

Gender Disparities in Emergency Medicine Publications: 1991-2018



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Background

Although matriculating medical student classes are increasingly proportional by gender, gender disparities remain pervasive in medicine^{1,2}. These disparities extend across specialties, including emergency medicine (EM).

- Female physicians comprise 36% of the current physician workforce but only 28% of emergency medicine physicians^{3,4}.
- Female physicians are significantly less likely to be appointed to senior leadership positions including full professor or department chair^{5,6}.
- Measures of scholarly productivity such as publication count are increasingly used in hiring, promotion, retention, and salary decisions within academic medicine and have been repeatedly associated with academic rank^{3,7-11}.
- Female physicians have fewer total publications and are less likely to be first authors¹¹⁻¹³.
- Last authors, often considered the author with the highest senior academic rank, are predominantly male with female physicians representing only 16-22% of last authors in EM^{13,14}.
- Although female authorship has increased since 1985, female authors continue to represent a minority of authors of original research and recent studies suggest authorship gains may have plateaued¹³⁻¹⁸.

Methodology

Author demographics were collected at three-year intervals between 1991 and 2018 from the following EM journals: Annals of Emergency Medicine (Annals), American Journal of Emergency Medicine (AJEM), Journal of Emergency Medicine (JEM), and Academic Emergency Medicine (AEM). Article title, type, year of publication, first and last author name, author degree(s), and first and last author affiliation information were documented for each article. Author gender was determined by name comparison to US Social Security Administration name-gender lists. When the author's gender could not be determined by comparison, gender was manually determined by searching the author's institutional website. Only articles containing original research from authors with US institutional affiliations were included.

Objectives

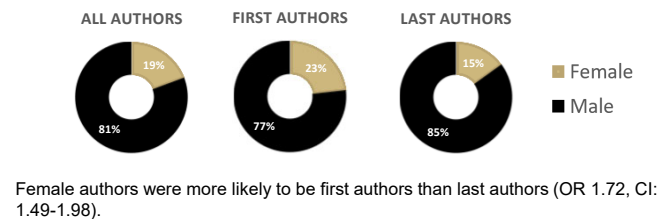
- Assess trends in female first and last authorship over time
- Examine authorship gender in relation to author degree, team composition, and institutional affiliation

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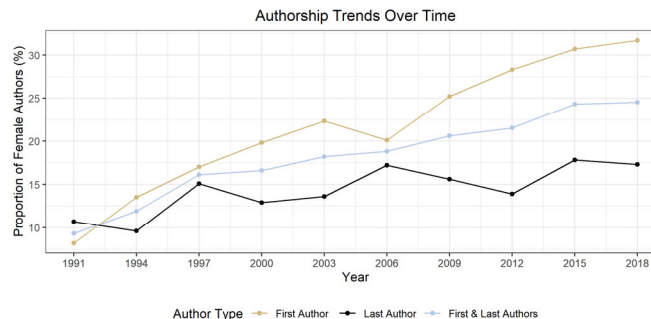
Results

Authorship Breakdown



Trends Over Time

Overall, the proportion of female first and last authors significantly increased over time. First authorship significantly increased in all journals studied; the trend was not significant for last authors in AEM, AJEM, or JEM.

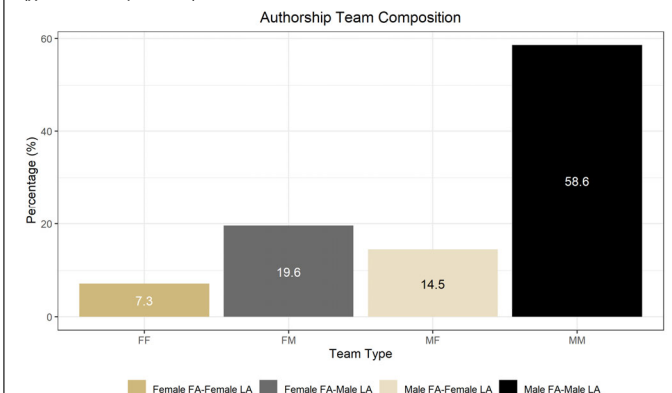


Gender & Degree

There was a significant relationship between degree type and author gender for all authors, first authors, and last authors (all p values < 0.0001). Female authors made up 19.3% of MDs, 20% of DOs, 37.2% of PhDs, and 47.8% of authors with other degrees. Physicians holding either a DO or MD were more likely to be male than non-physician authors with PhDs or authors with other degrees (OR 3.83, 95%CI 3.29-4.46). There were no significant differences in author gender between physicians for first or last authors (p = 0.96, p = 0.68).

Team Composition

First authors were significantly more likely to be female when the last author was female (OR 1.5, 95%CI 1.25-1.8). There was no significant relationship between team composition and shared institutional affiliation between first and last authors (χ^2 - 1.5536, p = 0.67)



Discussion

- Female first authorship increased between 1991 and 2018, exceeding the proportion of female physicians in EM starting in 2012. This increase may reflect the increase in early-career female physicians and trainees.
- Female physicians were more likely to be first authors than last authors; female last authorship increased at a slower rate and remained below the proportion of female physicians in EM.
 - Continued disparities in female last authorship may suggest that barriers to scholarly productivity for female physicians, including discrimination and variation in gender roles, may still affect the careers of female EM physicians, particularly late-career physicians.
- Physician authors (DO or MD) were more likely to be male than non-physicians with a PhD or other degree; the gender gap in EM publications may be particularly prominent for physicians compared to non-physicians.
- The proportion of male first author-male last author teams was higher than the proportion of all other team types combined; female first author-female last author teams represented the smallest portion of author team types.
- Female first authors were more likely to publish with a female last author which may reflect the importance of mentorship, particularly for early-career female EM physicians. Future research should consider the relationships between first and last authors and how mentorship can be used to promote scholarship for women at all career stages.