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Does Chair of Surgery Gender Influence Divisional or Residency Program Director Gender Diversity? ☆



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ABSTRACT

Background: Workplace diversity is beneficial and results in new ideas and improved performance. Within surgery leadership, the gender gap is improving, but still present. Given the increasing number of women surgery department chairs, we aimed to examine the association of surgery chair gender with division and residency program director gender. We hypothesized that surgery departments with female leadership would have an increase in gender diversity compared to departments led by male chairs.

Materials and methods: A list of all surgery departments were compiled from the Society of Surgical Chairs website. Gender of department chair, division director and residency program director were examined and compared. Chair position term length was determined based on online public announcements, publicly available curriculum vitae, and institutional profile biographies.

Results: Of 178 department chairs included, 10.7% were female, and 89.3% were male. There was no difference in female residency program director leadership between female versus male led programs (42.1 versus 26.1%, $P=0.147$). Of the programs with female department chairs, only 29.4% had any female division directors compared to 54.6% led by male chairs ($P=0.055$). When examining departments with ≥ 5 division directors, there was no difference in the average number of female division directors within departments led by female versus male chairs. There was a significant difference in length of surgery chairship, with female chairs holding the position for fewer years than male chairs (median time 5.3 (IQR = 3.4–5.8) versus 7.0 (IQR=4.3–12.3) years, $P=0.032$).

Conclusions: Female department chair leadership was not associated with increased diversity in divisional leadership compared to departments of surgery led by males.

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Introduction

Women in Department of Surgery chair positions have more than doubled since 2013, from women holding a total of 6 surgical chair positions to 19 in 2021, yet there is still room for improvement.¹ While impressive advances in gender parity have been made, particularly with respect to medical school admissions and residency,^{2,3} there remains a large gender gap for women holding full professorships and leadership positions.

As recently as 2017, women in medicine at large held 24% of full professorships, up from 10% in 1979.^{4,5} In surgery specifically, only 12.9% of full professors are female.⁶ Sexton et al. predicted it would take at least until 2096 for there to be an equal number of male and female surgery full professors.⁷ This is concerning as we know diverse leadership within surgery can have a long term positive impact on the specialty as a whole. Workplace diversity is beneficial and can result in innovation, better problem solving, and more effective overall performance.⁸

Many hypotheses have been provided for the delayed advancement of women in leadership positions within academic surgery,⁹⁻¹¹ but few studies have focused on women holding chair positions and the associations this may have on divisional and program leadership diversity. Given the increasing number of women department chairs in surgery, we aimed to examine the association of surgery chair gender with divisional and program gender leadership. We hypothesized that surgery departments with female leadership would have more gender diversity within division and residency program directors compared to departments led by male chairs.

Materials and Methods

Data collection and definitions

A list of all surgery departments was compiled by searching program members on the Society of Surgical Chairs website. All programs listed were used for the initial search. Any programs that were Pediatric specific or did not list division directors or section chiefs explicitly on the program website were excluded from the analysis. The Pediatric specific programs were excluded as the authors felt this would not be generalizable for all programs. Division director and section leader were both classified as division director in the analysis. Program director was defined as the residency program director for the general surgery program at the particular institution. Gender was determined and interpreted via online institutional profiles using written pronouns. Additionally, female surgery chairs were confirmed using the Association of Women Surgeons list of female chairs. Finally, length of holding departmental chair position in years for male and female surgeon chairs was determined using online public announcements, publicly available curriculum vitae, and institutional profile biographies. This study was approved by the University of Alabama at Birmingham Institutional Review Board (IRB).

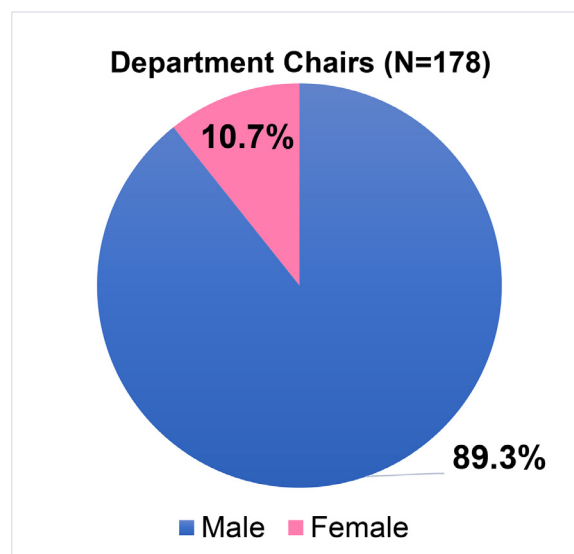


Fig. 1 – Department chairs of surgery by gender. Of the 178 departments with complete chair information, 10.7% (n = 19) were led by female chairs and 89.3% (n = 159) were led by males.

Statistical analysis

The analysis was performed using SPSS (IBM Inc). Descriptive statistics including counts were performed for the departments with complete chair, residency program director and divisional directors. Due to potential for skewing in departments with fewer number of division directors, additional analysis was completed just on departments with ≥ 5 division directors. Statistical testing included X^2 or Fischer's exact test where appropriate for categorical variables and student t-test for continuous variables. For continuous variables that were not normally distributed (tested by QQplot and Shapiro-Wilk test), non-parametric tests were used including the Mann Whitney U Test to compared groups. A P value less than 0.05 was considered statistically significant.

Results

One hundred and seventy-eight programs had complete chair information and had at least one division director. Of these departments, 10.7% (n = 19) were led by female chairs and 89.3% (n = 159) were led by male chairs (Fig. 1). When examining length of chairship by gender, there was a significant difference in length, with female chairs holding the position for less duration than male chairs (median time 5.3 (IQR = 3.4-5.8) versus 7.0 (IQR = 4.3-12.3) years, P= 0.032)(Fig. 2). For the departments with complete residency program director data available (n = 153), there was no difference in department director leadership with 42.1% of the female led programs having female residency program directors compared to 26.1% of the male led programs (P= 0.147)(Fig. 3).

When examining division directors across the country with complete data (n = 114), of the departments with female de-

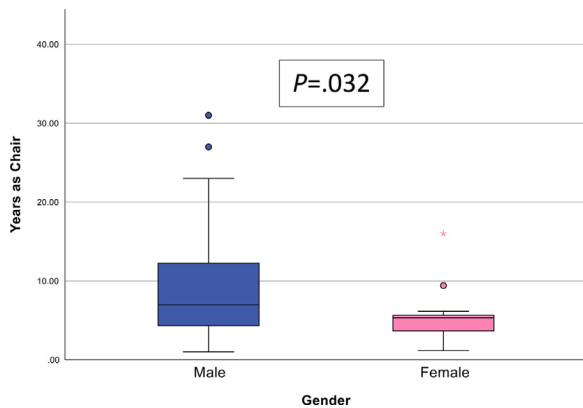


Fig. 2 – Length of Chairship by Gender. (N = 119 chairs) Female chairs have held their position for fewer years than male chairs, with a median time of 5.3 y (IQR 3.4-5.8) for female chairs and 7.0 y (IQR 4.3-12.3) for male chairs ($P=0.032$). *Data missing for 6 chairs.

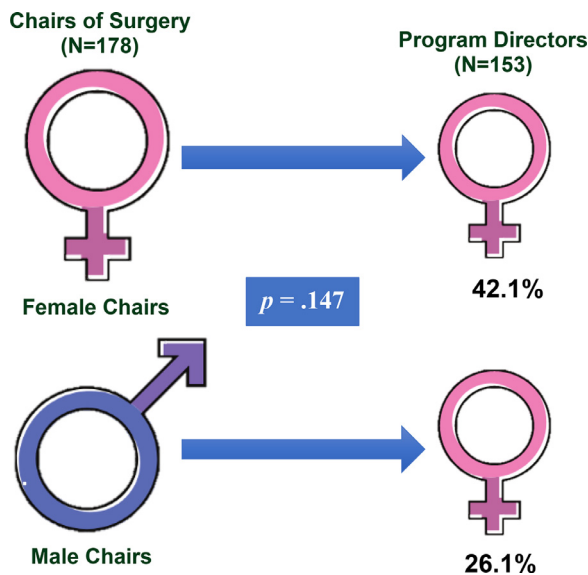


Fig. 3 – Gender of Surgery Chairs and Program Directors. Of the 153 departments with complete program director information, 42.1% (n = 8) of female led departments had female program directors, while 26.1% (n = 35) of male led departments had female program directors ($P=0.147$).

partment chairs, only 29.4% (n = 5) of the programs had any female division directors compared to 54.6% (n = 53) of the departments led by male chairs ($P=0.055$) (Fig. 4). Due to potential for skewing from small division director numbers, we excluded all departments with <5 division directors when examining the average number of female division director. Eighty-two departments had ≥ 5 division directors out of the original 178 departments. There was no statistically significant difference between the average percentage of female division directors within departments led by female chairs and male chairs (median % female division directors 0% (IQR = 0%-25%) versus 12.5 (IQR = 0%-19.1%), $P=0.643$).

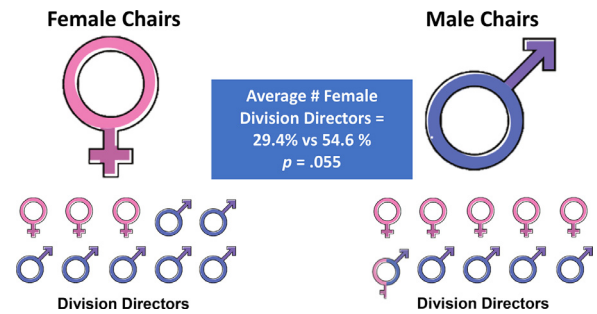


Fig. 4 – Gender of Surgery Chairs and Division Directors. Only 29.4% (n = 5) of female led departments had any female division directors while 54.6% (n = 53) of departments led by males had female division directors ($P=0.055$).

Discussion

We sought to determine whether female surgical chairs would be associated with an increase gender composition of faculty leadership downstream. We found that having a female department chair was not associated with an increase in female division or residency program director leadership. The reasons for these findings are currently unknown and surprising, given the opposite has been shown in the corporate sector and other medical specialties.^{12,13} Our findings do however, confirm the prior work done by Carpenter *et al.*, that showed general surgery departments with a female chair were no more likely to have a female residency program director compared to departments led by male chairs.¹⁴ One potential contributing factor to these results is likely the length for which a department chair holds the position. We found that female surgery chairs have held their position for fewer years on average than male chairs, which may be attributable to their more recent hiring. Over time, we should expect to observe the durations of chairships equalize between gender. It will be important to further assess these leadership trends over time.

We know effective mentorship is critical to advancement of women in a career in surgery yet it remains a barrier in academic surgery and in underrepresented minority women in surgery.^{11,15} A recent review demonstrated that women obstetrics and gynecology residents are more likely to report interest in pursuing leadership roles when they have women mentors and women leaders.¹⁶ Bettis *et al.* performed semi-structured interviews with female surgical faculty, residents, and medical students and found that the majority of respondents did notice a gender difference in mentoring relationships especially when it came to issues related to personal, lifestyle and child-rearing topics.¹⁷ On the other hand, asking women chairs of surgery about the factors involved in their own success showed a clear theme of consistent and public mentorship, whether that be with male or female mentors, related to their career progression.⁹ One theme that remains consistent in these studies is that regardless of gender, building more concrete and thoughtful mentorship networks that change over time and transform role models into active men-

tors among women in surgery could help advance gender diversity downstream.

One might assume that perhaps women are not progressing into leadership positions at equal rates with men due to their qualifications or questions over whether or not they are the best applicant for the job. It is true that in the United States, women earn fewer grants, and the grants they do win are worth less money from the National Institutes of Health (NIH), according to data published in *Nature*.¹⁸ Women were also found to be invited to speak at grand rounds in fewer numbers.¹⁹ Are these disparities due to the competence and qualifications of the candidates? It does not appear so, as these disparities remain when candidates have identical curriculum vitae, yet differ in gender only.²⁰ When looking at surgery specifically, women publish more of their abstracts as full manuscripts, at 68% compared to 50% from men.²¹ Women's work in academic surgery is also more often cited and published in higher impact journals.²¹ This would suggest that there are numerous factors at play beyond candidate qualifications with regards to the promotion of women. It also strongly supports that intentional efforts to support and champion diversity within surgery are necessary to overcome factors that are not fully understood.

It is also possible that male chairs are more likely to be criticized for lack of gender diversity within their departments and therefore are more likely to be intentional with divisional leadership opportunities or are more likely to use standardized selection committees for hiring and recruitment. Whether or not this is a contributor to the fact that female department chairs are no more likely to have more female division directors compared to male led departments is currently unknown, and understanding the specific hiring, compensation and promoting practices in these departments is an area that needs further investigation. Implementation of a thoughtful selection strategy at the University of Michigan led to increased hiring of women and underrepresented minorities than in prior years.²² Additionally, a recent study demonstrated a structured compensation plan can improve the sex pay gap between males and females, but more transparency in surgical compensation plans is still needed.²³ Caution must be taken to implement selection processes that address diversity at all levels of the department, including in the hiring of residents, staff, and non-MD faculty. It is likely that implementing structured selection and recruitment practices at all levels rather than unilateral hiring decisions would be associated with a more diverse workplace, department and institution. This goal of diversity paired with having a transparent, structured compensation plan would at least start to level the playing field.

It is important to acknowledge our limitations in this study, the primary being our method of determining gender by accessing institutional websites using names, pronouns, and interpretation of included photographs in profile biographies. While female chairs were easily confirmed using the Association of Women Surgeons list of female surgery chairs, there was no equivalent for chairs that do not identify as female. Additionally, our database was ultimately limited by our exclusion of any programs that were children specific or did not list division directors explicitly. Our study is also only a snapshot and may not be reflective of leadership trends over time.

Lastly, the small sample size of female chairpersons and the variability among the role and impact of chairpersons among distinct departments may be sources of bias.

Next steps include obtaining complete information for departments for which it was not readily available. Having a complete dataset will help us analyze ongoing trends over time, which will be critical to understanding whether progress is being made. In the future, it will be vital to determine the underlying reasons for the gender representation that we did find in our study. It will be helpful to better understand the process of promotion and selection to these positions and at the same time identify barriers to gender parity at the faculty promotion level. Future work should be directed at performing semi-structured interviews with department chairs, division directors, residency program directors, and female faculty to more fully elucidate the status of diversity in academic surgery leadership as a whole.

Conclusion

In our study, female department chair leadership was not associated with more diversity in divisional or program leadership compared to departments of surgery led by males. We also found that female chairs had shorter overall length of chairships compared to male chairs at least for now, but we are hopeful with time this will no longer. Our study suggests that intentional practices to create a fully diverse workforce are necessary for all leaders, regardless of their gender. These efforts should be championed by surgical societies, School of Medicine leadership, and within departments of surgery.

Author Contributions

All authors contributed to this manuscript at various stages including study design (HC, SB, DS), data collection (SB), data interpretation (GK, HC, DS, ZN, SB, SR, BC), writing of the manuscript (GK, DS, SB) and critical review of the manuscript (GK, HC, DS, ZN, SB, SR, BC).

Disclosure

The authors reported no proprietary or commercial interest in any product mentioned or concept discussed in this article.

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