

Mentoring at the University of Pennsylvania: Results of a Faculty Survey

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BACKGROUND: Research suggests mentoring is related to career satisfaction and success. Most studies have focused on junior faculty.

OBJECTIVE: To explore multiple aspects of mentoring at an academic medical center in relation to faculty rank, track, and gender.

DESIGN: Cross-sectional mail survey in mid-2003.

PARTICIPANTS: Faculty members, 1,432, at the University of Pennsylvania School of Medicine

MEASUREMENTS: Self-administered survey developed from existing instruments and stakeholders.

RESULTS: Response rate was 73% ($n=1,046$). Most (92%) assistant and half (48%) of associate professors had a mentor. Assistant professors in the tenure track were most likely to have a mentor (98%). At both ranks, the faculty was given more types of advice than types of opportunities. Satisfaction with mentoring was correlated with the number of types of mentoring received ($r=.48$ and $.53$, $P<.0001$), job satisfaction ($r=.44$ and $.31$, $P<.0001$), meeting frequency ($r=.53$ and $.61$, $P<.0001$), and expectation of leaving the University within 5 years (Spearman $r=-.19$ and $-.18$, $P<.0001$), at the assistant and associate rank, respectively. Significant predictors of higher overall job satisfaction were associate rank [Odds ratio (OR)=2.04, CI=1.29–3.21], the 10-point mentoring satisfaction rating (OR=1.27, CI=1.17–1.35), and number of mentors (OR=1.60, CI=1.20–2.07).

CONCLUSIONS: Having a mentor, or preferably, multiple mentors is strongly related to satisfaction with mentoring and overall job satisfaction. Surprisingly, few differences were related to gender. Mentoring of clinician-educators, research track faculty, and senior faculty, and the use of multiple mentors require specific attention of academic leadership and further study.

KEY WORDS: faculty mentoring; faculty development; promotion; career satisfaction.

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Mentoring and professional development programs for faculty members of medical schools are increasingly regarded as essential components of faculty success. Multiple studies report positive associations between having a mentor and markers of success such as number of publications, time devoted to research, career satisfaction, and promotion.^{1–4} Several good mentoring practices in schools of medicine have been identified,^{3, 5–7} and instruments have been devised to measure mentoring effectiveness and outcomes.⁸ Still, there remains much to learn about mentoring in the academic medical setting. For example, while studies have explored whether gender differences in mentoring are associated with differences in academic advancement,^{2, 9, 10} it remains unclear whether women get less mentoring or different types of mentoring, or if they are rather less satisfied with comparable mentoring.³ One report showed that members of clinical departments were more likely than members of basic science departments to have a mentor,² but little is known regarding differences in mentoring among faculty on tenure versus clinical faculty tracks. Finally, most studies of mentoring in academic medicine have focused on junior faculty. The senior faculty, who deal with problems such as burnout and disenchantment with the practice of medicine, shrinkage of federal grant funding, and promotion, may also benefit from mentoring.

We conducted a faculty work climate survey at the University of Pennsylvania School of Medicine that focused largely on mentoring. We examined the presence and structure of the mentoring relationship in relation to faculty rank and focused on track and gender differences; types of mentoring received; satisfaction with mentoring; use of multiple mentors; and the relationship between mentoring, overall job satisfaction, and expected job stability.

METHODS

The University of Pennsylvania School of Medicine had three faculty tracks: a tenure track in which independent investigator-initiated research effort is predominant (typically 80% or more); a clinician-educator track in which clinical effort is predominant (typically 80%) and published scholarship is expected for promotion; and an untenured research track in which investigation is the primary effort (typically upwards of 90%) and teaching and clinical responsibilities are minimal. Teaching is required of tenure and clinician-educator faculty, but not research faculty. Since 2001, an academic plan that identifies a mentor or mentors has been required at appointment or reappointment of junior faculty and at promotion to associate professor. In all tracks, promotion from assistant to associate professor after a defined probationary period was required to maintain a faculty appointment.

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Instrument. Since 1999–2000, faculty work climate surveys have been conducted at 3-year intervals. Details of the 1999–2000 survey are reported elsewhere.¹¹ For the 2003 survey, new content and revisions to the 2000 instrument were solicited from and reviewed by several faculty members, individuals within the Office of Faculty Affairs and Professional Development, leaders of FOCUS (a school wide faculty women's forum), and members of a Department of Medicine Council of Women. The final draft was presented to all department chairs in the School of Medicine for approval. The survey was approved by the Institutional Review Board (IRB).

Two groups of closed-ended questions on mentoring are the focus of this manuscript. First, respondents were asked about formation of the mentoring relationship, number of mentors, characteristics of the primary mentor (e.g., gender, department), frequency of meetings, and satisfaction with mentoring. Second, the specific assistance that mentors gave to faculty members was divided into two types, giving "advice" (10 items) and providing "opportunities" (7 items). "Advice" included 5 categories of information on how to work toward a specific goal (advice on promotion, career, enhancing visibility, leadership, promoting activities) and 5 categories of information about performance or relationships with colleagues (critique of work, constructive criticism, achieving autonomy, treat same as colleagues, positive feedback); "opportunity" was concrete assistance in achieving participation in certain activities (editorial boards, committee participation, research opportunities, coauthorship opportunities, informal social gatherings, business dinners, regional or national presentations). Respondents reported whether assistance had been provided in the past 12 months by a primary mentor(s). The distinction of primary mentor(s) from colleagues was at the discretion of the respondent. For each faculty member, we computed the number and percentage of different types of mentoring received (as a fraction of all possible types of mentoring) within the categories of advice, opportunities, and overall.

Procedures. The survey was sent via campus mail to 1,432 faculty members in mid-April 2003. Packets included a cover letter that described the purpose of the instrument and assured the anonymity of respondents; a survey with an identification number; and a return envelope to a research office not affiliated with the administration. A repeat mailing was sent in May 2003, followed by personal e-mails to nonrespondents in July 2003.

Analyses. Data are summarized separately for assistant and associate professors using descriptive statistics, primarily means and percentages. Subgroup responses were compared (e.g., men and women) using either chi-square for categorical variables or the nonparametric Kruskal-Wallis chi-square approximation for ordinal ratings and mean percentages. Spearman correlations assessed relationships among mentoring and other indicators. Logistic regressions explored predictors of overall job satisfaction (dichotomizing the 10-point scale at the median where ratings of 8–10 were coded as 1, and ratings of 1–7 were coded as 0, the reference category). Logistic regression was selected because the dependent variable was skewed. Predictors were rank (0=assistant, 1=associate), track (dummy variables for clinician-educator and

research tracks), gender (1=male, 0=female), age, frequency of mentoring meetings (4 ordinal categories), and satisfaction with mentoring (10-point scale). Because a large number of exploratory, hypothesis-generating comparisons were performed, attention is given to those results with a $P < .01$.

RESULTS

A total of 1,046 (73%) faculty responded. Response rates were somewhat different across faculty track (clinician educator (70%, $n=522$), tenure track (73%, $n=388$), research track (83%, $n=128$) and rank (assistant (76%, $n=476$), associate (70%, $n=278$), and full professor (70%, $n=286$)). Response rates were similar for men (73%, $n=775$) and women (71%, $n=262$). Overall demographics of respondents did not differ from the demographics of the school (Table 1). The results reported here are restricted to assistant and associate professors.

Overview of mentoring. A total of 92% ($n=433$) of assistant professors had at least one mentor. Equal percentages of assistant professor men (291/316; 92%) and women (139/152; 91%, $P=.81$) had a mentor but a lower percentage of women (93/136; 68%) than men (246/288; 85%, $P < .0001$) had a man as a primary mentor (Table 2). Faculty in the tenure track (155/158; 98%) were more likely to report having a mentor than faculty in the clinician-educator (211/236; 89%) and research tracks (66/76, 87%, $P < .0017$). Approximately half (48%, $n=129$) of associate professors had a mentor. A larger percentage of women (42/69; 61%) associate professors than men (87/199; 44%, $P=.01$) had a mentor. Having a man as a primary mentor was equally likely for men (77/86; 90%) and women (37/42; 88%, $P=.81$) associate professors. Among associate professors, the likelihood of having a mentor was similar for tenure (29/69; 42%), clinician-educator (85/168; 51%), and research tracks (15/30; 50%, $P=.48$).

Types of Mentoring Received. Of the 10 possible types of mentoring *advice*, assistant professor men received an average of 7.5 (or 75%; $SD=27$) types compared to 7.2 (or 72%; $SD=27$, $P=.24$) types reported by women. Among the different tracks, clinician-educators received 7.4 (or 74%; $SD=27$), tenure track faculty received 6.6 (or 66%; $SD=23$), and research track faculty reported 5.7 (or 57%; $SD=34$, $P=.31$) types. Of the 7 possible types of mentoring *opportunities* as assistant professor, men received an average of 2.9 (or 42%; $SD=31$) and women received 2.7 (or 38%; $SD=23$, $P=.21$). However, assistant professors in the clinician educator track received an average of 3.2 of the 7 opportunities (or 45%; $SD=30$), which was more than the 2.6 (or 37%; $SD=29$) reported by those in the tenure and research tracks ($P=.04$). Overall, assistant professors were provided a greater percentage of the 10 types of *advice* (mean=7.4, or 74%; $SD=27$) than of the 7 types of *opportunities* (mean=2.9, or 41%; $SD=30$; $P < .0001$) by their primary mentors.

Very similar results were obtained for associate professors (data not shown), except that there were no differences in number of types of opportunities provided related to track: clinician-educators received an average of 3.1 (or 43%; $SD=35$), tenure track faculty received an average of 2.3 (or 33%;

Table 1. Distribution of Survey Respondents and Total Faculty

Track	Rank	All faculty (n=1,432)		Respondents (n=1,046)*	
		Women	Men	Women	Men
		N (%)	N (%)	N (%)	N (%)
Clinician-educator	Assistant	130 (60)	215 (41)	94 (62)	146 (40)
	Associate	64 (30)	181 (34)	46 (30)	126 (34)
	Full	22 (10)	132 (25)	12 (8)	95 (26)
Tenure	Assistant	55 (56)	134 (31)	36 (53)	123 (39)
	Associate	18 (18)	90 (21)	13 (19)	58 (18)
	Full	26 (26)	211 (49)	19 (28)	134 (43)
Research	Assistant	36 (65)	58 (59)	22 (58)	51 (59)
	Associate	13 (24)	29 (29)	13 (34)	21 (24)
	Full	6 (11)	12 (12)	3 (8)	15 (17)

*Not all respondents of the 1,046 total reported gender (missing data=9), track (missing data=8) or rank (missing data=6).

SD=28), and research track faculty received an average of 3.5 (or 50%; SD=27, $P=.19$) of the 7 types. Associate professors also were provided more of the 10 types of advice (mean=7.1, or 71%; SD=19) than of the 7 types of opportunities (mean=2.9, or 41%; SD=33; $P<.0001$) by primary mentors.

Satisfaction with mentoring. Mean overall satisfaction with mentoring, rated on a 10-point scale, was 6.6 (SD=2.8) among assistant professors and 5.3 (SD=3.2) among associate professors ($P<.0001$). There were no differences in satisfaction with mentoring between men (mean, 6.9; SD=2.6) and women (mean, 6.2; SD=3.1, $P=.06$) or between those with a mentor of the same gender (mean, 6.9; SD=2.5) or different gender (mean, 6.6; SD=3.0, $P=.63$). At the assistant rank, differences in satisfaction were related to track ($P=.0002$). Satisfaction with mentoring was highest for tenure track (mean, 7.4; SD=2.4) and lower for the clinician-educator (mean, 6.3; SD=2.9) and research tracks (mean, 6.0, SD=3.2, $P<.0002$).

Among associate professors, there were no differences in satisfaction with mentoring between men (mean, 5.4; SD=3.2) and women (mean, 5.2; SD=3.2, $P=.81$) or between those with a mentor of the same gender (mean, 7.2; SD=2.6) or a different gender (mean, 6.2; SD=3.0, $P=0.09$). There were no differences in satisfaction related to track ($P=.08$): tenure (mean, 5.4; SD=3.3); clinician-educator (mean, 5.1; SD=3.1); and research tracks (mean, 6.7; SD=2.9).

Satisfaction with mentoring was correlated with the number of types of mentoring received (Spearman $r=.62$ and $.54$, $P<.0001$), job satisfaction (Spearman $r=.44$ and $.31$, $P<.0001$), meeting frequency (Spearman $r=.53$ and $.61$, $P<.0001$), and expectation of leaving the University within 5 years (Spearman $r=-.19$ and $-.18$; $P<.0001$), at assistant and associate ranks, respectively.

Multiple Mentors. Among assistant professors, more types of mentoring were received by those who reported having two or more mentors (mean 63%; SD=23) than those who had one mentor (mean 57%; SD=23%, $P=.009$) (Table 3). Those with more than one mentor had higher overall job satisfaction (mean, 7.3; SD=1.7) than those with one mentor (mean, 6.7;

SD=2.0) or no mentor (mean 6.2; SD=1.8, $P=.0001$). The same pattern was seen for satisfaction with mentoring. Assistant professors on the tenure track were more likely to have multiple mentors (58%) than faculty on the clinician educator (44%) and research (36%; $P=.0005$) tracks. For associate professors, results were similar except that faculty track was not related to having multiple mentors ($P=.15$).

In a regression model that included rank, track, gender, age, frequency of mentoring meetings, and satisfaction with mentoring as predictors of high (relative to low) overall job satisfaction, significant predictors were associate rank [Odds ratio (OR)=2.04, CI=1.29–3.21] and mentoring satisfaction (OR=1.27, CI=1.17–1.35). Substitution of number of mentors

Table 2. Overview of Mentoring Relationships

	Assistant professors (N=476)		Associate professors (N=278)	
	N (%)*	χ^2 (P)	N (%)*	χ^2 (P)
Have a mentor				
Men	291/316 (92)	.06(.81)	87/199 (44)	6.04 (.01)
Women	139/152 (91)		42/69 (61)	
Tenure Track	155/158 (98)	12.77 (.0017)	29/69 (42)	1.48 (.48)
Clinician Educator	211/236 (89)		85/168 (51)	
Research Track	66/76 (87)		15/30 (50)	
Have a male mentor				
Men	246/288 (85)	16.72 ($<.0001$)	77/86 (90)	.06 (.81)
Women	93/136 (68)		37/42 (88)	
Mentor is:				
From same department	366/420 (87)	N/A	106/ 125(85)	N/A
Division chief/ chair	153/407 (38)	N/A	48/118 (41)	N/A
Mentor was:				
Chosen by mentee	148/436 (34)	N/A	45/127 (35)	N/A
Assigned	152/436 (35)	N/A	26/127 (20)	N/A
Obtained some other way	127/436 (29)	N/A	55/127 (43)	N/A
How often meet with mentor				
Once a month	139/430 (32)	N/A	45/131 (34)	N/A
4–6 times per year	77/430 (18)	N/A	16/131 (12)	N/A
2–3 times per year	117/430 (27)	N/A	36/131 (27)	N/A
Once a year or less	97/430 (23)	N/A	34/131 (26)	N/A
Who initiates meetings with mentor				
Mentee	268/420 (64)	N/A	86/129 (67)	N/A
Mentor	98/420 (23)	N/A	26/129 (20)	N/A
Both	42/420 (10)	N/A	16/129 (12)	N/A
Someone Else	12/420 (3)	N/A	1/129 (1)	N/A

*The N is the cell or subgroup frequency. Not all N's sum to total because of small amounts of missing data.

Table 3. Overview of Multiple Mentors

	Assistant professors				Associate professors			
	Number of mentors				Number of mentors			
	0 (n=38)	1 (n=209)	2+ (n=224)	χ^2 (P)*	0 (n=139)	1 (n=86)	2+ (n=43)	χ^2 (P)*
Percentage of all possible types of mentoring received - Mean (SD)	25 (18)	43 (18)	51 (18)	59.6 (<.0001)	25 (4)	42 (17)	55 (16)	94.85 (.0001)
Job satisfaction [mean (SD)]	6.2 (1.8)	6.7 (2.0)	7.3 (1.7)	17.7 (.0001)	6.8 (1.7)	7.2 (1.7)	7.7 (1.3)	10.3 (.0057)
Satisfaction with mentoring (mean(sd))	3.5 (2.8)	6.3 (2.9)	7.4 (2.3)	42.8 (.0001)	3.2 (2.4)	6.8 (2.8)	7.3 (2.6)	74.35 (.0001)
Expect to leave within 5 years (%)	58	44	38	5.78 (.06)	33	28	26	1.20 (.55)
Faculty gender								
Men (%)	8	47	45	3.43 (.18)	56	30	14	6.77 (.03)
Women (%)	9	38	53		39	38	23	
Faculty track								
Clinician-Educator (%)	11	45	44	20.04 (.0005)	49	36	15	6.67 (.15)
Tenure track (%)	2	40	58		58	20	22	
Research track—%	13	51	36		50	37	13	

*Chi square resulting from either comparing percentages in a cross-tabulation or a Kruskal-Wallis non-parametric comparison of means.

for satisfaction with mentoring produced an OR=1.60 (CI= 1.20-2.07).

DISCUSSION

While many studies have examined the influence of gender on mentoring,^{2, 5, 9, 10, 12} this is the first study that has extensively analyzed faculty mentoring in both junior and senior ranks and according to faculty track. We add to the literature about differences between women and men and provide original contributions about multiple mentors and associate professors, a group relatively understudied in the mentoring literature. Overall, 5 conclusions stand out: (1) tenure track faculty of assistant professor rank were more likely to have mentors, including multiple mentors, and were more satisfied with mentoring, than faculty in other tracks; (2) there were few differences between men and women in having a mentor, types of mentoring received, and satisfaction with mentoring; (3) satisfaction with mentoring was associated with greater job satisfaction and less expectation of leaving the institution within the next few years; (4) associate professors were less likely to have mentors and less satisfied with mentoring than were assistant professors, women associate professors being more likely than men to have a mentor; and (5) having multiple mentors appeared to be better than having one mentor.

The high proportion of assistant professors who reported having a mentor was largely due to the requirement that mentor(s) be named in a mandatory academic plan at appointment or reappointment. However, mentoring was still more prevalent among faculty in the tenure track than among clinician-educator or research track faculty members. Leadership investment and faculty motivation for establishing a mentoring relationship may differ between tracks. Although there was no requirement for a mentor at associate professor rank, the relatively low proportion with a mentor (48%) is surprising and could reflect reduced pressure for promotion after attaining associate rank.

As reported by others^{1-3,12} women assistant professors were as likely as men to have primary mentor(s). Most women had a male mentor, though a greater percentage had a female mentor

than did their male counterparts. Women associate professors were more likely than men to have primary mentor(s), suggesting that having a mentor may be especially valuable for women in progressing to higher rank. Alternatively, if men are more mobile than women, some of the most talented men—who also had mentors—may have moved on to other institutions. Greater likelihood of having a female mentor was not observed among associate professors, most likely because the pool of potential women mentors was small.

This survey has the virtue of a high rate of response but the limitation of being a single-center observational study. However, the general features of faculty tracks correspond to important differences between faculty members in the proportion of effort devoted to clinical care, research, and teaching that may be generalized to other medical schools.^{13,14} Another limitation is that while we counted types of mentoring advice and opportunities received, we did not capture the intensity or duration of mentoring relationships as others have done.¹⁵ We may not have used the optimal metric to capture the amount of mentoring received.

Overall, mentoring is clearly associated with several beneficial outcomes, including higher job satisfaction and lesser expectation of leaving the institution. Perhaps these are causal relationships, but a plausible alternative is that productive and satisfied faculty were both more likely to stay at the institution and more likely to seek or keep mentor(s). In light of the apparent benefits of mentoring, academic medical leadership should pay particular attention to mentoring of clinician-educators, research track faculty, and senior faculty.

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