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Barriers to careers identified by women in academic surgery: A grounded theory model☆

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ABSTRACT

Background: Faculty attrition has been widely acknowledged and poorly understood throughout academic medicine. To date, barriers to career advancement in academic surgery have been identified and described in a limited fashion using only survey data. The authors sought to characterize career barriers for women academic surgeons using grounded theory methodology.

Methods: Authors conducted semi-structured interviews with 15 mid-career and senior female academic surgeons in the United States. Data were drawn together using grounded theory analysis of interview transcripts to develop a conceptual model.

Results: Interviewees identified barriers constituting two intersecting categories: (1) obstacles within the system of academic surgery and (2) impediments based in broader culture and its power structures. Interviewees' robust description of the challenges of integrating clinical and non-clinical professional responsibilities is novel.

Conclusions: Career barriers identified by women in academic surgery are complex and include cultural factors from within and outside of the profession. Identifying and dismantling barriers, particularly those that negatively impact perceptions of belonging, is imperative to creating a culture of sustained excellence in academic surgery.

Summary: The authors used grounded theory method to develop a conceptual model of barriers to careers in academic surgery as described by successful female academic surgeons. The authors identified intersecting cultural barriers specific to academic surgery and derived from cultural power differentials.

Introduction

Faculty departure from academic medicine has received increased scholarly interest over the last decade.[1] An accelerating rate of retirements and transitions out of academic practice is a known phenomenon and provides a specific threat to academic surgery in the United States.[2,3] A projected shortfall of surgeons therefore has particularly concerning implications for the future of surgical scholarship and care. Although some have hypothesized that gender is correlated with attrition from academic surgical careers, the findings from the literature are in fact complicated and inconsistent. However, gender and sexual prejudice may play a role in barriers to advancement in academic surgical careers. While 47% of United States medical school graduates in 2018 were women, women represent 21% of Associate Professors, 12% of Professors, and 21 Chairs in Departments of Surgery.[4–6] Based upon one recent set of projections, women will not achieve parity at the Professor level until 2136.[7]

The preponderance of previous work used a quantitative, deductive approach to confirm hypotheses about faculty engagement. Use of an inductive, open-ended approach to develop a conceptual model, based in the experiences of women academic surgeons, may provide more nuanced information about career barriers than pre-defined responses. Therefore, the goal of this study was to use grounded theory methodology to describe lived and observed barriers to careers as identified by women in academic surgery.

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Material and methods

Following institutional review board approval, authors identified eligible women surgeons across the United States who were at least five years beyond their first academic appointment following training. Mid-career and senior surgeons were selected based upon their understanding of career progression in academic surgery from lived and observed experiences. Women surgeons were specifically sought because of the authors' interest in retention and advancement of women in academic surgery and their goal of identifying barriers unique to the experience of women academic surgeons. A purposive sampling strategy was employed with the goal of balancing interviewee institution type, geographical region, years in practice, surgical specialty, scholarly emphasis, and race. Participants were recruited iteratively to maximize differences between interviewee perspectives, consistent with the concept of purposive sampling. The final number of participants was determined by data saturation, which occurs when information gathered during interviews no longer enhances or further illuminates the previous data.

Study participants were all personally known by the primary investigator (PI) or were referred by other study participants. The PI sent personalized email contacts requesting participation in an interview regarding barriers to careers in academic surgery; the purpose and scope of the study was described in this initial email. The PI scheduled an interview with those participants who responded to the initial participation query and obtained informed consent for their participation.

The primary instrument for this study was a semi-structured interview with open-ended questions designed to document the lived experiences of interviewees.[8] Grounded theory, a constructivist paradigm, was then used to reformulate definitions and questions based upon emergent themes in the stories; these themes serve as the basis for the creation of an integrated conceptual model of a complex process.

For this study we concentrated on interview content that addressed obstacles to careers in academic surgery in order to understand the impact of these categories from each woman's lived and observed experience, building toward a detailed description of the impact of each barrier. The interview began with two questions that asked interviewees to describe specific facets of their career development process: (a) "What career barriers have you seen in academic surgery?" and (b) "What career barriers have you experienced in your career in academic surgery?" The intent of asking these open-ended questions was to ground the interview in a shared understanding of career developmental processes, with a specific eye to barriers.

The PI consulted continuously with the two secondary authors who had access to the transcribed interviews for ongoing feedback on codes, emerging categories, and the final theoretical model. Data analysis was conducted according to a three-step process of constant comparison, moving from open coding (snippets of meaning that generate categories) to axial coding (definition of categories) to selective coding (overarching model to subsume all categories). Of note, quotations from interviewees could be coded into more than one category if this was appropriate; investigators would then discuss to identify the primary category described within the quote. Each investigator maintained personal project notes during the analysis phase; these notes formed a chronological recounting of the study. Documenting this process made transparent the interpretive, constructive processes of the data analysis. All data coding was performed manually. This process culminated in the development of a parsimonious conceptual model describing the characteristics of effective mentors based upon the experiences of female academic surgeons. Credibility was maintained through triangulation of data sources, including participant verification, investigator debriefing, and memo-based audit trails.[9,10]

Results

Participants in this study were 15 women surgeons who were interviewed during the 2014–2015 academic year. All interviewees had been in faculty appointments for at least 8 years at the time of interview. Practice specialties were widely representative and included GI/Minimally invasive (3), breast (2), colorectal (2), endocrine (2), transplant/hepatobiliary (2), trauma/acute care (2), pediatric (1) and vascular (1). Demographic characteristics of the interviewees are documented in Table 1.

Interviewees described five barriers specific to academic surgery: (1) ineffective mentorship, (2) lack of belonging, (3) inadequate or inappropriate resources, (4) unclear expectations for advancement, and (5) professional role conflict. Interviewees also described two barriers derived from broader social and cultural structures: (1) work-life integration, and (2) social values conflict (Fig. 1). Each category and sub-category is further defined below and is also illustrated using quotes from participants (Tables 2 and 3).

Barriers within academic surgery (Table 1)

Ineffective mentorship (15)

All interviewees identified effective mentorship as critical to the development of a career in academic surgery. Effective mentors were characterized as being capable of assisting mentees in navigating obstacles. In contrast, a mentor who uses the mentee's labor to meet his or her own professional goals may represent a significant obstacle to the progression of the mentee's academic surgical career. Finally, most interviewees identified a need for multiple mentors across the span of a career in academic surgery.

Lack of belonging (13)

A sense of not having a place, particularly for those with minority identities or nontraditional research interests, was found to limit success in academic surgery. Feeling excluded transcended demographic and scholarly characteristics, however, and was also described by surgeons who may voice differing values from those espoused by individuals in positions of power. Interviewees

Table 1
Demographic characteristics of interviewees.

Age grouping (n)	
40–44 years	4
45–49 years	7
50–54 years	1
≥55 years	3
Years post-Training (median years, IQR)	11 (9–14)
Academic Rank	3 Assistant Professor
	6 Associate Professor
	6 Professor
Surgical Specialty	3 GI/MIS
	2 Breast
	2 Colorectal
	2 Endocrine
	2 Hepatobiliary/Transplant
	2 Trauma/Acute Care
	1 Pediatric Surgery
	1 Vascular
Race	10 Caucasian
	2 Asian-American
	3 African-American
Marital Status	10 Married/Partnered
	3 Never Married
	2 Divorced, not remarried

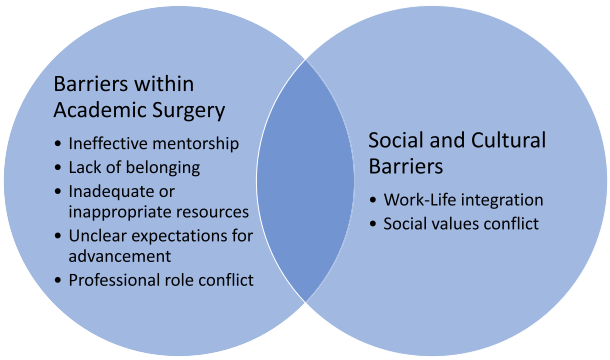

Fig. 1. Conceptual model of barriers to academic surgical careers.

described the sense that one's work and contributions were valued by leadership and peers was a critical component of faculty retention. While gender was mentioned as a factor that may serve as a magnifier of a sense of isolation, it was not described as an independent source of exclusion.

Inadequate or inappropriate resources (12)

Lack of resources, and lack of information about how to secure resources, was the third most frequently cited academic systemic barrier. Interviewees detailed that resources intended to support scholarly productivity were particularly scarce, including access to support staff, protected research time, or funding made available as part of a start-up package. In addition to lack of resources, there was a perceived paucity of information about how to go about advocating or negotiating to obtain needed supplies to support one's long-term academic goals and scholarly interests.

Unclear expectations for advancement (10)

Ten interviewees discussed institutional failure to provide clear criteria for advancement to new faculty and a lack of transparency regarding promotion and tenure systems. Many noted a pervasive sense by junior faculty that benchmarks for retention and advancement were not entirely objective and were not equitably applied. Interviewees reported that surgery lagged behind other departments at their institutions in sharing criteria for advancement with faculty. Interviewees also described that many departments and institutions are in the process of re-operationalizing "scholarly contributions" beyond the traditional measures of peer-reviewed publications and dollars of grant support.

Professional role conflict (10)

Tension between clinical productivity and scholarly activity was a novel barrier to academic career development that was identified by

Table 2
Barriers within academic surgery.

Barrier	Supporting Quote (Interviewee number)
Ineffective mentorship	"I do think that young folks, young residents and fellows should identify a mentor, but that mentor can't be somebody who is trying to benefit from them. That mentor has to say … you know, it's amazing how much you can accomplish if we don't look at who gets the credit." (11) "That's one barrier, which is really experienced mentors who had time to go through that with me. Maybe that was my lack of identifying them or I didn't know how to maximize these people who were already in my life." (13)
Lack of Belonging	"If you look at all of the answers you're going to get about barriers, it's going to be about someone not feeling like they belong … "My chair never gave me the opportunity." "They overlooked me." "I didn't have the mentorship and support that I needed" … that's ultimately what it boils down to." (2) "How to tell them how much you value them … I think value is everything because you need to be valued because then you just keep coming back." (7)
Inadequate or inappropriate resources	"I think I was given resources to be able to start an academic career but not any guidance of what I should really be doing with those." (4) "I think that it is a challenge for individuals who are junior to know what they need and it really goes back to what we were just talking about. If you come in the door and don't have any resources, your likelihood to succeed is limited. If you come in the door and are given a jump start, fine, but not many institutions can afford that." (15)
Unclear expectations for advancement	"Number one is setting expectations early. From what I find in my junior faculty is most of them don't have a clue what it's going to take to go up for Associate at year six." (5) "I was told … go look on the web site in the Promotion & Tenure Book. I happened to talk to a friend in another specialty and he showed me their department's book. They had a one year long calendar that they gave to their faculty being promoted that had every step along the way." (15)
Professional role conflict	"I finally started feeling a little bit jealous of my colleagues who are PhD scientists and don't have clinical responsibilities because they are working on their papers and their grants and they are researching every single day. I have two or three days a week when I am completely occupied doing clinical stuff and during these times I neglect my research." (12) "If you're going to be in academic practice and if they expect for you to be successful, there ought to be plans for how you are going to grow your clinical practice, how you are going to see patients, if you are going to do research, how are they going to make sure that you can juggle your time …" (14)

Table 3
Social and cultural barriers.

Barrier	Supporting Quote
Work-life Integration	"Family responsibilities still end up- whether it is child-rearing or child-supporting or taking care of sick family members- it still tends to be in the domain of female surgeons." (3) "… if you have a sick kid or a kid who is just having trouble or struggling … the woman … is much more likely to step back and get those things under control. And the same with a sick family member or parent -it's not just kids … women bear the brunt of that. I think it's not just women with children." (4)
Social values conflict	"It's really about having some kind of professional/personal balance, which I think generationally those who are coming up behind us are going to be even more demanding than we are so that if academic surgery thinks it's in crisis now because they can't find people to do it, it's only going to get worse." (1) "I think that for many women in surgery this comes back to do I have a really supportive partner or spouse or family who says, "How can I support you in both your personal and your professional life?"" (11)

our interviewees. Although clinical productivity at many institutions is the core measure of faculty productivity because of its financial implications, extramurally funded research was also cited as a valued, expected, and time-consuming contribution to department mission. Interviewees discussed frustrations with balancing expectations of clinical activity with pressure for academic productivity, particularly during the early years of their academic careers. Further, several interviewees questioned the appropriateness of emphasizing immediate clinical productivity for junior faculty who are also expected to develop a program of scholarly activity.

Social and cultural barriers (Table 2)

Work-life integration (10)

Simultaneous management of professional responsibilities and home life was described as challenging by interviewees and was notably gendered in terms of responses. Academic surgery departments were perceived as resistant to the realistic demands of personal life, especially managing cultural expectations that women serve as caregivers for children and aging parents. Partnered interviewees, all of whom were in dual-career relationships, faced familial and collegial expectations that their careers would be secondary to their spouse's, although none indicated that this pressure came from their spouse. Interviewees acknowledged having selected a time- and energy-intensive career, and many indicated that simultaneous excellence in all academic domains and personal life was unsustainable.

Social values conflict (10)

The incompatibility of modern American culture with academic surgical practice was commonly discussed by interviewees. Interviewees highlighted the unwillingness of younger academic surgeons, regardless of gender, to pursue career advancement to the detriment of all other life roles. Interviewees observed that the current academic surgical workforce was not representative of the increased numbers of women and minorities entering medicine and entering surgical training. Ultimately, this was felt to result in cultural and value conflict between these groups and traditional white male surgical leadership.

Discussion

Previous study of career barriers in academic surgery is largely based upon survey data and uses a deductive approach.[11–13] More recent surgery-specific survey work from our own group used the Career Barriers Inventory to assess barriers to academic careers and generated findings similar to those from prior research.[14,15] The present study represents a notable shift from previous research, both our own and others, because we employed an inductive, qualitative approach to illuminate the multiple and complex barriers to academic careers for women, and we expressly sought the perspectives of established women academic surgeons. Although the findings from the current study were unique, the categories clarify and supplement previous studies. In particular, the themes identified align strongly with the categories of barriers to women's leadership in academic medicine (constraints of traditional gender roles, manifestations of sexism in the medical environment, and lack of effective mentors) as identified in interviews of clinical department chairs by Yedidia and Bickel nearly 20 years ago.[16]

Barriers within academic surgery

Mentorship positively impacts work culture in academia through enhanced collegiality and alignment with the values of the institution.[17–19] The majority of academic faculty who participated in a cross-sectional national survey were dissatisfied with available mentoring, and inadequate mentoring was strongly linked to faculty considering leaving their current institution.[18] Within surgery, poor or absent mentoring has been noted as a crucial barrier to career advancement in several survey-based studies.[11,20,21] A complex web structure of mentors, each with a specific expertise, which evolves over time appears to be more beneficial than the dyadic, long-term mentoring relationship that has traditionally dominated in academic surgery.[22]

The lack of belonging described by participants, which was in part attributed to a scarcity of women in leadership roles in the field, accentuates the need for changed environmental and cultural conditions within academic surgery. This is similar to other research that has demonstrated that a sense of isolation increases risk of departure from academic medicine in all specialties, and especially for women in academic surgery.[13,23,24] The inflexible vision of success experienced and observed by interviewees contributed to a sense of exclusion, suggesting a subtle bias regarding who “belongs” in academic surgery. Both explicit and implicit stigma based upon demographic or intellectual and scholarly differences may yield lack of sponsorship for faculty who are in some way nontraditional and who seek advancement opportunities.

The emphasis participants placed on the need for resources beyond salary enhanced previous findings that demonstrated women surgeons are more likely to perceive inadequacy of clerical support, technical support, and non-research related start-up funds.[11] While studies outside of surgery have identified pay inequity and inadequate salary support as key reasons for faculty departure, these inquiries have not fully addressed resources beyond compensation that can impact academic careers.[25,26] Interviewees in our study regularly discussed the relevance of administrative support and research infrastructure as avenues to support the non-clinical work of academic surgeons. They were also careful to note that collaborative use of resources may be ideal for early career faculty who may be unaware of what resources they need or may not understand how to deploy those resources effectively. New faculty, regardless of sex, will struggle to establish their academic career when they do not receive appropriate and adequate support for all of their expected professional roles.

For women academic surgeons, perceived ambiguity of criteria for academic promotion and a paucity of career advancement opportunities within their institution provides a notable barrier that is not solely influenced by gender.[11,13,23,25,27] Survey data within surgery have consistently demonstrated that women are more likely to believe that promotion processes are based upon intangible criteria and that advancement opportunities may have differential standards based upon sex.[11–13] Our interviewees described subjective promotion processes based in outmoded criteria such as numbers of publications, suggesting a call to action to clarify and update promotion and tenure evaluation criteria at both institutional and systemic levels.

Surprisingly, role conflict between clinical and scholarly responsibilities has not been previously described as an obstacle within academic surgery. In addition to not receiving financial incentives analogous to those gained through clinical productivity, scholarly activities require a time commitment that directly competes with building a clinical practice. Although one recent study found that managing competing professional demands may contribute to the decision to leave an academic medical career, research has more commonly centered around work-life conflict rather than managing the multiple professional roles expected of academic surgeons.[27] Although interventions designed to enhance academic productivity (e.g. a semester-long manuscript writing program) are effective for PhD faculty, these supports may not be

adequate for MD faculty because of the unique demands of integrating clinical and scholarly responsibilities.[28]

Social and cultural barriers

The integration of personal and professional demands are often discussed as a gender-based issue. While research indicates women tend to be primary caregivers for family members, a pattern reconfirmed by our interviewees, balancing personal life and career is a barrier for surgeons and scientists of all genders.[29–31] Importantly, family is valued more highly than work for all surgical faculty, but supportive interventions designed to help women (e.g. flexible scheduling) can instead harm their career advancement.[32,33] "Faculty vitality", including work-life integration, is crucial to faculty engagement and the success of academic health centers.[34] The impact of gender roles and expectations of partners of women surgeons merits further exploration.

Surgery is almost by definition an "extreme job." Workweeks in excess of 70 h have their rewards, but this structure is also inherently dangerous to physical and emotional health.[35] Demonstrating the ability to withstand the challenges of a surgical career has historically been requisite in training; the cost of this "toughness" is manifested in the burnout epidemic found among trainees and practicing surgeons.[29,36,37] The expectation of physical presence as a proxy for engagement may also be nonproductive and contribute to burnout but is still a reality in many departments. Accommodating the multiple demands of academic surgery can be challenging; however, these roles will become increasingly manageable and satisfying by encouraging development of flexible models to support the academic surgeon throughout all career phases.

Our study is not without limitations. Perhaps the most significant limitation is that the research method, based upon purposeful sampling, has limited generalizability and variability in data interpretation. Our interview sample only included mid-career and senior women academic surgeons, most of whom successfully navigated the promotion process at least once prior to interview. Further, we deliberately framed the interview to exclude gender from the two structured queries. The lens of the interviewees' experiences as women surgeons informed their perspectives and therefore may have impacted the barriers that they described; gender may have served as an amplifier for those barriers in which it was not explicitly cited. In addition, while we anticipate that many aspects of the conceptual model may be generalized to other academic specialties, interviewees were asked only to address barriers in academic surgery. An important future direction for this work is the full characterization of professional role conflicts that we have identified as an obstacle within academic surgery.

Conclusions

Without a robust picture of the barriers to retention and promotion as well as career advancement, measures designed to dismantle those barriers are likely to be ineffective. The goal of this study was to identify barriers to academic surgical careers; the next step in this work is to generate potential solutions for these barriers that can be adapted between organizations. The use of grounded theory to create a model of career barriers in academic surgery generated new understanding that barriers may be subtle, or even insidious, and that some barriers are predicated upon perceptions of environments. In turn, solutions for these barriers require a shift in conditions that impact both experience and perception at the individual level. The responsibility for these changes lies with those in positions of power-institutions and leadership-to enhance performance, engagement, and retention of female and male academic surgeons.

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Appendix A. Supplementary data

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