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What makes them different? An exploration of mentoring for female faculty, residents, and medical students pursuing a career in surgery

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ABSTRACT

Background: This qualitative study examines the roles of mentoring and gender in choosing and continuing in a surgical career for women across the continuum.
Methods: Semi-structured interviews were held with a purposive sample of 24 female surgical faculty, residents, and aspiring medical students from one institution between November 2018 and January 2019. Interview transcripts were analyzed using traditional thematic analysis methods aided by computerized software.
Results: The use of a mosaic approach in seeking mentoring to match one's personal and career-relevant support needs was described frequently. Same-gender role models were more important for early career women, while leadership mentoring and coaching were more desired by later career women. Gender differences in mentoring were identified but some of these differences may apply equally to women and men.
Conclusions: Study findings contribute mentoring insights relevant to both women and men interested in pursuing and thriving in surgical careers.

Introduction

Although great strides have been made in recent years toward gender equity in academic medicine, a number of concerning trends remain for general surgery as a specialty, and for women in academic surgery more specifically. Across the continuum, women are decreasingly represented in the academic surgery pipeline.[1] 'Specialty choice regret' has been shown to be most prevalent among general surgery residents (at 17%), compared to all other specialties, regardless of trainee gender.[2] Some literature also indicates women are more likely to consider leaving the specialty,[3] and may perceive the lack of mentors as a barrier to career success.[4,5] Specific barriers to mentoring for women in surgery have been classified as external and structural, such as hierarchical work environments inherent in surgical disciplines[6] and lack of female role models.[7] Additionally, relational factors such as gender normative expectations and gender-based discrimination have been recently highlighted as further obstacles to successful mentoring for women pursuing surgical careers.[8]

Mentor-mentee relationships are being studied not only in the medical field, but also in other male-dominated science-based fields. A randomized trial examining same-gender peer mentor-mentee relationships for women engineering students resulted in benefits such as increased confidence, motivation, and ultimately retention of women in the field.[9] In a recent study of mentoring in plastic surgery, more than 80% of first-year residents reported a mentor's influence in their decision to pursue plastic surgery, and 40% selected the same subspecialty as their mentor; these findings were similar to existing literature.[10] In the same survey, only a few respondents mentioned the lack of same-sex mentors as a barrier, but critically, all who did were women.[10] In a national sample of vascular surgery trainees, there were no gender differences in the likelihood of having a mentor; the types of guidance identified most commonly involved educational roles such as sharing clinical knowledge, providing career guidance, and honing operative skills.[11]

The primary objective of this qualitative study was to understand the experiences of female academic surgeons, surgery residents, and aspiring students with regard to the role, gender, and

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influence of mentors in choosing and continuing in a surgical career. Additionally, for the women in surgical training or practice, we wished to understand whether they considered quitting the field, and what elements contributed to their retention.

Methods

Between November 2018 and January 2019, one-on-one semi-structured interviews were conducted with a purposive, convenience sample of female surgical faculty, surgery residents, and aspiring medical students from one institution. The institution is a mid-to-large size comprehensive academic health center with more than 10,000 employees. Of 199 full-time surgical and surgical subspecialty faculty at the center in 2017, 42% (n = 83) were female, and among surgical residents and fellows approximately 40% (n = 51) were female. Invitations to participate were sent to female surgical faculty and residents from general surgery, neurosurgery, OB-GYN, orthopedics, otolaryngology, and vascular surgery, and to fourth year medical students who had applied to a surgical residency. Invitations stated that the research was to look at women in surgery and the role mentors played in [their] surgical career. For participants that responded to the invitation, interviews were led by one third-year medical student (JB) in-person or via telephone, each lasting approximately 15 min. Interviews were audio-taped with permission and transcribed verbatim with all identifying references removed during transcription.

A brief interview guide was used to structure the conversations, and included the following key prompts as needed about mentors and careers in surgery:

- What role did mentors have in your choosing a career in surgery?
- Are your mentors male or female? Did you/do you have more than one mentor?
- How was the mentorship you received from a female mentor different, if at all, from male mentors?

The following prompts were also used for residents and faculty members.

- Do you encourage women medical students to pursue a career in surgery? Why or why not?
- We are interested in learning more about what factors have kept you in surgical training/practice.
- Since starting your surgical career, including residency, have you ever seriously considered quitting surgery?

Transcript responses were analyzed using an iterative process including traditional open coding and thematic analysis methods to identify common patterns, emergent observations, and insights, by item as well as across the corpus of responses. Two of the study team members read all transcripts (JB, CT) and identified relevant themes and insights for each of the broad questions asked. Cross-cutting themes that emerged across items were also identified. Analyses were supplemented with the use of computerized corpus linguistics software, AntConc, version 3.5.7.[12] Features used in AntConc included word frequency counts for each item to identify commonly occurring words to aid in thematic analyses, as well as keyword in context (KWIC) analyses which allow for isolating the appearance of chosen words in their respective context within the corpus of responses. A third study team member (RS) also reviewed all transcripts and all thematic analysis results to ensure a thorough and balanced interpretation of the study findings. The study was approved by the IRB using expedited approval procedures because the study was minimal risk.

Results

Faculty and residents interviewed included representatives from the following departments: General Surgery (n = 6), OB-GYN (n = 4), Neurosurgery (n = 5), and Orthopedic Surgery (n = 2). Additionally, interviews with 7 medical students aspiring to enter surgical specialties were included. Overall, the entire corpus of transcribed responses consisted of 20,486 words covering 19 single-spaced pages. The average number of words transcribed per interview was approximately 995 words, and varied from 1,651 (faculty), to 827 (residents), to 507 (students) per group.

Role of mentors in choosing a surgical career

Frequency counts of commonly used words in response to the question about the role of mentors in choosing a surgical career indicated the word “role” appeared 23 times. Most respondents indicated the importance of mentors in choosing to go into surgery. Of note, several respondents also indicated the importance of mentors during the residency training period for choosing and/or acquiring sub-specialization training. Examples such as the following were common responses to this question:

- “They played a large role for me.” (Student)
- “A huge role.” (Resident)
- “A pretty big role, I started medical school not intending to go into surgery.” (Faculty)
- “As a resident, a specific mentor had a very strong role in the subspecialty of surgery I ended up going into.” (Faculty)

Mentors were commonly both male and female with those who were important for choosing a career in surgery described as being: family members (uncles, fathers), attendings/faculty members, peers (other students), and near-peers (residents to students). One faculty surgeon described the influence of one of her female mentors as being “*so enthusiastic and passionate about what she did, I couldn't help but become interested in the field*.” A few, on the other hand, did not feel like they were strongly influenced by mentors in terms of choosing surgery as a career specialty. Table 1 provides a summary of exemplar responses about the role of mentors in choosing a surgical career. As noted with use of capitalization in Table 1, there were multiple instances of the word “see,” “seeing,” and “saw” used by respondents to this item. In total, the words see, seeing or saw appeared 41 times in the corpus of all responses.

Gender differences in mentoring

Table 2 provides examples of the type of responses about gender differences in mentoring noted by respondents. It is sorted based on whether few differences were noted versus those who acknowledged more substantial differences. Several gender differences in mentoring were noted and were expressed more in student interviews than in the faculty and resident interviews. A few respondents mentioned that the thought of a difference with gender in mentoring had never crossed their mind. Some faculty noted that not many women surgical mentors were available when they were in training, or early into their career, so no difference was able to be noted.

Encouraging medical students

Responses from faculty and residents were candid when asked about whether or not they encouraged female medical students to pursue a career in surgery, and indicated the gravity and importance of seeing all aspects of a career. Example responses are shown

Table 1
"What role did mentors have in your choosing a career in surgery?"

Example Responses
• *"It wasn't that they took me under their wing, but more … where you SAW what you would like to be."*
• "*SEEING a woman [surgeon] who had a family and was successful was a big inspiration for me*."
• "*It is not necessary that you … be mentored by a woman, but I think it is important that you SEE a woman surgeon, that you SEE it is real, that it can happen*."
• "*Everything to do with me choosing a career in surgery to be honest … it wasn't necessarily a hands-on mentorship or asking her for advice all the time, but SEEING her and other … female surgeons have a career in surgery … huge … influence on my decision …*"
• "*I SEE various female surgeons … really active in education … seem more approachable than anyone else … the thought of becoming a surgeon … becomes more achievable because we have such strong female faculty …*"
• "*I didn't realize that I had never met a [subspecialty] surgeon attending that was a women until I met her. It was a really startling thing that I realized that I was missing. After that I had it set in my mind that I wanted to be somewhere with a coach or a mentor that looked like me*."
• "*I … wanted to do surgery before high school. Then … met … pioneer in surgery … at my school … and I rotated … and she invited me to Thanksgiving dinner. That was very important for me in retrospect, having a relationship with her*."
• "*My father is a surgeon. I think he has been a mentor the most to me in the process … I SAW him and knowing how he got to places*."
• "*Later in residency, I had … mentors that helped me to get into my specific subspecialty*."
• *"In our entire team at one point when I was a medical student was women: the attending, the mid-level resident, the intern, the chief, and the medical students. It was sort of a wondrous thing when we walked around the hospital. I think … one of the reasons we went into surgery was because of … that experience. I think of moments like that as being mentorship as well even though they were my peers.*"

Table 2
"How has the mentorship you received from a female mentor different if at all from male mentors?"

Differences noted	No Differences Noted
• "*I think there was a difference … because the female mentors were young surgeons, just by default we had a lot more in common outside of work life.*" (Faculty)	• "*I cannot think of a big difference. It really was just whoever I was around and took an interest in me and I took an interest in them.*" (Faculty)
• "*Most of the time with males, a lot of them the relationship was paternalistic. They thought of me like a daughter and it could be the age difference.*" (Faculty)	• "*I picked them based on who I thought was going to be wise, thoughtful and whom I would have the best utility in that relationship and who would be receptive to it. That to me would be more productive than the gender of the person.*" (Faculty)
• "*I feel like I can talk about some of the more personal elements of the career … what it feels like to be a surgical resident or how a patient interaction affects me.*" (Resident)	• "*I am not sure it is entirely a gender difference because the male mentor was much older. I think the age discrepancy might have been the bigger part of that.*" (Faculty)
• "*… with a female mentor the relationship is more directed at talking about what it is like to go through residency and survival strategies and reflecting on your growth in residency. With my male mentors, it is more on … advancement in the career.*" (Resident)	• "*I don't know if there is that much difference in mentorship. Most of the men that I worked with, they treated me like the other guys, they didn't treat me special or that I couldn't do the same work, or that I wasn't smart enough. They treated me like I could do it.*" (Faculty)
• "*[Females] more supportive- giving me research opportunity, encouragement, and telling me I could do it. [Males] more practical in terms of what programs I was looking at … would send emails regarding my away rotations or interviews.*" (Student)	
• "I *felt more confident and comfortable around the female faculty … I put in more energy trying to convince the male faculty that I can do this … I felt like I had to be MORE structured and put together.*" (Student)	
• "*… able to ask Dr. [female surgeon] a couple more questions … like what is it like having kids and being a mom … she could relate to me a little bit more.*" (Student)	

in Table 3. Most respondents indicated that they encouraged *both* male and female students to seek their passion in medicine to find a best career fit whether in surgery or another specialty.

Retention factors

Mentoring was described as essential by some of the resident and faculty respondents in terms of persevering in the field of surgery, but was mentioned much less frequently than other factors. When asked about factors which kept them in the field, words like determination, fulfillment, passion, love, and even fun were enthusiastically expressed. Love was mentioned 33 times, happy 12 times, enjoy and fun 8 times each, and passion or passionate 7 times. The word commitment was mentioned 8 times. Most of the respondents stated they had never seriously considered quitting surgery, and only 2 respondents (both residents) said they had seriously considered quitting. Neither of them had discussed this idea with their mentor, but noted they sought advice from family when this occurred. No one identified lack of mentors as a barrier for them personally.

Themes noted as important for choosing and remaining in a surgical career were internal and relational. The internal factors frequently identified as important for retention were grit/perseverance, passion for the work itself, and self-care/wellness.

Table 3
"Do you encourage women medical students to pursue a career in surgery?"

Example responses
• *"I treat them the same way I treat the guys. If I can tell that they love it, and they think they are willing, I try to make sure they see the hardest side of it. I don't try to sugar coat it so they will want to join."*
• *"Not specifically, I encourage students to do something that they are passionate about."*
• *"I encourage medical students to find their passion and to figure out where they are the happiest and where they are the most intellectually stimulated and to do that."*
• *"Yes, absolutely. Not just women medical students, but any … I don't think the lifestyle is as intimidating as everyone thinks it is."*
• *"… what I generally tell people is you have to make this decision that fits for your life … It is sort of a calling. That should be honored."*
• *"I do. Regardless of sex … It is harder as a woman because you have these social standards of having to start a family, having to balance other life … but it shouldn't stop you from doing what you love. If you love being in the OR and really want to pursue that in your career, nothing should stop you from doing that."*

Relational factors included support from mentors, family, peers, or their community. Examples of responses and common themes are as follows:

- *"I was going to be a surgeon and I was going to figure out a way to do this. There is an element of perseverance or grit."* (Grit/perseverance)
- *"This is the most awesome thing in the world and if you told me I would have to do it on fire I would still do it because I am that passionate about it."* (Passion)
- *"I love my job and I love surgery, surgical patients, and surgical problems."* (Surgery, patient care as a calling)
- *"I put on my headphones and I go running for* 30 min *and I can get my head straight.* (Self-Care)
- *"A lot of cheerleaders not just on the sidelines: my parents, my friends, but also the people who are running with me through this journey."* (Family, peer, community support)

Overarching themes

Two emergent overarching themes were identified across the set of transcript responses: 1) using a mosaic approach in seeking mentoring to match personal and career-relevant support needs, and 2) having a broad conceptualization of various mentoring roles across the career continuum. For example, one senior faculty member noted how mentoring needs change over a career: *"It is more difficult now, in my position, finding mentors and coaches to help me to the next step … we lack coaches and mentors. There are a lot for the younger learners, medical students, and residents … When we think about Lebron James – he is the best in his field, but he still has a coach. For us to think that we cannot continue to improve and get better is very short sighted."* Another faculty member noted the lack of mentoring: "*As far as my career now, many years out from residency, I don't really have any strong mentor influences at this point in my career.*"

Respondents' broad conceptualization of different types of mentors were also expressed. To some, it was a surgical skills or technical mentor, others a formal assigned mentor, and some an informal role model or something closer to a friendship. This phenomenon, described as "mosaic mentoring,"[13,14] involves seeking mentors to match specific, short-term personal or career goals. Examples of key word in context (KWIC) results for the words MENTOR, MENTORS and MENTORING illustrate the variety of different roles that respondents' conceptualized for their mentors:

- Informal mentor
- Formal mentor
- Research mentor
- Pregnant mentor
- Assigned mentor
- Token mentor
- Long-term mentors
- Mentors from afar
- Mentor groups
- Cafeteria style mentoring
- Mentor through the match process
- Mentor for getting into specialty
- Information mentors

Multiple instances of words other than mentor were also used by the respondents indicating the wide variety of mentor roles and consisted of terms such as: coaches, sponsors, examples, inspirations, role models, and advisors. One faculty member said it best, "*Mentoring, it is like a cafeteria style, you find what personal and career relevant aspects of* support *you need at the time and you are the one that seeks it out*." Another noted similar thoughts, and echoed the importance of taking initiative to seek out mentoring: "*Every chapter in your life, you don't need one mentor, you need more than one mentor. That is what I think I did. In every chapter of my life, in every phase of my life, I chose a mentor that would just guide me through that phase*."

Discussion

This study adds to the understanding of how female surgeons perceive differences in mentorship received from female versus male mentors as well as how mentorships needs change through the course of a career. Many important facets of mentoring in choosing and sustaining a career in surgery were described by the faculty, residents, and aspiring students interviewed for this study. Interestingly, out of the variety of more than 20 interviews conducted, a common and important thread emerged: it was not critical to be mentored *by* a woman to have a successful surgical career, but it was important to *see* a female surgeon role model, to see that surgical careers for women are real and attainable. Simply seeing a female in a surgeon's role was extremely influential and empowering to our respondents; this phenomenon has been highlighted recently in several social media platforms with the viral popularity of academically-focused hashtags such as #ilooklikeasurgeon and #youcantbewhatyoucantsee.[15] In other research, early exposure to active mentorship has been widely promoted as an important avenue for addressing declining student interest in surgical specialties.[16] Correspondingly, lack of same-gender role models has been repeatedly identified as a deterrent for female medical students choosing a specialty.[16] Although we did not find this to be the case with all of our respondents, the importance of visible role models early on was repeatedly mentioned in our sample.

Although a few respondents did not experience gender differences in mentoring, the majority did note substantive gender differences in their current or previous mentoring relationships. A number of these comments indicated personal, lifestyle, and child-rearing related issues were more comfortable to discuss with female mentors. As one respondent noted, "*There are some things you can talk about with your fellow women that you cannot necessarily talk about with the guys or it wouldn't be as comfortable."* While we suspect this same sentiment would be equally endorsed by men, there are undeniably issues such as pregnancy which affect solely females. Gender differences also were not as commonly described by faculty members, which we theorize could be because there were fewer women surgeons available to them as mentors early in their careers. In our cohort, generational differences were mentioned as being more likely to contribute to meaningful mentoring differences rather than specifically gender.

Some literature suggests that women in surgery may perceive the lack of mentors as a barrier to career success.[4,5] Our study aligns with the corpus of literature reflecting that positive female role models and mentorship are often critical to initial interest in surgical careers. Regarding their retention in surgical fields, despite describing both relational and internal factors, most surgeons emphasized the importance of internal factors – reliance on their own self-motivation, determination (grit), and passion for their work – rather than mentorship as being the strongest impetus in completing training and becoming practicing surgeons. Interestingly, prior literature shows that in university students as a whole, women have significantly higher grit scores than men.[17] Specifically in surgery, faculty surgeons have been shown to have higher grit scores than surgeons in training, and female surgeons across the career continuum have higher grit scores than their male

counterparts.[18] The correlation between personal characteristics such as grit and women's success in a career in surgery merits further study.

The internal factors of passion for one's work and surgery as a calling were echoed in the faculty and resident responses about whether they encouraged female medical students interested in the field. They supported students equally regardless of gender. Dedication to the field, attitude, passion and other characteristics indicating fit for surgery were considered important whereas gender was not.

Although our respondents indicated that mentorship was less critical in their retention in surgery, nevertheless some respondents expressed needs for relevant mentorship at various stages in their career (e.g., in assuming leadership roles). The overarching themes identified in this study shed light on two important aspects of mentorship: a mosaic approach to mentoring, and the evolving needs of mentorship over the course of a person's career. Mosaic mentoring, defined as reliance on a cohort of multiple and evolving, changing mentors for different career needs,[14] was described by many respondents. Mosaic mentoring has been linked to significantly increased career success (e.g., career satisfaction, research productivity) across disciplines in academia.[19] As the surgical workforce continues to become more diverse with increased inclusion of women and under-represented minorities, surgical leadership has noted that mosaic mentoring approaches can mitigate some drawbacks of traditional dyadic mentoring, which can include incompatibility of gender and cultural issues.[20] In a similar vein, the work of Mayer et al.[21] suggests increased benefits for women beyond the traditional dyadic mentoring structures. Future work examining beneficial mentoring models for both women and men at various career stages is indicated.

Many surgical training programs have formal mentoring programs for students and/or residents, but our study identified a desire for continued mentoring structures or opportunities for female surgeons throughout their careers. This gap in faculty mentoring has been identified as an important area of future study[22,23] and may be an area of potential future faculty development initiatives.

Limitations

Interviews for this study were conducted with females only, from one institution, thus, may not be generalizable to other settings. Our academic health center has a higher proportion of female surgical faculty and residents compared to the national average,[24] as well as a separate surgical interest group for women medical students interested in pursuing a career. This may have introduced biases related to our survey topic. However, it is important to note that the faculty represented a variety of medical schools and training programs from multiple geographic regions, with multiple medical schools also represented among the resident cohort. More than half of faculty member respondents had no prior educational affiliation with the institution before joining as faculty members where the study was conducted. As such, this may help mitigate the interview bias from one institution. All interviews were performed by a medical student aspiring to go into surgery, therefore respondents may have either unknowingly or more consciously portrayed positive elements of their mentoring and career experiences. Even though we included faculty and residents from various surgical specialties, themes became apparent during the interviews, and we believe “thematic saturation” was reached. Nonetheless, interviews with a broader and representative sample of respondents in various surgical subspecialties could explore these trends on a larger scale.

Conclusions

This study found that seeing a same-gender role model was influential for early-career women surgeons. However, the respondents also emphasized the need for both ongoing mentoring as well as multiple types of mentors as needs change throughout one's career. In addition, though same-gender mentoring differences were frequently noted, these trends may apply equally to women and men.

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