. Indeed, the landscape for HPE publication is increasingly crowded and acceptance rates declining.¹⁴ Pedagogically, editors and other thought leaders might earmark certain subject matter or lines of inquiry as yielding nothing further to understand or uncover. Researchers attempting to disseminate findings related to these exhausted or veritable ‘unhot’ topics may not draw an enthusiastic response.¹⁵ Nevertheless, expressly stated aims of top HPE journals are to reflect perspectives that are global in scope and broadly address needs of health professional trainers and administrators. Earlier approaches to characterise geographic distribution of published HPE research in English would imply that the courted international readership in fact digests papers written from a limited worldview. Contemporary discourses frame diversity as differences between group member characteristics which may encompass race, ethnicity, gender, social class, religion, nationality and/or sexual identity.¹⁶ The inclusion of diverse learners, faculty, staff and leaders in health professional training (and ultimately for patient care) is gaining wider recognition and vital promotion, but what progress in achieving expanded portrayals in HPE scholarship has been achieved? We examined the authorship of recent publications to update geographic representation as a marker of national diversity and to explore any apparent change in patterns over time.

METHODS

We conducted a document analysis, systematically screening the table of contents of seven selected high-impact HPE journals over a 10-year time horizon (2008–2018). High-impact designation was determined through comparison of the top 20 indexed journals according to documented impact factor, H5 index and scientific journal rankings under each of the four subject categories ‘Education, Scientific Disciplines’; ‘Healthcare Sciences and Services’; ‘Health and Medical Sciences’; and ‘Medicine and Education’. These lists were merged and screened according to the described aims and scope outlined by each journal. Those indicating concentration of journal content for non-health-oriented audiences (eg, educators in engineering and natural sciences) or those not directly involved in patient care (eg, epidemiologists, health economists) were excluded. Of the remaining titles, we selected health professional journals which did not restrict English-language submissions by country, region or specific discipline. The resultant final included journals (and country of publication) were: *Academic Medicine* (USA), *Advances in Health Sciences Education* (USA), *BMC Medical Education* (UK), *Journal of Continuing Education in the Health Professions* (USA), *Medical Education* (UK), *Medical Teacher* (UK) and *Teaching and Learning in Medicine* (USA).

The table of contents was extracted from Embase through a host Ovid platform into a database for sorting and characterisation. Each publication field displayed the title, abstract, corresponding and coauthor first and last names, author affiliations, article type and publication date. Papers designated as original articles or reviews were included. Original articles were considered irrespective of length (and therefore included brief peer-reviewed reports). We did not collect data for editorials, letters or other article designations.

For each included publication, we recorded the country affiliations of the lead authors and coauthors as well as the region/s where the study was situated (when applicable). Lead author was assigned based on who was reported as corresponding author. We characterised the geographic origins of the research teams and study setting according to the United Nations (UN) standard geographic regions.¹⁷ Single-region teams were designated as those whose authors were affiliated with institutions in the same country or in different countries, but within the same UN region. Multiregion teams were collaborations by authors affiliated with institutions across two or more UN regions. If extracted author information indicated multiple affiliations, we coded the region of the affiliation they listed as first. Finally, differences in regional representation between journals and changes over time were examined through unadjusted proportional comparisons of publication numbers by geographic region.

Three main researchers extracted all data across the seven journals and populated the shared database. Coded data (ie, lead author and coauthor affiliation by nation, geographic context of research, if applicable) were

regularly subjected to crosschecks by reviewers among the authorship team who replicated data coding independently. Discrepancies were resolved through discussion between abstractors and consensus sought with other members of the authorship team before proceeding with further data collection.

Patient and public involvement

Patients or the public were not involved in the design, or conduct, or reporting, or dissemination plans of our research.

RESULTS

A total of 12018 titles were screened and 7793 (64.8%) articles included. The balance of 4225 articles was not characterised as original research or reviews (eg, editorials, commentaries, letters, opinions) and therefore excluded. There were 6811 (87.4%) original articles and 982 (12.6 %) review articles. Most publications were collaborations (7048, 90.4%); however, approximately 3% (n=223) of the total multiauthor publications in our data set could not be further characterised as single-region or mixed-region teams due to incomplete reporting of authorship information in the source article (online supplemental appendix 1). The majority of characterised collaborations (n=6825) were conducted by multiple authors from single geographic regions (5851, 86%). Known single-region teams were usually formed from countries in North America, Northern Europe (specifically the UK) or Western Europe (56%, 14% and 10%, respectively). Known mixed-region teams were led

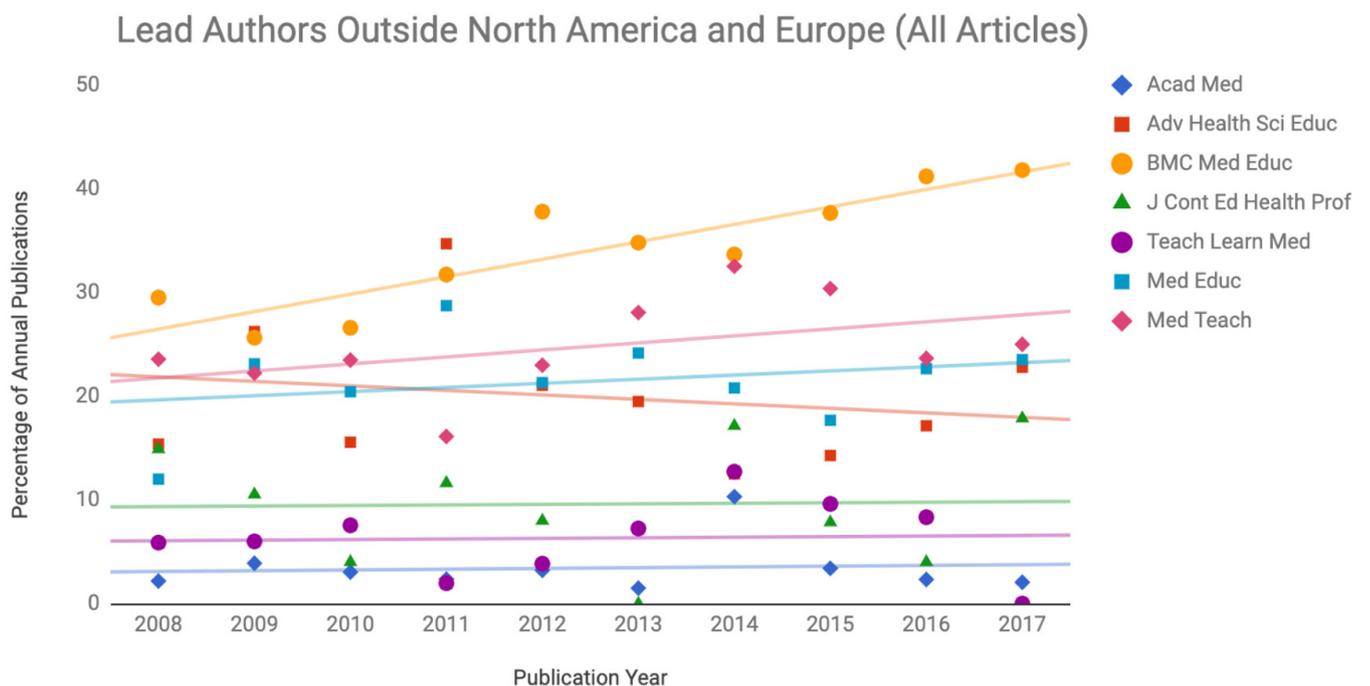
by authors from North America (35%), Northern or Western Europe (27%) or Australia (7%), while coauthors were typically from another country also located across these same regions (collectively, 93%). Single authorship papers (746, 9.6%) were overwhelmingly published by researchers affiliated with North American (53%) and Northern European institutions (23%) and no other single region made up more than 6% of the remaining total. Overall lead authorship (original or review papers) from Asian, African or South American regions was less than 15%, 5% and 1%, respectively.

Known mixed-region teams represented less than one-fifth (967, 14%) of published collaborations. When these original articles or reviews were situated in a particular geographic context, as described by the study setting or participants in the published abstract, a mismatch between lead author affiliation and study settings outside North America and Europe was found. For example, in the 82 mixed-region authored reports of teaching and learning set in Asia, Africa or South America, 66 (80%) were led by researchers outside these respective continents.

Overall, the proportion of lead authors outside North America or Europe was variable over time (ranging from 0% to 42% across the seven journals) with upward annual trajectories of greater geographic representation for only three journals in the decade we evaluated (figure 1).

DISCUSSION

In this study, we report the longitudinal characterisation of author source in specific published English-language



*The trend line illustrated is calculated by least squares method

Figure 1 Annual journal trends in article lead authorship outside North America and Europe.



HPE literature. When combined with earlier relevant research, our findings confirm relatively little change in the patterns of geographic representation in over a decade of examination. Multi-institution collaborations were the most prevalent authorship configuration, but teams were generally formed from the same region. Through analysis of corresponding and coauthor institutional affiliations, we identified that researchers from North America and Europe continue to dominate the published landscape.

Relatively homogeneous and stagnating origins of published research contributions plague many scientific communities, but should be cause for particular concern in HPE. Across many disciplines and medical subspecialties, curricular reform and international standardisation of competencies are increasingly pursued, but risk disproportionate emphasis on regional values and practices.^{18–21} Experiences and innovations from small or remote environments may in fact transfer more readily to certain Western contexts, especially where healthcare systems face comparable challenges (eg, medication shortages, inadequate supplies, ageing infrastructures, insufficient recruitment and retention of necessary personnel). Issues around the globalisation of HPE have been typically oriented towards the mobilisation of curricula and healthcare workforce across borders, but must also attend to patients themselves. The evolving dynamic demographic of patient populations and associated healthcare needs necessitates access to pre-existing insights gained elsewhere.^{22–23} The negative health consequences of accelerating climate change (extreme temperatures, air pollution, food insecurity) have implications for healthcare education.^{24–25} Lessons for equipping health professional trainees with the necessary skill set or ‘eco-literacy’ may be best learnt from these typically under-represented regions. Pursuit of diversity in HPE scholarship supports essential knowledge translation across local contexts.

Given recognised and immutable barriers to health professional research facing scholars in major continental regions, what strategies could address under-representation? These complex issues require multifaceted solutions, but certain mechanisms have been promoted within other fields facing these same concerns and merit amplification in HPE scholarship. Our data demonstrate team-based authorship as the prevailing model for research dissemination, including collaborations across institutions, countries and, less frequently, geographic regions. Extension of cross-continental networks into under-represented regions could function to cooperate in coordination of research activities and dissemination of scholarly products.²⁶ However, adequate time is necessary to identify and cultivate such relationships and establish balanced partnership frameworks whereby research agendas are mutually agreed.²⁷ More readily applicable approaches may involve how research submissions are managed once they reach the journal in question, particularly like those based in North America and the UK included in our report. Other scientific communities have petitioned for increased diversification

in editorial board composition and more varied pools of peer reviewers.²⁸ Broader reviewer recruitment promises more contextually diverse perspectives on submissions made from throughout the world and lends insight into research from their representative regions. Cosmopolitan editorial boards may mitigate explicit and implicit bias in manuscript selection, and enrich editorial judgements while building global capacity in skill and experience.²⁹ Finally, honest review of described journal aims and scope in reconsideration of how genuinely international or multidisciplinary they are interpreted to be may lead to more tempered statements useful to readers and authors alike, especially for journals affiliated with and prioritising matters of interest to a particular membership.

The digital age has dismantled publishing paradigms across academic and non-academic sectors alike. The proliferation of web-based and social media-based platforms for timely information sharing begs the question of ongoing relevance to privileging HPE scholarship reported in North American and European journals.³⁰ We admit to reinforcing these attitudes through our choice of ‘top ranked’ journals for review and acknowledge ongoing debate regarding flaws in how this status is achieved and its ongoing relevance.^{31–32} Indeed, we exit this study convinced that measures are necessary to address international under-representation in traditional modalities for dissemination of HPE scholarship. We are equally optimistic; however, that pursuit of democratisation of global research output will also grow within and across scholarly communities of diverse, yet relevant, health professional teaching and learning contexts through novel channels.³³

While these results bolster the findings of other authors, our systematic, multicoder approach to identify author affiliation and annual trends in geographic distribution among the foremost HPE journals is unique. Nevertheless, the work is subject to specific limitations. We acknowledge that our focus is a narrow perspective of diversity, as diversity encompasses wider identities of ethnicity, sexuality, gender, age and disability, as examples. To that end, we recognise how institutional affiliation of authors in certain instances is an imperfect surrogate for researchers’ cultural identity. Use of specific ranking indexes to select journals of interest privileges English-language scholarship and therefore neglects other published health professional literature with significant populations of readership (eg, Pacific Asia region). We relied on the source (Ovid Embase) output’s data organisation and labelling, such as publication type and authorship affiliation information. Similarly, this extraction process yielded over 12000 article citations which were manually sorted and analysed; we cannot eliminate unknown instances of random error, although we took measures (multiple crosschecks by independent coders) to minimise the margin of potential inaccuracies. We included only articles and reviews and therefore concede greater geographic inclusion, and diversity may be broadly found across commentaries, editorials and letters to the

editors. In future research, we recommend consultation with journals' editorial team members to determine the regional characterisation of article submissions to further understand where in their systems of research dissemination do challenges to international authors lie.

CONCLUSION

The diversity of international contributions in HPE scholarship as marked by nation of author affiliation remains low. Under-representation of published research outside Western regions may limit dissemination of novel ideas resulting in unidirectional flow of experiences and a concentrated worldview of teaching and learning. We argue the value of increased diversity and for means to augment opportunities for inclusion, but recognise wider information exchange can be achieved and accessed through legitimate alternate platforms.

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Appendix 1. Characterization of Original and Review Article Author Affiliation by United Nations Standard Geographic Region

MULTI-AUTHOR RESEARCH (7,048, 90.4%)*			SINGLE AUTHOR RESEARCH (746, 9.6%)
SINGLE REGION (5,851, 86%)	MULTI-REGION (967, 14%)		REGION
	LEAD AUTHOR AFFILIATIONS	COLLABORATOR AFFILIATIONS[^]	
North America (3,295, 56%)	North America (343, 35%)	North America (353, 37%)	North America (392, 53%)
Northern Europe (843, 14%)	Northern Europe (140, 14%)	Western Europe (255, 26%)	Northern Europe (171, 23%)
Western Europe (614, 10%)	Western Europe (130, 13%)	Northern Europe (175, 18%)	Australia/NZ (45, 6%)
Australia/NZ (429, 7%)	Australia (72, 7%)	Australia/NZ (114, 12%)	Western Asia (38, 5%)
Eastern Asia (192, 3%)	Western Asia (53, 5%)	Western Asia (46, 5%)	Western Europe (32, 4%)
Western Asia (143, 2%)	Eastern Asia (43, 4%)	Eastern Africa (39, 4%)	Southern Asia (17, 2%)
Southern Europe (79, 1%)	South Eastern Asia (43, 4%)	Eastern Asia (36, 4%)	Eastern Asia (14, 2%)
South Eastern Asia (74, 1%)	Southern Asia (33, 3%)	Southern Europe (27, 3%)	South Eastern Asia (14, 2%)
Southern Asia (74, 1%)	Southern Africa (24, 2%)	South Eastern Asia (26, 3%)	Southern Africa (11, 1%)
South America (53, <1%)	Southern Europe (24, 2%)	Central Asia (24, 2%)	Eastern Africa (3, <1%)
Southern Africa (27, <1%)	Eastern Africa (23, 2%)	Southern Asia (22, 2%)	Western Africa (3, <1%)
Eastern Africa (15, <1%)	South America (18, 2%)	South America (17, 2%)	Eastern Europe (2, <1%)
Western Africa (7, <1%)	Western Africa (8, <1%)	Western Africa (11, 1%)	Southern Europe (2, <1%)
Northern Africa (3, <1%)	Central America Caribbean (6, <1%)	Eastern Europe (9, <1%)	Middle Africa (1, <1%)
Middle Africa (2, <1%)	Northern Africa (5, 1%)	Central America Caribbean (4, <1%)	Northern Africa (1, <1%)
Central Asia (1, <1%)	Eastern Europe (2, <1%)	Northern Africa (2, <1%)	
		Southern Africa (4, <1%)	
		Middle Africa (1, <1%)	

*223 multi-author manuscripts could not be characterized

[^]Regional characterization of collaborator affiliations totals more than 100% as publications may have multi, multi-region co-authors