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The role of same-sex mentorship and organizational support in encouraging women to pursue surgery

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ABSTRACT

Introduction: While women represent approximately half of all medical students, only 38% of general surgery residents are women. The objective of this study is to explore how access to mentors and organizational support affects career choices.
Methods: In June of 2016, a survey was sent to medical students at a single institution (n = 472). Questions utilized a 5-point Likert scale. A two-sample *t*-test was used to evaluate data.
Results: A total of 160 students participated in the survey. Among MS1/MS2 students, women were more likely to rank same-sex role models as a positive influence (mean 3.1 vs. 2.4; $p < 0.05$). Similar results were seen among MS3/MS4 students (mean 3.6 vs. 2.5; $p < 0.05$). More women ranked the presence of organizations that support women in surgery as being important (mean 4.6 vs. 4.1; $p < 0.05$).
Conclusion: Exposure to same-sex mentors was highly rated among female participants. These findings encourage the creation of national mentorship programs. Early involvement in organizations can positively influence career choice. Addressing gaps in mentorship opportunities and widening accessibility to national organizations are important in reducing barriers.

1. Introduction

Recent studies show that women account for approximately 47% of graduating medical students and 38% of surgical residents.[1] However, women make up less than 20% of full-time surgical faculty and account for only 7.5% of Chairs of Surgery.[2] This difference becomes even more pronounced in surgical subspecialties like orthopedic surgery and urology.[3,4] More specifically, in 2015 the AAMC reported that women made of 7.8% of neurosurgeons, 23.9% of ophthalmologists, 5% of orthopedic surgeons, 15.8% of otolaryngologists, 15% of plastic surgeons, 6% of thoracic surgeons, and 11.3% of vascular surgeons.[5] According to studies performed between 2000 and 2006, the gender gap in the surgical field is slowly narrowing with more women pursuing surgical careers than ever before.[4] This has been shown by the increase in women obtaining surgical residency positions.[5] One of the factors that likely influenced this increase was a concurrent increase in full-time female faculty, from 12.6% in 2000 to 16.3% in 2005, to 22% in 2014.[6,7] Previous studies have also demonstrated that a large majority of women entering a surgical residency attended medical schools that had more access to female surgical role models.[7] However, recent AAMC data suggests that there is still a large disparity in the number of practicing general surgeons, with only 19.2% of those with an active practice being women.[5] This data suggests that a continued effort to recruit women to enter surgical fields is necessary to further reduce the gender gap in surgery over the coming years.

Established in 1981, the Association of Women Surgeons (AWS), is the largest organization dedicated to enhancing the interaction and exchange of information between women surgeons.[8] The importance of the presence and exposure to organizations that support women in surgery has not been looked at thus far, prompting us to explore medical student perceptions regarding the importance of female role models and national organizations representing women in surgery.

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2. Materials and methods

Study approval was obtained from the University of Arizona Institutional Review Board (IRB). All medical students and recent graduates of the University of Arizona College of Medicine in Tucson were sent an electronic survey via email at the end of the academic year, for a total possible N of 472 students and graduates. Students from the classes of 2018–2019 comprised the first/second year medical student group and students from the classes of 2016–2017 comprised the third/fourth year medical student group, where recent graduates were considered fourth year medical students. These recent graduates were only two months out from graduation and were beginning their internship year. Recent graduates were the only population of students that were considered fourth year medical students for the purposes of this survey. This grouping method was determined by amount clinical experience. Participation was voluntary and no identifying information was required to fill out the survey. Three different surveys were distributed to first year, second year, and third/fourth year medical students, based on total time spent in medical school and on clinical rotations. Surveys consisted of 15–16 questions, including details about top specialties of choice, gender, and 13–14 questions utilizing a Likert scale (1 = strongly disagree, 5 = strongly agree) to evaluate perceptions of surgery, exposure to same-sex mentors, and how lifestyle impacts the decision of career selection. Since the surveys were tailored to the amount of clinical experience each medical student class had experienced thus far, this accounts for variation in the number of questions on each survey. For the first year medical students, questions were asked regarding interest in shadowing, and involvement in extracurricular activities and clubs. For 2 nd year medical students, we reworded the questions to determine what impact shadowing and involvement of extracurricular activities has had on their career interests. The surveys for third/fourth year medical students included questions regarding how their experiences on the surgery clerkship and surgical electives impacted their career decision. These surveys were created by the authors and are not standardized. Statistical analyses were performed using Stata 14.0 software. Differences in responses based on class standing and between males and females were evaluated using a two-sample *t*-test.

3. Results

Responses were received from 160 students/recent graduates (20.5%). Of these, 121 were first/second year medical students and 39 were third/fourth year medical students. Seventy-eight were male and 82 were female (Table 1). Among participating first/second year students, 45.3% indicated that a surgical specialty was among their top three specialties of interest. When querying third/fourth year medical students on their selected specialty, only 14.3% indicated they would be applying for a surgical residency, with 9.5% of fourth year medical students successfully matching into surgery (9/95) actually matching into a surgical subspecialty in 2016. Regarding interest in a surgical specialty, the mean level of interest among first/second year medical students was 2.88 out of 5, whereas among third/fourth year medical students the mean was 2.79 out of 5. There was not a statistically significant difference between men and women regarding access to surgical mentorship ($p = 0.997$) or exposure to positive role models in surgery ($p = 0.519$) (Fig. 1). Statistically significant differences were found between men and women regarding the importance of same-sex mentorship ($p = 0.0003$) and organizations that support women in surgery ($p = 0.0001$). No differences were found among men and women regarding the impact of several factors on career choice, including overall lifestyle ($p = 0.170$), time commitment ($p = 0.571$), hours and call schedule ($p = 0.266$), or income ($p = 0.491$) (Fig. 2). However, there was a statistically significant difference between men and women in terms of the importance of having parental leave ($p = 0.0008$). Approximately, 40% of all participants agreed or strongly agreed that they had heard of the AWS and understood the resources this organization provided for medical students interested in surgery. There were no statistically significant differences between MS1/MS2 men and women ($p = 0.240$) or MS3/MS4 men and women ($p = 0.285$) in terms knowing about AWS and the resources that are available to medical students (Fig. 3).

4. Discussion

Female medical students are still less likely than their male counterparts to pursue a career in surgery and surgical subspecialties.[9] Although previous studies stated lifestyle, time commitment, and rigorous training environments as the main deterrents for women choosing surgical trainings, our research showed that the only statistically significant difference between men and women electing to go into surgery was the importance of parental leave. Early exposure to positive role models can be a powerful driving force for women to consider a surgical residency, as effective mentorship is critical to both personal and professional development.[10,11]

This study was prompted to evaluate the medical student perceptions regarding the importance of female role models and national organizations representing women in surgery. O'Herrin et al., in 2004, showed that positive interactions with role models were significant contributors to an increased interest in surgery, which is consistent with previous data.[12] Gender is often considered when mentoring relationships are being developed due to similar interests and goals. Nationally, some women surgeons have prominent roles, offering excellent role models for those with similar ambitions of leadership and success. Although, these role models may exist nationally, not all women medical students have access to local female mentors. The increase in the percentage of women among surgical faculty has provided female medical students more opportunity to meet women role models during their surgery

Table 1
Participant demographic information.

	First Year		Second Year		Third Year		Fourth Year	
	n	%	*n*	%	*n*	%	*n*	%
Possible Participants	115	24.4%	140	29.7%	121	25.6%	96	20.3%
Male	58	50.4%	69	49.3%	54	44.6%	43	44.8%
Female	57	49.6%	71	50.7%	67	55.4%	53	55.2%
Participants	50	31.2%	71	44.4%	31	19.4%	8	5.0%
Male	20	40%	43	60.6%	14	45.2%	1	12.5%
Female	30	60%	28	39.4%	17	54.8%	7	87.5%
Interested In or Pursing Surgery	27	54.0%	26	36.6%	5	16.1%	1	12.5%