

Short communication

The gender authorship gap in gynecologic oncology research[☆]

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ABSTRACT

Female first authorship and senior authorship in academic obstetrics and gynecology has increased over time but gender-specific publishing data are lacking within gynecologic oncology. We examined contribution by gender to the subspecialty's flagship journal, *Gynecologic Oncology*, over five decades, from 1972 to 2014, to identify trends in gender representation. Chi-square tests were used to compare gender distributions within and between the first and last years studied (1972–73 and 2014) as well as linear regression to model trends over time. Female first and senior authorship increased significantly from 1972 to 2014 (first: $\chi^2 = 20.9$, $p < .01$; senior: $\chi^2 = 9.9$, $p < .01$). The number of female first authors increased markedly after 2000. Male senior authors still outnumber female senior authors. Papers with senior female authors were more likely to have female first authors, suggesting a mentorship role. Subspecialty-wide gender equity initiatives should encourage continued mentorship of women by female colleagues.

1. Objective

Women now outnumber men in academic obstetrics and gynecology, which has the highest proportion of female faculty members (58%) among all clinical specialties. 68% of assistant, 49% of associate, and 30% of full professors are women; these shares are the largest, largest, and second-largest among all specialties, respectively. (American Association of Medical Colleges, 2015) Female first authorship in *Obstetrics and Gynecology* increased from 6.7% to 40.7% and female senior authorship from 6.8% to 28.0% between 1970 and 2004. (Jagsi et al., 2006) However, gender-specific publishing data are lacking within the subspecialty of gynecologic oncology, which has smaller proportions of female faculty members (42%), assistant professors (63%), associate professors (41%), and full professors (20%). (Hill et al., 2015) We examined contribution by gender to the subspecialty's flagship journal over time in order to better understand the extent to which this field conforms with the larger specialty and to identify potential gaps in gender representation.

2. Study design

We identified original articles (including reviews and editorials) from *Gynecologic Oncology* for the years 1972–73 (first 12 months of publication), 1980, 1990, 2000, and 2014. These years were chosen to aid comparison with other specialties. (Jagsi et al., 2006) We determined gender for the first and last authors of each article initially by inspection of name. If gender was not certain based on name, attempts were made to discern gender based on the author's institutional website or Google searches. Authors were excluded from analysis in rare instances where gender could not be determined based on the above methods. We also used the above methods to identify gender of editorial board members. We did not seek to identify non-binary or transgender authors. Chi-square tests were used to compare gender distributions within and between the first and last years studied (1972–73 and 2014) as well as linear regression to model trends over time. All analyses were performed using R. (Development Core and Team, 2018)

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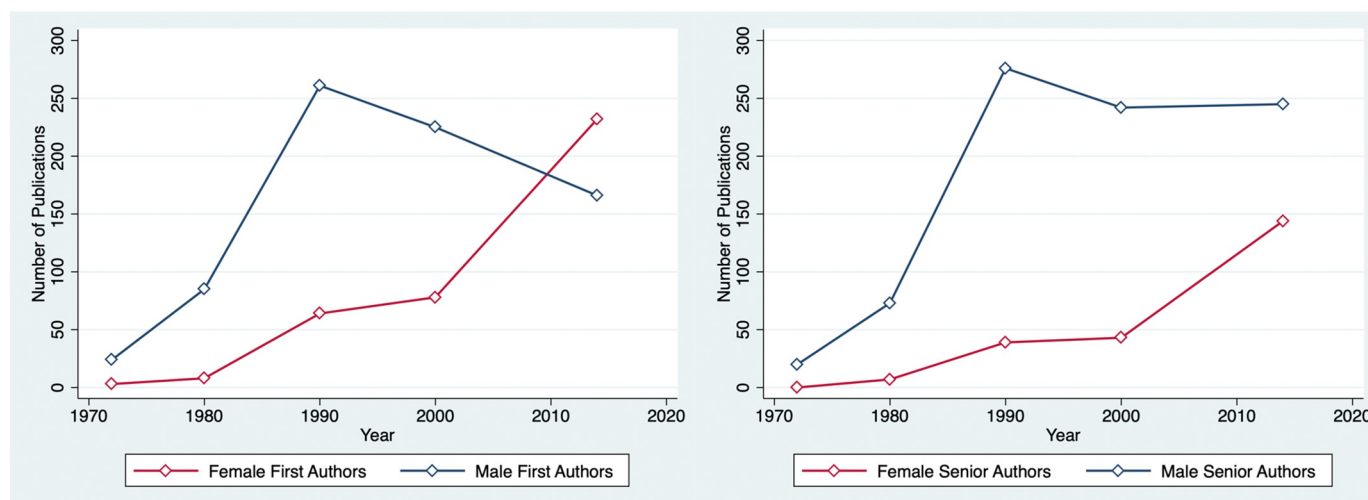


Fig. 1. Gender trends in *Gynecologic Oncology* first and senior authorship, 1972–2014.

3. Results

We reviewed 1201 total publications, including commentaries and review articles. In 1972–73, women comprised 11% of first authors (3/27, $\chi^2 = 16.3$, $p < .01$) and 0% of senior authors (0/20). In 2014, 58% (232/398, $\chi^2 = 10.9$, $p < .01$) of first authors and 37% (144/389, $\chi^2 = 26.2$, $p < .01$) of senior authors were female. Both female first and senior authorship increased significantly from 1972 to 2014 (first: $\chi^2 = 20.9$, $p < .01$; senior: $\chi^2 = 9.9$, $p < .01$). The number of female first authors increased markedly after 2000, while male first authors declined (Fig. 1). By 2014, the majority of first authors were women. Male senior authors continue to outnumber female senior authors, although the divide has narrowed (Fig. 1). Female senior authors were more likely to have female first authors than were male senior authors (54.2% vs. 28.7% across all years); furthermore, the proportion of female senior authors with female first authors (as opposed to males) has increased over time ($T = 10.5$, $p < .01$).

With regards to editorial board composition, women comprised 0/21 (0%) of board members in 1972–73, 0/25 (0%) in 1980, 1/36 (3%) in 1990, 4/44 (9%) in 2000, and 14/46 (30%) in 2014. With the exception of 2014, all editors-in-chief were male for the five years examined.

4. Conclusions

The publication gender gap in gynecologic oncology's journal of record has reversed among first authors and narrowed among senior authors over the last five decades. However, there remains a substantial divide between men and women at the senior author and editorial board levels, consistent with the relative minority of women in senior faculty positions. Studies in other fields have reported a similar pattern of increases in both first and senior authorship over time, with the latter lagging behind the former (Jagsi et al., 2006; Silvestre et al., 2016; Kurichi et al., 2005; Piper et al., 2016; Mimouni et al., 2016; Hart et al., 2019). We also observed that papers with female senior authors were more likely to have female first authors, likely illustrating the effects of mentoring by women in senior roles. If this observation is a proxy for gender-specific mentorship, national and institutional efforts should be directed toward creating formal mentorship and networking programs for women. This has been done in other specialties. For example, female trainees and junior faculty are matched one-to-one with female senior leaders at the annual meeting for the Society for General Internal Medicine (Mangurian et al., 2018). Additionally, subspecialty-wide gender equity initiatives should examine the progress of female

gynecologic oncologists into supervisory academic roles and editorial positions.

Author contribution

Courtney Penn – Original idea, data collection, writing and editing of manuscript.

Jasmine Ebott- Writing and preparation of manuscript.

Daniel Larach – Data collection, editing of manuscript.

Ashley Hesson – Statistical analysis, editing of manuscript.

Jennifer Waljee – Editing of manuscript.

Marilyn Larach – Editing of manuscript.

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Declaration of Competing Interest

The authors report no conflicts of interest.

References

- American Association of Medical Colleges, 2015. Distribution of full-time women M.D. faculty by department and rank. <https://www.aamc.org/download/481184/data/2015table4a.pdf>, Accessed date: 10 May 2018.
- R Development Core Team. R, 2018. A Language and Environment for Statistical Computing. 3.4, 1 ed. R Foundation for Statistical Computing, Vienna, Austria.
- Hart, K.L., Frangou, S., Perlis, R.H., 2019. Gender trends in authorship in psychiatry journals from 2008 to 2018. *Biol. Psychiatry*. <https://doi.org/10.1016/j.biopsych.2019.02.010>. (pii: S0006-3223(19)30112-X).
- Hill, E.K., Blake, R.A., Emerson, J.B., Svider, P., Eloy, J.A., Raker, C., et al., 2015. Gender differences in scholarly productivity within academic gynecologic oncology departments. *Obstet. Gynecol.* 126, 1279–1284.
- Jagsi, R., Guancial, E.A., Worobey, C.C., Henault, L.E., Chang, Y., Starr, R., et al., 2006. The “gender gap” in authorship of academic medical literature—a 35-year perspective. *N. Engl. J. Med.* 355, 281–287.
- Kurichi, J.E., Kelz, R.R., Sonnad, S.S., 2005. Women authors of surgical research. *JAMA Surg.* 140, 1074–1077.
- CLE, M., Sarkar, U., Rodriguez, C., Jagsi, R., 2018. What's holding women in medicine back from leadership. *Harv. Bus. Rev.*
- Mimouni, M., Zayit-Soudry, S., Segal, O., Barak, Y., Nemet, A.Y., Shulman, S., et al., 2016. Trends in authorship of articles in major ophthalmology journals by gender, 2002–2014. *Ophthalmology*. 123, 1824–1828.
- Piper, C.L., Scheel, J.R., Lee, C.I., Forman, H.P., 2016. Gender trends in radiology authorship: a 35-year analysis. *AJR Am. J. Roentgenol.* 206, 3–7.
- Silvestre, J., Wu, L.C., Lin, I.C., Serletti, J.M., 2016. Gender Authorship Trends of Plastic Surgery Research in the United States. *Plastic and Reconstructive Surgery*. 138 (136e–42e).