Gender Differences in Academic Advancement: Patterns, Causes, and Potential Solutions in One U.S. College of Medicine

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ABSTRACT

Purpose. The influx of women into academic medicine has not been accompanied by equality for male and female faculty. Women earn less than men in comparable positions, progress more slowly through academic ranks, and have not attained important leadership roles. This study tested hypotheses about why gender disparities exist in salary, rank, track, leadership, and perceptions of campus climate at one academic center, the University of Arizona College of Medicine, Tucson.

Method. Salary, rank, and track data were obtained from institutional databases for the 1999–2000 fiscal year. A structured, online questionnaire was made available to 418 faculty members to collect information about their goals, attitudes, and experiences.

Results. A total of 198 faculty members completed the questionnaire. The data showed significant gender differences in faculty salaries, ranks, tracks, leadership positions, resources, and perceptions of academic climate. On average, women earned $12,777 or 11% less than men, after adjusting for rank, track, degree, specialty, years in rank, and administrative positions ($p < .0003$). Of female faculty, 62% were assistant professors (49% of women were non–tenure-eligible assistant professors), while 55% of male faculty were promoted and tenured. Almost a third of women reported being discriminated against, compared with only 5% of men ($p < .00001$).

Conclusion. Substantial gender differences in the rewards and opportunities of academic medicine remain, that can not be attributed to differences in productivity or committment between women and men.

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The influx of women into academic medicine over the past three decades has not been accompanied by equality for male and female faculty in terms of rank attainment, leadership roles, salaries, and treatment by colleagues or superiors. Although the percentage of female faculty in academic medicine has doubled over the last three decades, increasing from 13% in 1967[1] to 27% in 1999,[2] women have not achieved parity with men in academic ranks or tracks. Only 6% of academic departments (170) were headed by women in 1998, and there were only six women deans at U.S. colleges of medicine in 1999.[2] In addition to disparities observed in rank and leadership,[3–6] women physicians receive lower salaries than their male colleagues.[4,7–9] Possible explanations for these disparities have included lower productivity of women,[5,8,10] conflict between familial and professional roles for women,[11,12] and academic climates that support gender discrimination and sexual harassment.[13–15]

Most research on gender differences in academic medicine has used U.S. national level data, looking across and within specific disciplines. However, these studies have been hampered by a lack of data on academic track (i.e., tenure versus nontenure) and reliance

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on self-reported salaries. Our study reported findings of gender disparities at a single institution, the University of Arizona College of Medicine, Tucson. Focusing on one institution permitted the use of reliable institutional data on salary, rank, track, and productivity.

METHOD

In 2000, at the request of a group of female faculty members, the dean of the College of Medicine created a committee of 19 women and three men, The Dean's Committee on Women Faculty, to assess the extent to which differences existed between the treatments of male and female medical faculty members. In 1999, the president of the University of Arizona had commissioned The Millennium Project, a study of faculty and staff perceptions of gender differences in all colleges of the university. The female faculty members in the College of Medicine, who had been meeting regularly, recognized that several issues faced by the medical faculty, in particular the provision of clinical service, were unique and deserved consideration in addition to the issues provided by the Millennium Project. The GRACE (Generating Respect for All in a Climate of Academic Excellence) Project was designed to complement the Millennium Project and provide a model for other colleges interested in an in-depth analysis of gender disparities.

The aims of the GRACE Project were to document gender disparities, test hypotheses for why they existed, and suggest ways to eliminate them. Areas for exploration included compensation, academic rank and track, levels of productivity, attainment of leadership positions, access to institutional resources and support, and perceptions of campus climate. We hypothesized that gender differences exist in salary, even after accounting for gender differences in rank, track, academic degree, specialties, and leadership positions. The dearth of women in higher ranks was postulated as being due to women's being less career-oriented than men or having greater difficulty balancing work and home responsibilities. Gender disparities in leadership positions might result from a lack of leadership aspiration or skills among women, an unwillingness to take on time-consuming leadership roles, or the fact that fewer women were in the pool of potential leaders (associate and full professors).

Given the variety of information required to test the hypotheses, we used two approaches. First, we obtained quantitative data on rank, track, leadership positions, and salary from the College of Medicine Appointed Personnel database for 1999–2000. Information was collected for 418 faculty members who met the following criteria as of July 1, 1999: 1) primary appointment in the College of Medicine; 2) on the tenure, clinical suffix, or research track; 3) rank of assistant, associate, or full professor; 3) $\geq$ 50% time; and 4) Tucson-based (some faculty from the College of Medicine practice in Phoenix).* Salary data was missing for five of the 418 faculty, reducing the total number of faculty to 413. We supplemented this information with data on productivity from two sources. The lifetime number of peer-reviewed publications was counted from current curricula vitae (CVs) provided by each department for 87.4% of faculty members ($n = 361$). We obtained clinical revenues generated during 1999–2000 for all faculty members who provided clinical services ($n = 241$) from University Physicians Inc., the faculty practice plan.

Second, faculty members were surveyed using a structured, online questionnaire to collect information about their ideas and experiences with leadership, promotion, professional and personal career issues, institutional support and space, resource procurement, treatment by colleagues, and leadership. We collected demographic data to characterize respondents. The questionnaire was designed by the Dean's Committee on Women Faculty in conjunction with the College of Medicine Division of Academic Resources to test the hypotheses about gender disparities. In November 2000, a letter from the dean was sent to all of the 418 eligible faculty members in the database, requesting their participation in the online questionnaire. We gave instructions for accessing the questionnaire, including a password to ensure that only eligible faculty participated. Over the next several weeks, we sent three reminders either by campus mail or by e-mail; we completed the survey in January 2001. To encourage participation, we donated a $100 restaurant gift certificate to one of every 100 respondents. All responses were confidential.

Data Analysis

We analyzed both the salary data and the survey data using standard statistical software. Salary analyses were based on total remuneration, including base salary and incentives. Salaries were log-transformed to remove the effects of outliers, such as exceptional individuals whose salaries were substantially higher than those of their colleagues of comparable rank, track, and department. We analyzed questionnaire responses using standard statistical techniques, such as contingency tables, bivariate means tables, and multivariate analysis of variance (ANOVA).

A multivariate ordinary-least-squares regression model was used to estimate

*The clinical suffix track is a non–tenure-eligible track for clinician–teachers employed full-time at the College of Medicine. Research track is a non–tenure-eligible track for researcher–teachers. Phoenix-based faculty members were excluded because the University of Arizona does not supply salary support for them.

the effect of gender on salary, adjusting for the following possible confounders: rank and years at that rank, track (tenure, clinical, or research track), degree (MD or PhD), administrative responsibilities (section/division chief, department head), and type of "specialty" (basic science, generalist, nonsurgical specialty, surgical specialty). Basic science faculty were from the five basic science departments (biochemistry, cell biology and anatomy, microbiology and immunology, physiology, and pharmacology). Generalists included those in the department of family and community medicine, the Arizona Prevention Center, general medicine faculty, and ambulatory pediatrics faculty. Surgical specialties included the five highest-paying departments: surgery, orthopedic surgery, ob/gyn, anesthesiology, and ophthalmology. Nonsurgical specialties included all other groups: non-generalists (such as infectious disease) in pediatrics and medicine, and the departments of radiology, psychiatry, neurology, pathology, and radiation oncology.

Table 1

Characteristics of Respondents and of the Total Eligible Faculty in the Salary, Rank, and Track Analysis, University of Arizona College of Medicine, Tucson, 1999–2000*

Characteristic	Total Faculty ($n = 413$) % (No.)	Respondents ($n = 198$) % (No.)
Gender		
Male	72 (297)	66 (130)†
Female	28 (116)	34 (68)
Department		
Basic science	17 (71)	23 (45)‡
Clinical	83 (342)	77 (153)
Rank		
Assistant professor	40 (165)	37 (74)
Associate professor	24 (100)	26 (52)
Full professor	36 (148)	36 (72)
Track		
Research	15 (60)	15 (29)†
Clinical	30 (122)	25 (49)
Tenure	55 (231)	61 (120)
Degree		
PhD	38 (157)	46 (91)‡
MD	62 (256)	54 (107)

*Chi-square tests were used to analyze statistically significant differences between the proportions of respondents and non-respondents for the surveyed faculty. †$p < .05$; ‡$p < .01$.

Results

Study Populations

A total of 198 faculty members completed the questionnaire. Table 1 shows the characteristics of the faculty members at the College of Medicine who were included in our salary, rank, and track analyses and the characteristics of our respondents. Table 1 also compares respondents with the larger population of faculty members (those in the salary, rank, and track analyses). Our respondents were significantly more likely to be female, be from basic science departments, be on the tenure track, and have a PhD.

Salary

Table 2 shows adjusted mean annual salaries for men and women at the College of Medicine and disaggregates them by type of department, rank, track, and specialty. On average, women earned $12,777 (11%) less than what men earned after adjusting for other factors. (The unadjusted difference was $36,768, 29% less than men's salaries.) Women's salaries were also significantly lower for most of the categories listed, and this disparity increased with rank, so that female full professors earned $23,764 less on average than men at the same rank. The differences remained statistically significant after adjusting for the number of peer-reviewed publications ($p < .0001$), with women earning $13,074 less than men for the College of Medicine as a whole. The observed differences also cannot be explained by differences in clinical activity since the gender difference remained significant ($p < .01$) after adjusting for clinical revenues. Finally, the salary disparities extended to most departments, including basic science departments (see Figure 1).

Rank, Track, and Time to Promotion

The distributions of male and female faculty members differed significantly according to rank ($p < .00005$) and track ($p < .0005$, see Figure 2). Women were predominantly in non–tenure-track positions at the assistant professor level (49%). In contrast, more than half of the men (55%) were promoted (associate or full professors) and tenured.

Based on questionnaire responses, women at the College of Medicine were significantly more likely to have considered changing academic tracks (58% versus 29%, $p < .0001$). This was particularly true on the tenure track, where almost half the women had

Table 2

Adjusted Mean Annual Salaries in U.S Dollars for Male and Female Faculty Members, Disaggregated by Department Type, Rank, Track, and Specialty, University of Arizona College of Medicine, Tucson, 1999–2000

	Adjusted Mean Salary			
	Male Faculty Members (*n*)	Female Faculty Members (*n*)	Female/Male Salary Ratio	*p* Value
College of Medicine*	$117,490 (297)	$104,713 (116)	.89	.0003
Basic science departments†	$81,283 (51)	$74,131 (20)	.91	.03
Clinical departments*	$125,893 (246)	$112,202 (96)	.89	.002
Rank‡				
Assistant professor	$100,000 (93)	$91,201 (72)	.91	.03
Associate professor	$114,815 (76)	$104,713 (24)	.91	.14
Full professor	$141,254 (128)	$117,490 (20)	.83	.008
Track§				
Research track	$61,660 (33)	$58,884 (27)	.95	.36
Clinical track	$138,038 (76)	$117,490 (46)	.85	.0008
Tenure track	$128,825 (188)	$114,815 (43)	.89	.01
Areas of specialty¶				
Generalists	$89,125 (35)	$79,433 (31)	.89	.06
Nonsurgical specialties	$123,027 (139)	$109,648 (46)	.89	.007
Surgical specialties	$169,824 (72)	$154,882 (19)	.91	.26
Faculty with clinical revenues**	$151,356 (183)	$138,038 (58)	.91	.01
College of Medicine, adjusting for peer-reviewed publications††	$120,226 (264)	$107,152 (97)	.89	.0001

*Adjusted for rank, track, degree, specialty, years in rank, department head, and section head, as described in Method. These variables account for 72% of the variation in salary for the College of Medicine ($R^2 = .72$) and 68% in clinical departments ($R^2 = .68$).

†Adjusted for rank, track, degree, years in rank, and department head. $R^2 = .80$.

‡Adjusted for track, degree, specialty, years in rank, department head, and section head, as described in Method, except salaries assessed separately by rank. The variable identifying department heads was excluded from the assistant professor analysis because there was no department head who was an assistant professor. Assistant professors, $R^2 = .79$; associate professors, $R^2 = .72$; full professors, $R^2 = .61$. For associate professors, the adjusted mean difference between men and women became borderline significant ($p = .06$) when the number of peer-reviewed publications was included.

§Adjusted for rank, degree, specialty, years in rank, department head, and section head, as described in Method, but assessed separately by track. There was no department head on the research or clinical track and no section head on the research track, so these variables were excluded from analyses for those tracks. Research track, $R^2 = .56$; clinical track, $R^2 = .52$; tenure track, $R^2 = .68$.

¶These categories distinguished faculty in clinical departments by specialty. Generalists, $R^2 = .69$; nonsurgical specialties, $R^2 = .63$; surgical specialties, $R^2 = .69$.

**Adjusted for rank, track, degree, specialty, years in rank, department head, and section head, as described in Method, but also includes adjustment for clinical revenues ($n = 241$), $R^2 = .67$.

††Adjusted for rank, track, degree, specialty, years in rank, department head, and section head, as described in Method, but includes adjustment for total number of peer-reviewed publications ($n = 361$), $R^2 = .74$.

considered changing tracks (46% versus 9% of men, $p < .00001$). However, women were no more likely than men to have actually changed tracks (19% versus 14% for men) or to have delayed the tenure clock (16% versus 10% for men).

Attaining the rank of associate professor took longer for women than for men. For the 97 associate or full professors who indicated on the questionnaire the numbers of years they had been assistant professors, the average time to promotion had been 6.5 years for women, versus 5.2 years for men ($p < .05$). There was no significant gender difference in lengths of time as associate professor.

Productivity

A common explanation for the differences in rank between male and female faculty members is that women may be less serious about their careers than men and thus less productive. However, questionnaire responses indicated no significant gender difference in the reported importance of career advancement ($p = .79$) or the extent to which work and personal life conflicted ($p = .78$). Women who worked full-time were no more likely than men to want to work part-time (38% versus 27% for full-time men, $p < .13$). However, a higher proportion of men were willing to move to take a better job (71% versus 51% of women, $p < .05$).

Initial comparisons of the numbers of peer-reviewed publications for faculty suggested that men were more productive than women (see Table 3), regardless of whether the estimates came from faculty members' CVs or from self-reporting on the questionnaire. However, this was an artifact of gender differences in rank, track, and time in rank. When stratified by rank and track, gender differences disappeared, except among full professors on the tenure track. In this category, men published more, but they had been at that rank twice as long as the women had been (11.7 versus 6.4 years, $p < .05$). When adjusted for years in rank, the difference in mean numbers of publications for female and male full professors became insignificant (63.1 versus 78.0, $p < .49$). Also, equal proportions of women and men had received teaching awards (30.2% and 33.3%, respectively).

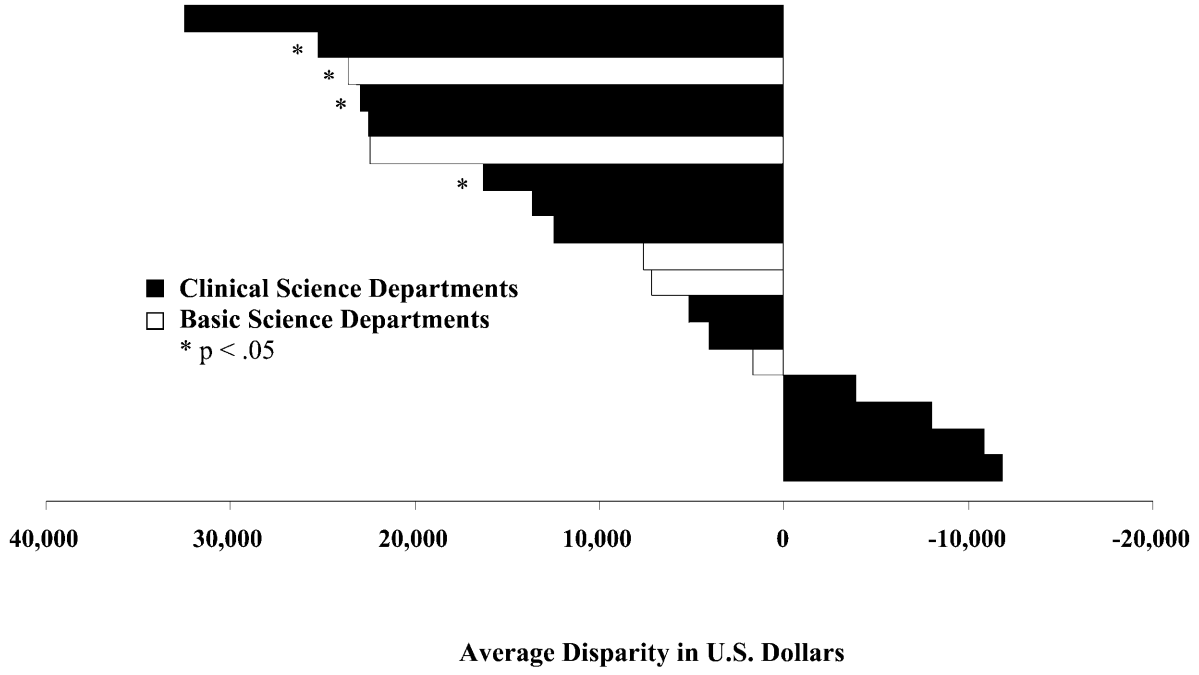

Figure 1. Average disparities in adjusted salary in U.S. dollars for male and female faculty members, by department adjusted for rank, track, degree, specialty, number of publications, years in rank, department head, and section head, University of Arizona College of Medicine. The names of departments have been withheld because of confidentiality concerns. One department was excluded because it had no female faculty member.

Clinical revenues by gender, adjusted for specialty and rank, are shown in Table 4. The difference in clinical revenues was significant for only two of the comparisons: full professors who were generalists (in which case the sole woman in this category made twice the average revenues for the men) and surgical specialists at the level of assistant professor, where men generated significantly more clinical revenues than women ($p < .05$).

Leadership

Respondents' leadership experiences are presented in Table 5. Contrary to our hypothesis, there was no significant gender difference in self-assessed leadership ability or aspirations to hold leadership positions. Nevertheless, women were significantly less likely than men to have been asked to serve in leadership roles. They were also less likely to report ever having served as committee, section/division, or department chairs. When analyses were limited to associate or full professors, women were still significantly less likely to have been asked to serve or to have served as section heads or department chairs. More than one fourth of the men who responded to the questionnaire had been invited to serve as department heads, as compared with only 6% of women.

Given the differences in leadership opportunities, it was not surprising that the women felt they had significantly less power and influence in their departments. Half as many women as men reported having decision-making authority over promotion of colleagues (27% versus 48%, $p < .005$) or over non–grant-related resources (22% versus 47%, $p < .001$). Also, the women were significantly less likely to offer advice to department chairs (2.7 versus 3.2 on a 1-to-5 scale from never to always, $p < .001$) and to feel that they effectively influenced departmental decisions (2.5 versus 2.8 on a 1-to-6 scale from never effective to always effective, $p < .01$).

Institutional Support and Access to Resources

There was no significant gender difference in access to or difficulty obtaining resources, office space, or staff support. However, differences did exist with regard to research space. Of those who responded to the questionnaire, 60.8% of the women and 43.4% of the men reported sharing their research space with other faculty members. Among full professors, 72.7% of the women reported sharing research space with other faculty, as compared with only 40.0% of the men. After adjusting for rank, women reported exerting significantly more effort to obtain non–grant-supported research space (4.42 versus 3.87 for men, on a 1–5 scale, 5 = "a great deal of effort," $p < .01$).

Treatment and Climate Issues

Women were significantly more likely than men to cite safety concerns, with regard to working at certain times or

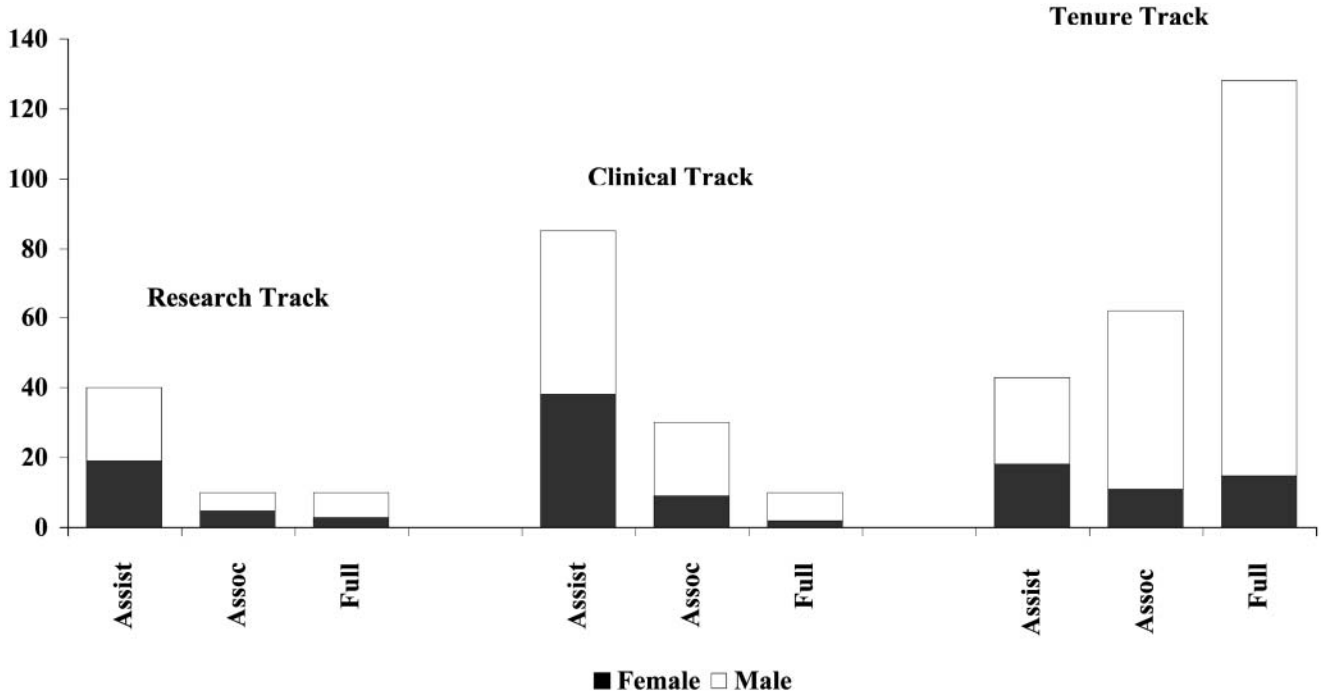

Figure 2. The numbers of research, clinical, and tenure-track female and male faculty members, by rank of assistant professor, associate professor, or full professor, University of Arizona College of Medicine, Tucson, 1999–2000.

in certain places (see Table 6). They were also much more likely to feel that their departments treated men and women differently. Almost one third of the women reported being discriminated against, as compared with only 5% of the men ($p <$ .00001). Only two of the 22 women who reported being discriminated against had sought recourse for the discrimination. A majority (68%) of these 22 women but only 15% of the men who reported being discriminated against felt the College did not respond appropriately to such charges. Finally, women were significantly less likely to feel that they "fit in" at the College of Medicine (72% versus 85%, $p < .03$).

Table 3

Mean Lifetime Numbers of Peer-reviewed Publications from Curricula Vitae of Male and Female Faculty Members According to Rank and Track, University of Arizona College of Medicine, Tucson, 1999–2000

	Men	Women
All faculty	47 (265)	20 (99)*
Research track	32 (25)	23 (22)
Clinical track	9.7 (66)	7.5 (38)
Tenure track	64 (174)	31 (39)*
Assistant professors	10.4 (19)	11.4 (16)
Associate professors	32 (42)	23 (8)
Full professors	84 (113)	59 (14)

*$p < .01$.

Discussion

Our investigation into the status of male and female faculty members in a College of Medicine indicated substantial gender differences in the rewards and opportunities of academic medicine. There were significant gender disparities in salary, with women earning 89% of what men earned. A plurality of women were non–tenure-eligible assistant professors, while the majority of men were tenured associate or full professors. In general, women were as productive as men, indicated by both publications and clinical revenues, despite having less research space and less influence in their departments. Although the women aspired to leadership positions and felt they had leadership skills, few had been asked to lead. Almost one third of the women reported experiencing discrimination. These differences support the widespread perception that academic medicine is not gender-blind and that the road to success is more challenging for women than for men.

Similar studies have been conducted at other medical institutions.[16–20] Our study provides a more comprehensive picture of gender differences in academic medicine by examining a wide range of aspects of academic life beyond salary,[16] promotion rates,[17] or faculty perceptions of the academic environment,[18–20] which have often been studied in isolation. Further, we incorporated a number of measurement techniques into our study, including

Table 4

Total Clinical Revenues in U.S. Dollars of Male and Female Faculty Members According to Specialty and Rank, University of Arizona College of Medicine, Tucson, 1999–2000

	Clinical Revenues		
	Male Faculty Members (*n*)	Female Faculty Members (*n*)	*p* Value
Generalists	$155,202 (13)	$128,263 (11)	.45
Assistant professor	$144,136 (8)	$123,042 (7)	.64
Associate professor	$269,026 (2)	$105,583 (3)	.11
Full professor	$108,827 (3)	$232,849 (1)	.02
Nonsurgical specialties	$213,852 (108)	$169,382 (33)	.16
Assistant professor	$206,861 (25)	$140,871 (20)	.14
Associate professor	$265,309 (32)	$219,713 (7)	.52
Full professor	$184,993 (51)	$205,699 (6)	.76
Surgical specialties	$381,663 (62)	$280,438 (15)	.06
Assistant professor	$383,162 (21)	$285,970 (13)	.05
Associate professor	$364,842 (19)	— (0)	—
Full professor	$394,759 (22)	$244,479 (2)	.38

institutional databases, questionnaires, and interviews, to present a fuller picture of gender disparities at the University of Arizona College of Medicine.

Our findings of gender differences in rank are similar to those of other analyses. These differences are often attributed to a pipeline effect,[1,3–6] the notion that an insufficient number of women have been in academia long enough to have reached the rank of full professor. Yet, analyses of gender differences in rank attainment have not supported this hypothesis.[1,3,5] An alternate explanation for the paucity of women at higher ranks is that they are less committed to their careers because of family and other personal responsibilities. In our study, the women were no more likely than the men to report conflicts between family responsibilities and work. However, other studies have shown that women are differentially affected by and concerned with family responsibilities.[11,12,21] It is possible that there were gender differences in interpreting our questionnaire, with more men than women taking for granted the full support of their spouses in caring for children. Finally, gender differences in productivity have been postulated as another factor leading to women's slow progression through academic ranks. Our study found substantial unadjusted gender differences in numbers of peer-reviewed publications and clinical revenues, but once adjustments were made for rank, track, and years in rank, these differences disappeared. Although some widely cited studies showed that male faculty members publish more papers than female faculty members,[1,5–8,10] these studies did not adjust for differences in track, rank, and years in each rank. The only other study that adjusted for confounding influences on productivity found no gender difference in numbers of publications or grants.[4]

The rewards of the system also appeared to differ by gender. Substantial gender differences were evident in salary, after adjusting for other predictors of compensation. Salary disparities have been documented in many specialties and both academic and practice environments.[4,7–9] Our observation that significant gender differences in salary also existed for assistant professors suggests that the problem has not been solved.

Table 5

Male and Female Respondents' Self-assessed Leadership Potential, Opportunities, and Experiences, University of Arizona College of Medicine, Tucson, 1999–2000

	Male Respondents	Female Respondents	*p* Value
Leadership potential			
Aspiration to leadership positions*	57%	61%	.55
Importance of holding a leadership position†	3.3	3.0	.12
Perception that they have the qualities of a good leader*	95%	91%	.35
Willingness to take on time-consuming service tasks‡	4.3	4.6	.33
Leadership opportunity			
Have been asked to serve as a committee chair*	68%	48%	.006
Have been asked to serve as a section or division head*§	45%	12%	.0001
Have been asked to serve as a department head*§	26%	6%	.0007
Leadership experience			
Have served as a committee chair*	70%	55%	.03
Have served as a section or division head*§	47%	10%	.0000
Have served as a department head*§	26%	8%	.003

*The percentage of faculty members who responded affirmatively.

†1 to 5 scale, 5 = very important.

‡1 to 6 scale, 6 = very willing.

§When limited to associate and full professors, these differences remained statistically significant.

Table 6

Male and Female Respondents' Safety Concerns and Responses about Gender Discrimination, University of Arizona College of Medicine, Tucson, 1999–2000*

	Male Respondents (%)	Female Respondents (%)	*p* Value
Safety concerns			
Safety concerns have deterred you from working:			
At certain times	1.6	10	.006
In certain places	4.7	11.6	.07
With certain people	4	7	.33
Gender discrimination			
Department treats people differently based on gender to a somewhat or great extent	21	54	.00001
Ever discriminated against	5	32	.00001
College of Medicine responds appropriately to charges of discrimination†	68	15	.00001

*The percentage of faculty members who responded affirmatively.

†Sixty-three percent of respondents said they did not know whether the College of Medicine responded appropriately to charges of discrimination. The percentages shown are based on the 37% of respondents who had an opinion.

Our study also showed gender differences in leadership opportunities. At the time this research was conducted, there was no female department head of any of the 19 departments in the College of Medicine, and only 10% of section or division chairs (four) were women. National data have revealed a similar absence of women in leadership positions.[1,2] The paucity of women at higher ranks may contribute to the underrepresentation of women in high-level leadership positions, since the candidate pool of potential leaders remains small. Our study showed that a very high proportion of women in academic medicine believe they have leadership aspirations and skills. This suggests that leadership that is overwhelmingly male may not recognize leadership abilities in women or that women may abandon their aspirations without female role models.

Given these findings, it is not surprising that women were more likely to report differential treatment on the basis of gender at the University of Arizona College of Medicine. The literature on gender discrimination in academic medicine has indicated that subtle forms of gender discrimination are prevalent across the United States.[13–15] Besides being illegal, gender discrimination and harassment can have detrimental effects on career advancement and satisfaction. Carr et al. reported that women who experienced gender discrimination reported lower levels of career satisfaction than did women who had not experienced discrimination.[15]

Our study had limitations. First, the respondents were not entirely representative of the larger faculty, and longitudinal data were not available to track changes over time. Further, the College of Medicine database did not contain accurate information about research grants, making it impossible to adjust for potential differences in research funding, which might account for some of the observed salary and rank disparities. Nevertheless, the fact that similar disparities have been observed at the national level suggests that these findings are not likely to be limited by the data.

Numerous solutions have been proposed to address gender disparities among academic medicine faculty.[2,11,22–23] Regular monitoring of salaries, track assignments, start-up packages, and promotions would help to identify disparities and assess progress.[22,24–25] A system for mentoring and advising junior faculty members early in their careers about promotion requirements will facilitate advancement.[2,22,24,26] Institutional changes should be made to allow greater flexibility in tenure-track positions and in the definition of scholarly contributions, while maintaining a commitment to academic excellence. Promotion and search committees as well as influential individuals such as department heads and deans should be educated about subtle forms of discrimination. Perhaps the most critical element for ensuring change is assigning accountability.[27] Progress in the recruitment, promotion, retention, and advancement of female faculty members to leadership positions should be rewarded. Departments with exemplary performances could be rewarded with additional research funds for faculty or additional faculty lines, while administrators who consistently impede the diversification of faculty must be penalized.[25,26]

In conclusion, our analysis suggests that male and female faculty members have substantially different experiences in academic medicine. In general, women's contributions are less likely to be recognized (either financially or through promotion) and their leadership abilities are more likely to be ignored. Changing these discriminatory patterns and behaviors will require persistent effort, open communication, continuous monitoring of progress, and a commitment to diversifying faculty and leadership. The alternative, in the words of Dr. Catherine DeAngelis, is to "waste half our genetic pool of

intelligence, creativity and critical insights and experience. Medicine simply can't afford that loss."[24]

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