

RESEARCH LETTER

Inequities in Country- and Gender-Based Authorship Representation in Cardiology-Related Cochrane Reviews



Female authors continue to be underrepresented in cardiovascular literature.^{1,2} Similarly, low- and lower-middle-income countries (LMICs) are poorly represented in the authorship of key scientific literature,³ despite bearing a disproportionate burden of cardiovascular diseases.

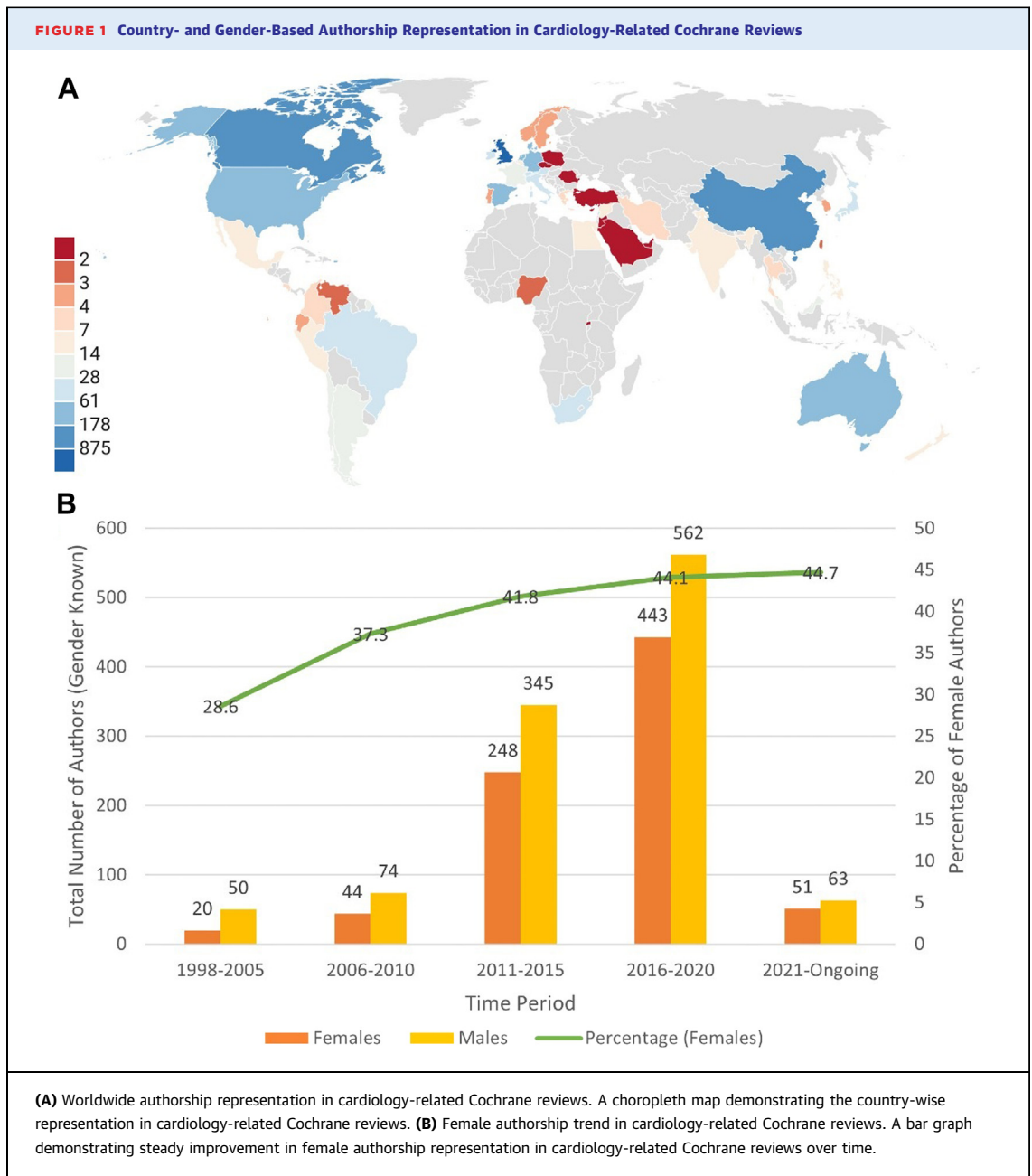
Cochrane is a nonprofit collaborative, whose systematic reviews are considered among the highest level of evidence available. Cochrane reviews widely influence policy and practice worldwide. Equitable representation of LMIC authors in these reviews would help broaden their applicability and the adoption of their recommendations. Little is known regarding authorship diversity in cardiology-related Cochrane reviews. We sought to describe the country-wise and gender-wise author representation in Cochrane reviews related to cardiovascular health.

We searched the Cochrane Library for all publications under the topic, “Heart and Circulation”, published from inception, in 1998, till September 1, 2021. We extracted all titles to a comma-delineated (csv) file. A single author screened all titles, excluding duplicates and articles not strictly related to cardiology, concerning stroke, cardiac surgery, varicose veins, venous ulcers, diabetic foot, vasculitis, and amputation. We included both published reviews and publications withdrawn for updates or delays. We extracted the country affiliation of all authors and classified them into high- and upper-middle-income countries (HICs) or LMICs based on the World Bank income classifications. We then searched online to determine each author’s gender, attempting to record at least 1 webpage, for example, their institutional profile, Twitter, or LinkedIn, that demonstrated it. Those whose gender could not be definitively

ascertained were excluded from the gender-based analysis. We carried out descriptive data analyses (mean, percentage, median) on Microsoft Excel and appropriate inferential analyses (chi-square) on R version 3.6.2. The Clopper-Pearson method was used to calculate the 95% confidence interval (CI) of proportions. A second author cross-verified the data for accuracy. Because this is an analysis of publicly available data, involving neither patients nor animals, ethical approval was not required. We followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guidelines.

We initially extracted 788 records. After screening, we included 438 articles (excluding 348 irrelevant articles and 2 duplicate articles). There were a total of 2,312 authors (1,544 unique authors). Only 40 (1.7%; 95% CI: 1.2%-2.4%) authors were from LMICs. HICs were significantly overrepresented, with the top 5 represented countries being the United Kingdom (37.8%, 95% CI: 35.9%-39.9%, n = 875), Canada (10.9%, 95% CI: 9.7%-12.3%, n = 254), China (7.7%, 95% CI: 6.6%-8.9%, n = 178), United States (5.4%, 95% CI: 4.5%-6.4%, n = 124), and Australia (4.5%, 95% CI: 3.7%-5.5%, n = 105) (**Figure 1A**). Gender information was available for 1,901 authors (82.2%, 95% CI: 80.6%-83.8%). There were 806 women, constituting 42.4% of all authors (95% CI: 40.2%-44.7%). The median number of authors per study was 5 (IQR: 3-7), with that of males and females being 2 (IQR: 1-3) and 1 (IQR: 0-3), respectively. Of all, 50.8% (95% CI: 45.5%-56.1%, n = 184/362) of first authors were women, and 40.3% (95% CI: 35.2%-45.6%, n = 146/362) of corresponding authors were women. The representation of women, overall, has steadily improved with time (**Figure 1B**). From LMICs, women constituted only 35.3% (95% CI: 19.8%-53.5%, n = 12/34) of all authors although this was not significantly different from HICs (42.6%, 95% CI: 40.3%-44.9%, n = 794/1,864, $P = 0.39$).

This is the first analysis of the authorship representation of cardiology-related Cochrane reviews. Overall, LMICs constituted <2% of all authors despite these countries suffering the greatest burden of cardiovascular diseases, a finding that echoes an analysis of ophthalmology-related Cochrane



reviews.⁴ We found that women authors were well represented overall, a welcome contrast to their representation in cardiovascular clinical trials and guidelines.^{1,2} Unfortunately, this did not apply to authors from LMICs.

A diverse authorship group can ensure that the recommendations derived from systematic reviews and clinical guidelines are truly relevant to the impacted populations. Notably, the term “foreign gaze” has been coined to describe a foreign narrative

of health issues in LMICs that is often highly academic and impractical.³ Furthermore, diversity promotes fairness and improves the quality of research. For example, increased representation of women in cardiovascular clinical trial authorship, which continues to be poor, has been demonstrated to improve enrollment of women participants, thereby reducing bias.¹

Scientific journals should promote equitable global and gender-based representation in their editorial

boards and authorship. Some potential actions include inviting more women and LMIC-based researchers as ad hoc reviewers or editors, publishing special issues with a geographic or gender-based focus, and lowering barriers to publishing, such as financial ones, for authors from LMICs. The American College of Cardiology's publications have made strides toward this goal—*Journal of the American College of Cardiology* has demonstrated steady improvement in the gender diversity of its invited editors and editorials over the years,⁵ and *Journal of the American College of Cardiology: Asia* is a new, open-access journal dedicated to publishing cardiovascular research in, and from, Asia. Professional organizations would do well to promote diversity in their membership, particularly in leadership roles, and support research capacity-building efforts in LMICs. To this end, the American College of Cardiology has reiterated its commitment to improving equity in the cardiology workforce, and diversity and inclusiveness are explicit goals of Cochrane.^{4,5} However, continued, concerted efforts are required to improve authorship diversity, particularly geographic diversity, at the highest levels of cardiology literature.

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the [Author Center](#).

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