ACADEMIC MEDICINE
Journal of the Association of American Medical Colleges

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DOI: 10.1097/ACM.0000000000002146

Academic Medicine

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Gender Differences in Academic Medicine: Retention, Rank, and Leadership Comparisons From the National Faculty Survey

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Supplemental digital content for this article is available at http://links.lww.com/ACADMED/A526.

Acknowledgments: The authors would like to thank Grace Yoon, BA, and Carolyn Luk, BA, Tufts Medical Center, for administrative work on the project; Subash Pathak, MS, Fred Hutchinson Cancer Research Center, for assistance with analyses; and Sharon Tennstedt, PhD, Heather Cochran, Julie Barenholtz, and Olga Dain, New England Research Institutes (NERI), for survey data collection.

Funding/Support: The project described was supported by Award Number R01 GM088470 from the National Institute of General Medical Sciences and Office of Research on Women's Health, National Institutes of Health (NIH).

Other disclosures: None of the funders were involved in the design of the study; the collection, analysis, and interpretation of the data; or the decision to approve publication of the finished manuscript.

Ethical approval: This study was approved by the institutional review boards (IRBs) of Boston University School of Medicine (Protocol # 1.769575) on 04/24/2009 through 04/01/2015 and Tufts Health Sciences Campus (IRB # 10372) on 05/15/2012 through 5/14/2015; Tufts IRB reviewed on behalf of Massachusetts General Hospital through the Master Common Reciprocal Agreement approved on 10/01/2013.

Previous presentations: June 7, 2016, NIH 25th Anniversary of the Office of Research on Women's Health, Bethesda, Maryland; and July 29, 2016, Medical Women's International Meeting, Vienna, Austria.

Abstract

Purpose: Prior studies have found that women in academic medicine do not advance or remain in their careers in parity with men. The authors examined a national cohort of faculty from the 1995 National Faculty Survey to identify predictors of advancement, retention, and leadership for women faculty.

Method: The authors followed 1,273 faculty at 24 medical schools in the continental United States for 17 years to identify predictors of advancement, retention, and leadership for women faculty. Schools were balanced for public or private status and the four Association of American Medical Colleges geographic regions. The authors used regression models to adjust for covariates: seniority, department, academic setting, and race/ethnicity.

Results: After adjusting for significant covariates women were less likely than men to achieve the rank of professor (OR = 0.57; 95% CI, 0.43–0.78) or to remain in academic careers (OR = 0.68; 95% CI, 0.49–0.94). When number of refereed publications were added to the model, differences by gender in retention and attainment of senior rank were no longer significant. Male faculty were more likely to hold senior leadership positions after adjusting for publications (OR = 0.49; 95% CI, 0.35–0.69).

Conclusions: Gender disparities in rank, retention, and leadership remain across the career trajectories of the faculty cohort in this study. Women were less likely to attain senior-level positions than men, even after adjusting for publication-related productivity. Institutions must examine the climate for women to ensure their academic capital is fully utilized and equal opportunity exists for leadership.

Research since the Kaplan study of a sample of academic pediatricians in the United States in 1996[1] has consistently revealed a lack of parity in advancement for women in academic medicine. In the following 20 years, there have been a number of studies confirming this result.[1–5] Most of these studies have been cross-sectional, retrospective, or limited to one institution. Prior work has not been able to assess long-term trajectories; and these reports do not allow for differing time frames for achieving advancement. Cross-sectional surveys also exclude those women and men who have left academia for other career options. In this National Institutes of Health (NIH)-funded study we analyzed advancement in rank and senior leadership positions as well as retention of faculty in academic medicine in a national cohort of faculty followed long-term from 1995 to 2012–13 to examine differences in career outcomes by gender.

Method

Sample

In 1995 we conducted the National Faculty Survey, in which we mailed a questionnaire to a representative sample of academic medical faculty in the continental United States.[6,7] We randomly selected 24 medical schools from medical schools at that time that had at least 200 faculty, of which 50 were women and 10 were minority faculty, so that we had adequate numbers of total faculty, women, and minority faculty for the study. The schools were balanced for public and private status and the four geographic areas of the Association of American Medical Colleges (AAMC) (Northeast, South, Midwest, and West). Within each school, six faculty were randomly sampled within each of 24 cells: three graduation cohorts (before 1970, 1970–1980, and after 1980), gender, and four areas of medical specialization (primary care, medical specialties, surgical specialties, and basic science). To have adequate numbers of senior women and underrepresented minority faculty (since many schools did not have sufficient

women or minority faculty for all cells), we sampled all women faculty who graduated before 1970 and all underrepresented minority faculty. The response rate was 60%, with 1,801 faculty returning the survey. All faculty were asked if they were willing to be contacted for future studies; 74% consented to participate in follow-up studies. Those consenting for follow-up surveys were similar in proportions to the original sample on key variables, including gender as well as race, specialty, and number of publications stratified by gender (Supplemental Digital Appendix 1, available at http://links.lww.com/ACADMED/A526).[6]

We conducted a follow up survey during the 2012–13 academic years. Using the name, prior institution, and academic interests from the 1995 survey, we conducted a web-based search to obtain the current location and contact information for the study subjects. Of the 1,335 faculty who agreed to be contacted, 60 had died, leaving 1,275 faculty. Two of the respondents did not provide their gender, leaving a sample of 1,273 faculty (Figure 1). Demographic characteristics of the sample are provided in Table 1. An email invitation was used to contact faculty where valid email addresses were identified. When no email address was available, we attempted to contact faculty by phone or mailing address. Subjects were invited to participate by completing a follow-up survey, either online or in a mailed version. To ensure matches between the original and follow-up surveys, faculty were again asked for gender, year of birth, and race/ethnicity. A comparison of the original 1995 cohort with the 2012–13 subset who agreed to be contacted revealed no major differences in response by gender (see Supplemental Digital Appendix 1, at http://links.lww.com/ACADMED/A526). A modest remuneration was provided to faculty who completed the survey. For those subjects who did not answer the survey, we reviewed publicly available websites to obtain information about their career, including the academic institution or other location where they were employed, their academic rank, and what leadership positions

they currently held. For example, we conducted a web engine search (Google) of their name, and reviewed the websites of all medical schools, other academic schools, and academic health centers identified in their affiliations listed on their publications. We searched the NIH Research Portfolio Online Reporting (RePORT) tools for federal funding in the prior two years.[8] The follow-up survey was conducted in the 2012–13 academic year. Institutional review board approval for the study was received from Boston University, Tufts Medical Center, and for Massachusetts General Hospital through a reliance agreement with Tufts Medical Center.

Data analysis

The outcomes of focus in this study were rank, retention, and senior leadership positions. These were determined from 2012–13 data (either from the survey itself or the publicly available data). We dichotomized academic rank as full professor versus all others. Retention in academic careers was defined as working in an academic, foundation, or government setting, or being retired from one of those settings. We categorized faculty who moved to private practice, industry, or another setting as not being retained in academic medicine. Two investigators (P.L.C., K.M.F.) coded all leadership positions into senior leadership positions (e.g., dean, associate dean, provost, and department chair) and other.

Gender was the independent variable of primary interest. Race from 1995 was dichotomized as white versus minority, medical specialization in 1995 was separated into four categories (generalist, medical specialist, surgical specialist, and basic science faculty). We also adjusted for seniority in 2012–13 (years since first appointment). Other covariates that we measured in 1995 that we included were percent effort distribution for administrative, research, clinical, and teaching activities. Marital status in 1995 was dichotomized as married/partnered versus all others. We dichotomized parental status in 1995 as having any children versus no children.

Retention in an academic setting in 2012–13 was utilized as a covariate in the rank and senior leadership models. We measured academic productivity by total number of refereed career publications in 1995 and was a covariate in the model 2 analysis (described below, and see Table 2).

Descriptive statistics were calculated for subject characteristics. To assess gender differences we calculated unadjusted differences and then developed logistic regression models to adjust for covariates. Race/ethnicity and gender were included in both models. Variables significant at $P < .10$ in bivariate analyses were retained if the association reached the $P < .05$ level in the backward selection process. For each outcome we developed two models. Model 1 allowed the backward selection process to choose from potential covariates (specialty, seniority, effort distribution, marital status, and parental status), excluding productivity in 1995. Model 2 included the Model 1 covariates and productivity. We used SAS statistical software, version 9.4 for all calculations (SAS Institute, Cary, NC).

Role of the funding source

The study was funded by the National Institute of General Medicine Sciences and the Office of Research on Women's Health, NIH Award number R01 GM088470. None of the funders were involved in the design of the study; the collection, analysis, and interpretation of the data; or the decision to approve publication of the finished manuscript.

Results

Of the 1,273 follow-up study participants, 607/1,273 (48%) responded to the survey (311/632 (49%) of females and 296/641 (46%) of males); 668 subjects, (321/632 (51%) females and 345/641 (54%) males) had follow-up information obtained from publicly available websites. Two participants did not provide their gender and were dropped from the analyses.

Rank

In unadjusted analysis, 312/632 (60%) combined female respondents achieved the rank of professor compared to 399/641 (71%) combined men ($P < .0001$) (Table 3). Multivariable regression analysis indicated that women remained significantly less likely than men to have achieved the rank of full professor by 2013 (OR = 0.57; 95% CI, 0.43 – 0.78) after adjusting for race, years since first academic appointment, department, and setting (Table 2). However, when the adjusted model additionally included academic productivity as a covariate, the association between gender and receipt of full professor rank was no longer significant (OR = 0.77; 95%, CI 0.56 – 1.08).

Retention

In univariate analysis women were less likely to remain in academic medicine compared to men, 485/632 (81%) vs. 524/641 (85%) ($P = .03$). The odds ratio for a woman to remain in academic medicine after adjusting for race and department was 0.68 (95% CI, 0.49 – 0.94) (Table 2). Adding productivity to the model changed the odds ratio for the association between female gender and retention to 0.86 (95% CI, 0.61 – 1.19), such that it was no longer significant.

Senior leadership role

In univariate analysis men were more likely to have a senior leadership role than women, 137/641 (21%) vs. 65/632 (10%) ($P < .0001$). In the logistic model that did not include productivity, the odds ratio of women achieving a senior leadership role compared to men was 0.44 (95% CI, 0.32 – 0.61) (Table 2). Adjusting for productivity, the odds ratio for women to achieve a senior leadership role was 0.49 (95% CI, 0.35 – 0.69), indicating that women continued to be less likely to have senior leadership positions, even after accounting for academic productivity.

Discussion

Our findings indicate that differences in rank, retention, and senior leadership of faculty by gender at representative U.S. medical schools continue. After 17 years of longitudinal follow up, women in our cohort were less likely to attain senior rank or to remain in academic fields than their male counterparts, with the productivity publication record an explanatory variable of this difference. Women were only half as likely to attain senior leadership roles in academic medicine as medical school deans, associate deans, provosts, and department chairs compared to men over the course of our follow up. The gender difference in senior leadership was not modified by inclusion of any of our covariates, including academic productivity.

The 2015 publication of Jena and colleagues also found a difference in senior academic rank by gender, but this was not explained by academic productivity.[9] Similarly in a 2017 publication looking at rank of academic cardiologists, the odds ratio of a woman being a full professor was 37% lower than that for a man.[10] One other single-institution study[11] addressed leadership attainment, but included chairs of institutional committees and national organization leadership, resulting in most women (56%) and men (70%) holding some leadership role. Our definition was restricted to chair, dean, associate dean and provost positions. Many fewer faculty hold these positions, and women were half as likely as men to achieve these leadership roles.

The differences we identified in rank and retention were not explained by race/ethnicity, department, years since first faculty appointment, effort distribution across research, administration, teaching and clinical care, or marital or parental status. However, upon adding academic productivity in 1995 to the models, the differences in rank and retention by gender were no longer significant. Some have suggested that publication record and productivity represent the causal pathway by which women do not advance in their careers. Women often

begin their careers with less institutional support in the forms of both internal grant funding and administrative assistance,[12] and they carry a greater burden of domestic responsibilities and need for caregiving leave such that, generally, they never catch up to their male colleagues.[13,14] Other studies[1–3] have suggested that the rank differences between men and women reflect differences in effort distribution or time use in their career, with women focusing more on teaching and clinical care rather than research in academic medicine. In our study, when we looked at models that accounted for this effort distribution, it did not reduce the gender gap, indicating that gender difference in time use alone does not account for the rank and retention differences. Earlier career publication record in 1995 was strongly associated with retention and rank, and accounted for the gender difference in rank and retention when added to the model. Early academic productivity appears to predict those who remain and advance in academic careers. Retention is a measure of two components—those who choose to leave academic medicine and those who are not permitted to remain because of tenure track policies, a distinction not available in our dataset. The prior explanation for the lack of women in leadership positions was the pipeline theory,[15,16] and that increasing numbers of women in academic medicine would lead to greater numbers of women in senior leadership positions. Our data indicate that this has not happened. We require a new paradigm to explain the lack of women in senior-level positions in academic medicine, one that recognizes that women may not be getting equal opportunity or support to attain these positions. These findings are not unique to academic medicine or the United States; gender inequities in leadership are seen across academic medicine internationally[17] and in business[18–20] and law.[21] The need to address the culture of advancement for women transcends academic medicine, suggesting that changes in the culture are needed to achieve the equitable career advancement of women across professional fields.

One theory for the persistent gender differences in professional advancement is that of perceptions of different leadership styles between men and women. Our prior work suggests that women are assumed to have a more collaborative and equalizing engagement style that would impede their capacity to serve as a leader within the more hierarchical structure of academic medicine.[22,23] Notably, more collaborative teams have been shown to be more productive, especially when they are more diverse,[24] but this has not translated into broadening the demographic profile of leadership in medicine. Addressing this difference would require a change in academic culture to appreciate different leadership styles and the benefits of a diverse leadership group. Studies of multilevel interventions to counteract pervasive stereotypes have shown gains in leadership self-efficacy for women participants, and these gains appear to have an enduring value in women's careers.[25,26] Tools to help women be successful are emerging and institutions need to provide these opportunities to level the playing field and increase the number of women in senior-level positions.

Even when women achieve leadership positions, data suggest that women may be more vulnerable and less likely to achieve sustained leadership success.[27] A study looking at U.S. medical school deanships found that women deans were at less research intensive medical schools and had shorter tenures than male deans.[27]

From our findings, it can be concluded that women will be more likely to be retained and to achieve senior rank if they are more academically productive, regardless of whether they pursue research, education, or clinical academic pursuits. Baseline publication was a predictor of subsequent retention and advancement. A number of strategies may address this gap. First, recent data suggest that women do not receive the same level of initial support for their academic careers, and that institutions must ensure equity of benefits including start-up packages.[28]

Mentorship is predictive of academic success, but was less commonly available to the women in our cohort in a publication of our 1995 data.[29] Changes in promotion criteria for educational and clinical scholarship may also help, with venues such as the AAMC's MedEd PORTAL for dissemination of educational scholarship and recognition of other academic products, including curricula.[30]

Our study has limitations: the response rate is not optimal, but we used a novel approach searching publicly available websites to garner career information including academic institution, rank, and leadership positions held. In addition, the self-reported data were consistent with the data we found online for the participants without gender differences. By using this online data we were able to have data for 98% of eligible participants. These sources may underrepresent a woman's achievements if she changed her surname. While we have a representative national sample of academic faculty, our data are not sourced from all institutions. Our faculty sample consisted of senior faculty who have been in academic medicine since 1995 or earlier, thus our sample did not include a later cohort of junior faculty. Our study has important strengths: a longitudinal lens allows us to find predictors of retention and senior leadership, which can provide insight for how to better mentor women in academic medicine. Our study follows a nationally representative cohort of medical faculty, while much of the literature is limited to one institution or a single specialty. The follow-up time is 17 years, which is much longer than most longitudinal studies and captured the longer-term impact of gender on the outcomes of rank, retention, and leadership in academic medicine.

This longitudinal study contributes to efforts to address the gender disparity in academic rank, faculty retention, and attainment of senior leadership roles in academic medicine. Mentorship and academic support for women early in their careers is critical to ensure that they achieve the

academic milestones towards advancement and retention. A new paradigm within academic medicine is necessary for women to attain senior leadership positions based upon their leadership skills and academic achievements. A culture change in academic medicine that recognizes and acts on this knowledge is needed for a more diverse and inclusive leadership that maximizes women's potential.

References

1. Kaplan SH, Sullivan LM, Dukes KA, Phillips CF, Kelch RP, Schaller JG. Sex differences in academic advancement: Results of a national study of pediatricians. N Engl J Med. 1996;335:1282–1289.

2. Clark RA. Promotion and retention of women physicians in academia. J La State Med Soc. 2008;160:289–291.

3. Tesch BJ, Wood HM, Helwig AL, Nattinger AB. Promotion of women physicians in academic medicine. Glass ceiling or sticky floor? JAMA. 1995;273:1022–1025.

4. Nonnemaker L. Women physicians in academic medicine: New insights from cohort studies. N Engl J Med. 2000;342:399–405.

5. Joliff L, Leadley J, Coakley E, Sloane RA. Women in U.S. Academic Medicine and Science: Statistics and Benchmarking Report 2011–2012. Association of American Medical Colleges. 2012. https://www.aamc.org/download/415556/data/2011-2012wimsstatsreport.pdf. Accessed January 12, 2018.

6. Carr PL, Ash AS, Friedman RH, et al. Faculty perceptions of gender discrimination and sexual harassment in academic medicine. Ann Intern Med. 2000;132:889–896.

7. Ash AS, Carr PL, Goldstein R, Friedman RH. Compensation and advancement of women in academic medicine: Is there equity? Ann Intern Med. 2004;141:205–212.

8. National Institute of Health. Research Portfolio Online Reporting Tools (RePORT). https://projectreporter.nih.gov/. Accessed January 12, 2018.

9. Jena AB, Khullar D, Ho O, Olenski AR, Blumenthal DM. Sex differences in academic rank in U.S. medical schools in 2014. JAMA. 2015;314:1149–1158.

10. Blumenthal DM, Olenski AR, Yeh RW, et al. Sex differences in faculty rank among academic cardiologists in the United States. Circulation. 2017;135:506–517.

11. Reed DA, Enders F, Lindor R, McClees M, Lindor KD. Gender differences in academic productivity and leadership appointments of physicians throughout academic careers. Acad Med. 2011;86:43–47.

12. Carr PL, Ash AS, Friedman RH, et al. Relation of family responsibilities and gender to the productivity and career satisfaction of medical faculty. Ann Intern Med. 1998;129:532–538.

13. Raj A, Carr PL, Kaplan SE, Terrin N, Breeze JL, Freund KM. Longitudinal analysis of gender differences in academic productivity among medical faculty across 24 medical schools in the United States. Acad Med. 2016;91:1074–1079.

14. Freund KM, Raj A, Kaplan SE, , et al. Inequities in academic compensation by gender: A follow-up to the National Faculty Survey cohort study. Acad Med. 2016;91:1068–1073.

15. Bickel J, Wara D, Atkinson BF, et al. Increasing women's leadership in academic medicine: Report of the AAMC Project Implementation Committee. Acad Med. 2002;77:1043–1061.

16. White JS. Pipeline to pathways: New directions for improving the status of women on campus. Liberal Educ. 2005;91:22–27.

17. Accelerating women's advancement and leadership in academic medicine. 2014. University of Oxford, Medical Sciences Division. https://www.medsci.ox.ac.uk/news/accelerating-women2019s-advancement-and-leadership-in-academic-medicine. Accessed January 12, 2018.

18. Helfat CE, Harris D, Wolfson PJ. The pipeline to the top: Women and men in the top executive ranks of U.S. corporations. Academy of Management Perspect. 2006;20:42–64.

19. Evans D. Room at the top: Advancement and equity for women in the business world. Natl Civ Rev. 2011;100:62–64.

20. Wellington S, Kropf MB, Gerkovich PR. What's holding women back? Harvard Business Review. 2003;81:18–19.

21. Rhode DL. The Unfinished Agenda. American Bar Association, Commission on Women in the Profession. 2016. http://Womenlaw.stanford.edu/pdf/aba.unfinished.agenda.pdf. Accessed July 10 2016.

22. Mayer AP, Files JA, Ko MG, Blair JE. Academic advancement of women in medicine: Do socialized gender differences have a role in mentoring? Mayo Clin Proc. 2008;83:204–207.

23. Carr PL, Pololi L, Knight S, Conrad P. Collaboration in academic medicine: Reflections on gender and advancement. Acad Med. 2009;84:1447–1453.

24. Morahan PS, Rosen SE, Richman RC, Gleason KA. The leadership continuum: A framework for organizational and individual assessment relative to the advancement of women physicians and scientists. J Womens Health (Larchmt). 2011;20:387–396.

25. Isaac C, Kaatz A, Lee B, Carnes M. An educational intervention designed to increase women's leadership self-efficacy. CBE Life Sci Educ. 2012;11:307–322.

26. Haslam SA, Ryan MK. The road to the glass cliff: Differences in the perceived suitability of men and women for leadership positions in succeeding and failing organizations. Leadersh Q. 2008;19:530–546.

27. White FS, McDade S, Yamagata H, Morahan PS. Gender-related differences in the pathway to and characteristics of U.S. medical school deanships. Acad Med. 2012;87:1015–1023.

28. Sege R, Nykiel-Bub L, Selk S. Sex differences in institutional support for junior biomedical researchers. JAMA. 2015;314:1175–1177.

29. Palepu A, Friedman RH, Barnett RC, et al. Junior faculty members' mentoring relationships and their professional development in U.S. medical schools. Acad Med. 1998;73:318–323.

30. Crites GE, Gaines JK, Cottrell S, et al. Medical education scholarship: An introductory guide. AMEE Guide No. 89. Med Teach. 2014;36:657–674.

Figure Legend

Figure 1

Follow-up faculty study cohort: National Faculty Survey longitudinal follow-up study of the effects of gender on retention, rank, and leadership positions in academic medicine, 2012–2013.

Table 1

Demographic Characteristics of Men and Women Faculty: National Faculty Survey Longitudinal Follow-Up Study of the Effects of Gender on Retention, Rank, and Leadership Positions in Academic Medicine, 2012–2013

Characteristics	Men (of 641 respondents)		Women (of 632 respondents)		*P* value
	Total no. who answered	Those who answered "yes"	Total no. who answered	Those who answered "yes"	
Race, no. (%)					
White	639	499 (78.1)	631	520 (82.4)	.0533
Department, no. (%)					
Basic sciences	613	147 (24.0)	605	134 (22.1)	.1396
Generalists	613	156 (25.4)	605	176 (29.1)	
Medical specialty	612	188 (30.7)	605	200 (33.1)	
Surgical specialty	613	122 (19.9)	605	95 (15.7)	
Number of years since initial academic appointment, mean (SD)	633	29.4 (9.2)	616	28.3 (8.6)	.0196
Currently in academic setting, no. (%)[a]	614	445 (72.5)	601	418 (69.6)	.2612
Marital status in 1995, no. (%)					
Married or partnered	635	557 (87.7)	626	460 (73.5)	<.0001
Parental status in 1995, no. (%)					
1 or more children	637	534 (83.8)	628	432 (68.8)	<.0001
% Effort distribution in 1995, mean (SD)					
Administrative	637	18.6 (18.0)	628	18.8 (17.6)	.8307
Research	637	30.4 (29.9)	629	28.7 (29.3)	.3290
Clinical	639	31.9 (28.9)	631	31.5 (28.7)	.7966
Teaching	638	19.1 (13.4)	630	21.0 (15.0)	.0166

Number of refereed articles in 1995, mean (SD)	602	33.5 (37.6)	604	22.2 (31.6)	<.0001

Abbreviation: SD indicates standard deviation.

[a] "Currently in an academic setting" includes government and foundation as well as medical school settings.

Table 2

Unadjusted and Adjusted Models: National Faculty Survey Longitudinal Follow-Up Study of the Effects of Gender on Retention, Rank, and Leadership Positions in Academic Medicine, 2012–2013

Outcomes	No. respondents	Unadjusted model: odds ratio (95% CI)	Model 1: odds ratio (95% CI)[a]	Model 2: odds ratio (95%CI)[b]
Rank	998	0.59 (0.46, 0.77)	0.57 (0.43, 0.78)	0.77 (0.56, 1.08)
Retention	1,138	0.72 (0.53, 0.97)	0.68 (0.49, 0.94)	0.86 (0.61, 1.19)
Senior leadership	1,201	0.42 (0.31, 0.58)	0.44 (0.32, 0.61)	0.49 (0.35, 0.69)

Abbreviation: CI indicates confidence interval.

[a]Model 1: All models included gender and were adjusted for race (white vs. minority). Additionally, candidate variables included in the backward selection process were: specialty (generalists, medical specialists, surgical specialists, and basic scientist faculty), seniority (years since first faculty appointment), effort distribution, marital status, and parental status. The covariates retained were: Rank – race, specialty, and seniority; retention – race and specialty; senior leadership position – race.

[b]Model 2: The number of refereed publications in 1995 was added to Model 1.

Table 3

Univariate Outcomes of Men and Women Faculty: National Faculty Survey Longitudinal Follow-Up Study of the Effects of Gender on Retention, Rank, and Leadership Positions in Academic Medicine, 2012–13

Univariate outcomes	Value	No. (%) men (of 641 respondents)	No. (%) women (of 632 respondents)	*P* value
Rank	Professor	398/557 (71.5)	312/522 (59.8)	<.0001
Senior leadership	Senior role	137/640 (21.4)	65/631 (10.3)	<.0001
Retention	Retained	524/614 (85.3)	485/601 (80.7)	.03

Figure 1