

Gender Bias and Its Negative Impact on Cardiothoracic Surgery



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In 1972 Congress passed Title IX, a law stating that “no person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance.” Almost 50 years after Title IX, women make up half of matriculating medical school classes, with 2017 marking the first year that the number of women starting medical school exceeded the number of men despite there being a higher percentage of male applicants.¹ Unfortunately, the surgical workforce is not close to the gender parity that has been achieved within medical schools.

Multiple studies have demonstrated influential factors in specialty selection for medical students, namely, exposure to electives, lifestyle, and, most importantly, mentorship.² However, in the discipline of surgery, women consist of only 35% and 20% of general and cardiothoracic surgery residents, respectively.³ More concerning is that only 7% of practicing cardiothoracic surgeons are women, and even fewer are in academic or leadership positions.⁴ This limits the number of women mentors or role models for female students interested in surgery and acts as a major impediment to recruitment and retention of women in the field. Pipeline programs designed to increase the representation of women in the surgical and medical workforce have made important gains, but their success is, unfortunately, limited by the entrenched biases at the end of the pipeline.

Gender Bias

A large body of literature shows that women have unequal employment opportunity (benefits, privileges, and promotion). One major contributor to these inequalities is gender bias. Bias is a preference for one group over another based on a set of assumptions or stereotypes about the groups. Biases and associated stereotypes can

be explicit (overt) or implicit (automatic). Overt gender biases, such as beliefs that women are less committed to medicine than men or women make less effective leaders than men, persist despite decreased acceptability since the institution of Title IX. Explicit biases continue to influence decision making, resource allocation, and opportunities for women in medicine. Compounding the issue is that implicit gender biases and stereotypes are pervasive, more elusive, and affect the judgment and actions of people who explicitly and reportedly believe in gender equity.⁵

It is suggested that gender biases affect the surgical work force as early as during the medical school years. A survey of medical students in 1995, reported 96% of female students compared with 0% of male students viewed surgery as “unfavorable” to their gender.⁶ More disheartening is that a more recent study found this perception is being perpetuated by potential mentors. In a 2010 study of surgical faculty, male attending surgeons (the vast majority of the surgical work force) are less likely than female surgeons to agree that surgery is a good career for women.²

Gender biases also affect one’s job placement and undermine practice development and success. Referring physicians are less likely to refer to a female physician, and female surgeons suffer extraordinary backlash after surgical complications, whereas male surgeons do not.⁷ Female physicians typically score lower on teaching evaluations, and some studies have demonstrated that they receive lower patient satisfaction ratings despite similar practices to male physicians, although there are conflicting data on the topic of patient satisfaction.⁸

Lastly, women continue to have difficulty ascending the leadership ladder: 25% of female surgeons are assistant professors, only 9% are full professors, and 3% are division or department chairs or deans.⁹ Gender biases are

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presumed to be playing a role in this “sticky floors” and “glass ceiling” effect.

Gender Bias in Cardiothoracic Surgery

The Society of Thoracic Surgeons (STS) and Women in Thoracic Surgery (WTS) recently surveyed their members to investigate the extent of gender bias within our discipline. The gender bias portion of the survey received responses from 663 physicians, including 86 surgical trainees. Respondents were asked on a 5-point Likert-like scale to agree or disagree with various statements regarding their workplace. Statements composed of scenarios of differential treatment as well as balancing work and personal obligations were based on the Working Environment for Women in Academic Settings and Mayo Clinic physician wellness and burnout questionnaires.

Of the respondents, 149 indicated that they were female (99 attendings and 50 trainees). The responses from women in cardiothoracic surgery indicated that the discipline of cardiothoracic surgery is a fairly “chilly” one. Statements reflecting supportive behavior toward women in the workplace attained low scores (means ranged from 2.0 to 2.4), whereas statements that represented unsupportive behavior scored highly (means ranged from 3.5 to 4.3; [Appendix](#)).

More concerning, however, is that the perception of gender bias varied greatly between male and female respondents ([Figure 1](#)). Although male and female cardiothoracic surgeons’ responses were more concordant with respect to acknowledging some of the challenges relating to work-life integration (ie, both agreed with “the difficulty of female surgeons balancing work and family/personal life” and “female surgeons incur more disadvantages by having a family than male surgeons do”), they responded differently to other aspects (ie, “a female surgeon can expect resentment if she takes extended maternity leave”).

In addition, responses from men and women diverged vastly with respect to disparate workplace treatment (eg, “in meetings people pay as much attention when a female surgeon speaks as when a male surgeon speaks,” “most surgeons would feel as comfortable with a female chairperson,” “female surgeons are less likely to have influence on departmental politics”), as well as exclusionary attitudes and comments (eg, “small talk among surgeons is more geared toward men’s interest”).

Given that less than 10% of board certified cardiothoracic surgeons are women, and an even lower percentage of women are in leadership or positions of influence, women cardiothoracic surgeons are left working in an environment with colleagues and leaders who often do not even perceive, much less acknowledge, the inherent disadvantages under which they are practicing.

Moving Forward

It has to be emphasized, however, that promotion and recognition should be, above all else, based on merit. Thoracic surgery, orthopedics, and neurosurgery training

programs continue to be predominately composed of men, whereas obstetrics, pediatrics, and dermatology are heavily skewed toward women.⁴ If this differing distribution is due only to applicant choice rather than any sort of bias, then no further action is warranted. However, at least in the case of cardiothoracic surgery, it seems unlikely the disproportionate distribution is due to trainee preferences alone. We are not advocating reverse discrimination; rather, we are suggesting that women must be allowed to compete on a level playing field. If entrenched structural factors and implicit biases are limiting access of female applicants to these traditionally male-dominated specialties, we should work toward correcting the impact of these biases.

A critical step to correcting behaviors of implicit gender bias is to recognize the gender-stereotyped assumptions and how they influence judgment. We have polled cardiothoracic surgeons and have strong evidence that gender bias affects our discipline. It is now important to challenge these biases as unjust and to deliberately practice replacing them.⁵

First, we must increase awareness. It is incumbent upon us as a profession to increase implicit bias literacy through training, discussions, and repeat training. More important than increasing awareness, however, are concrete solutions to reduce the impact of implicit bias. Let us educate ourselves on strategies to reduce the impact of implicit biases on behavior and implement them.

Second, we must call out explicit bias when it occurs and support those who take the risks involved with whistle blowing when gender is inappropriately influencing decisions and opportunities.

Lastly, we need to endorse inclusive behavior. Evidence supports that implicit bias is a remediable habit, and as such, we should be required to learn strategies to reduce discrimination and increase diversity.⁵ These practices ought to be used for the recruitment and retention of surgeons.

Several initiatives have been instituted across the country in various disciplines toward the goal of gender diversity. Institutions have a duty to introduce processes for the active recruitment and retention of women. If the pool of female graduates consists of 50% women, there should be a goal of matching as close to that number as possible in surgical residents and faculty (reflecting the proportion of women interested in these surgical specialties). Let us focus on active recruitment beginning as early as medical school, with programs to attract the best and brightest students to thoracic surgery irrespective of sex. This would include recruitment efforts by both male and female faculty, informing potential trainees that thoracic surgery both welcomes and needs practitioners of both sexes. Family/medical leave policies that are more conducive to being inclusive of women must be established. Furthermore, these policies should be extended to surgical trainees as well as to faculty.

Toward the goal of retention, implementation of active processes to encourage the promotion of women at the same rate as the promotion of men is valuable. This may require broadening the criteria for promotion and

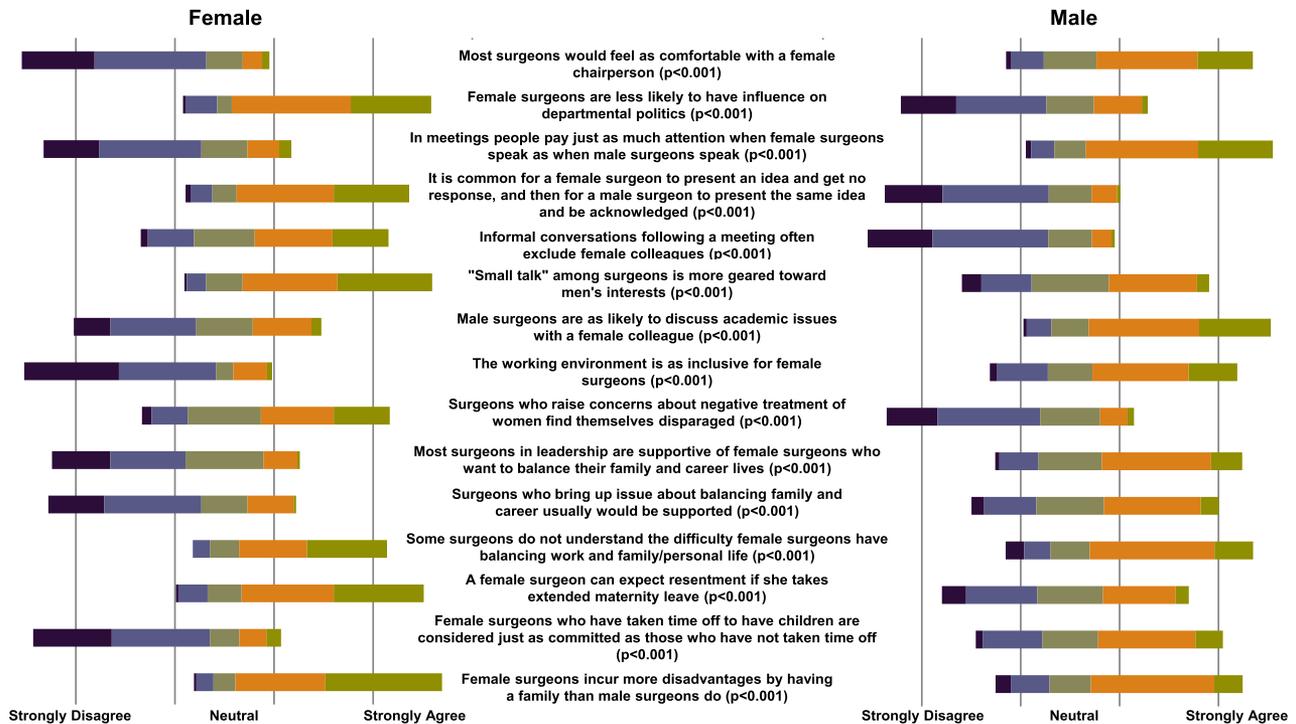


Figure 1. Stacked plots of responses by women and men cardiothoracic surgeons to gender bias survey items. Trainee responses mirrored a similar trend in discordant responses between the sexes.

recognition of the person as a whole, including a wider range of valuable activities—education, administration, outreach—and not just the number of publications.² Compensation plans ought to be transparent, using compensation review committees to ensure fair compensation regardless of gender. Lastly, we must work to change the entrenched structural factors underlying these imbalanced systems of evaluation and promotion that systematically disadvantage women.

In being deliberate and proactive in practicing gender inclusion, as a community let us emphasize increasing the regional and national profile of female cardiothoracic surgeons. Once again, as the medical school graduating class is 50% female, we should strive for as close to 50% female representation as possible for invited speakers and moderators at our national meetings. The Society of American Gastrointestinal and Endoscopic Surgeons has instituted such policies; our professional organizations should follow suit.

In addition, we need to work toward mentoring and sponsoring more women to be leaders and make it an initiative to have more women the decision-making table. Studies have demonstrated that a single token minority is insufficient to evoke change, and for a minority group to be heard within a committee, a presence of at least 25% to 30% is required to achieve a “tipping point.” Toward this goal, the American Association for Thoracic Surgery is applauded for focusing its 2018 Leadership Academy entirely on female surgeons. Next, institutions and our discipline should strive to have at least 25% to 30% of leadership positions be filled by women, not just as

program directors but as division chiefs, department chairs, and deans.⁹

In conclusion, the overt and implicit bias in our specialty not only negatively affects female cardiothoracic surgeons but is also a direct threat to the future growth of our specialty. It is up to all members of our discipline to understand the issues, recognize the potential for implicit bias in their actions, and strive to treat female surgeons as equal partners. Female surgeons participate in the same rigorous training, the same board certification process, and are measured by the same metrics. Members of our specialty have a unique opportunity to support women, sponsor women, and become advocates. This is not just a gender issue. As Backhus and colleagues¹⁰ noted, it is a surgical education issue, a work force issue, and a patient safety issue.

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References

1. American Association of Medical Colleges. More Women Than Men Enrolled in U.S. Medical Schools in 2017.

- AAMC News; December 18, 2017. Available at: <https://news.aamc.org/press-releases/article/applicant-enrollment-2017/>. Accessed October 1, 2018.
- Ahmadiyeh N, Cho NL, Kellogg KC, et al. Career satisfaction of women in surgery: perceptions, factors, and strategies. *J Am Coll Surg*. 2010;210:23-28.
 - Stephens EH, Robich MP, Walters DM, et al. Gender and cardiothoracic surgery training: specialty interests, satisfaction, and career pathways. *Ann Thorac Surg*. 2016;102:200-206.
 - American Association of Medical Colleges. Active Physicians by Sex and Specialty, 2017. Available at: <https://www.aamc.org/data/workforce/reports/492560/1-3-chart.html>. Accessed December 6, 2018.
 - Carnes M, Bartels CM, Kaatz A, Kolehmainen C. Why is John more likely to become department chair than Jennifer? *Trans Am Clin Climatol Assoc*. 2015;126:197-214.
 - Lillemoie KD, Ahrendt GM, Yeo CJ, Herlong HF, Cameron JL. Surgery—still an “old boys’ club”? *Surgery*. 1994;116:255-259 [discussion: 259-261].
 - Sarsons H. Interpreting Signals in the Labor Market: Evidence From Medical Referrals. Available at: https://scholar.harvard.edu/files/sarsons/files/sarsons_jmp.pdf. November 28, 2017. Accessed November 21, 2018.
 - Fassiotto M, Li J, Maldonado Y, Kothary N. Female surgeons as counter stereotype: the impact of gender perceptions on trainee evaluations of physician faculty. *J Surg Educ*. 2018;75:1140-1148.
 - Weiss A, Lee KC, Tapia V, et al. Equity in surgical leadership for women: more work to do. *Am J Surg*. 2014;208:494-498.
 - Backhus LM, Fann BE, Hui DS, Cooke DT, Berfield KS, Moffatt-Bruce SD. Culture of safety and gender inclusion in cardiothoracic surgery. *Ann Thorac Surg*. 2018;106:951-958.