Perceived Obstacles to Career Success for Women in Academic Surgery
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Hypothesis: We conducted this study to determine whether concerns expressed by male and female surgeons at 1 academic center are generally reflective of broader concerns for academic surgery and academic medicine. We reviewed published studies concerning women in academic surgery within the context of reporting the results of a survey of both male and female surgeons at 1 academic center.

Data Sources: We developed a survey that included demographic information, work experience, and social issues. The survey was distributed to the entire faculty. For key questions, we compared answers between male and female faculty. Additional data came from the published literature.

Study Selection: We reviewed all available studies identified by a MEDLINE search with key words women and academic and medicine or physician. Included studies contained either data collection or editorial comment concerning women in academic medicine.

Data Extraction: Data and opinions from all included studies paralleling survey questions were extracted from each article.

Data Synthesis: Male and female faculty members reported different experiences and perceptions, specifically relating to relationships between family and professional life and perceptions of subtle sex-related biases. Both men and women reported insufficient mentoring and difficulties in balancing personal and professional responsibilities.

Conclusions: Attitudes, behaviors, and traditions surrounding how we structure work and evaluate participation in academic surgery are more difficult to change than just addressing obvious inequities in support for female surgeons. However, attempting the deeper changes is worthwhile, because addressing obstacles faced by female faculty, many of which also affect men, will allow progress toward environments that attract and retain the best physicians, regardless of sex.

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The past 2 decades have seen an increasing interest in women’s participation in academic medicine. For at least the past 10 years, the number of female medical students has risen steadily, leading to an expectation of parallel increases in female academic physicians and leaders. The latter does not seem to be the case. In 1998, women were chairs at only 3 departments of internal medicine. Controversies remain, many of which are contributed to by individual studies in different specialty areas, as well as others that focus on physicians at different stages of their training. This raises questions about how men and women perceive their academic environment and if women are leaving academic medicine at a disproportionate rate compared with men. Identification of problems inciting women to leave academic medicine, or to remain within the academic environment without advancing to the highest levels, might lead to avenues for addressing these issues, either by changing departmental structures and processes or by attempting to increase individual awareness and education. There are likely issues that are common across a range of specialties, as well as ones specific to given areas of practice. This article reviews published studies that contribute to an understanding of the perceptions and advancement of women in surgery within the context of reporting the results of a survey of both male and female surgeons at 1 academic center.

RESULTS

DEMOGRAPHICS

All of the male and all but 1 of the female faculty members responding to the survey were married. Forty-five (45%) of 99 male faculty and 9 (56%) of 16 female faculty members responded to the survey. Table 1 contains demographic information on these faculty members. All of the
MATERIALS AND METHODS

We developed a survey that included demographic information, responsibilities for clinical, research, educational, and service roles, and perceptions of sex-based career obstacles, mentoring experiences, career expectations, and social and family issues. Each of these areas has been explored to some extent previously in the published literature and part of our interest was to determine whether our faculty had the same experiences as those commonly reported, or whether there were specific issues of greater or lesser importance within our faculty.

The survey was distributed to the entire faculty. It was sent out once with a cover letter explaining our interest in these issues and describing our goal of potential changes to improve the work environment for all faculty members. We allowed 8 weeks before cutting off survey collection. Responses were entered into a spreadsheet and tabulated separately for male and female faculty. For key questions, we performed univariate tests to compare answers in the 2 groups and t tests for either means or percentages. Based on answers to the survey, we developed a set of potential changes to departmental policy that might improve the ability to attract and retain top-level faculty of both sexes.

Educational backgrounds of survey respondents are shown in Table 2. Male and female faculty had similar appointments and seniority as well as the same amount of residency and fellowship experience. We divided faculty into junior and senior faculty, with junior indicating faculty member in ranks before tenure (lecturer, instructor, or assistant professor) and senior indicating associate and full professors. In the department overall, 26 men (69%) were junior faculty, while only 3 women (33%) report participation. However, 31 men (69%) had medical students per year. However, 31 men (69%) had medical students and 26 (51%) had residents participating in their research, while only 3 women (33%) report participation by either group. Internally, men served on a mean of 4.2 committees and women on 3.3, with a proportionate responsibility for committee chair positions. Men were more likely to play an administrative role in national societies. The greatest area of disparity was in research funding and publication. Men more often had extramural funding and had a larger amount per person of funding; however, they published significantly less. The funding agencies from which men and women in the department overall received grants did not vary by sex in terms of prestige (federal, other national, or other).

RESPONSIBILITIES

Data on reported responsibilities are shown in Table 3. Men and women reported similar perceptions of workload. Twenty-one men (48%) and 4 women (44%) felt that they had clinical responsibilities greater than their colleagues, while 16 men (36%) and 2 women (22%) felt they had administrative responsibilities greater than their colleagues. However, except in the area of start-up funding for research, women were far less likely to feel that
clinical support, technical support, and nonresearch start-up funds were adequate (Table 4).

In addition to support and workload issues, women generally felt that there were sex-based obstacles to career success for women that did not exist for men; male respondents generally did not agree with this statement. Some specific areas of perceived bias by women include standards, mentoring, collaborative research opportunities, informal networking, and academic attitudes. Five women (56%) felt that women were held to higher academic standards for promotion than were men (2 men [5%] agreed with this statement). Eight women (89%) vs 7 men (16%) felt that women were less successful in achieving promotion because they received less mentoring and/or fewer professional opportunities than did men. Related to this, 5 women (56%) reported their belief that men were more likely to be sought out to participate in collaborative research than were women with comparable expertise (5 men [11%] agreed). Seven women (78%) felt that informal networking often excluded faculty on the basis of sex (9 men [20%] felt this to be the case). Additionally, 6 women (67%) and 6 men (14%) agreed that men have difficulty taking the careers of female faculty seriously and accepting women as colleagues. Despite these differences, there was almost universal agreement that men are making an effort to become more accepting of women as students and colleagues.

MENTORING EXPERIENCES

Two thirds of both male and female faculty report having or having had a mentor. Thirty-two men (71%) and 3 women (33%) identified their mentor as a member of the surgical faculty. All male faculty had a male mentor, although 4 (10%) also identified a female mentor. Women had male mentors in 7 cases (86%) and female mentors in the remaining 2 (14%). Men felt that they received more critiques of both their clinical performance (30 [62%] vs 5 [56%]) and their scientific work (42 [93%] vs 6 [67%]). Women uniformly reported that their mentors actively fostered the advisee's career, although 5 [56%] also reported that their mentor used their work to advance the career of the mentor rather than the advisee. Thirty-six men (80%) felt that their mentors fostered the advisee's career, but only 11 (24%) said that their work had been used to further the mentor's rather than the advisee's career.

In terms of departmental or general advising, 25 men (55%) vs 2 women (14%) felt that they had been prospectively informed about the criteria for promotion. Twenty-four men (53%) and 4 women (44%) reported receiving regular performance reviews. The greatest disparity was in the presence of role models, for which 32 men (71%) and only 2 women (14%) agreed that there were good role models in their section and within the department of surgery.

CAREER EXPECTATIONS

Two thirds of both male and female faculty wanted to be in academic medicine and expected to be promoted. However, 31 men (70%) vs 5 women (56%) expected to be in academic medicine 10 years after the survey. This is related to the 9 men (19%) vs 3 women (33%) who reported seriously considering leaving academic medicine.

SOCIAL AND FAMILY ISSUES

Social and family issues are a major concern for both male and female faculty. However, both men and women report differences in the conflict between family and career responsibilities and perceptions of balancing those responsibilities for men and women (Table 5). Two thirds of both men and women reported that the demands of their surgical faculty position adversely affect their relationships with spouses. Men reported a slightly higher tendency to miss family activities because of job demands (35 [77%] vs 6 [67%]), while women were significantly more likely to miss work activities because of family responsibilities (5 [56%] vs 9 [20%]). Women more
often believe that leaving early or arriving late for work because of family demands adversely affects a faculty member's standing in the department. Fourteen men (31%) agreed that leaving early or arriving late can have an adverse effect; however, 9 men (21%) agreed that this behavior was applauded as the sign of being a good parent, a belief expressed by none of the women. The influence of family responsibilities on the ability to meet career demands was also reported. Two thirds of women and slightly more than half the men agree that female faculty who are parents were less able to meet career demands; however, 14 men (32%) believe that male faculty who are parents were also less able to meet career demands, while no women believe this to be true for male faculty members. Women are more likely to agree that there are too many early morning and late evening meetings (8 [89%] vs 22 [50%]), and more frequently are unable to attend these meetings because of family responsibilities (4 [44%] vs 10 [22%]). However, both men (26 [58%]) and women (4 [44%]) report that attending early morning and late evening meetings adversely affects their families. Despite conflicts between family and career responsibilities, virtually all faculty reported that their spouses were supportive of their careers.

The issues covered in this survey are not new. Much of the controversy in the literature centers around the question of whether women are advancing through the ranks of academic medicine and, if not, why not? In general, the factors that seem to impede academic progress for women are childbearing and child care responsibilities, lack of mentors and role models, sex stereotypes, and feelings of isolation. Many of the studies discussed below are now 10 years old and cover areas of medical practice other than surgery; however, many previously published findings are relevant to any inquiry into advancement and retention of female medical and surgical faculty.

DEMOPGRAPHICS

The American Association of Medical Colleges report on women on the faculties of US medical schools from 1978 to 1989 provides a starting point for demographic comparison. During this period, the number of women faculty members increased by 76%, while male faculty increased by only 25%. The greatest increases were at the level of assistant professor (49% of female faculty members). All departments showed an increase in female faculty; however, increases were not uniform across departments. The greatest percentage increases were in departments of internal medicine, family practice, and obstetrics; while in pediatrics, which has the highest representation of women, the percentage decreased from 35% to 33%. There are reported differences between female surgeons and other female physicians. Female surgeons are younger and more likely to be both unmarried and childless, even when adjusted for age, than are other female physicians.

A study at Columbia University College of Physicians and Surgeons studied the records of full-time faculty between 1969 and 1988. They discovered that women were more likely to both enter the clinical track and leave the tenure track for the clinical track than were men. While this study indicates that women are entering academic positions and being promoted at the same rate as men, it also suggests that women may not be pursuing more demanding tenure-track positions in academic medicine.

Our survey also reflects demographic patterns reported elsewhere. For example, more male than female physicians have children. Additionally, many studies show that women accept more responsibilities that do not add to their academic career and leave the tenure track for the clinical track than do men. While representation of women is certainly increasing overall, representation seems to cluster in certain specialties, such as family practice and pediatrics, and in the lower ranks, primarily because of spending longer periods in the lower ranks before achieving promotion. The literature is unclear on whether the latter will resolve with time and no specific comparative studies have addressed reasons for the former or ways to make all medical specialties more available for female faculty. There have been studies looking at the choice of surgery as a career. Many of these issues were cogently discussed in Dr Walters’ keynote address to the annual Women in Medicine Program. A study of medical student choices indicated that the most likely differences contributing to fewer women entering surgical careers include differences in which qualities of a specialty are important to women, the availability of role models, and less exposure to surgical electives.

RESPONSIBILITIES

The responses to our survey were similar to those seen in other studies. For example, DeAngelis and Johns cite data documenting less academic productivity for female compared with male medical faculty. However, this study indicates that women in internal medicine are less likely to have research training, a finding not paralleled in our study. There are mixed reports on academic productivity, with some studies reporting women publishing at a higher rate, and others indicating that while women may publish fewer articles, those articles are more often cited. Additionally, many studies show that women accept more responsibilities that do not add to their academic career than do men. One review indicates that the advancement of women in medicine at a slow rate, combined with increasing awareness of the need for women in administrative roles, places a disproportionate administrative burden on women.
burden on those women who do achieve some measure of success, making it difficult for them to maintain high levels of academic productivity.\textsuperscript{11}

**PERCEPTIONS OF OBSTACLES**

In addition to specific obstacles to career advancement, many articles report data or theories on the existence of subtle forms of sex bias affecting the careers of academic physicians. Bickel\textsuperscript{12} coins the term *cumulative career disadvantage* to describe the series of subtle disadvantages encountered by women throughout their careers. These include failure to receive collegial support and stereotypes that lead women to spend more time engaged in duties not in their career interests. The term *microinequalities* was used by the American Medical Association Council on Ethical and Judicial Affairs\textsuperscript{13} to encompass conscious and unconscious slights, lack of visibility, and exploitation that cumulatively lead to women leaving academic medicine. This study and others also cited exclusion from informal and formal peer networks as an obstacle to women’s careers, a finding reflected in our survey.\textsuperscript{14} This may be especially important in the process of peer review for grants and journal publications.\textsuperscript{15} Bennett and Nickerson\textsuperscript{16} surveyed women at Columbia University and discovered similar findings, concluding that close to half of the women surveyed felt they did not have equivalent professional opportunities as compared with men and that promotions were biased, while almost one third reported that sexist comments and attitudes were common. The latter finding was not supported by our study. Significantly more women than men were found to perceive a wide variety of career obstacles involving promotion, collaborative interactions, networking, and sex climates in another survey at a single academic institution.\textsuperscript{16} A survey of cardiothoracic surgeons reported that women perceive the promotion process as unfair and women were much more likely than men to believe that discrimination had hindered their career development.\textsuperscript{6}

The more material obstacles identified by our faculty are also seen in other studies. Tesch et al\textsuperscript{17} studied a retrospective cohort and discovered that women had fewer resources such as office space, laboratory space, and protected time allocated. These findings were also suggested by our survey.

**MENTORING EXPERIENCES**

Lack of mentoring is a difficulty for both male and female physicians, both as house staff and as young faculty. This seems to be exacerbated for women by the perceived lack of role models.\textsuperscript{14} It may also be a function of unconscious discrimination because of socialization, with women assuming that mentors will approach them and mentors assuming that it is the woman’s responsibility to take the first step.\textsuperscript{15} The work of Levinson et al\textsuperscript{17} indicated that 61% of women younger than 50 years in departments of medicine felt they had a relationship with a mentor. This study concludes that mentorship can improve career satisfaction and productivity for women. Adler\textsuperscript{18} stated this more strongly, indicating that there is bias in the selection of women as advisees, both because mentors prefer to work with people like themselves and/or because senior members of faculties assume that women are less likely to succeed in academic medicine. Our study indicates that lack of mentoring may be a problem for both men and women, with women feeling the lack of mentorship more acutely because of a perceived lack of role models and collegial partnerships. This was reflected in a study of medical students considering surgical careers, with more than half of all students agreeing that there is a lack of appropriate surgical role models for female medical students.\textsuperscript{19} A survey of the membership of the Association of Women Surgeons provided overwhelming support for the importance of mentorship in academic surgery. Of 676 surgeons responding to a survey, 630 respondents believed that female medical students need successful female surgeons as role models. Despite being considered essential, these role models were often not available in the experience of survey respondents.\textsuperscript{19}

**CAREER EXPECTATIONS**

Other studies have also pointed out differing expectations for careers in academic medicine for men and women. Before embarking on careers, one study reported that male medical students and residents were more likely to envision themselves in academic careers than were their female counterparts.\textsuperscript{20} In another study of medical students, men were more likely to identify technical challenge, earning potential, and prestige as important, while women identified residency conditions, part-time work, and parental leave availability. These students perceived surgeons as having rewarding careers and earning more than those in other specialties, but did not agree that surgeons have rewarding family lives.\textsuperscript{10} The concern about the impact of a surgical career is exacerbated by the lack of role models present for women in academic medicine, a lack that is very evident in responses to our survey.

**SOCIAL AND FAMILY ISSUES**

These issues are ongoing in the lives of medical faculty. The difficulties of balancing family and professional responsibilities is a common theme\textsuperscript{15,21} with women often expressing more concern or conflict over balancing academic and family commitments.\textsuperscript{21} Data from the Council of Ethical and Judicial Affairs are even more lopsided than ours, stating that male physicians perform only 19% of child care duties and 26% of household duties in their homes, while female physicians perform two thirds of both child care and household duties in their homes. Some centers have reported changes in structure intended to address these conflicts. For example, several medical schools have instituted “clock-stopping” policies, allowing faculty members to postpone promotion while attending to family responsibilities.\textsuperscript{20}

**IMPROVING CAREER DEVELOPMENT FOR WOMEN IN ACADEMIC MEDICINE**

Our study points to some specific areas for improvement as well as questions about the desires of women...
across departments for changes in structure addressing women's roles outside of academics. Many of these reflect measures undertaken at Johns Hopkins University\(^\text{16}\) and have been proposed in other centers. While structural and formal mechanisms can be changed, many of the obstacles to women's advancement in academic medicine and in our department seem to be rooted in societal attitudes and behaviors that may be subtle and unconscious. In addition, many current policies and academic practices reflect social structures that no longer exist. Almost all women in academic medicine, and an increasing number of men, are married to other professionals. This means there is no longer a full-time person available to address domestic and family aspects of life and that, increasingly, all faculty must balance their personal and academic responsibilities. Attitudes, behaviors, and long-ingrained traditions of how we structure work and evaluate faculty participation in academic medicine will be more difficult to change than the formal and obvious inequities in pay and other types of support. Attempting to make these changes is worthwhile, because through creation of an environment, and more than lip service by academic leadership toward addressing the obstacles for women faculty, many of which also affect men, academic medicine can make progress toward creating environments that attract and retain the best physicians, regardless of sex.

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