

Faculty Perceptions of Gender Discrimination and Sexual Harassment in Academic Medicine

Phyllis L. Carr, MD; Arlene S. Ash, PhD; Robert H. Friedman, MD; Laura Szalacha, EDM; Rosalind C. Barnett, PhD; Anita Palepu, MD, MPH; and Mark M. Moskowitz, MD

Background: Gender-based discrimination and sexual harassment are common in medical practice and may be even more prevalent in academic medicine.

Objective: To examine the prevalence of gender-based discrimination and sexual harassment among medical school faculty and the associations of gender-based discrimination with number of publications, career satisfaction, and perceptions of career advancement.

Design: A self-administered mailed questionnaire of U.S. medical school faculty that covered a broad range of topics relating to academic life.

Setting: 24 randomly selected medical schools in the contiguous United States.

Participants: A random sample of 3332 full-time faculty, stratified by specialty, graduation cohort, and sex.

Measurements: Prevalence of self-reported experiences of discrimination and harassment, number of peer-reviewed publications, career satisfaction, and perception of career advancement.

Results: Female faculty were more than 2.5 times more likely than male faculty to perceive gender-based discrimination in the academic environment ($P < 0.001$). Among women, rates of reported discrimination ranged from 47% for the youngest faculty to 70% for the oldest faculty. Women who reported experiencing negative gender bias had similar productivity but lower career satisfaction scores than did other women ($P < 0.001$). About half of female faculty but few male faculty experienced some form of sexual harassment. These experiences were similarly prevalent across the institutions in the sample and in all regions of the United States. Female faculty who reported being sexually harassed perceived gender-specific bias in the academic environment more often than did other women (80% compared with 61%) and more often reported experiencing gender bias in professional advancement (72% compared with 47%). Publications, career satisfaction, and professional confidence were not affected by sexual harassment, and self-assessed career advancement was only marginally lower for female faculty who had experienced sexual harassment ($P = 0.06$).

Conclusion: Despite substantial increases in the number of female faculty, reports of gender-based discrimination and sexual harassment remain common.

Ann Intern Med. 2000;132:889-896.

For author affiliations and current addresses, see end of text.

Women now account for slightly more than one quarter of U.S. medical school faculty (1). However, it has been reported that female physicians in academic settings encounter more gender discrimination and sexual harassment than do female physicians in the community (2–5). Female physicians, even those in positions of authority in medical schools, perceive a considerably more hostile environment than their male colleagues, and gender discrimination and sexual harassment contribute substantially to these perceptions (6). *Gender discrimination* refers to gender-based behaviors, policies, and actions that adversely affect work by leading to disparate treatment or creation of an intimidating environment (7). *Sexual harassment* covers a spectrum from generalized sexist remarks and behaviors to coercive sexual advances (8) and from unconscious patronization and subtle innuendo to blatant sexual threats (8–10).

Although harassment of medical students by superiors has been examined frequently (11–15), less is known about gender discrimination and sexual harassment among academic medical faculty. Studies of harassment in academic medicine have generally examined small samples or populations at only one site or in one discipline (12, 13, 16, 17). Moreover, studies have usually examined harassment and abuse in isolation rather than in the context of the total academic experience. Narrowly focused surveys typically overestimate the prevalence of problems that they examine because the persons who have experienced those problems are more likely to respond to questionnaires. Our study examines gender-based discrimination and sexual harassment in the context of the total work experience of full-time academic medical school faculty. Specifically, we examined the perceived prevalence of gender-based discrimination and sexual harassment among medical school faculty and the associations of these phenomena with an objective academic measure (number of peer-reviewed publications), as well as the subjective outcomes of career satisfaction and perceptions of career advancement.

Methods

Study Design

In 1995, we used a two-stage design to draw a stratified random sample of full-time faculty at U.S. medical schools. First, we selected 24 medical schools from which faculty would be sampled. Of the 126 medical schools listed by the Association of American Medical Colleges (AAMC) at that time, we excluded 6 schools that were outside the contiguous United States because the AAMC considers them to differ greatly from mainland schools. To obtain reasonable numbers of female and ethnic minority faculty in each institution, we also excluded 14 schools with total faculties smaller than 200 persons, those in which female faculty numbered fewer than 50, and those in which ethnic minority faculty numbered less than 10. We used random numbers to select 24 schools from the remaining 106 eligible medical schools. The mean number of faculty at the sampled schools (749) was similar to the mean number of faculty in the population of the 106 eligible schools (722). The resulting sample of schools was balanced across the four AAMC regions of the United States and was divided evenly between public and private institutions. Women represented 23% of all AAMC faculty and of faculty in the sampled schools.

In the second stage of sampling, we identified full-time salaried faculty from the 24 schools. We used the AAMC Faculty Roster System to select approximately 4000 faculty, whom we stratified by sex (female or male), ethnicity/race (under-represented ethnic minority or other), and medical specialty (basic scientist, surgical specialist, medical and other specialist, or generalist) within three graduation cohorts (years of experience, and faculty who completed a doctorate [MD or PhD] before 1970, between 1970 and 1980, or after 1980).

The AAMC listed 17 434 faculty at the selected schools. Exclusion of 720 faculty in unique departments that did not exist at other medical schools left 16 714 faculty, of which 4156 were women. Within each of the 24 schools, we first sampled faculty by using 6 replications of a $4 \times 3 \times 2$ factorial design, with equal numbers in four academic department groupings, three graduation cohorts, and two sexes. Within each cell (school \times department grouping \times graduation cohort \times sex), we sought 6 faculty. The most senior graduation cohort cells were filled first. When we found fewer than 6 faculty for a cell, we finished filling the cell with persons who were in the same school, specialty, and sex but were adjacent in age cohort. To achieve adequate numbers of ethnic minority, generalist, surgical, and senior female faculty, we supplemented this balanced design by including 100% of ethnic minor-

ity and generalist faculty, all women in surgical specialties with very few women, and all women with more than 15 years' experience since receiving their doctoral degree. The balanced factorial part of the design yielded somewhat fewer women than men because not all cells contained at least 6 women. The total ethnic minority and generalist samples also had fewer women. This imbalance was offset by the addition of senior and surgical female faculty, leading to a sample with nearly equal numbers of men and women.

We mailed 4405 surveys to faculty at their professional addresses. Of the faculty, 1073 were ineligible because they had left their institutions (512), were not full-time (510), had died (11), had participated in the pilot sample (9), or had other reasons for being excluded (31). Nonrespondents among the eligible 3332 faculty received reminder postcards, follow-up telephone calls, and survey remaining as needed.

The self-administered survey contained 177 questions about personal demographic characteristics; self-esteem; family responsibilities; experiences of bias, discrimination, and harassment; current academic environment; mentoring relationships; professional goals; academic productivity; rank; faculty compensation; and career satisfaction. Approximately 10% of the survey items related to gender-based discrimination and sexual harassment, which could have occurred at any time over the faculty member's career. The survey was pretested by 45 medical school faculty at three institutions to ensure that the respondents would understand the meaning of the questions and could answer the questions appropriately.

Outcome Measure and Definitions of Variables

We used a career satisfaction scale consisting of four items that assessed the work environment: "How satisfied are you with 1) your current work setting, 2) your potential to achieve your professional goals, 3) your overall professional practice and/or research and 4) the extent to which this practice and/or research has met your expectations" (18). Each item was measured on a Likert scale ranging from 1 (very dissatisfied) to 5 (very satisfied) (Cronbach $\alpha = 0.87$).

We conceptualized gender discrimination as behaviors, actions, policies, procedures, or interactions that adversely affect work by resulting in disparate treatment according to sex or creation of a hostile or intimidating environment (7). We asked the following specific questions.

1. Do you perceive any gender-specific biases or obstacles to the career success or satisfaction of faculty by gender in your academic environment (1 = no, never; 5 = yes, frequently)?

2. In your professional career, have you ever been left out of opportunities for professional advancement based on gender (1 = yes, 2 = probably, 3 = possibly, 4 = not to my knowledge, 5 = no)?

3. In your professional career, have you had increased opportunities for professional advancement based on gender (same scale as in the preceding question)?

Our sexual harassment construct was based on the 1980 Equal Employment Opportunity Commission definition: “unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature” (19). We asked the following questions:

1. In your professional career, have you encountered unwanted sexual comments, attention, or advances by a superior or colleague (1 = no, 2 = yes)?

2. If the answer to the previous question was yes, how much of a problem has this been for you (1 = no problem, 5 = major problem)?

We captured the severity of sexual harassment by using five levels described by Till (8): 1, generalized sexist remarks and behavior; 2, inappropriate sexual advances; 3, subtle bribery to engage in sexual behavior; 4, threats to engage in sexual behavior; and 5, coercive advances. In analyses, we defined *harassment* broadly as including any of these behaviors and narrowly as reporting levels 2 to 5 on the Till scale. We evaluated the perceived impact of sexual harassment with the following questions: To what extent have these experiences had a negative effect on your confidence in yourself as a professional (1 = not at all, 5 = greatly)? To what extent have these experiences negatively affected your career advancement (1 = not at all, 5 = greatly)?

Statistical Analysis

Frequency distributions, means, and SDs were used to describe survey respondents. We used multivariate models to test all relations between gender and outcomes or between outcomes and faculty characteristics within gender. The following variables appear in all models: medical school, specialty (basic science, surgical specialists, medical and other specialists, and generalists), race or ethnicity (underrepresented ethnic minority and other), seniority (years since first faculty appointment), and seniority squared. When comparing men and women, we report the adjusted mean for each group (using the least-mean-squares method) and the 95% CI for the adjusted mean difference, which is the main effect of “female” in a model using all of the above variables as predictors.

To simplify reporting, the values in Tables 2 and 4 refer to ordinary least-squares regressions, regardless of the form of the dependent variable. Findings

Table 1. Participant Characteristics*

Variable	Women (n = 953)	Men (n = 1010)
Age, n (%)		
<40 y	301 (32)	244 (24)
40–49 y	346 (36)	392 (39)
>50 y	303 (32)	373 (37)
Ethnicity/race, n (%)		
White	773 (81)	809 (81)
Black	62 (7)	90 (9)
Hispanic	26 (3)	39 (4)
Asian	84 (9)	55 (5)
Native American	3 (0)	5 (0)
Marital status, n (%)		
Part of a couple	755 (80)	925 (93)
Single†	186 (20)	73 (7)
U.S. region, n (%)		
Northeast	378 (40)	357 (36)
South	198 (21)	234 (24)
Midwest	172 (18)	207 (21)
West	200 (21)	195 (20)
Type of institution, n (%)		
Private	454 (48)	466 (47)
Public	495 (52)	535 (53)
Specialty, n (%)		
Primary care	276 (30)	332 (33)
Basic science	235 (25)	228 (23)
Medical specialty	266 (28)	245 (24)
Surgical specialty	153 (16)	190 (19)
Rank, n (%)		
Full professor	203 (22)	346 (35)
Associate professor	244 (27)	254 (26)
Assistant professor	418 (45)	344 (35)
Instructor	58 (6)	41 (4)
Mean total career publications ± SD n	23 ± 33	36 ± 49
Mean career satisfaction score ± SD‡	3.4 ± 0.9	3.6 ± 0.9

* Information is missing on age for 7 women and 6 men, ethnicity for 3 women and 6 men, specialty for 16 women and 12 men, rank for 32 women and 25 men, region for 5 women and 17 men, institution for 4 women and 9 men, and marital status for 12 women and 12 men.

† Includes divorced, separated, widowed, and never married.

‡ From McGlynn's four-item scale. Each item was measured on a Likert scale of 1 to 5 (1 = very dissatisfied, 5 = very satisfied).

did not differ (and therefore are not separately reported) when logistic regression was used to predict dichotomous outcomes.

We used the same multivariable method to test men and women separately for associations of discrimination and harassment with various personal and professional characteristics. Because few men reported these experiences (93 [9%] reported discrimination and 48 [5%] reported harassment), there was little power to detect such associations for men. Details of these analyses are therefore presented for women only. Results of examining the association between a report of having been sexually harassed and a respondent's perception and experience of discrimination are shown for men and women.

Participants responded to subjective questions by using a Likert scale of 1 to 5; we reported as positive any response of 3, 4, or 5. Findings rarely changed when only responses of 4 or 5 were considered positive. For the two questions in Table 5 in which the cut-point made a difference, we provide more detailed information on the response distribution.

Table 2. Perception and Experience of Discrimination and Harassment by Gender

Problem*	Adjusted Mean Value†		Difference between Adjusted Means (95% CI)‡	P Value
	Women (n = 953)	Men (n = 1010)		
	%		percentage points	
Respondents who perceived gender-specific bias in the academic environment§	77	30	47 (43–52)	<0.001
Respondents who personally experienced gender bias in professional advancement	60	9	51 (48–55)	<0.001
Respondents who personally experienced gender advantage in professional advancement	31	11	20 (16–23)	<0.001
Respondents who personally experienced harassment¶	52	5	47 (44–50)	<0.001

* Each question was scored on a scale of 1 to 5. Responses of 3, 4, or 5 were counted as positive.

† Adjusted for medical school, specialty, ethnicity/race (majority or minority), and years since first faculty appointment.

‡ Value for women minus the value for men.

§ 1 = no, never; 5 = yes, frequently.

|| 1 = no, 2 = not to my knowledge, 3 = possibly, 4 = probably, 5 = yes.

¶ 1 = no, 2 = yes.

We used linear regression to estimate the effects of having experienced gender bias in advancement and having been sexually harassed on the number of publications and career satisfaction. Because the distribution of the number of publications is highly skewed, our analysis was structured to predict log of publications plus one. In these analyses, we controlled for hours of work per week, percentage of time in research, and percentage of time in clinical work, in addition to the variables listed above. We used SAS statistical software, version 6.11 (SAS Institute, Inc., Cary, North Carolina).

Role of the Funding Source

The Robert Wood Johnson Foundation funded the study but had no role in its design, conduct, or reporting.

Results

Demographic Characteristics of Respondents

The number of respondents was 1979, with response rates of approximately 60% for both male and female faculty. Women accounted for 49% of the faculty respondents (Table 1). The similar distributions of respondent men and women by specialty, region, and public status of their institution reflected the balance built into the sampling design. However, even sampling by sex within cohorts defined by year of medical school graduation did not fully equalize the age distribution: Female respondents were on average 2 years younger than male respondents. White faculty accounted for 81% of respondents for both genders; fewer women than men were black (6.5% and 9.0%) or Hispanic (2.7% and 3.9%), and more women than men were Asian (8.8% and 5.5%). Women were less likely than men to be married or have a partner (80% and 93%) (the category “single” encompassed never married, divorced, separated, or widowed). Women were less

frequently full professors (22% and 35%), were more often assistant professors (45% and 35%) and had fewer total career publications (23 and 36).

Because of the sampling design, our respondents differed somewhat from the AAMC Medical Faculty Roster in terms of age distribution (we had a flatter age distribution that was similar for men and women) and overrepresentation of nonwhite faculty. The rank distribution of male respondents was similar to that in the AAMC, but our female respondents were older than is typical and included a higher proportion of full professors (22% compared with 10%). The specialty distribution also differed, with more faculty in basic science (25% and 16%).

Gender-Based Discrimination and Harassment

Table 2 shows the prevalence of gender-based discrimination and harassment among male and female faculty. Many more female faculty than male faculty perceived gender bias in the academic environment (77% and 30%; $P < 0.001$). In addition, 60% of women but only 9% of men suspected or felt clearly that they had experienced gender bias in professional advancement ($P < 0.001$). However, many more women than men also felt that gender had given them an advantage in professional advancement (31% and 11%; $P < 0.001$). More than half of female faculty (52%) reported having been sexually harassed by a superior or colleague compared with only 5% of male faculty ($P < 0.001$).

Factors Associated with Discrimination and Harassment

Many faculty and school characteristics were examined separately for men and women in terms of associations with gender discrimination, including age, ethnicity, marital status, number of publications, specialty and rank of faculty, public or private status, and regional location of institution. No factor was associated with discrimination among men ($P >$

0.05 for all factors). Among women, factors independently associated with gender-based discrimination were increasing age (prevalence ranged from 47% for women < 40 years of age to 70% for women > 50 years of age) and black compared with white ethnicity (74% and 60%) (Table 3).

When the same characteristics were examined for associations with self-reported harassment, we found no associations among men. Among women, white female faculty reported more harassment than did other female faculty of ethnicities or races (57% compared with $\leq 42\%$), women in primary care reported less harassment than did women in other specialties (44% compared with $\geq 52\%$) and women of senior rank reported more harassment than did other female faculty (58% compared with 47%) (Table 3).

Data on type of sexual harassment by increasing level of severity are shown in Table 4. Almost half of female faculty (48%) reported encountering sexist remarks or behavior, and nearly 30% reported more substantial harassment (unwanted sexual advances, subtle bribery to engage in sexual behavior, threats to engage in sexual behavior, or coercive advances). In contrast, male faculty rarely reported such experiences ($\leq 3\%$). Although most women reported that sexual harassment had little effect on their professional confidence or their career advancement, the presence of an effect was more evident for women than men ($P = 0.007$ and 0.06 , respectively). Women who reported being sexually harassed were more likely to perceive institutional gender bias in the academic environment (Table 5) and gender bias in professional advancement ($P < 0.001$ for both) than did other female faculty.

Associations with Career Outcomes

Female faculty who reported experiencing negative gender bias had lower career satisfaction scores than did other women (adjusted mean scores, 3.2 and 3.7; $P < 0.001$), even though they had similar numbers of publications ($P > 0.2$). Among men, reported discrimination was not associated with either satisfaction or number of publications. Among men and women, the experience of harassment was not independently associated with career satisfaction or number of publications ($P > 0.2$ for all comparisons).

Discussion

Although the high prevalence of sexual harassment of women in traditionally "male" occupations is well documented (20, 21), the problems of gender-based discrimination and sexual harassment among faculty in academic medicine have not been studied. Data on medical students reveal a disturbing frequency of such experiences (15–17, 22, 25–28). In our study, men and women differed strikingly in their experiences and perceptions of gender-based discrimination and sexual harassment: More than half of female faculty reported such experiences, whereas very few men noted that such behavior existed in academic medicine. A substantial minority of female faculty felt that their gender had helped them in career advancement, whereas male faculty seldom perceived a gender advantage in career progress.

Our results are consistent with previous findings that female surgeons and other specialists in histor-

Table 3. Female Faculty's Experience of Discrimination and Harassment

Faculty Characteristics	Women <i>n</i>	Discrimination		Harassment	
		Unadjusted Rate	Adjusted <i>P</i> Value*	Unadjusted Rate	Adjusted <i>P</i> Value*
		%		%	
All women	953	60	–	52	–
Age					
<40 y	301	47	–	49	–
40–50 y	346	63	<0.001	52	
>50 y	303	70	<0.001	55	
Ethnicity/race					
White	773	60	–	57	–
Black	62	74	0.03	42	0.07
Hispanic	26	46		39	0.05
Asian	84	56		21	<0.001
Native American	3	33		0	
Specialty					
Primary care	276	53	–	44	–
Basic science	235	64		56	0.03
Medical specialty	266	63		52	0.02
Surgical specialty	153	63	0.06	60	0.003
Rank					
Full/associate	447	68	–	58	–
Assistant/instructor	474	52		47	0.02

* *P* values indicate statistical significance of differences from the base category (listed in the first row) after adjustment for all other characteristics (medical school, specialty, ethnicity/race, age, and rank). *P* values >0.1 are not shown.

ically male-dominated specialties are more likely to be harassed (2–6). In fact, female faculty are almost twice as likely as women in primary care to be sexually harassed. Possible explanations include the idea that primary care is more hospitable to women because of the greater numbers of women in that discipline and that surgery and other procedure-oriented specialties place a higher value on hierarchy, authority, and traditional hegemonic structures than do other disciplines, which has better maintained an environment of gender discrimination.

Some differences were seen among ethnic or racial groups; black women reported more gender-based discrimination than white women or women of other ethnic minority groups. However, white women reported sexual harassment more frequently than did black women or women of other ethnic minority groups. It is not clear whether white women are actually more likely to experience sexual harassment than are other women or are simply more sensitized to these issues. Ethnic minority women may find it difficult to determine whether offensive, harassing, or discriminating behavior is gender-based or ethnicity-based. The greater prevalence of harassment among higher-ranked women faculty may mean that the situation is improving and the prevalence of harassment is decreasing. However, it may simply reflect the reality that longer careers provide more opportunity for negative experiences.

Gender bias and mild forms of sexual harassment have more far-reaching consequences than has previously been appreciated. Satterfield and Muehlen-

hard (29), found that flirtatiousness in an authority figure negatively affects women's self-confidence in their creativity but does not affect men's self-confidence. They postulated that women have had more cumulative negative experiences and are therefore sensitive to even minor forms of harassment (29, 30). Although flirtatiousness, particularly when reciprocated, is often not viewed as harassment (31), it still negatively affected women's professional confidence. We did not find large differences in the effects of sexual harassment on professional confidence or career advancement, but women who reported experiencing negative gender bias had lower career satisfaction. Several investigators (32) have found that women focus and define themselves more in the context of relationships than do men. This tendency may enhance women's awareness of these issues in the workplace. The full consequences of the subjective aspects of harassment and gender bias are unknown.

Cole and Singer (30) suggest that women's lower publication rate may stem from the accumulation of micro-inequities over time. Gender bias and sexual harassment are two such inequities. Despite the high prevalence of gender bias and sexual harassment, women in our study with these experiences had productivity similar to that of other female faculty, as assessed by numbers of publications.

The major limitation of our study is that it is cross-sectional and cannot follow the effects of harassment on faculty careers over time. We report associations of gender discrimination and sexual harassment with several outcomes, including peer-

Table 4. Experience and Perceived Effects of Harassment by Gender

Nature and Effects of Harassment	Adjusted Mean Value*		Difference between Adjusted Means (95% CI)†	P Value
	Women (n = 953)	Men (n = 1010)		
	%		percentage points	
Personally encountered any of the following				
Sexist remarks or behavior	48	1	47 (44 to 51)	<0.001
Unwanted sexual advances	27	3	25 (22 to 28)	<0.001
Subtle bribery to engage in sexual behavior	8	0	8 (6 to 10)	<0.001
Threats to engage in sexual behavior	2	1	1.5 (0.5 to 2.4)	0.002
Coercive advances	8	1	7 (5 to 9)	<0.001
Personally encountered any of the four most severe types of harassment listed above (items 2–5)	29	3	26 (23 to 29)	<0.001
Respondents reporting harassment‡	495	48		
Among respondents reporting harassment, the extent to which harassment affected the following§				
Professional confidence				
Little (1 or 2)	75	94	–19 (–32 to –5)	0.007
Much (4 or 5)	9	2	7 (–3 to 18)	0.152¶
Career advancement				
Little (1 or 2)	77	90	–13 (–26 to 0)	0.060
Much (4 or 5)	11	8	3 (–7 to 13)	0.573¶

* Adjusted for medical school, specialty, ethnicity/race (majority or minority), and years since first faculty appointment.

† Adjusted mean difference is defined as the value for women minus the value for men.

‡ Data given are the number of respondents.

§ Each question was scored on a Likert scale of 1 to 5 (1 = not at all, 5 = greatly).

|| P value compares scores of 1 or 2 with scores of 3 to 5.

¶ P value compares scores of 1 to 3 with scores of 4 or 5.

Table 5. Experience and Perception of Discrimination by Gender and Harassment Status*

Problem	Women (n = 953)		Adjusted P Value†	Men (n = 1010)		Adjusted P Value†
	Experienced Harassment (n = 495)	Have Not Experienced Harassment (n = 458)		Experienced Harassment (n = 48)	Have Not Experienced Harassment (n = 962)	
	n (%)			n (%)		
Respondents who perceived gender-specific bias in the academic environment‡	392 (80)	273 (61)	<0.001	12 (25)	233 (25)	>0.2
Respondents who personally experienced gender bias in professional advancement§	358 (73)	210 (47)	<0.001	13 (27)	80 (8)	<0.001
Respondents who personally experienced gender advantage in professional advancement§	166 (34)	99 (22)	<0.001	11 (23)	81 (9)	<0.001

* Each question was scored on a scale of 1 to 5. Responses of 3, 4, or 5 were counted as positive. Numbers and percentages are unadjusted.

† P values refer to differences within gender between those who reported having experienced harassment and those who did not have this experience.

‡ 1 = no, never; 5 = yes, frequently.

§ 1 = no, 2 = not to my knowledge, 3 = possibly, 4 = probably, 5 = yes.

reviewed publications, career satisfaction, and perception of career advancement. However, we have no way of determining cause and effect: that is, whether the perception of gender bias results in lower job satisfaction among faculty or lower job satisfaction increases the perception of gender bias. In addition, a cross-sectional study fails to capture the experience of “non-stayers,” most notably those who may have left academic medicine rather than continue in what they perceive to be an unwelcome environment. Our data are self-reported and may not accurately reflect the actual experience of faculty. However, because our questions were part of a larger survey of the total experience of academic faculty, response bias was probably less pronounced than in a more narrowly focused study.

We have limited data on the 40% of faculty who did not respond to the survey, and we have no way of measuring response bias. We examined only gender-based discrimination and harassment by superiors or colleagues and did not explore gender-based problems among students or patients (33, 34). Furthermore, we documented the frequency but not the “experience” of discrimination or harassment. Qualitative studies are needed to understand these phenomena and to guide the design of specific interventions. Finally, our data do not reflect only the current academic environment; the reported experiences of gender discrimination and sexual harassment could have occurred at any point in an academic career. However, among female faculty initially appointed in 1988 or later, roughly half reported discrimination or harassment in their professional careers.

Our study has many strengths. It examined medical faculty and used a national database to determine the prevalence of gender-based discrimination and sexual harassment among both male and female faculty in the full spectrum of medical school departments. Because our study was part of a larger

survey of the total academic experience of faculty, less response bias should have occurred than in more narrowly focused studies. We also addressed both subjective and objective career outcomes of gender bias and sexual harassment.

Because medical school faculty educate future physicians and provide care to patients, widespread and under-recognized gender bias and harassment have broad consequences. The high prevalence of perceived gender bias and sexual harassment among female faculty makes these issues of serious concern for leaders of academic medicine.

From Boston Medical Center, Boston University School of Medicine, Massachusetts General Hospital, and Harvard University, Boston, Massachusetts; and Murray Research Center, Radcliffe College, Cambridge, Massachusetts.

Acknowledgments: The authors thank Cheryl Caswell (The New England Research Institutes, Inc.) for assistance with the design of the survey instrument, the conduct of data collection, and the presentation of data for analysis. They also thank Amy Scaramucci (Boston University), Jeanne Speckman (Boston University), and Susan Regan (Massachusetts General Hospital) for assistance with data analysis.

Grant Support: In part by the Robert Wood Johnson Foundation (grant 19600).

Requests for Single Reprints: Phyllis L. Carr, MD, Women’s Health Associates, Blake 10, Massachusetts General Hospital, 32 Fruit Street, Boston, MA 02114.

Requests To Purchase Bulk Reprints (minimum, 100 copies): Barbara Hudson, Reprints Coordinator; phone, 215-351-2657; e-mail, bhudson@mail.acponline.org.

Current Author Addresses: Dr. Carr: Women’s Health Associates, Blake 10, Massachusetts General Hospital, 32 Fruit Street, Boston, MA 02114.

Dr. Ash: Health Care Research Unit, Boston University School of Medicine, 720 Harrison Avenue, Suite 1102, Boston, MA 02118.

Dr. Friedman: Boston University, 720 Harrison Avenue, Suite 1102, Boston, MA 02118.

Ms. Szalacha: Harvard Graduate School of Education, 367 Lovell Avenue, Newton, MA 02460-2149.

Dr. Barnett: Murray Research Center, 10 Garden Street, Cambridge, MA 02138.

Dr. Palepu: Room 620-B, Burrard Building, Centre for Evaluation and Outcome Sciences, St. Paul's Hospital, 1081 Burrard Street, Vancouver, British Columbia V6Z 1Y6, Canada.
Dr. Moskowitz: Section of General Internal Medicine, Boston University School of Medicine, 720 Harrison Avenue, Suite 1102, Boston, MA 02118.

References

1. Association of American Medical Colleges. U.S. Medical School Faculty: Faculty Roster System. Washington, DC: Assoc of American Medical Colleges; 1997.
2. Conley F. . . . And, ladies of the club [Editorial]. *JAMA*. 1992;267:740-1.
3. Conley F. Gender stereotyping and the medical profession: why women scientists must challenge the "old boy network." *Journal of College Science Teaching*. 1994;24:17-21.
4. Conley F. Toward a more perfect world—eliminating sexual discrimination in academic medicine [Editorial]. *N Engl J Med*. 1993;328:351-2.
5. Frank E, Brogan D, Schiffman M. Prevalence and correlates of harassment among U.S. women physicians. *Arch Intern Med*. 1998;158:352-8.
6. Schiffman M, Frank E. Harassment of women physicians. *J Am Med Womens Assoc*. 1995;50:207-11.
7. Lenhart S, Evans C. Sexual harassment and gender discrimination: a primer for women physicians. *J Am Med Womens Assoc*. 1991;46:77-80, 81-2.
8. Till F. Sexual Harassment: A Report on the Sexual Harassment of Students. Washington, DC: National Advisory Council on Women's Educational Programs; 1980.
9. Fitzgerald LF, Shullman SL, Bailey N, Richards M, Swecker J, Gold Y, et al. The incidence and dimensions of sexual harassment in academia and the workplace. *Journal of Vocational Behavior*. 1988;32:152-75.
10. McCann ND, McGinn TA. Harassed: 100 women define inappropriate behavior in the workplace. Homewood, IL: Business One Irwin; 1992.
11. A professional disgrace [Editorial]. *Lancet*. 1993;342:627-8.
12. Baldwin DC Jr, Daugherty SR, Eckenfels EJ. Student perceptions of mistreatment and harassment during medical school: a survey of ten United States schools. *West J Med*. 1991;155:140-5.
13. Wolf TM, Randall HM, von Almen K, Tynes LL. Perceived mistreatment and attitude change by graduation of medical students: a retrospective study. *Med Educ*. 1991;25:182-90.
14. Richman JA, Flaherty JA, Rospenda KM, Christensen ML. Mental health consequences and correlates of reported medical school abuse. *JAMA*. 1992;267:692-4.
15. Lubitz RM, Nguyen DD. Medical students abuse during third-year clerkships. *JAMA*. 1996;275:414-6.
16. Dresler CM, Padgett DL, MacKinnon SE, Patterson GA. Experience of women in cardiothoracic surgery. A gender comparison. *Arch Surg*. 1996;131:1128-34.
17. Capek L, Edwards DE, MacKinnon SE. Plastic surgeons: a gender comparison. *Plast Reconstr Surg*. 1997;99:289-99.
18. McGlynn EA. Physician Job Satisfaction: Its Measurement and Use as an Indicator of System Performance. Santa Monica, CA: RAND; 1989.
19. Equal Employment Opportunity Commission. Discrimination because of sex under Title VII of the Civil Rights Act of 1964, as amended: adoption of interim interpretive guidelines. *Fed Regist*. 1980;45:25024-5.
20. LaFontaine E, Tredeau L. The frequency, sources and correlates of sexual harassment among women in traditional male occupations. *Sex Roles*. 1986;15:433-42.
21. Maypole PE, Skaine R. Sexual harassment of blue-collar workers. *Journal of Sociology and Social Welfare*. 1982;9:682-95.
22. McGoldrick KE. Sexual harassment: unsettled topography. *J Am Med Womens Assoc*. 1992;47:4.
23. Sandler B. Sexual harassment: a new issue for institutions. *Journal of the National Association of Deans Administrative Counsel*. 1990;52:5-10.
24. Lillemoe KD, Ahrendt GM, Yeo CJ, Herlong HF, Cameron JL. Surgery—still an "old boys' club?" *Surgery*. 1994;116:255-9.
25. Riger S. Gender dilemmas in sexual harassment policies and procedures. *American Psychologist*. 1991;46:497-505.
26. Komaromy M, Bindman AB, Haber RJ, Sande MA. Sexual harassment in medical training. *N Engl J Med*. 1993;328:322-6.
27. Fitzgerald L, Ormerod A. Breaking silence: the sexual harassment of women in academia and the workplace. In: Denmark F, Paludi M, eds. *Psychology of Women: A Handbook of Issues and Theories*. Westport, CT: Greenwood Pr; 1993:553-81.
28. Hostler SL, Gressard RP. Perceptions of the gender fairness of the medical education environment. *J Am Med Womens Assoc*. 1993;48:51-4.
29. Satterfield AT, Muehlenhard CL. Shaken confidence: the effects of an authority figure's flirtatiousness on women's and men's self-rated creativity. *Psychology of Women Quarterly*. 1997;21:395-416.
30. Cole JR, Singer B. A theory of limited differences: explaining the productivity puzzle in science. In: Zuckerman H, Cole JR, Bruer RT, eds. *The Outer Circle: Women in the Scientific Community*. New York: WW Norton; 1991.
31. Padgitt SC, Padgitt JS. Cognitive structure of sexual harassment: implications for university policy. *Journal of College Student Personnel*. 1986;27:34-9.
32. Gilligan C. In a Different Voice: Psychological Theory and Women's Development. Cambridge, MA: Harvard Univ Pr; 1982.
33. Gordon GH, Labby D, Levinson W. Sex and the teacher-learner relationship in medicine. *J Gen Intern Med*. 1992;7:443-8.
34. Phillips SP, Schneider MS. Sexual harassment of female doctors by patients. *N Engl J Med*. 1993;329:1936-9.