Differential Gender-Based Experiences of Cardiothoracic Surgeons: Time to Change our Alternate Realities

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Central Message: In addition to differential experience in training and career advancement, women surgeons encounter workplace sexual misconduct. It is time to amplify awareness of these facts and face them head-on.
Central Figure Legend: Cecilia Pompili MD, PhD and Mara B. Antonoff MD, FACS
Earlier this year, Dr. Begeny and colleagues published an important and revealing article in the British Journal of Surgery, entitled “Sexual harassment, sexual assault, and rape by colleagues in the surgical workforce, and how women and men are living different realities: observational study using NHS population-derived weights.” The authors should be applauded for this transparent elucidation of the state of the surgical workplace. As women cardiothoracic (CT) surgeons, we read this article with great interest, particularly drawn to a specific element of the title, “women and men are living different realities.” Let that sink in: women and men are living different realities. This fact was quite obvious to us, two midcareer thoracic surgeons practicing across the globe from one another, as we discussed Dr. Begeny’s publication among colleagues and surgeons shortly after its release. The findings in this paper provide concrete data to uphold known facts to the women in our field, yet they are somehow shocking to our colleagues who are men. How is this possible, that the women have all been aware of these findings, yet the men were caught blindsided? As surgeons and scientists, we all want and need data, and the authors of this study provide a powerful contribution of data for which we praise its investigators. Asking these very difficult questions and then finding a way to scientifically grapple with the findings is both brave and necessary. The scientific space of sexual violence in the surgical workplace remains vastly underinvestigated and underreported. However, the truth is, there is an abundance of data to show that men and women surgeons are living in starkly different realities.

So, for the scientists among us, here are the data, loud and clear, that show that men and women in our field have clearly different realities:

*Women do not have equal opportunities to enter surgery and its subspecialties.*

Despite early gender parity in medical school, women continue to enter surgical training at lower rates than men, and disparities in representation are most pronounced in specific subspecialties. In
2017, women accounted for only 7% of practicing CT surgeons, up substantially from 3.8% in 2007.\textsuperscript{2,3} More recent data revealed that 17% of cardiothoracic faculty were women, compared with 27% of surgical faculty and 43% of clinical faculty overall (\(p < 0.01\) for both).\textsuperscript{4} The argument is often made that women aren’t entering the field because they lack interest, but opportunities are not equal.

Bias impacts every step of recruitment, with well-documented issues in high-impact metrics, letters of recommendation, screening and selection of applicants, and interview conduct and scoring.\textsuperscript{5} Retrospective analysis of blinded letters of recommendation for CT surgery trainees identified differences in linguistic terms used regarding men and women applicants, with men writers more often using favorable gendered language in support of men applicants.\textsuperscript{6}

For women who are offered interviews, practices during and after the interview can harbor systematic flaws which put women at a disadvantage. Issues with types of questions asked, word choice for those questions, and gendered language in scoresheet grading criteria have been shown to cause unintended imbalance.\textsuperscript{7} Even when women matriculate into surgical training programs, they don’t have equal opportunities for education, autonomy, mentorship, or sponsorship.

Nearly 30 years ago, a survey of medical students reported that 96% of women respondents, compared to 0% of men, viewed surgery as unfavorable to their gender.\textsuperscript{8} We’d like to think that things have changed. Have they? Twenty years later, a 2013 survey of general surgery residents and faculty revealed that 54% of women perceived that they were treated differently because of their gender, compared to 16% of men.\textsuperscript{9} Moreover, one-third of respondents to this survey felt that others’ opinions regarding their gender directly created a barrier to career aspirations and
Men surgeons continue to argue that surgery is not a good career for women, and referring physicians report less desire to send patients to women surgeons while demonstrating greater backlash against women after suboptimal operative outcomes compared with their response to similar outcomes of men surgeons. Successful training and career development are highly dependent on mentorship, and women faculty members are scarce in many surgical specialties and departments. Some men surgeons continue to argue that surgery is not a good career for women, influencing women to seek alternative careers. A survey of mentorship needs stratified by specialty and gender showed substantial issues for women seeking careers in surgery. Compared to men, women training in surgical specialties less likely to have exposure to same-gender mentors at their own institution (43% vs. 91%, p<0.001), and they were more likely to be mentored by individuals of the opposite gender though wished to be mentored by individuals of the same gender (35% vs. 0%, p<0.001). Analysis of trainees in CT surgery showed these findings to be even more pronounced, with women trainees expressing greater desire for mentoring by women with even less access.

It’s clear that autonomy in the operating room is critical to training, yet women trainees in the operating room are routinely granted less autonomy than men. Women in their chief years of training are greater than five times more often viewed as needing a substantial amount of guidance in the operating room compared to men. Women in surgical training routinely report having to work harder than their colleagues to gain the same respect from faculty.

In a 2020 study, cardiothoracic surgical faculty members were shown identical videos of a “surgical trainee” performing a coronary anastomosis, with half of the evaluators randomized to descriptions of a trainee using feminine pronouns while the other half were described a trainee using masculine
pronouns. Not surprisingly, this study showed the presence of gender bias in scoring of trainees, as well as susceptibility of common assessment tools to such implicit biases.

Women in surgery are held back in terms of research funding.

While startup funding is an important foundation for a career as a surgeon-scientist, new women faculty receive far less financial support than men, with median $350,000 vs $889,000, even when adjusted for degrees, experience, and institutional variables. Women principal investigators receiving first-time funding from the National Institutes of Health receive, on average, $40,000 less than men colleagues. Without similar funding, efforts to discover, present, and publish may be held back or thwarted altogether.

Women in surgery do not experience equal opportunities for authorship, presentations, and scholarly accolades.

On reviews of presentations at the Society of Thoracic Surgeons and Southern Thoracic Surgical Association Annual Meetings, data revealed that, over time, increases in presentation authorship by women were observed. However, compared with men, women were more likely to have first author rather than senior author roles, and they were consistently accounting for fewer positions as invited speakers.

A subsequent bibliometric analysis of women’s authorship roles in leading North American cardiothoracic surgical journals noted important trends over time, yet ongoing issues of gender imbalance. Looking at nearly 15,000 articles over more than a decade, Papageorge and colleagues found that frequency of authorship by women rose (12.6 to 21.1% for first authors, 5.4 to 11.5% for last authors). The average number of last author publications was greater for men than for women.
Notably, women first authors were more likely to have the opportunity to publish with women last authors, despite there being far fewer women last authors in the specialty. These findings demonstrate the current value of same-gender collaborations, while emphasizing the strong need for much greater cross-gender mentorship for women. Moreover, while proportion of women in the CT surgery workforce has (slowly) increased, last authorship by women has remained flat, increasing at just 0.06% per year.\(^{22}\)

Women in surgery and its subspecialties make cents on the dollar for what men are paid.

Analysis of the 2019 Medicare payment data in the United States showed that women cardiothoracic surgeons received significantly lower payments than men surgeons after controlling for number of services, unique billing codes, case complexity, years in practice, and regional differences.\(^{23,24}\) A recent cross-sectional analysis showed that in 2021, women cardiothoracic surgeons were paid substantially less than men, earning from $0.71 to $0.86 for every dollar earned by men, with ascending academic rank correlated with greater gender salary disparity.\(^{25}\) This important work by Erkmen et al revealed that gender disparities in cardiothoracic surgery today continue to persist, with low representation of women and salary disparities at every academic rank.\(^{25}\)

Women in surgical fields experience microaggressions, macroaggressions, and discrimination.

Among 334 surveyed surgical trainees and practicing surgeons, 87% experienced gender-based discrimination in medical school, 88% in residency, and 91% in practice.\(^{26}\) Explicit discrimination continues to exist in some environments, while, in others, forms of bias are more subtle yet just as impactful. Microaggressions, which are categorized as microassaults, microinsults, microinvalidations, and environmental microaggressions, are indirect expressions of prejudice that contribute to the
maintenance of existing power structures and may limit the hiring, promotion, and retention of women. Despite their subtlety, these repeated encounters have a substantial impact on the recipients of repetitive disparate treatment, so called “death by a thousand papercuts.”

In a randomized study of operating room personnel, survey respondents were each asked to assess the appropriateness of a series of questionable surgeon behaviors, with options for justified team-member response. However, respondents were randomized in terms of the gender of the pronouns used to describe the surgeon in question—with all other aspects of the scenarios being identical. Subgroups of respondents were particularly more critical of women surgeons than men for the exact same behaviors, with greater tendency to report women surgeons to their supervisors.

Several comprehensive definitions of negative, bullying behaviors have been recently described to characterize the various forms of ‘psychological violence’ and to enable discussions around a broader cultural understanding and recognition. Often underestimated in terms of its impact, undermining behavior is arguably a more subjective and subtle delineation, but is defined by the United Kingdom General Medical Council as behavior that “subverts, weakens or wears away confidence.”

Nevertheless, what all these behaviors have in common is that their consequences can negatively impact the mental health and well-being of women in the surgical workforce and may affect patient care.

Bias and discrimination do not only impact women surgeons in their attempts to care for patients; these issues also cross over into their private lives. Forty percent of women CT surgeons report that their career negatively impacts their ability to find a partner. Women thoracic surgeons begin their families later in life, have fewer children, and experience more frequent pregnancy complications as
compared with national data, while reporting concerns of the condemning perceptions of their peers and adverse impact on their careers. These fears are far less frequent among men surgeons.

*Sexual harassment is a frequent event in the surgical arena.*

When queried, nearly a third of surgical residents reported experiencing sexual harassment during training, with the majority of respondents indicating that the supervising surgeons was the perpetrator; not surprisingly, 23% reported that this interaction impaired their performance on the rotation, 25% felt it impaired mentorship during training, 22% felt an impact on their ability to learn, and three-quarters of the incidents were never reported.

A survey of residents from 16 general surgery training programs revealed that 71% of women respondents had experienced at least 1 form of sexual harassment during their training, among whom less than 8% reported the incident, with half indicating that they didn’t report it because it would be “a waste of time.” Three-quarters of these incidents took place in the operating room (OR), where attending surgeons and nurses were the most common harassers. The most frequent nature of the OR harassment included being called names that were sexist slurs or conveyed inappropriate, unwanted intimacy.

This problem permeates our world of CT surgery. Ceppa et al revealed that 81% of practicing women CT surgeons (vs 46% of men, p < 0.001) had experienced workplace sexual harassment. Among CT surgical trainees, 90% of women reported sexual harassment (vs 32% of men, p < 0.001), with women citing the most common offenders being supervising leaders and colleagues.

*But wait, there’s more: sexual misconduct, assault, and rape are not infrequent in the surgical workplace.*
Begeny and colleagues reported results of their survey of 1434 surgeons from England’s National Health System (NHS), with respondents selected to proportionately represent the full surgical workforce in terms of experience and subspecialties, including 51.5% women. This is particularly important given the often-re criticated limitation of gender-bias based surveys of non-representation. In weighted analysis of composite scores, compared to men, women respondents more often experienced being the target of sexual harassment (71% vs 29%), workplace sexual assault (34% vs 10%), forced physical contact for career opportunities (11% vs 0.7% men), and rape by colleagues (1.4% vs 0%). The same gender-related difference was also reported in witnessed sexual harassment, sexual assault, and rape in the past 5 years.

Despite the prevalence of these issues, surgeons and residents are historically unlikely to report sexual misconduct, resulting in frequent dismissal of these issues as anecdotal. Data from surgical departments in Australia and New Zealand demonstrated that reporting abusive, negative behaviors led to their cessation in fewer than 10% of cases, often having serious effects on those filing the complaints rather than on the abuser. More alarming, comments from employers highlighted a culture of fear of reporting, with most information on bullying and sexual harassment learned through informal rather than formal reporting channels.

Sexual harassment is a form of unlawful discrimination under the Equality Act 2010. Sexual harassment puts patient safety at risk, as well as the safety of the recipient. Shocking results were reported in a recent paper analyzing contributing factors to suicidal ideation among surgeons in Italy and Sweden, in which the authors found that at-work harassment was the strongest associated predictor for suicidal ideation, regardless by any mental health risk factor.
The work from Begeny and colleagues is the first report defining and reporting publicly sexual misconducts, including sexual harassment, sexual assault, and rape among a national surgical workforce, also initiating a Working Party on Sexual Misconduct in Surgery website with a glossary accessible to everyone. It is notable that only 2% of the respondents in Begeny’s study were in their first two years of training, and no medical students were involved in this survey. These limitations highlight the tendency of non-reporting of negative behaviors from the younger and most vulnerable members of our workforce—the individuals who are literally the very future of our specialty. This further demonstrates the lack of psychological safety for those who are the most common targets of sexual misconduct, even if a survey is anonymous, whereas those who have reached more senior standing may feel more able to speak up.

When this publication was released, many men in surgery responded with shock and horror. There was an outcry. How could this be? We have had immense data for years showing that men and women had disparate experiences, as highlighted above. Why was this different now? Begeny and colleagues did not just show that women were publishing less, earning less money, gaining less leadership, or feeling less liked by colleagues and peers—issues that could perhaps be argued, justified, or blamed on a variety of rationales. Begeny and colleagues showed that women surgeons are not safe at work. This notion is troubling, as it should be, and it is time for everyone to be aware of these facts and face them head-on.

This publication resulted in an echo chamber effect on social media, popular media, and academic outlets, at the national and international level. Certainly, these results validated in a more granular and clear way the difficult-to-read sentences pronounced in the independent review of diversity and
inclusion that women and other underrepresented groups do not feel valued by the Royal College of Surgeons of England (RCSEngland). However, more than ever before, the surgical community witnessed public reporting from women surgeons of what they had suffered during their surgical training and beyond. This publication exposed a workplace in which sexual assault, harassment, and rape can occur among surgical staff and tend to be ignored because the system lacks simple and safe mechanisms to identify perpetrators and support their victims.

Unfortunately, these results are in line with recently published survey in the British healthcare system more broadly, which indicated that 8% of respondents experienced recent sexual harassment at work with more than half of these acts being perpetrated by co-worker. Furthermore, a lack of dedicated training to prevent sexual misconduct was identified among most of the NHS trustees by researchers from the University of Cambridge, and active bystander training has been promoted as one strategy to address sexual harassment.

These data are clearly disturbing—more so than all the evidence previously generated regarding disparities. Are we still living in a world, where some men can justify themselves under the “false feminism” as pronounced by the President of the Spanish Football Federation after the victory of Spain at the FIFA Women’s World Cup when he was eclipsed by an unsolicited kiss from the President to midfielder Jennifer Hermoso? This scandal highlighted the need of a public campaign and witnessing of these unacceptable behaviors to stand together and beside the victims to support and prevent long lasting psychological effect like shame, anxiety, and depression. The athletic world reacted, as did the academic and healthcare sectors. A subsequent survey on sexual harassment was published in the Lancet, with results emphasizing that the reporting culture is still lacking. The authors identified several ongoing challenges, including normalization of sexist behavior; lack of
support from colleagues, supervisors, and institutional authorities; and persistent concerns about not being taken seriously with downstream career repercussions for reporting victims\textsuperscript{43}.

The British Surgical Royal Colleges and other healthcare organizations committed after this publication to change this harmful culture in surgery, and signed the NHS organizational charter on sexual safety in healthcare\textsuperscript{44}. In this document there a clear zero-tolerance commitment primarily in integrating training and safe reporting resources.

For men and women surgeons, we must face this fact: the undisputed presence of disturbing, unpleasant, and unequivocally harmful behaviors toward women surgeons strongly influences how we feel about future generations of our children, our students, and our mentees following in our footsteps more than the body of evidence indicating other “softer” disparities.

Where do we go from here?

Harassment and inequality are mutually reinforcing. Failure to adequately tackle harassment contributes to perpetuating and reproducing inequality.

Moving forward is challenging. Bias, discrimination, harassment, and abuse in our specialty not only negatively affect women surgeons; they are also direct threats to the future growth of our specialty\textsuperscript{45}. To meet the needs of our patients and our workforce, it is critical to ensure that the contributions of men and women surgeons are valued and treated with respect equitably\textsuperscript{46}. Best practices for allyship of women in CT surgery have been evaluated, revealing themes of mentorship, support, and sponsorship as the most important qualities\textsuperscript{47}. Initiatives to enhance support for women surgeons emphasize increased access to mentorship and sponsorship, and progress will require both men and women allies alike to promote positive behavior and minimize detrimental behaviors. We must hold
all members of our discipline accountable, with expectations for them to understand the issues described herein, to recognize the potential for harm in their actions (and inactions), and to treat women surgeons as equal, deserving partners. Establishing a culture of safety is pivotal, and all must take accountability in order for us to do so.

In conclusion, Begeny and Colleagues clearly reported with granular data that we still have a long way to go in showing the respect deserved by our women colleagues in the surgical workforce. We commend the authors for their bravery in investigating in a conscious manner an upsetting, sensitive, and often secretly neglected topic. Despite years of reporting gender pay gaps and conscious and unconscious biases experienced by women in surgery, it looks that the time for meaningful change in surgery has been revealed.
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