Gender imbalance in gynecologic oncology authorship and impact of COVID-19 pandemic

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HIGHLIGHTS

- The proportion of female first and senior authors has increased over time.
- Men remain overrepresented as senior authors and on journal editorial boards.
- The effects of the COVID-19 pandemic are not yet detectable on gender distribution in authorship.

ABSTRACT

Objective Despite increased participation of women in academic medicine in recent decades, gender disparities persist. The gender gap in authorship and editorial boards in gynecologic oncology, and impact of the COVID-19 pandemic, have not been recently evaluated. We examined gender representation and the impact of COVID-19 on authorship and editorial boards of two major peer-reviewed gynecologic oncology journals.

Methods We conducted a bibliometric analysis of original articles published in *Gynecologic Oncology* and the *International Journal of Gynecological Cancer,* comparing the most contemporary 5-year period (2016–2020) to single years in the two prior decades (1996, 2006). To assess the early impact of COVID-19, we compared publications from May 2020–April 2021 to 2019. Editorial boards were analyzed for gender composition. First names, pronouns, and institutional photographs were used to determine gender.

Results There were 3022 original articles published between 2016 and 2020, 763 in 2006, and 203 in 1996. Gender was identified for 91.3% of first authors (3641 articles) and 95.6% of senior authors (3813 articles). Men comprised the majority of the editorial boards in 2021 at 57% and 61% for *Gynecologic Oncology* and the *International Journal of Gynecological Cancer,* respectively. Men were overrepresented as senior authors across all study periods: 93% in 1996, 77% in 2006, and 58% in 2016–2020. Over time, representation of women as first and senior authors increased (7% in 1996, 42% in 2016–2020, p<0.00001). There was no immediate impact of the early pandemic on gender distribution of authorship.

Conclusions Despite greater representation of women over time as authors in gynecologic oncology journals, there remains gender disparity in senior authorship and editorial board representation. This presents an opportunity for the academic publishing community to advocate for deliberate strategies to achieve gender parity. Although no impact of the early COVID-19 pandemic was found, this requires ongoing surveillance.

INTRODUCTION

The participation of women in academic medicine has risen significantly. The specialty of obstetrics and gynecology now possesses the second-highest representation of women in the American medical workforce at 58.9% in 2019, second only to pediatrics.[1] In the subspecialty of gynecologic oncology, the majority (55%) of academic gynecologic oncologists are women in the US.[2] Canadian data report that 85.7% of gynecologic oncology fellows are female.[3] Despite increased representation of women in most specialties, gender disparities persist across multiple facets of academic medicine, including the lower proportion of women in senior academic and leadership positions,[2 4] the gender pay gap,[5–7] and underrepresentation of women in the authorship of academic publications.[8–12]

Publications in medical journals are an important metric of academic productivity that carry significant weight in the granting of academic promotions and tenure, provide visibility and recognition of expertize within the scientific community, and influence grant and funding allocation for future research.[11 13] Observational studies of prominent journals across internal medicine, pediatrics, general surgery, and obstetrics and gynecology have found that while rates of female authorship have increased in recent decades, women remain in the minority and this growth has plateaued in recent years.[9 11] As a primarily surgical subspecialty within obstetrics and gynecology, gynecologic oncology provides a unique lens through which to examine trends in gender equality due to the potential compounding effects of a greater proportion of female surgeons serving a primarily female population,[7] and the documented persistence of gender-based discrimination toward female physicians and trainees in surgical specialties.[14 15]

There has been growing concern that the COVID-19 pandemic may have exacerbated these inequalities and widened the gender publishing gap, as women may have disproportionately shouldered the coexisting pandemic burdens of increased domestic responsibilities including educating children during school closures and providing care for young and elderly dependents,[16–19] and the academic demands of adopting virtual clinical platforms, committee work,

and teaching.[19 20] The early impact of the COVID-19 pandemic remains to be investigated on publications and authorship in gynecologic oncology. We hypothesized that there would be a decrease in the proportion of female authorship in the years of the COVID-19 pandemic compared with immediately prior, based on early reports from other subspecialties of a shift toward disproportionately lower than expected female authorship, particularly in original research manuscripts submitted during the COVID-19 period.[18 19 21–23] However, this finding has not been consistent in all studies.[24 25]

The objectives of this study were to examine current and historic gender representation in authorship and editorial boards of two major peer-reviewed gynecologic oncology journals, *Gynecologic Oncology* and the *International Journal of Gynecological Cancer*. We also evaluated the early impact of the COVID-19 pandemic on gender representation in publications and authorship. In this research, gender, the outcome of interest in this study, was defined as per the Sex and Gender Equity in Research (SAGER) guidelines[26]: the socially constructed roles, behavior, and identities of female, male, and gender-diverse people that influences how individuals are perceived, behave, and interact.[26]

METHODS

A bibliometric analysis of original articles in gynecologic oncology journals was performed. Journals publishing exclusively articles on the topic of gynecologic oncology were identified. Three journals with the highest impact factor based on the Clarivate Web of Science 2020 Journal Citation Reports were considered: *Gynecologic Oncology,*[27] the *Journal of Gynecologic Oncology,*[28] and the *International Journal of Gynecological Cancer.*[29] General obstetrics and gynecology journals were excluded. Data were collected for several journal issues of the *Journal of Gynecologic Oncology;* however,we encountered greater uncertainty in gender determination of Asian names, which may be gender non-specific[22] and also more challenging to disambiguate via internet search engines,[30] limiting our ability to draw meaningful conclusions from these data. Name-to-gender inference web services such as Gender API and genderize.io also perform poorly on Asian names compared with those of European origin.[31] Consequently, *Journal of Gynecologic Oncology* was not included. The final two journals included were *Gynecologic Oncology* and the *International Journal of Gynecological Cancer*.

All articles published in these journals were retrieved from the current and archived issues sections of their websites (https://www.sciencedirect.com/journal/gynecologic-oncology and https://ijgc.bmj.com/). First names, last names, and country of affiliated institution were obtained from each article's list of authors and affiliations. First and senior authors were designated as those occupying the first and last positions in the list of authors, excluding study group names; thus, we did not analyze the gender of first or senior shared co-authors whose names did not occupy these positions. The primary outcome was the distribution of first and last author authorship between men and women over time. The following article types were included:

1. Original articles: randomized controlled trials, experimental studies, cohort studies, descriptive studies, case-control studies, cross-sectional studies, case reports.
2. Reviews: reviews, systematic reviews, meta-analyses, mini reviews.
3. Guidelines or society statements: guidelines, consensus statements, society opinion or statement, management recommendations, white papers.

The following were excluded: videos, commentaries, letters, editorials, conference abstracts, meeting or conference reports, expert opinions, correspondences, corrigenda/erratums, and articles from Corners of the World in the *International Journal of Gynecological Cancer*.

Publicly available data were used to identify subjective gender of authors in addition to reviewer assessment of first name, including photographs from institutional websites and Google searches. Classifications were corroborated using pronouns from the institutional affiliations and credentials listed in each author's respective article. The use of surrogates (names, images, and pronouns) rather than author self-report of gender precluded identification of non-binary genders given our use of female/male dichotomization. We evaluated the trend in Google image results and websites for first names that were gender ambiguous to determine if they were typically used for men or women and classified them as unknown if the online search results remained ambiguous. While name-to-gender inference web services such as Gender API and genderize.io remove the subjectivity of manual gender determination, these algorithms use first name only (without inclusion of corroborating and contextual data used in our study) and continue to be validated against manual determination which remains the quality standard.[31]

Two independent reviewers collected the articles and manually determined the gender of first and last authors. Both reviewers collected data for the same issues of *Gynecologic Oncology* and the *International Journal of Gynecological Cancer* for 1 year of publications to assess concordance in inclusion of articles as well as subjective gender. Discrepancies were resolved between the two reviewers with the senior author (JMVN) available as a tiebreaker. Where a study group was present, the reviewers identified a list of all names of individuals included in that study group and included this number in the total count of authors. Social media editors, video editors, and statistical consultants were excluded from the total count of authors in guidelines or society statements. A single reviewer collected gender data for the editorial boards, including Editor-in-Chief, Deputy or Associate Editors, and editorial board members, including members of the Early Career Editorial Board for the *International Journal of Gynecological Cancer*. Social media, video, and managing editors, and statistical reviewers were excluded. Editorial leadership position was defined as Editor-in-Chief, Associate Editor, or Deputy Editor.

To assess trends in gender representation of first and senior authors, the most contemporary 5-year period (2016–2020) was compared with single years in the two prior decades (1996, 2006), consistent with methodology used in previous studies in other subspecialties.[10–12] To assess the early impact of the COVID-19 pandemic, publications between May 2020 and April 2021 (defined as the early pandemic period) were compared with those published in 2019. Chi-square tests were used to compare gender distribution. In addition, gender proportions of editorial board members overall, and in editorial board leadership, were compared between 1996, 2006, and 2020. Historical editorial board membership from

Table 1 Representation of women in first and senior authorship position by year

	1996	2006	2016–2020	P value
Authorship	**Women (n)/articles (n) with known author gender (%)**			
Gynecologic Oncology				
First author	9/162 (5.9)	184/434 (42.4)	1001/1692 (59.2)	**<0.00001**
Senior author	5/162 (3.1)	110/443 (24.8)	806/1729 (46.6)	**<0.00001**
International Journal of Gynecological Cancer				
First author	9/39 (23.1)	73/217 (33.6)	594/1107 (53.7)	**<0.00001**
Senior author	9/40 (22.5)	38/193 (19.7)	391/1123 (34.8)	**0.00007**
Overall				
First author	18/201 (9)	257/651 (39.5)	1595/2799 (57)	**<0.00001**
Senior author	14/202 (7)	148/636 (23.3)	1197/2852 (42)	**<0.00001**

Values in bold denote statistical significance.

1996 and 2006 was obtained from the print versions of each journal's January issue.

This project was provided an exemption from Hamilton Integrated Research Ethics Board in view of the use of publicly available data. In accordance with the journal's guidelines, we will provide our data for the reproducibility of this study in other centers if such is requested.

RESULTS

Baseline Gender Representation

We included 3022 original articles between 2016 and 2020, 763 in 2006, and 203 in 1996. Gender was identified for 91.3% of first authors (3641 articles) and 95.6% of senior (last) authors (3813 articles). Trends of gender representation in authorship are presented in Table 1 and Figure 1. Over time, the proportion of female first authors significantly increased (9% in 1996, 39.5% in 2006, and 57% in 2016–2020, p<0.00001). This trend was also observed in senior authorship (7% women in 1996, 23.3% in 2006, and 42% in 2016–2020, p<0.00001), but men remained overrepresented as senior authors across all study periods. The increased representation of women in authorship over time was observed in both *Gynecologic Oncology* and the *International Journal of Gynecological Cancer* (Figure 1). In *Gynecologic Oncology*, women represented 5.9% of first and 3.1% of senior authors in 1996; these percentages rose to 42.4% and 24.8% in 2006, and 59.2% and 46.6% in 2016–2020 (p<0.00001). In the *International Journal of Gynecological Cancer,* representation of women also increased over time: women comprised 23.1% of first and 22.5% of senior authors in 1996, 33.6% of first and 19.7% of senior authors in 2006, and 53.7% (p<0.00001) of first and 34.8% (p=0.00007) of senior authors in 2016–2020.

Gender Representation on Editorial Boards

Gender was identifiable for 99.7% (372 of 373) of editorial board members in 1996, 2006, and 2020 of both journals. Representation of women on editorial boards of both journals is presented in Table 2 and Figure 2. While there was increased representation over time, with women accounting for 9% and 16.7% of members in 1996, 28.3% and 21.5% in 2006, and 43.1% (p=0.01) and 38.9% (p=0.015) in 2020 for *Gynecologic Oncology* and the *International Journal of Gynecological Cancer,* respectively, the majority of editorial boards were comprised of men in all three study periods. In addition, men were overrepresented as Editors-in-Chief. Of six Editors-in-Chief for both journals in 1996, 2006, and 2020, there was only one woman. This was in 2020 for *Gynecologic Oncology*. When aggregating all leadership positions (Editors-in-Chief, Associate, and Deputy Editors) over the three study periods, women remained underrepresented: 5 of 23 (21.7%) in *Gynecologic Oncology* and 2 of 10 (20%) in the *International Journal of Gynecological Cancer* were female.

Impact of COVID-19 Pandemic

When comparing the gender of authors for articles published during the pandemic period (n=712) to those in 2019 (n=540), we found no difference in the gender distribution of first and senior authors in both journals (Table 3). In *Gynecologic Oncology*, women represented 60% of first and 41.3% of senior authors in 2019, which was not significantly different from 55.6% of first authors (p=0.48) and 44.2% of senior authors (p=0.77) during the pandemic period. Similarly, in the *International Journal of Gynecological Cancer,* the proportion of women as first authors was 51.2% in 2019 and 53.8% during the pandemic (p=0.98), and the proportion of female senior authors was also comparable at 33.3% in 2019 and 39% during the pandemic (p=0.25).

DISCUSSION

Summary of Main Results

This study yielded three important findings. First, we found the proportion of women as both first and senior authors significantly increased over time, with a notable lag in the growth in female senior authorship. Second, editorial boards remain predominantly male, with the most significant gender gap persisting in positions of editorial board leadership. Finally, the first year of the COVID-19 pandemic has not yet resulted in a significant difference in gender of authorship in comparison to the preceding year.

Results in the Context of Published Literature

This study found a rising proportion of women in authorship overall, although with a slower rate of rise in senior authorship. Bibliometric studies of gender representation across high-impact internal

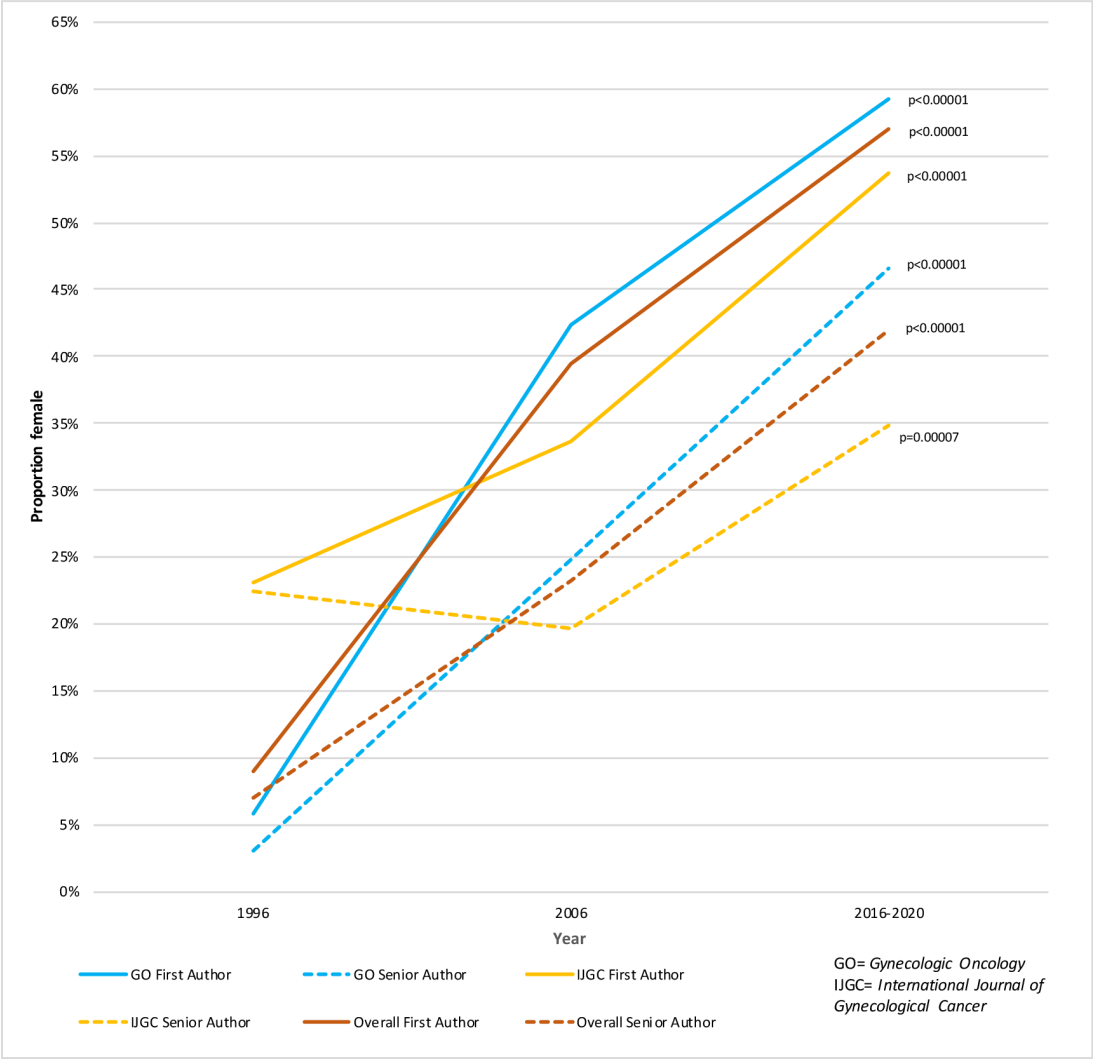

Figure 1 Proportion of female authorship over time for *Gynecologic Oncology* (GO) and the *International Journal of Gynecologic Oncology* (IJGC).

medicine and oncology journals[9 10] and other surgical specialties[12] also report similar trends towards increased representation in female authorship over time, although our findings in gynecologic oncology suggest a more rapid rate of growth with no evidence of the recent plateau noted in other specialties.[9]

Our finding that the representation of women on editorial boards of gynecologic oncology journals is increasing over time but continues to be lower than expected in proportion to practicing gynecologic oncologists may be a demonstration of the "leaky pipeline" effect, where the proportion of women decreases with ascendancy to positions of more senior leadership.[10 24 32] This is consistent with previous studies that find women to be underrepresented on editorial boards of major journals across specialties.[20 33 34] This mirrors established literature in obstetrics and gynecology and gynecologic

Table 2 Representation of women on journal editorial boards over time

	1996	2006	2020	P value
Authorship	**Women (n)/total (n) (%)**			
Gynecologic Oncology				
Overall	4/44 (9)	28/99 (28.3)	22/51 (43.1)	**0.01**
Leadership position*	0/4 (0)	2/12 (16.7)	3/7 (42.9)	
International Journal of Gynecological Cancer				
Overall	7/42 (16.7)	14/65 (21.5)	28/72 (38.9)	**0.015**
Leadership position	0/2 (0)	0/2 (0)	2/6 (33.3)	

Values in bold denote statistical significance.
*Leadership position was defined as Editor-in-Chief, Associate Editor, or Deputy Editor.

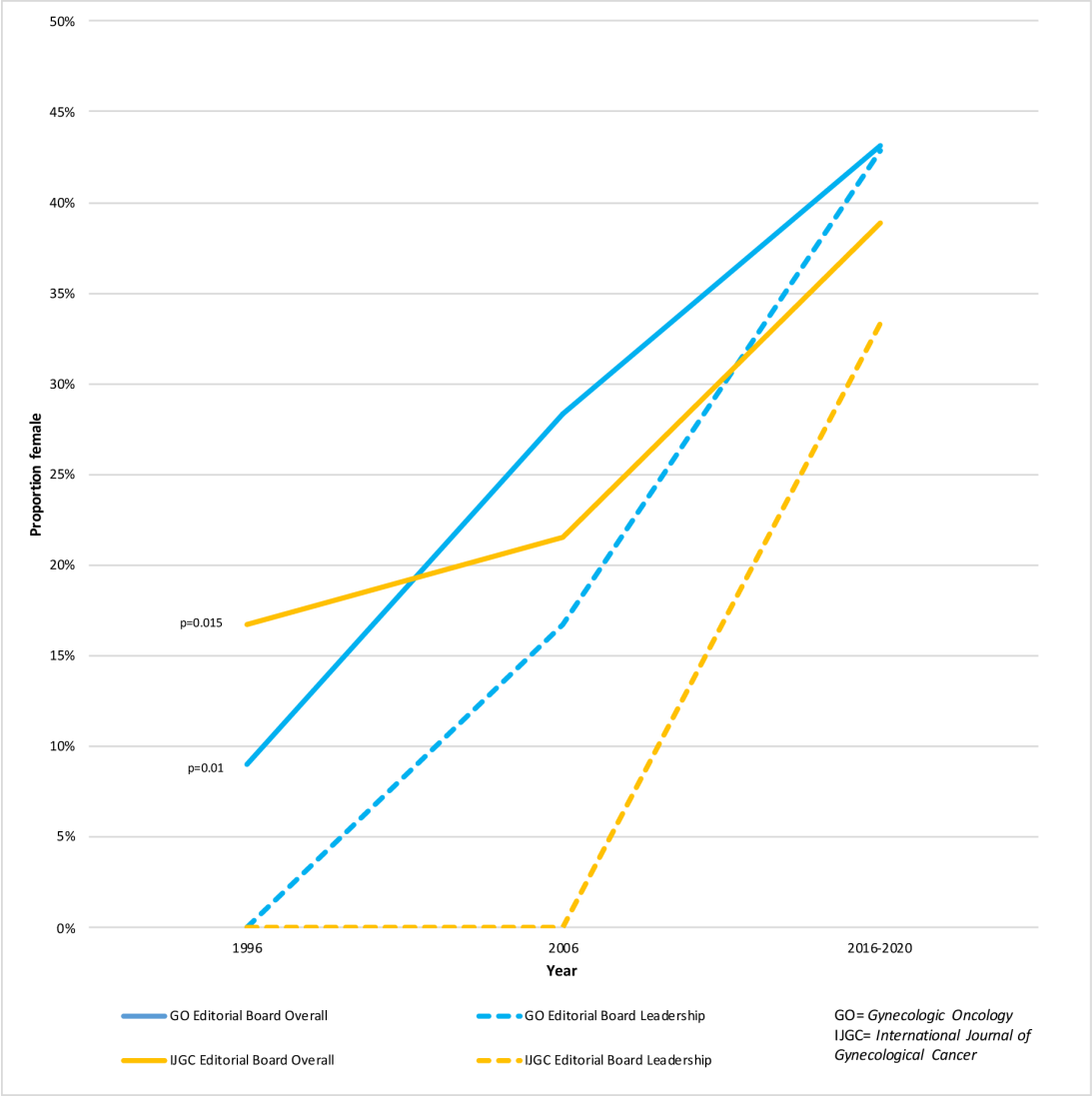

Figure 2 Proportion of female editorial board membership over time for *Gynecologic Oncology* (GO) and the *International Journal of Gynecologic Oncology* (IJGC).

Table 3 Representation of women in first and senior authorship position in the early pandemic period compared with 2019

Authorship	2019 Women (n)/ articles (n) with known author gender (%)	Pandemic period (May 2020–April 2021) Women (n)/articles (n) with known author gender (%)	P value
Gynecologic Oncology			
First author	204/339 (60)	248/446 (55.6)	0.48
Senior author	140/339 (41.3)	197/446 (44.2)	0.77
International Journal of Gynecologic Cancer			
First author	103/201 (51.2)	143/266 (53.8)	0.98
Senior author	67/201 (33.3)	104/266 (39)	0.25

oncology that find women to be underrepresented in departmental leadership positions.[2 4]

There was no difference found in the proportion of female authorship during the early pandemic period compared with the preceding year. While this has not yet been examined in many specialties, early reports have shown inconsistent trends.[18 19 21–23] A survey by Garrido et al of the European Society for Medical Oncology membership found that women were significantly more likely to report less time spent on research than men during and after COVID-19-related lockdowns.[35] While it is possible that the pandemic did not impact research productivity in gynecologic oncology differentially by gender, it may be too early to assess this due to the time lag between research conduct, manuscript submission, and publication. Articles published during the pandemic period specified in our study include research conducted prior to the pandemic, which would likely dilute the pandemic effect.[16]

Strengths and Weaknesses

Strengths of the present study include the use of an objective, bibliometric methodology to assess gender and research productivity in

gynecologic oncology, and identification of the gender of over 91% and 95% of first and senior authors, respectively. Providing a rapid baseline assessment of the impact of the COVID-19 pandemic on publication trends in our field may permit ongoing real-time evaluation and institutional responsiveness to the differential effects this may have on female and early-career investigators.

Limitations include that there were some authors for whom gender could not be ascertained, and although we attempted to maximize objectivity in the method of manual determination of gender identity using multiple sources per author, we acknowledge the possibility of subjectivity bias and error with human-annotated gender determination. Our methodology also precluded assessment of dual or shared first or senior co-authorship; and by including only accepted manuscripts, we were unable to capture the proportion of female authorship across all journal submissions, including rejected manuscripts, for comparison. Our findings may not be representative of the international gynecologic oncology academic community due to the exclusion of the *Journal of Gynecologic Oncology* in view of our methods described above. Finally, while the use of single-year historical comparisons in authorship and editorial boards has been employed in previous bibliometric studies in other specialties,[10–12] it may have introduced bias in our reported trends if the selected years were not representative.

Implications for Practice and Future Research

Further research is warranted to investigate aetiologies of the ongoing relative underrepresentation of women as authors, the impact of intersectionality (such as the compound effects of race and gender), and the experiences of diverse and non-binary gender identities in academic publishing. Hypotheses generated by previous authors include that women may face inequities in grant funding allocations and research mentorship with potential contribution from implicit bias and sexism.[13 36] Female physicians may also spend a greater amount of time on clinical, administrative, and teaching responsibilities.[37 38]

Addressing the ongoing gender gap in academic research and publication requires multifaceted solutions. There has been a recent call for greater transparency in diversity and inclusion in academic publishing, including publication of gender, race, and other demographic data for submitted and accepted manuscripts.[39] In the manuscript review process, the role of reviewer blinding is under examination. Both the *International Journal of Gynecological Cancer* and *Gynecologic Oncology* employ single-blind review. *Obstetrics and Gynecology* has recently implemented double-blind review as of July 1, 2021; previous studies of single-blind review in *The Journal of Pediatrics*[40] and double-blind review in *Plastic and Reconstructive Surgery*[12] did not find a clear difference in outcome decisions, although both studies acknowledged that reviewers with knowledge of experts in the field were often able to infer author identity even when blinded, allowing potential bias to persist. Broadly, the Sex and Gender Equity in Research (SAGER) and upcoming SAGER II guidelines for research design, conduct, and dissemination offer a framework for researchers and journals to consider the impact of sex and gender and strive for equality and representation.[26]

Possible solutions to address the impact of the COVID-19 pandemic include delaying tenure clock timelines, increasing support and flexibility for research, improving access and funding for child care, and adjusting funding opportunities to support sex and gender research and investigators of underrepresented groups.[16 23] Striving for balanced gender representation in research supports universal goals of maximizing group intelligence, encouraging innovation and novel perspectives including gendered aspects to the field of inquiry, and increased representation of the patient population which may improve our understanding of diversity in clinical decision-making.[18 41]

CONCLUSIONS

In conclusion, this report of publication authorship and editorial board composition in gynecologic oncology shows narrowing of the gender gap. Importantly, female representation continues to lag in senior authorship and editorial leadership. Future research into the impact of greater transparency in journal reporting of demographic factors related to manuscript review, and development of institutional policies to support the mentorship and development of female investigators, may further reduce existing disparities. We did not find a differential impact of the early COVID-19 pandemic on gender of authorship, although this merits ongoing surveillance with future research.

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REFERENCES

1 American Association of Medical Colleges. Active physicians by sex and specialty, 2019. Available: https://www.aamc.org/data-reports/workforce/interactive-data/active-physicians-sex-and-specialty-2019
2 Temkin SM, Rubinsak L, Benoit MF, *et al*. Take me to your leader: reporting structures and equity in academic gynecologic oncology. *Gynecol Oncol* 2020;157:759–64.
3 Canadian Post-M.D. Education Registry. Gender analysis of postgraduate medical trainees in Canada Ottawa: CAPER/RCEP, 2018. Available: https://caper.ca/sites/default/files/pdf/presentations/2018-GenderAnalysis_en.pdf
4 Hofler LG, Hacker MR, Dodge LE, *et al*. Comparison of women in department leadership in obstetrics and gynecology with those in other specialties. *Obstet Gynecol* 2016;127:442–7.
5 Cohen M, Kiran T. Closing the gender pay gap in Canadian medicine. *CMAJ* 2020;192:E1011–7.

6 Dossa F, Simpson AN, Sutradhar R, *et al*. Sex-based disparities in the hourly earnings of surgeons in the fee-for-service system in Ontario, Canada. *JAMA Surg* 2019;154:1134.
7 Watson KL, King LP, Discrimination D. Double discrimination, the pay gap in gynecologic surgery, and its association with quality of care. *Obstet Gynecol* 2021;137:657–61.
8 Bernardi K, Lyons NB, Huang L, *et al*. Gender disparity among surgical peer-reviewed literature. *J Surg Res* 2020;248:117–22.
9 Filardo G, da Graca B, Sass DM, *et al*. Trends and comparison of female first authorship in high impact medical journals: observational study (1994-2014). *BMJ* 2016;i.
10 Dalal NH, Chino F, Williamson H, *et al*. Mind the gap: gendered publication trends in oncology. *Cancer* 2020;126:2859–65.
11 Jagsi R, Guancial EA, Worobey CC, *et al*. The "gender gap" in authorship of academic medical literature — a 35-year perspective. *N Engl J Med* 2006;355:281–7.
12 Silvestre J, Wu LC, Lin IC, *et al*. Gender authorship trends of plastic surgery research in the United States. *Plast Reconstr Surg* 2016;138:136e–42.
13 Witteman HO, Hendricks M, Straus S, *et al*. Are gender gaps due to evaluations of the applicant or the science? A natural experiment at a national funding agency. *Lancet* 2019;393:531–40.
14 Peel JK, Schlachta CM, Alkhamesi NA. A systematic review of the factors affecting choice of surgery as a career. *Can J Surg* 2018;61:58–67.
15 Richardson HC, Redfern N. Why do women reject surgical careers? *Ann R Coll Surg Engl* 2000;82:290–3.
16 Oleschuk M. Gender equity considerations for tenure and promotion during COVID-19. *Can Rev Sociol* 2020;57:502–15.
17 Garrido P, Adjei AA, Bajpai J, *et al*. Has COVID-19 had a greater impact on female than male oncologists? Results of the ESMO Women for Oncology (W4O) Survey. *ESMO Open* 2021;6.
18 DeFilippis EM, Sinnenberg L, Mahmud N, *et al*. Gender differences in publication authorship during COVID-19: a bibliometric analysis of high-impact cardiology journals. *J Am Heart Assoc* 2021;10.
19 Ribarovska AK, Hutchinson MR, Pittman QJ, *et al*. Gender inequality in publishing during the COVID-19 pandemic. *Brain Behav Immun* 2021;91:1–3.
20 Amrein K, Langmann A, Fahrleitner-Pammer A, *et al*. Women underrepresented on editorial boards of 60 major medical journals. *Gend Med* 2011;8:378–87.
21 Williams WA, Li A, Goodman DM, *et al*. Impact of the coronavirus disease 2019 pandemic on authorship gender in The Journal of Pediatrics: disproportionate productivity by international male researchers. *J Pediatr* 2021;231:50–4.
22 Muric G, Lerman K, Ferrara E. Gender disparity in the authorship of biomedical research publications during the COVID-19 pandemic: retrospective observational study. *J Med Internet Res* 2021;23:e25379.
23 Andersen JP, Nielsen MW, Simone NL, *et al*. COVID-19 medical papers have fewer women first authors than expected. *Elife* 2020;9. doi:10.7554/eLife.58807. [Epub ahead of print: 15 06 2020].
24 Quak E, Girault G, Thenint MA, *et al*. Author gender inequality in medical imaging journals and the COVID-19 pandemic. *Radiology* 2021;300:E301–7.
25 Misra V, Safi F, Brewerton KA, *et al*. Gender disparity between authors in leading medical journals during the COVID-19 pandemic: a cross-sectional review. *BMJ Open* 2021;11:e051224.
26 Heidari S, Babor TF, De Castro P, *et al*. Sex and gender equity in research: rationale for the SAGER guidelines and recommended use. *Res Integr Peer Rev* 2016;1.
27 Elsevier ScienceDirect. Gynecologic Oncology, 2022. Available: https://www.sciencedirect.com/journal/gynecologic-oncology
28 Journal of Gynecologic Oncology. Journal of Gynecologic Oncology: an official publication of the Asian Society of Gynecologic Oncology, the Korean Society of Gynecologic Oncology, the Japan Society of Gynecologic Oncology, and the Society of Gynecologic Oncology of Canada (GOC), 2022. Available: https://ejgo.org/#
29 BMJ Journals. International Journal of Gynecologic Cancer: the official journal of the International Gynecologic Cancer Society and the European Society of Gynaecological Oncology, 2022. Available: https://ijgc.bmj.com/
30 Kim S. Disambiguation of Korean names in references. *J Inf Sci Theory Pract* 2018;6:62–70.
31 Santamaría L, Mihaljević H. Comparison and benchmark of name-to-gender inference services. *PeerJ Comput Sci* 2018;4:e156.
32 Salinaro JR, Puechl AM, Havrilesky LJ, *et al*. Gender trends in gynecologic oncology authorship: implications for the critical evaluation of gender distribution in academic rank and leadership positions. *Gynecol Oncol* 2018;151:542–6.
33 Qureshi R, Lê J, Li T, *et al*. Gender and editorial authorship in high-impact epidemiology journals. *Am J Epidemiol* 2019;188:2140–5.
34 Grinnell M, Higgins S, Yost K, *et al*. The proportion of male and female editors in women's health journals: a critical analysis and review of the sex gap. *Int J Womens Dermatol* 2020;6:7–12.
35 Cevik M, Haque SA, Manne-Goehler J, *et al*. Gender disparities in coronavirus disease 2019 clinical trial leadership. *Clin Microbiol Infect* 2021;27:1007–10.
36 Bornmann L, Mutz R, Daniel H. Gender differences in grant peer review: a meta-analysis. *J Informetr* 2007;1:226–38.
37 Hill EK, Blake RA, Emerson JB, *et al*. Gender differences in scholarly productivity within academic gynecologic oncology departments. *Obstet Gynecol* 2015;126:1279–84.
38 Mueller C, Wright R, Girod S. The publication gender gap in US academic surgery. *BMC Surg* 2017;17:16.
39 Pinho-Gomes A-C. The time is ripe for addressing gender inequalities in the authorship of scientific papers. *Am J Public Health* 2021;111:15–16.
40 Williams WA, Garvey KL, Goodman DM, *et al*. The role of gender in publication in The Journal of Pediatrics 2015-2016: equal reviews, unequal opportunities. *J Pediatr* 2018;200:254–60.
41 Søgaard M, Nilsson KL, Tacconelli E. The SARS-CoV-2 pandemic puts the spotlight on gender inequality in clinical research. *Clin Microbiol Infect* 2021;27:944–6.