

Gender Disparities in Academic Practice

Jennifer F. Waljee, M.D.,
M.S.

Kate Wan-Chu Chang, M.A.

H. Myra Kim, Sc.D.

Margaret R. Gyetko, M.D.

Elisabeth H. Quint, M.D.

Nicholas W. Lukacs, M.D.

James O. Woolliscroft, M.D.

Kevin C. Chung, M.D., M.S.

Ann Arbor, Mich.

Background: In academia, women remain underrepresented. The authors' sought to examine differences in faculty position and professional satisfaction among academic physicians by gender.

Methods: From 2008 to 2012, academic faculty members at a single institution were surveyed (2008, $n = 737$; 2010, $n = 1151$; and 2012, $n = 971$) regarding current position, choice of position, professional satisfaction, and desire for leaving. Logistic regression was performed to compare aspects of professional satisfaction by gender.

Results: Men more often held tenure track positions compared with women (2008, 45 percent versus 20 percent; 2010, 47 percent versus 20 percent; and 2012, 49 percent versus 20 percent; $p < 0.001$). Women were more likely to engage in only clinical activities compared with men (2008, 31 percent versus 18 percent; 2010, 28 percent versus 14 percent; and 2012, 33 percent versus 13 percent; $p < 0.001$) and less likely to participate in research. Women chose tracks to accommodate work-life balance [2008, OR, 1.9 (95 percent CI, 1.29 to 2.76); 2010, OR, 2.0 (95 percent CI, 1.38 to 2.76); and 2012, OR, 2.1 (95 percent CI, 1.40 to 3.00)], rather than the opportunity of tenure [2008, OR, 0.4 (95 percent CI, 0.23 to 0.75); 2010, OR, 0.5 (95 percent CI, 0.35 to 0.85); and 2012, OR, 0.5 (95 percent CI, 0.29 to 0.76) compared with men. Men reported higher professional satisfaction compared with women (2008, 5.7 versus 5.4, $p < 0.009$; 2012, 5.3 versus 5.0, $p < 0.03$). Men were more likely to leave because of leadership opportunities (14.4 percent versus 9.2 percent, $p < 0.03$) and compensation (14.2 percent versus 9.2 percent, $p < 0.03$) compared with women.

Conclusions: Women report lower levels of professional satisfaction in academic practice compared with men. Given the increasing pressures of academic practice, efforts to align work-life balance and professional goals could potentially improve faculty satisfaction and retention. (*Plast. Reconstr. Surg.* 136: 380e, 2015.)

Young physicians are often dissuaded from entering academic practice because of educational debt, prolonged training, early financial disincentives, and tension between research and clinical responsibilities.¹⁻⁴ Furthermore, faculty attrition remains high, and particularly affects junior and female faculty.^{5,6} Dissatisfaction with aspects of both the academic and clinical environment is correlated with a desire to leave academic practice for community-based or private practice.^{7,8}

Therefore, identifying the causes of faculty dissatisfaction is essential to improve faculty retention and enhance gender diversity.

Women constitute approximately half of matriculating medical students each year. Although women enter academic practice more frequently than men, female faculty have significantly higher attrition rates.^{6,9,10} Women remain underrepresented in leadership positions, less likely to achieve promotion, and more likely to leave academic medicine.¹¹⁻¹³ Previous studies indicate that a lack of mentorship, unfavorable work culture, and barriers to research contribute to dissatisfaction. However, few studies have directly contrasted the factors that drive differences in job satisfaction among male and female academic physicians.¹⁴⁻¹⁶

From the Section of Plastic Surgery, Department of Surgery, the Brachial Plexus Program, the Departments of Neurosurgery, Internal Medicine, Obstetrics and Gynecology, and Pathology, University of Michigan Health System, and the Center for Statistical Consultation and Research, University of Michigan.

Received for publication October 6, 2014; accepted February 10, 2015.

Copyright © 2015 by the American Society of Plastic Surgeons

DOI: 10.1097/PRS.0000000000001530

Disclosure: *The authors have no financial interest to declare in relation to the content of this article.*

For an academic department, faculty attrition is expensive, and the average annual cost associated with faculty turnover is approximately \$400,000. Furthermore, these expenditures can compound in excess of \$45 million over 5 years across an entire medical center.^{17,18} In addition to financial concerns, the loss of gender diversity among faculty can weaken collaborative clinical and research efforts in women's health. Most importantly, the lack of female faculty results in a dearth of successful female mentors and role models to encourage female medical students and residents to enter academic practice, further propagating gender inequities. Therefore, the specific aims of this study are to identify and contrast by gender (1) the decision and factors influencing the choice for type of academic faculty position, (2) professional satisfaction, and (3) reasons for leaving academic practice.

METHODS

Study Sample

All active faculty members at the University of Michigan Medical School were surveyed anonymously using a Web-based survey during 2008, 2010, and 2012. Faculty members completed a 48-item survey regarding aspects of their current academic faculty position, professional satisfaction, and their decision to leave or remain in academic practice. We excluded faculty members who had achieved emeritus status or with adjunct/visiting faculty positions. All aspects of this study were approved by the Institutional Review Board at the University of Michigan.

Variables

We examined specific aspects of faculty positions, including rank, effort spent toward research and clinical endeavors, and appointment type. Faculty rank was categorized as assistant professor, associate professor, full professor, or other (instructor/lecturer). Activity involved included primarily clinical work, primarily research, and clinical and research evenly distributed. Faculty appointment type included the instructional, clinical, research track positions, or other (lecturer/clinical lecturer). Instructional track faculty were those faculty members who are appointed with the expectation of pursuing scholarly research, teaching, organizational service, and health care as pertaining to their professional field. Instructional track faculty are promoted primarily based on their achievements in scholarship, specifically

with respect to research publications and external funding. Faculty appointed to the research track are primarily involved in scientific investigation over clinical activity, and promotion is based on achievements in mentoring, publications, external funding, and national reputation. Faculty members appointed to the clinical track are primarily responsible for patient care and trainee mentoring. Promotion is based primarily on accomplishments in clinical care and teaching, although scholarly activity and organizational service are expected as well.

Faculty were asked their reasons for choosing their track with the following yes/no options: track best suited my career decision, track was suggested by leadership, track offered the best option for work/life balance, track offered the opportunity for tenure, track did not include the pressure of tenure, not given a choice, and other. Faculty were asked to rate their overall professional satisfaction on a scale of 1 (low) to 7 (high). In addition, faculty were asked to rate their satisfaction with academic practice ("If I had to do it all over again, I would choose a career in academics") on a scale of 1 (low) to 7 (high), and their likelihood to leave the institution ("I am likely to look for appointments at other institutions in the coming 12 months") on a scale of 1 (very likely) to 7 (very unlikely). Finally, faculty were asked to describe their reasons for leaving their position with the following yes/no options: leadership opportunities elsewhere, compensation, dissatisfaction with the institution or environment, personal reasons (e.g., spouse/partner seeking alternate employment), leaving academic medicine, and other.

In our analyses, we controlled for self-reported clinical specialty (medical, surgical, or hospital-based). Medical fields included dermatology, neurology, physical medicine and rehabilitation, psychiatry, emergency medicine, radiation oncology, family medicine, internal medicine, pediatrics, and communicable diseases. Surgical fields included neurosurgery, obstetrics and gynecology, ophthalmology, orthopedic surgery, general surgery, and urology. Hospital-based specialties included anesthesiology, pathology, and radiology. Finally, we controlled for ethnicity, which was categorized as "white" and "nonwhite." Nonwhite ethnic groups consist of Arab, Asian, black/African American, Hispanic/Latino, and multiple ethnic groups.

Statistical Analysis

Identifiers were not linked across years to protect respondent privacy, and each year of survey administration was considered as a single,

cross-sectional point in time, rather than cumulative or longitudinal data. Descriptive statistics were generated for the study sample. Chi-square analysis was used to determine demographic differences by gender. Logistic regression models were used to determine the effects of various aspects of job satisfaction on each self-report reason for choosing track. We also compared mean satisfaction scores between genders using the *t* test and reasons for leaving position using the chi-square test. The significance level was set at $p < 0.05$. Stata 11.2 (StataCorp LP, College Station, Texas) and SPSS PASW Statistics 17.0.3 (SPSS, Inc., Chicago, Ill.) were used for analyses.

RESULTS

A total of 3003 faculty with appointments as assistant, associate, or full professors were included in the study, and an average of 1351 faculty members (45 percent) responded to the survey over the 3 years of survey administration. Table 1 illustrates the characteristics of the study sample. In each year, male faculty were more likely to be appointed to instructional track positions compared with female faculty (2008, 45 percent versus 20 percent; 2010, 47 percent versus 20

percent; and 2012, 49 percent versus 20 percent; $p < 0.001$), who were more likely to be appointed to clinical track positions. Female faculty were significantly more likely to be of lower faculty rank compared with male faculty during each year of the study. For example, in 2008, 49 percent of female faculty were at the assistant professor level, and only 9 percent had achieved a rank of full professor, compared with 32 percent of male faculty at the assistant professor level and 32 percent who had achieved a rank of full professor ($p < 0.001$). These gaps diminished slightly by 2012 but remained significantly different (assistant professor, 29 percent male versus 42 percent female faculty; full professor, 37 percent male versus 12 percent female faculty; $p < 0.001$). Female faculty were significantly more likely to report that they were engaged in clinical work only during each year compared with male faculty (2008, 31 percent female versus 18 percent male faculty; 2010, 28 percent female versus 14 percent male faculty; and 2012, 33 percent female versus 13 percent male faculty; $p < 0.001$) and less likely to report that they participated in both clinical and research activities. There were no significant differences by specialty or ethnicity between male and female faculty members.

Table 1. Characteristics of Faculty at the University of Michigan Medical School from 2008 to 2012

Characteristic	2008 (n = 737)		2010 (n = 1151)		2012 (n = 971)		p*
	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)	
Track†							
Instructional	207 (45.0)	53 (20.0)	227 (47.2)	65 (20.3)	204 (48.6)	58 (20.3)	<0.0001
Clinical	220 (47.8)	179 (67.6)	218 (45.3)	214 (66.9)	200 (47.6)	202 (70.6)	
Other	33 (7.2)	33 (12.5)	36 (7.5)	41 (12.8)	16 (3.8)	26 (9.1)	
Rank‡							
Assistant professor	149 (32.4)	129 (48.7)	157 (32.9)	143 (45.3)	121 (28.8)	118 (41.7)	<0.0001
Associate professor	100 (21.7)	39 (14.7)	101 (21.1)	47 (14.9)	89 (21.2)	46 (16.3)	
Full professor	145 (31.5)	25 (9.4)	153 (32.0)	39 (12.3)	154 (36.7)	35 (12.4)	
Other	66 (14.4)	72 (27.2)	67 (14.0)	87 (27.5)	56 (13.3)	84 (29.68)	
Activities involved§							
Clinical only	81 (18.0)	83 (31.1)	68 (14.2)	87 (27.5)	54 (12.9)	93 (32.9)	<0.0001
Clinical and research	377 (82.0)	182 (68.7)	410 (85.8)	229 (72.5)	366 (87.1)	190 (67.1)	
Specialty¶							
Medical	127 (27.6)	72 (27.2)	121 (25.3)	96 (30.4)	107 (25.5)	73 (25.9)	0.89
Surgical	126 (27.4)	69 (26.0)	127 (26.6)	84 (26.6)	119 (28.4)	66 (23.4)	
Hospital-based/other	207 (45.0)	124 (46.8)	230 (48.1)	136 (43.0)	193 (46.1)	143 (50.7)	
Ethnicity							
White	359 (80.1)	197 (78.0)	361 (75.5)	229 (72.5)	315 (75.0)	224 (79.2)	0.67
Nonwhite¶¶	89 (19.9)	53 (21.2)	117 (24.5)	87 (27.5)	105 (25.0)	59 (20.9)	

* $p < 0.0001$, χ^2 analysis of independence was performed to test differences between proportions in the instructional and clinical track.

†Track includes faculty appointment as instructional, clinical only, research only, and other (lecturer/clinical lecturer). Numbers do not add up because some faculty did not report their track or rank.

‡Rank includes full professor, assistant professor, associate professor, and other (instructor/lecturer).

§Activities involved include those who were involved in clinical work only, research only, and both clinical and research works.

¶Medical includes dermatology, neurology, physical medicine and rehabilitation, psychiatry, emergency medicine, radiation oncology, family medicine, internal medicine, pediatrics, and communicable diseases. Surgical includes neurosurgery, obstetrics and gynecology, ophthalmology, orthopedic surgery, general surgery, and urology. Hospital-based includes anesthesiology, pathology, and radiology.

¶¶Nonwhite ethnic groups consist of Arab, Asian, black/African American, Hispanic/Latino, and multiple ethnic groups.

Table 2 describes the reasons cited by faculty for choosing their professional track [i.e., instructional (tenure) or clinical (nontenure)], stratified by gender. Female faculty were less likely compared with male faculty to report that they chose their track because of its alignment with their professional goals [2008, OR, 0.52 (95 percent CI, 0.36 to 0.78); 2010, OR, 0.57 (95 percent CI, 0.40 to 0.83); and 2012, OR, 0.86 (95 percent CI, 0.60 to 1.22)]. Female faculty were more likely to choose their track to accommodate work-life balance compared with male faculty [2008, OR, 1.89 (95 percent CI, 1.29 to 2.76); 2010, OR, 1.95 (95 percent CI, 1.38 to 2.76); and 2012, OR, 2.05 (95 percent CI, 1.40 to 3.00)]. In addition, female faculty were less likely to choose their track for the opportunity of tenure [2008, OR, 0.42 (95 percent CI, 0.23 to 0.75); 2010, OR, 0.54 (95 percent CI, 0.35 to 0.85); and 2012, OR, 0.47 (95 percent CI, 0.29 to 0.76)], and were more likely to choose

their track to avoid the pressure of achieving tenure [2010, OR, 1.56 (95 percent CI, 1.04 to 2.43); and 2012, OR, 1.57 (95 percent CI, 1.02 to 2.43)] compared with male faculty

Figure 1 illustrates overall professional satisfaction across each study year, stratified by gender. Overall, male faculty reported slightly higher professional satisfaction scores across each year, which were significantly different compared with female faculty in 2008 (5.7 versus 5.4, $p < 0.009$) and 2012 (5.3 versus 5.0, $p < 0.03$).

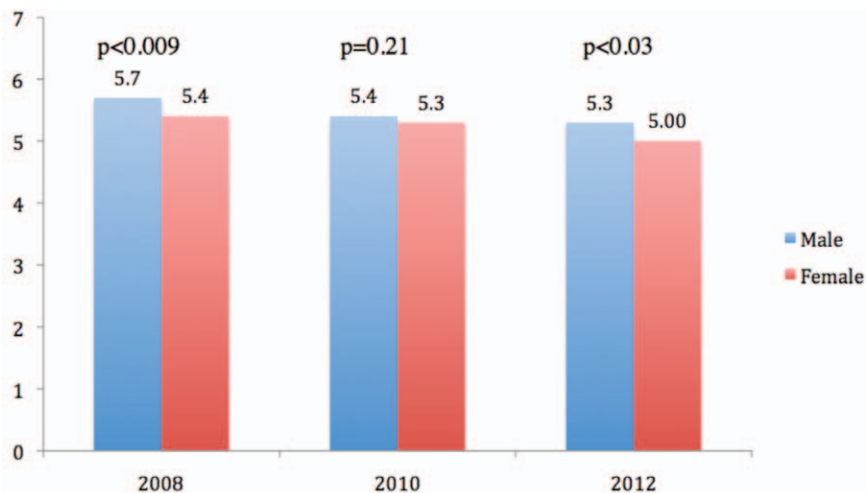
In our sample, there were no significant differences between men and women with respect to their likelihood of leaving the institution over the subsequent upcoming 12 months. However, there were significant differences in the reasons faculty cited for leaving, by gender (Fig. 2). For example, in 2010, male faculty were more likely to cite leaving for leadership positions elsewhere (14.4 percent versus 9.2 percent, $p < 0.03$) and

Table 2. Self-Reported Factors Influencing Choice of Professional Track*†

	2008			2010			2012		
	OR	95% CI	<i>p</i>	OR	95% CI	<i>p</i>	OR	95% CI	<i>p</i>
Best suited my professional goals	0.52	0.36–0.78	0.001	0.57	0.40–0.83	0.03	0.86	0.60–1.22	0.39
Suggested by leadership	0.88	0.62–1.28	0.53	0.73	0.53–1.0	0.05	0.90	0.63–1.27	0.54
Best for work-life balance	1.89	1.29–2.76	0.001	1.95	1.38–2.76	0.001	2.05	1.40–3.00	0.001
Opportunity for tenure	0.42	0.23–0.75	0.003	0.54	0.35–0.85	0.008	0.47	0.29–0.76	0.002
Did not want pressure of tenure track	1.39	0.87–2.25	0.17	1.56	1.04–2.43	0.03	1.57	1.02–2.43	0.04

*Reference group is male faculty members.

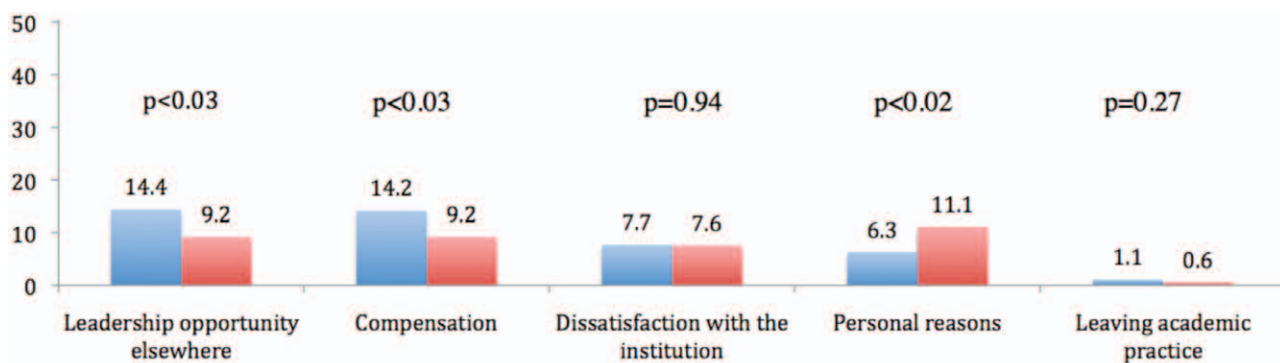
†Adjusted for ethnicity, rank, and specialty.



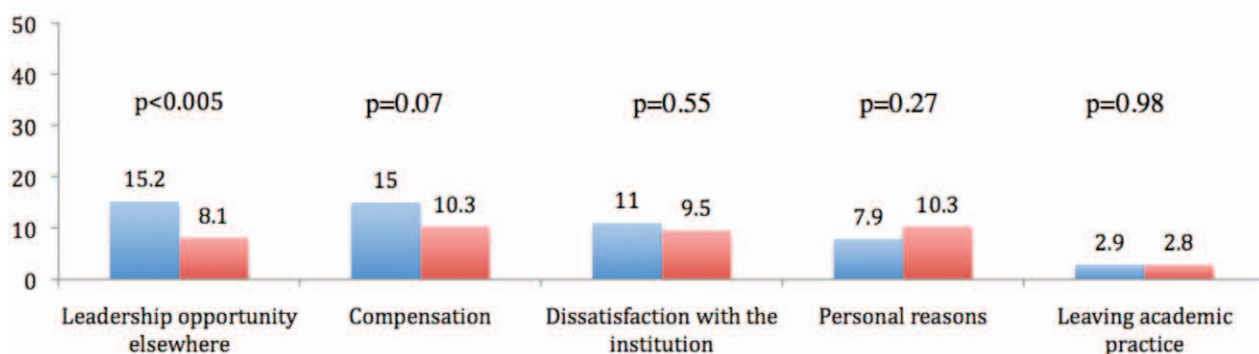
* adjusted for rank, specialty, ethnicity, and track;

Student's t-test was conducted for gender comparisons in each individual year.

Fig. 1. Overall professional satisfaction across each study year stratified by gender.



* Chi-square test was conducted for gender comparisons



* Chi-square test was conducted for gender comparisons

■ Male ■ Female

Fig. 2. Reasons for leaving academic medicine by gender in 2010 (above) and 2012 (below).

because of compensation (14.2 percent versus 9.2 percent, $p < 0.03$) compared with female faculty. Female faculty were more likely to cite leaving for personal reasons (e.g., spouse/partner job relocation) compared with male faculty (11.1 percent versus 6.3 percent, $p < 0.02$). In 2012, the only significant differences by gender remained leadership opportunities elsewhere, which were more likely among male faculty (15.2 percent versus 8.1 percent, $p < 0.005$).

DISCUSSION

In this study of medical school faculty at a large public institution, female faculty were less likely to hold tenure-track positions or fully tenured positions, compared with male faculty. In addition, female faculty reported lower levels of professional satisfaction, and were more likely to choose their positions because of work-life balance and avoiding the pressure of achieving tenure compared with male faculty. Although male and female faculty did not differ in their likelihood of leaving their position, male faculty were more likely to leave because of leadership

positions elsewhere and compensation compared with female faculty, who were more likely to leave because of personal commitments.

Previous research indicates that women are underrepresented in academic medicine and systematically disadvantaged.^{11-14,19} Common barriers to success in academic practice cited by female faculty include a lack of appropriate mentorship and poor work-life balance.^{15,20} Female physicians also cite poor departmental leadership, low compensation compared with other colleagues, and difficulty in professional advancement as important sources of dissatisfaction.¹⁶ These obstacles likely contribute to the observed differences between men and women with respect to academic position and promotion.^{6,9,15,21} Although the reasons for these persistent barriers are not entirely clear, cultural norms for men and women, such as negotiation and communication styles, may contribute to observed differences in success. For example, previous research suggests that men are more likely to use direct tactics for negotiation (e.g., direct inquiry), whereas women rely on indirect tactics (e.g., demonstrating skills).²² In addition,

differences in family-related responsibilities and expectations by gender may further contribute to difficulty with work-life balance and professional satisfaction. Although these demands are common for women in many professions, such as business, law, and corporate management, work-life conflicts are directly correlated with physician burnout and depression, and are more commonly reported among female physicians compared with male physicians.^{23,24}

This study has several notable limitations. First, our survey was conducted at a single institution. Our observations may not be applicable to faculty at other institutions with a different infrastructure or practice model, and our study may only reflect issues and cultural differences unique to our institution. Although the survey structure was anonymous without linked identifiers, faculty may be reluctant to describe dissatisfaction and desire to leave, and approximately 53 percent of faculty who were surveyed did not respond. Even though the nonresponder percentage was comparable with previously published physician survey response rates, our results may be subject to responder bias that was not captured in our analysis.^{25–28} Although we do not have information regarding the characteristics of nonresponders, the distribution of gender across faculty specialty, rank, track, and ethnicity are similar to publically available distributions at our institution. Furthermore, surveys were administered anonymously during 2008, 2010, and 2012 to maximize candid responses regarding professional satisfaction. Therefore, each year can only be considered as a single, cross-sectional point in time, and responses cannot be analyzed cumulatively. Finally, this survey did not specifically examine the proportion of faculty who sought and achieved promotion, or failed to achieve promotion, and the criteria correlated with success, such as academic and clinical productivity. Future longitudinal, comparative studies between male and female faculty may better illuminate the barriers for women to achieve promotion and success in academia.

Nonetheless, our findings highlight several aspects of academic medicine that could improve faculty satisfaction and, ultimately, retention. Clinical demands on faculty members have risen sharply with the inception of resident work-hour regulations, and many academic physicians report a decline in research productivity because of diminished clinical support for patient care.²⁹ In addition, over the past decade, financial support for research has become increasingly competitive for dwindling resources, and there is increased

pressure on physicians to generate revenue for their salary through patient care.^{30,31} Regulations on resident work hours have resulted in a greater clinical burden on academic faculty.²⁹ Despite the intellectual rewards of entering academic practice, these constant pressures accumulate, and over 30 percent of practicing surgeons describe feeling emotional exhaustion, and work-life balance remains elusive.^{32,33} Currently, the majority of academic faculty members work approximately 80 or more hours per week.^{34,35} Although there are no accepted criteria for a “part-time” commitment, some centers have developed part-time tenure track positions with success. Part-time faculty have been shown to provide higher quality of care, greater patient satisfaction, more effective resource use, and greater academic productivity.^{36–38} Increasing resources for family care can also ease the burdens of domestic responsibility on academic physicians.^{20,39} For example, greater access to on-site child care, equitable parental leave policies, and streamlined administrative duties to weekday working hours can allow faculty the ability to meet their professional and personal responsibilities effectively. Finally, using physician extenders can also improve academic and clinical productivity. These strategies could reduce clinical workloads and increase clinical support, possibly leading to improved satisfaction and work-life balance.

In addition to addressing work-life balance, optimizing departmental leadership can potentially improve faculty satisfaction and retention. Faculty who struggle to maintain success professionally and personally frequently look to their department leaders for mentorship and support. Although the culture in academic medicine is often described by physicians as individualistic, competitive, and hierarchical, specific initiatives can change these perceptions.^{40–42} For example, the University of Toronto implemented the Career Development and Compensation Program in 1995 to outline job expectations, enhance career development, and provide a regular peer-review process for performance evaluation. Under this model, male and female faculty advanced at similar rates.⁴ In addition to clearly defining expectations, administrative leadership should have candid and constructive communication with their faculty. At the University of Virginia, a supervisory dialogue program was initiated in 2001 to provide a defined structure for faculty evaluations. Following the implementation of this program, faculty reported increased morale, a clearer vision of their personal and the institution’s goals,

and an improved alliance between section leaders and faculty.⁴³

Finally, strong mentorship is correlated with academic productivity and retention in academic practice.⁴⁴⁻⁴⁶ Formal mentorship programs have been shown to be successful in promoting diversity and retaining academic faculty. For example, in 1998, the Office of Women's Health of the U.S. Department of Health and Human Services implemented the National Centers of Leadership in Academic Medicine, designed to foster knowledge, skills, and resources for junior faculty through a structured mentoring program.⁴⁷ Following implementation, the retention of junior faculty at selected institutions increased from 58 percent to 80 percent, and retention in academia increased from 75 percent to 90 percent.⁴⁸ Although this program is directed largely toward maintaining racial and ethnic diversity among faculty, similar efforts could be successful if applied toward gender disparities.

Faculty attrition rates may differ by gender, yet all faculty have similar job desires and priorities, and identifying common criticisms among all faculty can direct resources to optimize faculty satisfaction and productivity. Strategies such as part-time tenure track positions and development programs can potentially ease the transition for graduating physicians and improve faculty retention. Ultimately, these efforts can maintain a diverse and motivated faculty that will effectively train rising physicians, provide empathic patient care, and advance knowledge through innovative medical research.

Jennifer F. Waljee, M.D., M.S.

Section of Plastic Surgery
University of Michigan Health System
2130 Taubman Center, SPC 5340
1500 East Medical Center Drive
Ann Arbor, Mich. 48109-5340
filip@med.umich.edu

ACKNOWLEDGMENTS

This study was supported by a Midcareer Investigator Award in Patient-Oriented Research (2K24 AR053120-06) (to K.C.C.) from the National Institute of Arthritis and Musculoskeletal and Skin Diseases, and a Mentored Clinical Investigator Award (1K08HS023313-01) (to J.W.).

REFERENCES

- Cain JM, Schulkin J, Parisi V, Power ML, Holzman GB, Williams S. Effects of perceptions and mentorship on pursuing a career in academic medicine in obstetrics and gynecology. *Acad Med.* 2001;76:628-634.
- Borges NJ, Navarro AM, Grover A, Hoban JD. How, when, and why do physicians choose careers in academic medicine? A literature review. *Acad Med.* 2010;85:680-686.
- Kelly AM, Cronin P, Dunnick NR. Junior faculty satisfaction in a large academic radiology department. *Acad Radiol.* 2007;14:445-454.
- Reck SJ, Stratman EJ, Vogel C, Mukesh BN. Assessment of residents' loss of interest in academic careers and identification of correctable factors. *Arch Dermatol.* 2006;142:855-858.
- Bickel J, Brown AJ. Generation X: Implications for faculty recruitment and development in academic health centers. *Acad Med.* 2005;80:205-210.
- Alexander H, Lang J. The long-term retention and attrition of U.S. medical school faculty. In: *Analysis in Brief*. Vol. 8. Washington, DC: American Association of Medical Colleges; 2008:1-3.
- Bell DJ, Bringman J, Bush A, Phillips OP. Job satisfaction among obstetrician-gynecologists: A comparison between private practice physicians and academic physicians. *Am J Obstet Gynecol.* 2006;195:1474-1478.
- Chung KC. Revitalizing the training of clinical scientists in surgery. *Plast Reconstr Surg.* 2007;120:2066-2072; discussion 2073.
- Magrane D. The changing representation of men and women in academic medicine. In: *Analysis in Brief*. Vol. 5. Washington, DC: American Association of Medical Colleges; 2005:1-2.
- Nonnemaker L. Women physicians in academic medicine: New insights from cohort studies. *N Engl J Med.* 2000;342:399-405.
- Wyrzykowski AD, Han E, Pettitt BJ, Styblo TM, Rozycki GS. A profile of female academic surgeons: Training, credentials, and academic success. *Am Surg.* 2006;72:1153-1157; discussion 1158.
- Kalet AL, Fletcher KE, Ferdman DJ, Bickell NA. Defining, navigating, and negotiating success: The experiences of mid-career Robert Wood Johnson Clinical Scholar women. *J Gen Intern Med.* 2006;21:920-925.
- Pell AN. Fixing the leaky pipeline: Women scientists in academia. *J Anim Sci.* 1996;74:2843-2848.
- Carr PL, Szalacha L, Barnett R, Caswell C, Inui T. A "ton of feathers": Gender discrimination in academic medical careers and how to manage it. *J Womens Health (Larchmt.)* 2003;12:1009-1018.
- Levine RB, Lin F, Kern DE, Wright SM, Carrese J. Stories from early-career women physicians who have left academic medicine: A qualitative study at a single institution. *Acad Med.* 2011;86:752-758.
- Lowenstein SR, Fernandez G, Crane LA. Medical school faculty discontent: Prevalence and predictors of intent to leave academic careers. *BMC Med Educ.* 2007;7:37.
- Waldman JD, Kelly F, Arora S, Smith HL. The shocking cost of turnover in health care. *Health Care Manage Rev.* 2004;29:2-7.
- Schloss EP, Flanagan DM, Culler CL, Wright AL. Some hidden costs of faculty turnover in clinical departments in one academic medical center. *Acad Med.* 2009;84:32-36.
- Schroen AT, Brownstein MR, Sheldon GF. Women in academic general surgery. *Acad Med.* 2004;79:310-318.
- Colletti LM, Mulholland MW, Sonnad SS. Perceived obstacles to career success for women in academic surgery. *Arch Surg.* 2000;135:972-977.
- Cropsey KL, Masho SW, Shiang R, Sikka V, Kornstein SG, Hampton CL; Committee on the Status of Women and Minorities, Virginia Commonwealth University School of Medicine, Medical College of Virginia Campus. Why do

- faculty leave? Reasons for attrition of women and minority faculty from a medical school: Four-year results. *J Womens Health (Larchmt.)* 2008;17:1111–1118.
22. Stevens CK, Bavetta AG, Gist ME. Gender differences in the acquisition of salary negotiation skills: The role of goals, self-efficacy, and perceived control. *J Appl Psychol*. 1993;78:723–735.
 23. Dyrbye LN, Shanafelt TD, Balch CM, Satele D, Sloan J, Freischlag J. Relationship between work-home conflicts and burnout among American surgeons: A comparison by sex. *Arch Surg*. 2011;146:211–217.
 24. West CP, Shanafelt TD, Kolars JC. Quality of life, burnout, educational debt, and medical knowledge among internal medicine residents. *JAMA* 2011;306:952–960.
 25. Asch DA, Christakis NA, Ubel PA. Conducting physician mail surveys on a limited budget: A randomized trial comparing \$2 bill versus \$5 bill incentives. *Med Care* 1998;36:95–99.
 26. VanGeest JB, Johnson TP, Welch VL. Methodologies for improving response rates in surveys of physicians: A systematic review. *Eval Health Prof*. 2007;30:303–321.
 27. Kellerman SE, Herold J. Physician response to surveys: A review of the literature. *Am J Prev Med*. 2001;20:61–67.
 28. Field TS, Cadoret CA, Brown ML, et al. Surveying physicians: Do components of the “Total Design Approach” to optimizing survey response rates apply to physicians? *Med Care* 2002;40:596–605.
 29. Goitein L, Shanafelt TD, Nathens AB, Curtis JR. Effects of resident work hour limitations on faculty professional lives. *J Gen Intern Med*. 2008;23:1077–1083.
 30. The Editors. Dr. No Money: The broken science funding system. *Sci Am*. 2011;298:1–2.
 31. Lucan SC, Phillips RL Jr, Bazemore AW. Off the roadmap? Family medicine’s grant funding and committee representation at NIH. *Ann Fam Med*. 2008;6:534–542.
 32. Campbell DA Jr, Sonnad SS, Eckhauser FE, Campbell KK, Greenfield LJ. Burnout among American surgeons. *Surgery* 2001;130:696–702; discussion 702.
 33. Dyrbye LN, Shanafelt TD. Physician burnout: A potential threat to successful health care reform. *JAMA* 2011;305:2009–2010.
 34. Harrison RA, Gregg JL. A time for change: An exploration of attitudes toward part-time work in academia among women internists and their division chiefs. *Acad Med*. 2009;84:80–86.
 35. Helitzer D. Commentary: Missing the elephant in my office: Recommendations for part-time careers in academic medicine. *Acad Med*. 2009;84:1330–1332.
 36. Carr PL, Pololi L, Knight S, Conrad P. Collaboration in academic medicine: Reflections on gender and advancement. *Acad Med*. 2009;84:1447–1453.
 37. Palda VA, Levinson W. Commentary: The right time to rethink part-time careers. *Acad Med*. 2009;84:9–10.
 38. Pololi L, Kern DE, Carr P, Conrad P, Knight S. The culture of academic medicine: Faculty perceptions of the lack of alignment between individual and institutional values. *J Gen Intern Med*. 2009;24:1289–1295.
 39. Mizgala CL, Mackinnon SE, Walters BC, Ferris LE, McNeill IY, Knighton T. Women surgeons: Results of the Canadian Population Study. *Ann Surg*. 1993;218:37–46.
 40. Bunton S. U.S. medical school faculty job satisfaction. In: *Analysis in Brief*. Vol. 8. Washington, DC: American Association of Medical Colleges; 2008.
 41. Pololi L, Conrad P, Knight S, Carr P. A study of the relational aspects of the culture of academic medicine. *Acad Med*. 2009;84:106–114.
 42. O’Brodivich H, Beyene J, Tallett S, MacGregor D, Rosenblum ND. Performance of a career development and compensation program at an academic health science center. *Pediatrics* 2007;119:e791–e797.
 43. Rollins LK, Slawson DC, Galazka SS. Using a supervisory dialogue process in the performance management of family medicine faculty. *Fam Med*. 2007;39:201–207.
 44. Jackson VA, Palepu A, Szalacha L, Caswell C, Carr PL, Inui T. “Having the right chemistry”: A qualitative study of mentoring in academic medicine. *Acad Med*. 2003;78:328–334.
 45. Chung KC, Song JW, Kim HM, et al. Predictors of job satisfaction among academic faculty members: Do instructional and clinical staff differ? *Med Educ*. 2010;44:985–995.
 46. Bland CJ, Seaquist E, Pacala JT, Center B, Finstad D. One school’s strategy to assess and improve the vitality of its faculty. *Acad Med*. 2002;77:368–376.
 47. Mark S, Link H, Morahan PS, Pololi L, Reznik V, Tropez-Sims S. Innovative mentoring programs to promote gender equity in academic medicine. *Acad Med*. 2001;76:39–42.
 48. Daley S, Wingard DL, Reznik V. Improving the retention of underrepresented minority faculty in academic medicine. *J Natl Med Assoc*. 2006;98:1435–1440.