

# Gender parity and heart failure research: Female authors could mean more female participants

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While about a quarter of physicians and researchers working in advanced heart failure (HF) and transplant cardiology are women, representation of women leading HF research remains limited, according

to new research led by Penn Medicine. The authors say the findings point to a need to support great gender diversity among researchers to drive diversity among clinical trial participants and even improve patient outcomes. The analysis, published this month in *Circulation: Heart Failure*, showed that less than 20 percent of first authors on manuscripts cited to support the highest recommendations in HF treatment guidelines were women, and less than 15 percent of the senior authors were women. Furthermore, only 16 percent of contemporary clinical trials in HF had a woman as a first or senior author. The research is the first of its kind to explore gender disparities in authorship of HF guideline citations and clinical trials.

Despite this lack of representation in authorship, researchers found that [clinical trials](#) with higher proportions of women authors had a higher number of female participants—aligning with a longstanding priority from federal organizations to increase the enrollment of women in clinical trials.

"Diversity in authorship can have a snowball effect across the field—not only in improving [gender equity](#) in cardiovascular medicine, but also perhaps in reducing the underrepresentation of women in clinical trials," said Nosheen Reza, MD, the study's lead author, an instructor of Cardiovascular Medicine, and advanced HF and transplant cardiologist in the Perelman School of Medicine at the University of Pennsylvania. "For many reasons, institutions are now taking a hard look at improving diversity, inclusion, and equity, and our findings represent benchmarking data that organizations can utilize and build from."

The researchers identified authors of publications referenced in so-called class I recommendations—representing the strongest clinical guidelines and recommendations—in the United States (173) and European HF guidelines (100), and of publications of HF trials with more than 400 participants published between 2001 and 2016 (118).

After authors' genders were determined by using a multinational database and name matching algorithm, the researchers evaluated the authorship patterns—with a focus on those who led the research for each paper—over time.

On average, the overall proportions of women as first authors of referenced publications in the United States HF guidelines was 18 percent and 16 percent for European HF guidelines, and as last authors 13 percent and 12 percent, respectively. From 1986 to 2016, the percentage of women authorship modestly increased overall in guideline citations.

The proportions of women as first or last authors in HF clinical trials did not change significantly over time, and only 16 percent of the HF clinical trials examined had a woman as a first or senior author. However, HF trials with a woman first or senior author were associated with a higher proportion of enrolled female clinical trial participants (39 percent versus 26 percent).

"While the reasoning behind this interesting phenomenon is still unknown, it's clear representation is an important element for improving care for women," Reza said. "One hypothesis we have for this finding is that women may be more likely to enroll as participants in clinical trials that they know are being conducted by women investigators. Another possibility could be that women investigators are more likely to refer women patients for enrollment in clinical trials. This is certainly an area in which future research is needed."

The authors call for efforts to rectify these disparities, especially since women authorship of HF clinical trials is an important predictor of the enrollment of female participants, which may help to reduce the underrepresentation of women in HF clinical [trials](#).

"Institutions must come together to make a committed effort to improve diversity, inclusion, and equity on promotions committees, editorial boards, steering committees, and other leadership bodies in the HF research enterprise. Women will not overcome these hurdles if these metrics and efforts don't change. By advocating for broad scale efforts in these domains, such as including more women in leadership positions and increasing the mentorship of women across career stages in medicine, we'll be able to develop future generations of experienced and accomplished [women](#) investigators and mentors in HF, and advance science together without leaving anyone behind," Reza said.

Co-authors include Ayman Samman Tahhan, Penn's Nadim Mahmud, Ersilia M. DeFilippis, Alaaeddin Alrohaibani, Muthiah Vaduganathan, Stephen J. Greene, Annie Hang Ho, Gregg C. Fonarow, Javed Butler, Christopher O'Connor, Mona Fiuzat, Orly Vardeny, Ileana L. Piña, JoAnn Lindenfeld, Mariell Jessup.

**More information:** Nosheen Reza et al, Representation of Women Authors in International Heart Failure Guidelines and Contemporary Clinical Trials, *Circulation: Heart Failure* (2020). [DOI: 10.1161/CIRCHEARTFAILURE.119.006605](#)

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