Coloniality in Patterns of Authorship

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United Nations University – International Institute for Global Health (UNU-IIGH), Kuala Lumpur, Malaysia is the designated UN think tank on global health, serving as a policy translation hub for UN member states, agencies and programmes.

Decolonising Global Health (DGH) is a programme of work within UNU-IIGH working to improve the Global Health system by catalysing equitable shifts in power and new forms of global health practice that are better tailored to the needs and contexts of low- and middle-income countries and marginalised population groups.
Infographic: Coloniality in Patterns of Authorship

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Why does authorship matter?

Global Health’s colonial legacies are perpetuated by persistent power imbalances in knowledge production and publications, exacerbated by racialised and gendered hierarchies of being.

Previous analyses of authorship trends between 2014 – 2019 show that researchers based in HICs dominate in the prestigious first and last author positions, whilst a high number of papers lack representation from LMICs.

We analysed 1,269 single-country (one LMIC), multi-country (two or more countries with at least one LMIC), and global (countries from three or more WHO regions) papers from 2019-2021 to see if the picture has improved.*

Who occupies positions of prestige?

Authors affiliated to institutions in HICs continue to dominate authorial positions of prestige which confer influence and impact; their share of the pie is disproportionately large in stark contrast to LIC-affiliated authors.

<table>
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<tr>
<th>HIC-affiliated authors</th>
<th>LIC-affiliated authors</th>
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<tbody>
<tr>
<td>71.1% of all first authors</td>
<td>74.2% of all last authors</td>
</tr>
<tr>
<td>2.3% of all first authors</td>
<td>1.7% of all last authors</td>
</tr>
</tbody>
</table>

HIC-affiliated men

40.3% of all first authors

48% of all last authors

LIC-affiliated women

0.4% of all first authors

0.6% of all last authors

We also observed an intersectional gender gap, echoing and exacerbating race- and gender-based power asymmetries rooted in coloniality.

Who is stuck in the middle?

Sandwich authorship is the phenomenon of in-country authors being relegated to the middle of the authorship list for papers focusing on research in their own contexts. This is particularly egregious in light of the fact that local researchers often playing pivotal roles in research design, data collection, and community engagement.

Single-country papers

390 out of 470 single-country papers had middle authors.

30% (n=146) of these papers could only claim in-country representation through middle authors, while 9% (n=30) had no in-country representation at all.

Multi-country papers

235 out of 316 multi-country papers had middle authors.

34% (n=79) of these papers could only claim in-country representation through middle authors, while 18% (n=43) had no in-country representation at all.

HICs appear as study locations in 112 multi-country papers, and HIC authors are thus considered in-country authors where their primary institutional affiliation matches any of the study locations. Of these 112 papers, 22 are coded as having in-country sandwich authors due solely to the presence of HIC researchers and study locations.

Who sets the global health agenda?

HIC dominance is most prevalent within the global papers, suggesting that power structures governing collective agenda-setting remain unchanged.

HIC-affiliated men remain the largest cohort of authors at the global level, while LIC-affiliated women and men do not appear as first and last authors, respectively, in any of our 483 global papers.

These findings serve as a sobering reminder that global health has a ways to go towards decolonisation.
Introduction

Global health’s deep-rooted, extractive colonial legacies have contributed to power asymmetries that permeate all aspects of the global health ecosystem, from research and implementation to funding and governance. These imbalances are perpetuated by three interconnected dimensions of colonialism and coloniality encompassing the power asymmetries that exist within and between global health stakeholders, the colonisation of global health’s structures and systems of governance by a small subset of powerful actors, and the extraction of resources through global health programmes and policies [1]. Within global health research, concerns exist about the preponderance of unequal research partnerships [2,3], where funding flows to [4], and the continued disproportionate flow of raw information from low- and middle-income countries (LMICs) to high-income countries (HICs) [5,6]. Cumulatively, these factors contribute to a system in which large amounts of data are extracted from LMICs, and then become knowledge and expertise ‘owned’ by HICs [7,8].

Persistent imbalances contribute to the (contested) perception of global health as “public health somewhere else”, particularly for those in HICs [9,10]. In our work, we operationalise a definition of global health that is intent on ‘achieving equity in health for all people worldwide’ [11] with the recognition that to do so, the principles of ‘health for all (for all people worldwide), health by all (by a representative range of stakeholders and actors) and health in all (multisectoral efforts to increase health)’ [12] are foundational. As such, we are particularly interested in interrogating how [13], where [14], and by whom [15] global health narratives are shaped and told. Patterns of authorship within peer-reviewed publishing are not only manifestations of coloniality in knowledge production but also have practical implications for the researchers who produce the evidence, directly impacting visibility within the field, the ability to secure grants, and ultimately career progression [16–18].

Previous analyses of authorship trends between 2014 – 2019 show that researchers based in HICs are overrepresented in the prestigious first and last author positions, whilst many papers lack representation from LMICs [14,19]. Inspired by these studies and the many calls to ‘decolonise Global Health’, we analysed 1,269 papers published in 12 global health, medical, and tropical disease journals between January 2019 and December 2021 to see if the picture has improved. We set out to interrogate the following elements of the global health authorship landscape:

Figure 1: Four key elements of global health authorship in our analysis.

- Positions of Prestige
  - First authors are generally responsible for the bulk of the research and writing, whilst last authors are often the most senior researchers on the team.
  - To what extent do in-country authors occupy these positions?

- Sandwich Authorship
  - Often, in-country researchers are relegated to the position of middle authors - i.e., “sandwiched” between out-of-country first and last authors.
  - To what extent do in-country authors only appear in “sandwich” positions?

- Gender Representation
  - Colonialism was both a racialised and gendered project and coloniality continues to perpetuate power asymmetries based on a racialised and gendered hierarchy.
  - To what extent do we see this hierarchy reflected in gendered authorship patterns?

- Institutional Affiliations
  - Institutions act as brokers of both knowledge and power, offering insight into change or lack thereof at the structural level.
  - To what extent are authors affiliated with in-country institutions?
Methodology

A purposively selected sample of 12 journals (see Table 1) was identified. Journals were selected to ensure some continuity with previous studies [14,19] as well as to ensure a reasonable mix of journal types, including prestigious medical journals, leading global health journals, and journals specialising in infectious diseases with a large disease burden in LMICs.

For each journal, we identified 20 research and 20 non-research global health articles per year from 2019-2021 for analysis. Articles were chronologically sampled by selecting the first twenty articles of each type in each year which met the following inclusion criteria:

- Primary and secondary research articles involving at least one LMIC: We focused on research conducted in/on LMICs where the story has typically been told through and by outsiders.
- Non-research editorials, commentaries, and opinion pieces involving at least one LMIC.
- Articles about human health: While human, animal, and environmental health are all inextricably linked, we focused only on papers concerning human health.
- Articles with named authors visible during title/abstract review.
- Articles published in the main journal, i.e. not supplemental or thematic issues.

The following types of articles were excluded:

- Research articles on human health with no human participants, such as lab experiments.
- Non-research articles such as obituaries, news, letters, book reviews, images and other media types, and journal-specific article types (e.g., series/commissions).

Not all journals published 40 eligible articles in a given year. In total, this review included 1,269 articles of a potential 1,440:

Table 1: Total count and source list of dataset.

<table>
<thead>
<tr>
<th>Journal</th>
<th>Journal type</th>
<th>Research</th>
<th>Non-research</th>
<th>Total</th>
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<tbody>
<tr>
<td>British Medical Journal</td>
<td>Medicine</td>
<td>60</td>
<td>52</td>
<td>112</td>
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<tr>
<td>Journal of the American Medical Association</td>
<td>Medicine</td>
<td>57</td>
<td>40</td>
<td>97</td>
</tr>
<tr>
<td>The Lancet</td>
<td>Medicine</td>
<td>60</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>New England Journal of Medicine</td>
<td>Medicine</td>
<td>60</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>BMJ Global Health</td>
<td>Global health</td>
<td>60</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>Bulletin of the World Health Organization</td>
<td>Global health</td>
<td>60</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>Health Policy and Planning</td>
<td>Global health</td>
<td>60</td>
<td>15</td>
<td>75</td>
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<tr>
<td>The Lancet Global Health</td>
<td>Global health</td>
<td>60</td>
<td>60</td>
<td>120</td>
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<tr>
<td>American Journal of Tropical Medicine and Hygiene</td>
<td>Infectious diseases</td>
<td>60</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>International Journal of Tuberculosis and Lung Disease</td>
<td>Infectious diseases</td>
<td>60</td>
<td>56</td>
<td>116</td>
</tr>
<tr>
<td>Malaria Journal</td>
<td>Infectious diseases</td>
<td>60</td>
<td>22</td>
<td>82</td>
</tr>
<tr>
<td>Tropical Medicine and International Health</td>
<td>Infectious diseases</td>
<td>60</td>
<td>7</td>
<td>67</td>
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<tr>
<td><strong>Total:</strong></td>
<td></td>
<td><strong>717</strong></td>
<td><strong>552</strong></td>
<td><strong>1,269</strong></td>
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The following data were extracted from each of the selected articles and recorded in an Excel spreadsheet: title, publication date, type of article, study level and location, gender and geographic location of the primary institutional affiliation of first and last authors, and geographic location of sandwich authors. For clinical trials, study locations were extracted from the relevant clinical trials databases [20,21]; trial numbers and links to the relevant page were generally included in the abstract for trial papers in medical journals. Papers were categorised into one of three ‘buckets’ based on their geographic focus: single-country papers were those focused on a single low or middle-income country, multi-country papers were those focused on two or more countries spread across up to three WHO regions, and global papers featured four or more WHO regions [22].

Some papers in our dataset named joint first authors; in this instance, the details of the first individual named were used. Where authors listed multiple institutional affiliations, primary and secondary affiliations were noted; primary affiliation was used for our analyses unless stated otherwise. For both author and study location, LMICs were identified based on the World Bank’s 2021 country income classifications [23].

Lastly, we categorised authors according to their gender using the GenderChecker name database [24]. While we understand gender is a spectrum and not a binary, the database codes names as male, female, and unisex. Where a name was identified as unisex, we manually searched the Internet for author profiles and coded the entry with either a specified gender or as unknown, as per Merriman et al [14]. At final count, our dataset contained 12 individuals of unknown gender.

### Analysis

We analysed the geographic and gendered distribution of first and last authorship as well as positioning of in-country researchers as “sandwich” authors. In presenting our findings, we combined research and non-research papers and present results from all three years aggregated as the first round of analyses revealed negligible differences between the different article types and no discernible year-on-year trends.

#### Positions of prestige

We looked at first authors (n=1,269) and last authors (n=1,149) of all papers and present our findings at the single-country, multi-country, and global level, as well as through a gender lens.

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<td>0.4%</td>
</tr>
<tr>
<td>All last authors</td>
<td>48.0%</td>
<td>0.6%</td>
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Across the whole dataset (n=1,269), 71.1% of first authors and 74.2% of last authors are affiliated to HIC institutions. Male authors based in HICs form the largest cohort of both first and last authors, representing 40.3% of all first authors and 48% of all last authors, while women in LICs form the smallest cohort, representing only 0.4% of all first authors and 0.6% of all last authors.

For single-country papers (n=470), we sought to assess in-country representation. Of 470 first authors, less than half (47.2%) were affiliated with an in-country institution; of the 248 first authors affiliated with an out-of-country institution, 89.9% were based in HICs. Interestingly, greater levels of gender parity were observed amongst out-of-country first authors (men represented 50.8% of authors while women represented 49.2%) as compared to in-country authors, where men occupied 61.3% of first author positions while women represented only 35.6% of in-country first authors. Similar patterns were observed for last authors (n=456), with only 41.5% of last authors affiliated to a local institution; 92.8% of out-of-country last authors were HIC-affiliated researchers. No gender parity was observed in last authorship (often a signal of seniority, authority, and power), with women representing only 33.3% of in-country last authors and 36.8% of out-of-country last authors.
Strikingly, for nearly half of the single-country papers (46.8%, n=220/470), both first and last authors were affiliated with institutions outside of the study country. Of the three types of journals in our dataset, we had hypothesised that the infectious diseases journals might have higher rates of in-country representation. Indeed, of the 221 single-country papers from our selection of infectious diseases journals, only 39% had neither a first nor last in-country author. In comparison, 44% of single-country papers in the medical journals and 58% of single-country papers in the global health journals lacked any first or last authors affiliated to in-country institutions.

Of the multi-country papers, 75% (n=237) had neither a first nor last author with a primary affiliation in any of the study locations. HIC authors formed the largest cohort of both first and last authors for multi-country papers, representing 79.8% (n=316) of all first authors and 81.5% (n=281) of all last authors. In comparison, LIC researchers represented just 2.5% of all first authors and 1.4% of all last authors. The levels of gender disparity in multi-country authorship are similar to those recorded for single-country authorship, with women representing 37% of all first authors and 33.5% of all last authors. HIC-affiliated men formed the largest cohorts, representing 49.1% of first authors and 53.7% of last authors, while LIC women formed the smallest cohort by comprising only 0.6% of all first authors and 0.4% of all last authors.

Just over a quarter of first authors in our dataset listed two or more affiliations (345 of the 1,269, 26.6%). While 238 first authors of single- or multi-country papers held multiple affiliations, only 47% (n=113) reported at least one of their affiliations as being in-country. Similarly, 284 out of 1,149 (24.7%) last authors listed two or more affiliations, 194 of whom were last authors of single- or multi-country papers. Of the 194 last authors, just 43.8% (n=85) held at least one in-country affiliation.

The dominance of HIC-affiliated authors was most prevalent across the global-level papers. Of the 483 global papers in our dataset, 88.4% of first authors (n=482) and 91.1% of last authors (n=429) are affiliated with a HIC-based institution. UMIC researchers formed the second-largest cohort at 6.6% of first authors and 5.4% of last authors, LMIC researchers represented 4.4% of first authors and 3.3% of last authors, and LIC researchers recording the lowest rates of representation at 0.6% of first authors and 0.2% of last authors.

Similar to trends observed in other analyses [14], men outnumbered women as both first and last authors, with women representing 40.4% of all first authors and 36.4% of all last authors. As expected, men based in HICs formed the largest cohort of authors, representing 52% of first authors and 59% of last authors. Forming the smallest cohort, LIC researchers, both male and female remain glaringly absent from global health at the global level: women in LICs do not appear as first authors at all and represent only 0.2% of last authors, while men in LICs represent 0.6% of first authors and are entirely absent from the list of last authors. 0.23% of last authors for global papers were coded as having unknown genders due to missing data.
**Sandwich authorship**

A complete picture of power dynamics within authorship ranks can only be formed by complementing an analysis of positions of prestige with an analysis of sandwich authorship, the phenomenon of in-country authors being relegated to the middle of the authorship list for papers focusing on research in their own contexts. For this analysis, we returned to the single- and multi-country papers to determine the extent to which in-country authors are ‘sandwiched’ between out-of-country first and last authors. To identify out-of-country first and last authors, both primary and secondary affiliations were taken into consideration.

Of the single-country papers, 390 out of 470 papers had middle authors. Of these, we found that 9% (n=36) had no in-country representation at all while 30% (n=116) could only claim in-country representation through the presence of middle authors.

For multi-country papers, 235 out of 316 papers had middle authors. Of these, we noted 33 (14%) papers in which every author was affiliated with an institution in one of the study locations and 42 (18%) papers which reported no in-country authors at all. It is worth noting at this point that HICs appeared as study locations alongside MICs and LICs in 112 multi-country papers, and HIC authors are thus considered in-country authors where their primary institutional affiliation matches any of the study locations. Of these 112 papers, 22 are coded as having in-country sandwich authors solely due to the presence of HIC researchers and study locations.

**Discussion**

Owning the narrative is a powerful tool and a right that has been denied to too many health researchers. Whilst there are signs of increasing patterns of local authorship, particularly for single-country papers, the numbers here present a sobering picture of continued dominance by HIC individuals of research conducted in LMICs, as well as an abysmal under-representation of authors from low-income countries in global level and multi-country papers. Furthermore, a profound gender gap within and between country income categories proves that we have a long way to go towards achieving gender parity in global health research.

To achieve health equity, calls for ‘health by all’ [12] must move beyond performative stakeholder diversity efforts and truly value and integrate the work and experience of LMIC and LIC researchers, from setting their own research agendas, to telling their own stories, and influencing their own policies [25]. Furthermore, the decolonisation of knowledge production cannot stop at LMICs regaining control over local agendas while the machinery of coloniality churns on at the global level, dominating agenda setting, monopolising funding, and unduly influencing the governance of the global health architecture. Positive change is happening within the academic publishing enterprise, ranging from the establishment of new journals committed to equity and inclusivity, such as PLOS Global Public Health [26], to the calls for the adoption of author reflexivity [27,28] statements, already being implemented in existing journals like Health Policy and Planning [29]. These changes are to be encouraged. At the same time, we must be cautious of partial changes that improve optics but fail to address the structural drivers of authorship inequity [30].
Journals play a key role in decolonising global health, but the responsibility cannot be theirs alone. Unless and until all agendas, priorities, and research are equitably co-designed, Global Health will remain something that is done to rather than with the majority of the world – a return to, rather than a departure from, its colonial roots. As funders, researchers, and other global health actors, we need to question the roles each of play in addition to holding each other accountable for our pledges to diversify and improve representation [31]. Funders can increase the proportion of their portfolio that supports principal investigators and lead organisations in LMICs, as well as requiring open access publication for knowledge products created with their support. Researchers in HICs should avoid research projects about LMICs that do not have local partners as equals and need to ‘lean out’ when deciding authorship order. Institutions in LMICs should consider how best to empower researchers to strengthen South-South and triangular collaborations [32]. Together, we must continue to interrogate the coloniality of knowledge as perpetuated by academic publishing in all its stages, from knowledge production to dissemination to translation to implementation – and beyond.
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UNU International Institute for Global Health (UNU-IIGH), Kuala Lumpur, Malaysia is the designated UN think tank on global health, serving as a policy translation hub for UN member states, agencies and programmes. It was established by a statute adopted by the Council of the United Nations University in December 2005.

The Institute generates policy-relevant analysis by applying a gender lens to inform the development, implementation and evaluation of health programmes. UNU-IIGH also supports capacity development of local decision-makers and stakeholders to engage effectively with global health challenges within the 2030 Agenda for Sustainable Development.

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