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Original Research

Moving the Needle: Directed Intervention by the American Society for Surgery of the Hand Is Effective in Encouraging Diversity in Expert Panel Composition



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Purpose: Recent efforts have been made by the American Society for Surgery of the Hand to encourage female inclusion in expert panels. We hypothesized that female representation on expert panels has increased over the past decade and that a directed intervention by the American Society for Surgery of the Hand would be associated with an increased percentage of submissions with female panelists.

Methods: We performed a retrospective analysis of Instructional Course Lecture and Symposium submissions for the 2011 through 2021 American Society for Surgery of the Hand Annual Meetings. Authorship was reviewed, and the gender of the proposed authors was recorded. Additionally, the status of “all-male panel” was attributed to panels with no proposed female authors. Submissions were reviewed and compared with meeting programs to determine the status of accepted or rejected. Longitudinal analysis was performed to determine trends in the gender composition of expert panels.

Results: In total, 1,687 submissions were reviewed, including 1,323 Instructional Course Lectures and 364 Symposia. Female authorship constituted 18% of authorship (1,170/6,663), and lead authorship was similarly distributed, with 18% being female (296/1,687). Overall, female representation has increased steadily over the past decade, with females constituting 13% (43/332) and 20% (163/818) of the submitted authors in 2011 and 2020, respectively. Similarly, all-male panels declined from 74% (76/103) to 46% (85/185) of panels over the same timeframe. Most strikingly, a sharp increase in gender representation was observed with the directed intervention noted in the 2021 Call for Abstracts, resulting in an increase in female authorship to 26% (295/1,124) and a decline in all-male panels to 29% (70/241).

Conclusions: Gender representation among hand surgery expert panels moved toward increased equity over the past decade, which has been aided by directed interventions.

Clinical relevance: Career development and trainee decision making are impacted by gender representation; directed and intentional interventions by professional organizations are effective in encouraging greater equity and diversity within the field.

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Professional societies are crucial for both the recruitment and professional development of the next generation of surgeons, and

trainees often look up to leaders within the field to model how their future careers may look.^{1–6} Orthopedic and plastic surgery have lagged behind other medical specialties with respect to the number of women in training, practice, and leadership.^{7–9} However, recent efforts have been made by the American Society for Surgery of the Hand (ASSH) to encourage female entry and promote women within the field of hand surgery.

The Annual Meeting is the most well-attended ASSH gathering of the year, and the Symposia and Instructional Course Lectures

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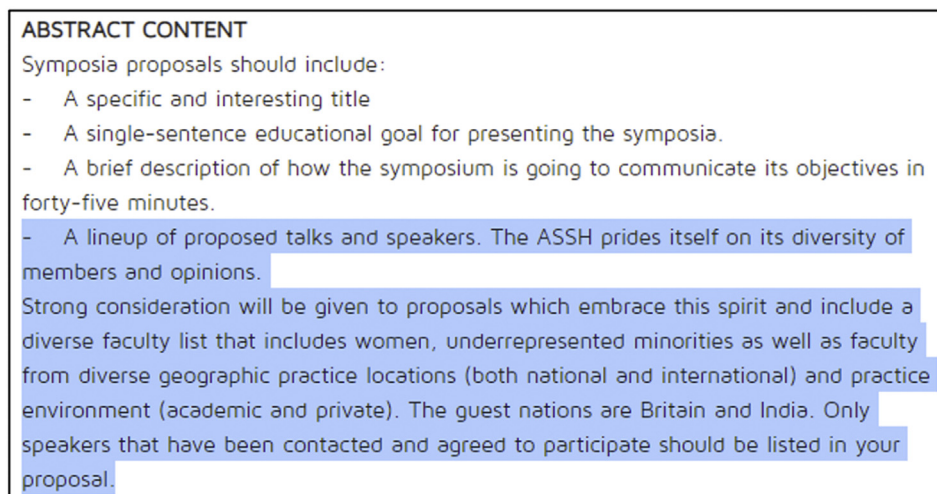


Figure 1. The 2021 Call for Abstracts emphasized the importance of diversity in faculty on ICL and Symposium panel submissions.

(ICLs) are forums in which hand surgery experts share their knowledge and, often, gain respect within the field. These forums represent career development opportunities and are informative to hand surgeons in all stages of their career, especially to younger generations of trainees, that is, residents and students. Prior literature has demonstrated that residency programs appearing to lack diversity are unappealing to underrepresented minorities.¹⁰ Furthermore, studies have shown that female medical students are considerably more likely to enter specialties with a higher proportion of women and, specifically, with identifiable female role models.^{11–16} As such, diverse representation on expert panels within hand surgery could have an important impact on trainees' thinking with regard to whether hand surgery represents a viable career path.

The ASSH has recently encouraged increased diversity on panels in their Call for Abstracts, emphasizing the inclusion of female authors as a priority (Fig. 1). Although several studies have demonstrated the growth in diversity in the field of hand surgery, we sought to specifically assess female representation on expert panels. As such, our primary goal was to profile the gender composition of ASSH Symposium and ICL panels over the past 10 years. Our secondary aim was to determine whether a directed intervention could be effective in encouraging gender equity among panelist submissions. We hypothesized that female representation on expert panels has increased over the past decade and that a directed intervention by the ASSH, which encouraged diversity in ICL and Symposium submissions, would be associated with an increased percentage of submissions with female panelists.

Materials and Methods

We performed a retrospective analysis of all ICL and Symposium submissions for the 2011 through 2021 ASSH Annual Meetings, which were directly obtained from the ASSH education and meeting office. All authors were reviewed, and the gender of the proposed authors was recorded. Gender was confirmed using online professional profiles with specific attention to pronoun use. The lead author was identified based on application attribution as the primary contact and moderator of the panel. Additionally, the status of "all-male panel" was attributed to those panels with no proposed female authors. Submissions were reviewed and compared with meeting programs to determine submission status

of accepted or rejected. Additionally, information regarding the nationality of the lead author was recorded. International submissions were defined as those for which the lead author's home country was not the United States.

Longitudinal analysis was performed to determine trends in the gender composition of expert panels over time. Panel composition was compared for the years before and after the directed intervention in the 2021 Call for Abstracts, which encouraged increased diversity in panel faculty. Two-tailed Fisher exact and chi-square tests were used to determine differences between gender diversity for the years immediately before and after the intervention. Given that our sample size was limited to the available submissions, a post hoc power analysis was performed to establish power to detect differences in gender diversity for the years immediately before and after the intervention.

Results

In total, 1,687 submissions were reviewed, including 1,323 ICLs and 364 Symposia. Female authorship constituted 18% of authorship (1,170/6,663), and lead authorship was similarly distributed, with 18% being female (296/1,687). After eliminating duplicate authorship, females constituted 20% (365/1,803) of the total unique authors.

Overall, female representation has increased steadily over the past decade, with females constituting 13% (43/332) and 20% (163/818) of the submitted authors in 2011 and 2020, respectively (Fig. 2A). Submissions identified with accepted status demonstrated similar trends, and females constituted 22% (86/389) of accepted authors in 2020 versus a 9% acceptance rate in 2011 (14/155) (Fig. 2B). Similarly, all-male panels declined from 74% (76/103) to 46% (85/185) of panels over the same timeframe (Fig. 3).

Most strikingly, a sharp increase in gender representation was observed with the directed intervention noted in the 2021 Call for Abstracts with an increase in female authorship to 26% (295/1,124) of submitted authors in comparison to 20% (163/818) from the prior year ($P < .05$). Similarly, there was a decline in all-male panels to 29% (70/241) of panels in comparison to 46% (85/185) from the prior year ($P < .05$). Notably, although this intervention encouraged female inclusion on panels, female lead authorship did not increase similarly. Female lead authorship submissions increased only from 21% (39/185) to 22% (54/241) between 2020 and 2021, respectively ($P = .81$).

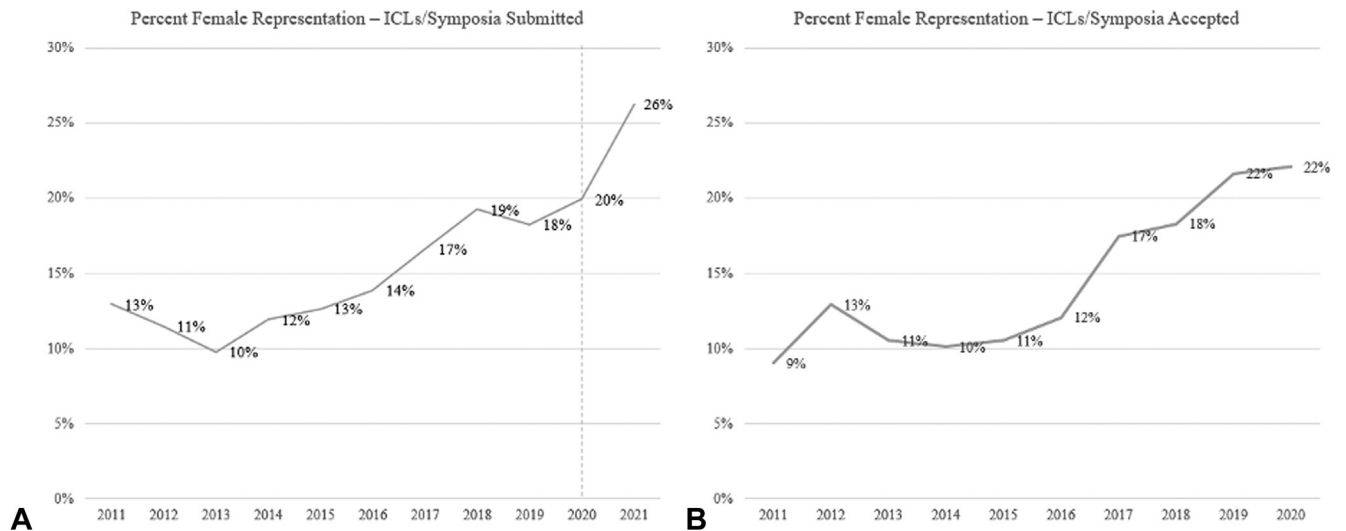


Figure 2. **A** Female representation on the submitted ICLs and Symposia has increased steadily since 2011. Directed intervention in the 2021 Call for Abstracts was associated with an increase in female representation. The hashed line represents ASSH Call for Abstract targeted intervention. **B** Trends in gender representation of accepted ICLs and Symposia at the ASSH Annual Meeting mirrors that of submitted work.

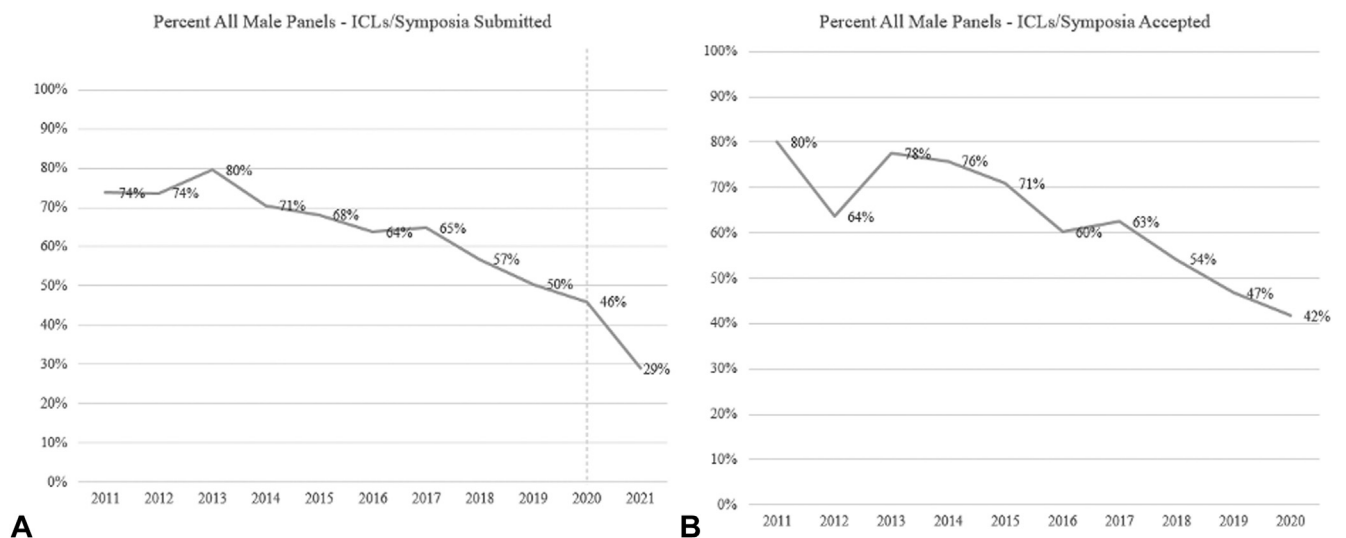


Figure 3. **A** All-male panels for submitted ICLs and Symposia have declined steadily since 2011. Directed intervention in the 2021 Call for Abstracts was associated with a further decrease in all-male panel submission. The hashed line represents ASSH Call for Abstract targeted intervention. **B** Trends in accepted all-male panels ICLs and Symposia at the ASSH Annual Meeting mirrors that of submitted work.

With regard to international submissions, trends in gender diversity reflected greater inclusion of female authors. Although there was a relatively greater rate of all-male panel submissions in the early part of the decade with a 92% (11/12) proportion of all-male submissions in 2011, all-male submissions declined to 50% in 2021 (9/18) (Fig. 4). Similarly, female authorship increased from 11% (4/36) of submissions to 25% (20/81) in 2021 (Fig. 5).

Post hoc power analysis demonstrated that our sample of submissions for the years immediately before and after the intervention achieved 87% power to detect a 6% difference between the number of female authors with ICL and Symposium submissions. Similarly, our study achieved a 95% power to detect a 17% decline in all-male panel submissions. Both power analyses were performed with a significance level (α) of 0.05 using a 2-sided 2-sample *t* test.

Discussion

A review of the ICLs and Symposia accepted abstracts over the past decade demonstrated an increase in female authorship from 9% to 22%. Female representation on submitted work has similarly increased from 13% to 26%, with a notable 6% increase after the public solicitation for diversity in submissions. All-male panel submissions similarly declined from 74% to 29%, with a 17% decline after ASSH diversity solicitation.

Representation is a known criterion in the development of career goal setting. Prior literature in medical education has identified “gender” as the criterion most associated with differences in the factors of motivation for or discouragement from a specialty choice.^{2,14,17} Despite the increase in female representation within medical schools, academic medicine and

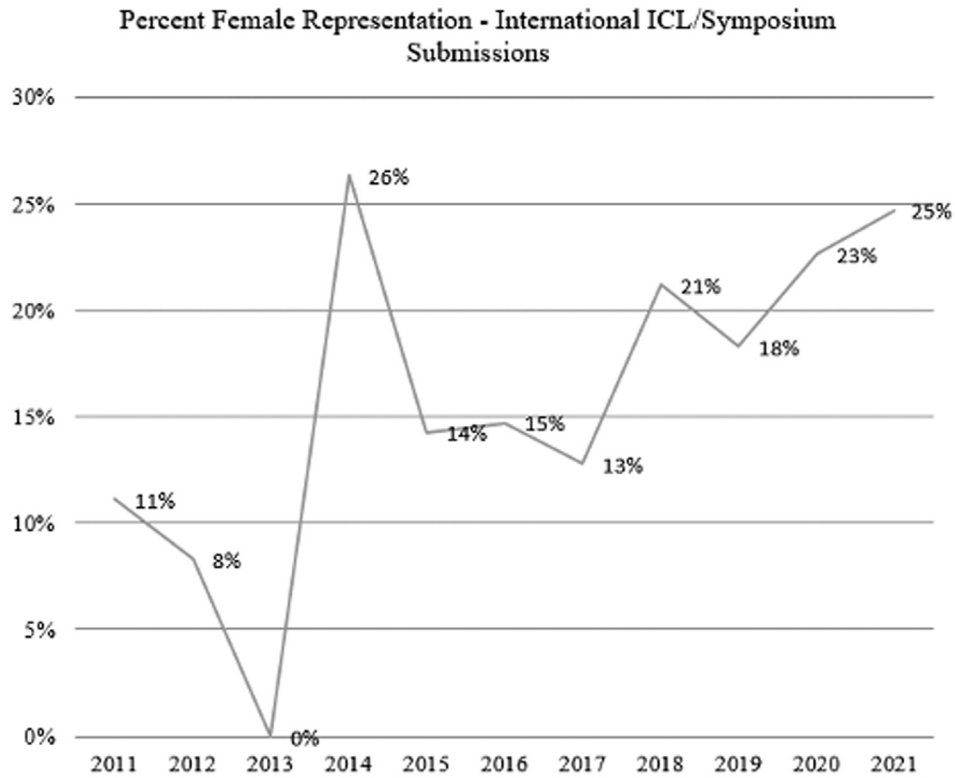


Figure 4. Percent female representation on international ICL/Symposium submissions demonstrates trends in-line with overall submissions.

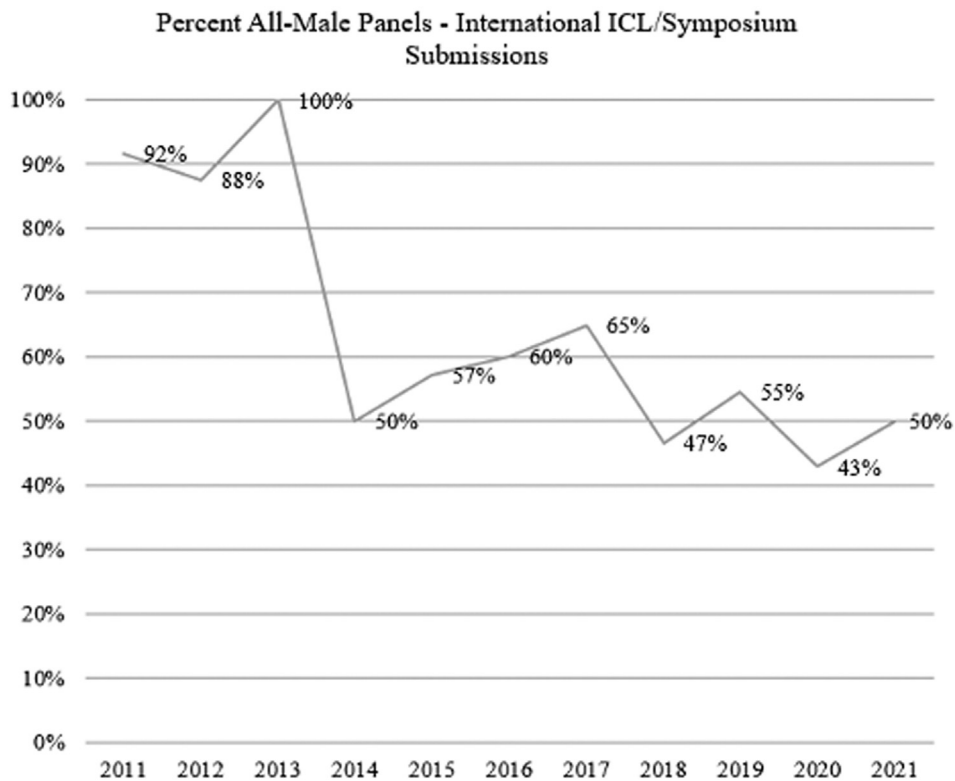


Figure 5. Percent all-male panels for international ICL/Symposium submissions demonstrate trends in-line with overall submissions.

surgery, in particular, have remained male-dominated fields.^{13,14,16} Inherent in this sentiment is the notion that the lack of female surgical role models and, in some places,

cultural elements have a negative influence on women entering the field.^{7–9,12,15,18} Thus, it is critical that attention be paid toward achievement of gender equity in subspecialties.

Prior studies have confirmed the importance of role models and mentors in setting the career goals of medical students and residents.^{19–23} Role models can be identified within one's own institution but can also be identified at professional events such as meetings or courses. A study of 247 female medical trainees noted that women saw careers in surgery as unfavorable to them, largely secondary to a perception of male bias, including greater proportions of men and negative attitudes toward women within surgical specialties.¹⁵ Specifically, less than 10% of females in each subject group had female surgical role models. Similarly, a study of 160 female medical students demonstrated the positive influence of same-sex role models and, notably, that the influence of role models increased in later years of medical school, when specialty choice was made.³ Additionally, they noted the importance of female organizations, such as the Association of Women Surgeons, and mentorship support in positively affecting career decisions. Such organizational support requires support from organizational leadership.

Similar to other fields, female representation in expert and senior leadership positions within hand surgery lags behind male representation.²⁴ This trend is common among medical fields and, in spite of increasing representation of females in medicine overall, a 2007 study of the United Kingdom demonstrated that only 1 in 10 medical professors are women.²¹ Similarly, literature on the United States has demonstrated that women advance to a professorship at lower numbers than their male colleagues and lack status in laboratory space and equivalence in salaries.^{25,26} Gender diversity has increased within the field of hand surgery and should continue to increase based on trainee demographics.^{24,27,28} The ASSH active membership is currently 15% female, whereas candidate resident membership is 25% female with an overall combined involvement of 20% among active, candidate, and affiliate members, suggesting that the organization is shifting toward even greater female involvement rapidly.²⁹ At a current rate of 22% authorship, female involvement in accepted ICLs and Symposia now generally reflects female involvement in the Hand Society, and we believe that the efforts of the ASSH have been critical in that achievement.

However, expert positions and positions of leadership continue to be held predominantly by men. A recent article in *Clinical Orthopaedics and Related Research* demonstrated that women composed only 9% of editorial board membership in orthopedic journals with the highest impact factors.³⁰ Similarly, female surgeons have less frequently received awards of acclaim within the ASSH than their male counterparts.³¹ For example, of 40 awarded Bunnell fellowships, only 5 awardees have been female. Likewise, only 1 of 12 Weiland Medal winners has been female. Only 1 female has served as ASSH president.³² To attain these levels of expert status and leadership, female surgeons must be included in forums that build their credentials in this manner. Given these known disparities, it bears an even greater reason to encourage gender equity among expert panels within hand surgery professional forums.

The data identified in our study are critical to our understanding of how small interventions can affect change regarding gender representation in hand surgery forums. Our study demonstrated an increase in female authorship from 9% to 22% over the course of the past decade. Although expert panel positions are not yet equitably distributed, progress is being made toward gender equity. This is true of both submissions from the United States and international guest nations. The simple act of encouraging the inclusion of female surgeons on expert panels was effective in changing the gender composition of authorship in a substantive way in 1 year. These data additionally emphasize that directed interventions from ASSH leadership are effective in moving our society toward the goal of gender equity. Although further studies would be required to

determine how these changes impact female entry into the field, prior literature in other subspecialties supports that these changes should have a positive impact in overall gender equity within hand surgery. With this knowledge, intentional efforts that highlight female contributions and representation within the field would be equally impactful in both female entry and advancement within hand surgery.

Our study has limitations. As a review of prior submissions, our study was impacted by the makeup of society. Notably, the guest nation from any specific year substantially impacted international submissions. We did not evaluate submissions to the Annual Meeting of the American Association for Surgery of the Hand, which may have a different gender distribution among its membership and those submitting abstracts to that meeting. We were limited to the historical records of the ASSH and, as such, can only comment on submissions in comparison to presented ICLs and Symposia as a proxy for accepted work. We specifically cannot comment on whether a project is accepted but the authors decline to present. Finally, we cannot comment on the perception of trainees attending the Annual Meeting with regard to whether these changes, in fact, positively impact gender perception in hand surgery. We rely on prior literature to support this sentiment, and further studies would be required to prove this effect with respect to the impact of gender representation within the ASSH Annual Meeting. Finally, although most authors likely do self-categorize as male/female, it is certainly possible that some members of the ASSH and some authors do not. Presenters' workplace website profiles may not be adequate to judge this, and individual inquiry to each author would be required to better assess this, which was limited by our study design. We expect that this represents a minority of cases, although this is an important consideration in the discussion of equity. We were similarly limited in our assessment of race and believed that our methodology would be insufficient to analyze this through website profiles. Although we acknowledge that this is an important aspect discussing regarding diversity, this was not within the scope of our study.

In conclusion, our study demonstrated that gender diversity among hand surgery expert panels moved toward increased equity over the past decade; however, there is still work to be done. Notably, as career development and trainee decision making are impacted by the exposure of gender representation, directed and intentional interventions from professional organizations are needed to move the needle forward to increasing diversity within the field of hand surgery.

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