

**Gender bias and its negative impact on cardiothoracic surgery**

Running Head: gender bias in CT 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 will exceed the number of men despite there being a higher percentage of male applicants.<sup>1</sup> 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.<sup>2</sup> However, in the discipline of surgery women consist of only 35% and 20% percent of general and cardiothoracic surgery residents, respectively.<sup>3</sup> More concerning is that only 7% of practicing cardiothoracic surgeons are female, and even fewer are in academic or leadership positions.<sup>4</sup> 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, 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. Both 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.<sup>5</sup>

It is suggested that gender biases affect the surgical work force as early as during the medical school years. In 1995, a survey of medical students reported 96% of female students compared to 0% of male students viewed surgery as “unfavorable” to their gender.<sup>6</sup> More disheartening is that in a more recent study, 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.<sup>2</sup> 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 women surgeons suffer extraordinary backlash following surgical complications, whereas male surgeons do not.<sup>7</sup> Women 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).<sup>8</sup> Lastly, women continue to have difficulty ascending the leadership ladder. Twenty-five percent of female surgeons are assistant professors, only 9% are full professors and 3% are division or department chairs or deans.<sup>9</sup> It is presumed that gender biases are 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 performed a survey of its members in order to investigate the extent of gender bias within our

discipline. Six hundred sixty-three physicians (including 86 surgical trainees) responded to the gender bias portion of the survey. Respondents were asked using 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.

One hundred forty-nine respondents 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 2.0-2.4) while statements that represented unsupportive behavior scored highly (means ranged from 3.5 to 4.3) [Appendix 1].

More concerning, however, is that the perception of gender bias varied greatly between male and female respondents (Figure 1). While male and female cardiothoracic surgeons’ responses were more concordant with respect to acknowledging some of the challenges relating to work-life integration (i.e., 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 (i.e., “a female surgeon can expect resentment if she takes extended maternity leave”). Additionally, responses from men and women diverged vastly with respect to disparate workplace treatment (e. g., “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 (e. g., “small talk among surgeons is more geared toward men’s interest”). Given that less than 10% of board certified cardiothoracic surgeons are female, 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 comprised of men whereas obstetrics, pediatric and dermatology are heavily skewed towards women.<sup>4</sup> 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 towards 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.<sup>5</sup> 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.<sup>5</sup> 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 gender. This would include recruitment efforts by both male and female faculty, informing potential trainees that thoracic surgery both welcomes and needs practitioners of both genders. 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 are valuable. This may require broadening the criteria for promotion and recognition of the person as a whole (including a wider range of valuable activities—education, administration, outreach) and not just the number of publications.<sup>2</sup> Compensation plans ought to be transparent, utilizing 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. Additionally, we need to work toward mentoring and sponsoring more women to be leaders and make it an initiative to have more women “at the table” of decision-making. Studies have demonstrated that a single “token” minority is insufficient to evoke change and in order for a minority group to be heard within a committee a presence of at least 25-30% 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 25-30% of leadership positions be filled by women, not just as program directors but as Division Chiefs, Department Chairs and Deans.<sup>9</sup>

#### CONCLUSION

The overt and implicit bias in our specialty not only negatively affects female cardiothoracic surgeons; it is 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, *et al* noted, it is a surgical education issue, a work force issue, and a patient safety issue.<sup>10</sup>

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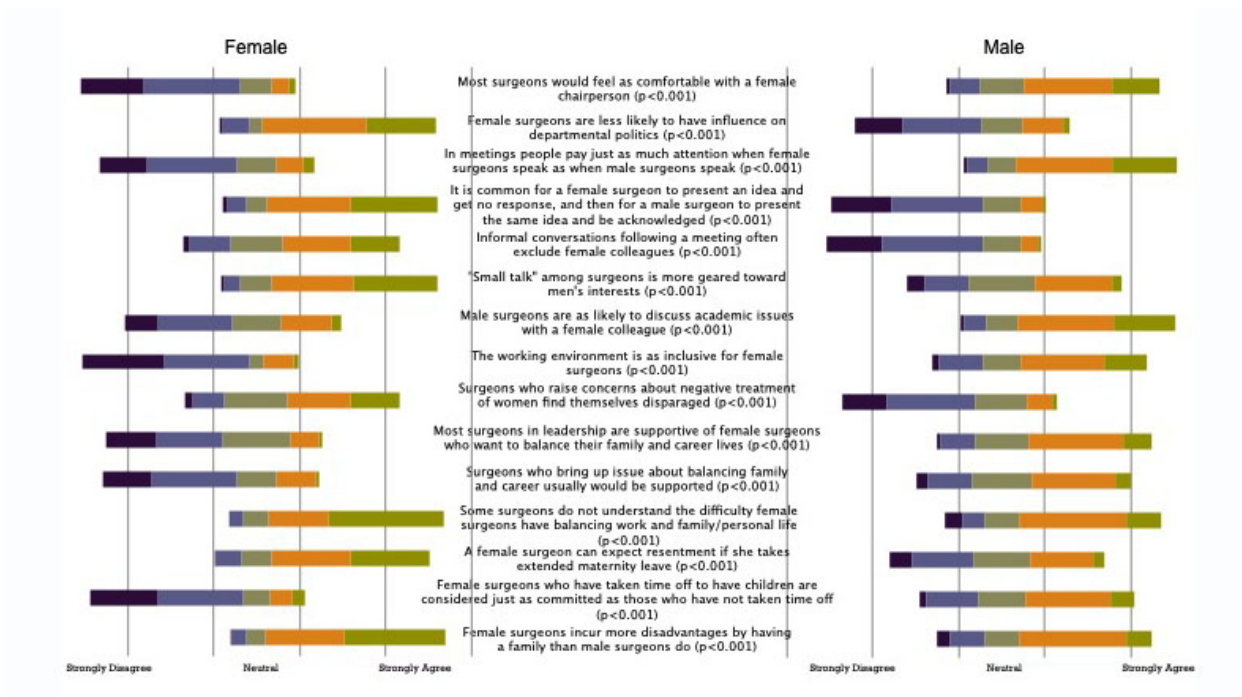
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### **Figure Legend**

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

Appendix 1. Results of the gender bias survey questions. Scores from the Likert-like scale are listed as mean score. Responses in the table are from female respondents only.



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