

## Mentoring in Medicine: Keys to Satisfaction

A mentor may be defined as an active partner in an ongoing relationship who helps a mentee maximize potential and reach personal and professional goals. Research in law, business, and nursing has shown that mentoring leads to higher levels of career satisfaction and a higher rate of promotion, with a greater effect if it begins early in a person's career (1,2). In non-medical fields, however, mentoring seems to occur less frequently with women and members of minority groups, although it may have a greater influence on them (3,4).

Mentoring in the medical profession has not been studied extensively. One study has suggested that mentoring has a greater influence on women than men when measured by rate of promotion and overall career satisfaction (5). The role of mentorship in academic medicine is not well defined, although research has suggested that physicians in academic medicine with mentors may publish more articles in peer-reviewed journals (6) and feel more confident in their capabilities than their peers (5).

Characteristics of physician role models and ideal characteristics of mentors, based on surveys of medical students, house officers, and physicians, have been described in prior literature. One study suggested that the most desirable attributes of a role model are clinical skills, compassion, and excellent teaching, while the role model's academic title and research accomplishments seem to be less important (7). In contrast, ideal characteristics of mentors may include the ability "to inspire, to support and to invest" in a mentee while providing career and psychosocial support (8). Few data are available on characteristics of mentoring relationships in which mentees are satisfied with the relationship. In this context, our aim was to describe the prevalence of mentoring in hospitals and institutions affiliated with one medical school and to identify specific factors associated with having a mentor and with the satisfaction of those being mentored.

### METHODS

#### *Study Site and Population*

The Harvard Medical School Office of Faculty Development and Diversity collected data at Harvard Medical School and its 17 affiliated independent hospitals and institutions. Participants for this study were identified from an internal administrative database, which also included the participant's professional rank. The Office of Faculty

Development and Diversity was established in January 1995 with the aim of increasing diversity among trainees and faculty of Harvard Medical School. Programs to achieve this aim are directed at medical students, graduate students, house officers, fellows, and junior faculty. At the time this study was conducted, the office sponsored an annual award for excellence in mentoring but did not have any formal programs to increase mentoring of women or minorities at HMS.

#### *Questionnaire Development and Administration*

Our questionnaire was based on a consensus statement entitled "On Being a Mentor to Students in Science and Technology," developed in 1997 by a joint committee of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine (9). This committee described a mentor as a faculty advisor, career advisor, and skills consultant. The statement included a questionnaire addressing specific characteristics of mentoring relationships in five domains: personal communication, professional development, skill development, academic guidance, and research.

We modified this instrument to identify respondents with a current mentor, and to identify demographic characteristics of the respondent, including sex, ethnicity (African American, Asian American, Hispanic American, Native American/Alaskan Native, White), academic rank, and a commitment to a career in academic medicine. The instrument also measured overall satisfaction with current mentoring, as well as satisfaction with 21 specific characteristics of the mentoring relationship in the five domains listed above. For specific statements about the 21 characteristics associated with mentoring, the response categories consisted of a five-point Likert scale, with categories ranging from "strongly agree" to "strongly disagree." Respondents also noted if the item was not applicable to their mentoring relationship. Similarly, the question about overall satisfaction with mentoring asked respondents to rate their satisfaction on a five-point scale ranging from "very satisfactory" to "very unsatisfactory."

In 1998, we mailed the questionnaire to all full-time house officers, fellows, instructors, and assistant professors of Harvard Medical School. In the cover letter that accompanied the questionnaire, we assured respondents that the data collected would be confidential and would be reported only in aggregate form. The questionnaire was sent by mail to each participant's institutional ad-

dress, with one follow-up mailing to those who did not respond initially. A total of 8,397 individuals participated in this study: 2,387 research fellows, 2,374 clinical fellows (including house officers), 2,586 instructors, and 1,050 assistant professors. Because there was a low response rate among fellows and house officers (33%), however, we limited all subsequent analyses to respondents who were instructors or assistant professors.

We tested the internal consistency of the 21 items measuring satisfaction with specific characteristics of the mentoring relationship by calculating Cronbach's alpha coefficient. The Cronbach's alpha coefficient for all items was 0.92, indicating close correlation among the different items. We also calculated Cronbach's alpha coefficient for each specific domain that contained more than three items. These ranged from 0.75 to 0.85, which also indicates close correlation within each domain.

### *Data Analysis*

To identify characteristics associated with having a current mentor, we examined the association between identifying a mentor and mentee sex, ethnicity, academic rank, and a commitment to a career in academic medicine, using chi-squared tests. We used multivariable logistic regression to identify factors independently associated with having a mentor. Academic rank and a commitment to a career in academic medicine were entered into the logistic regression model, as these factors were significant on bivariable analysis ( $P < 0.05$ ). Sex and ethnicity were also included in the model based on our a priori hypothesis that these factors may be related to developing a mentoring relationship. We combined African Americans, Hispanic Americans, Native Americans, and Alaskan Natives to form the ethnic category of underrepresented minorities (URM), and for comparison, we combined the ethnic categories Asian American and White to form the category of non-underrepresented minorities (non-URM).

We examined the association between characteristics of the mentee and overall satisfaction with mentoring. The Likert scale responses were dichotomized into two categories to identify respondents who expressed any degree of satisfaction with their mentoring relationship, and to identify the specific characteristics of the mentoring relationship with which they were satisfied. To do so, we grouped together the responses "very satisfactory" and "satisfactory" as one category, and compared this with a category that included "neutral," "unsatisfactory," and "very unsatisfactory" responses. We used bivariable analyses to examine the association between satisfaction with mentoring and mentee sex, ethnicity, academic rank, and a reported commitment to a career in academic medicine. We then used multivariable logistic regression to identify factors associated independently with satisfaction.

To identify specific characteristics of the mentoring relationship significantly associated with satisfaction with mentoring, we tested the association between overall satisfaction with mentoring and each of the 21 specific characteristics of a mentoring relationship, using the Fisher exact test. Because each factor was associated with overall satisfaction ( $P < 0.05$ ), we included all factors in a logistic regression model to identify factors that were independently associated with overall satisfaction with mentoring. We built the model with a forward selection algorithm and checked the final model for collinearity and confounding. All models were adjusted for sex, ethnicity, and academic rank. For all multivariable models, we selected the subgroup with the largest number of respondents as the reference group.

We used an interaction term to examine whether the item "takes into account gender issues" had a different effect on overall satisfaction with mentoring for women compared with men. Similarly, an interaction term was used to examine whether the item "takes into account ethnic and/or cultural issues" had a different effect on overall satisfaction with mentoring for underrepresented minority respondents compared with their majority counterparts.

## RESULTS

### *Response Rate and Respondent Characteristics*

The response rate was higher among assistant professors (65%) compared with instructors (57%), together yielding an overall response rate of 60%. Table 1 shows the characteristics of the respondents. There was no substantial difference between the respondents and the overall faculty when compared by sex or ethnicity (data not shown). As expected, the majority of respondents (85%) were committed to a career in academic medicine. Only 39% of the respondents had a mentor, and more than one half (52%) described some degree of satisfaction with their current mentoring, with 28% very satisfied, 24% satisfied, 16% neutral, 17% dissatisfied, and 15% very dissatisfied with mentoring.

### *Characteristics Associated with Having a Mentor*

In the bivariable analyses (Table 2), instructors were significantly more likely to have a mentor than were assistant professors. Those committed to a career in academics were also significantly more likely to have a mentor than those who did not plan to continue in academic medicine. After adjustment for all demographic characteristics (Table 2), the relation between current mentoring and either academic rank or a planned career in academic medicine persisted. In the multivariable analysis, women were at least as likely as men were to have a mentor. Underrepresented minority faculty were less likely to

**Table 1.** Demographic Characteristics of Respondents\*

Characteristic	Study Respondents n (%)
<b>Sex:</b>	
Male	1304 (61%)
Female	827 (39%)
<b>Ethnicity:</b>	
White	1691 (80%)
Asian American	261 (12%)
Hispanic American	45 (2%)
African American	42 (2%)
Native American or Alaskan native	6 (<1%)
Other (mixed ethnicity)	80 (4%)
<b>Academic rank:</b>	
Assistant professor	685 (32%)
Instructor	1483 (68%)
<b>Committed to a career in academic medicine:</b>	
Yes	1758 (85%)
No	320 (15%)

\* The total number of respondents is 2,168. Owing to missing data, however, the total number of respondents for each specific category is as follows: sex, n = 2,131; ethnicity, n = 2,125; academic rank, n = 2,168; commitment to academic medicine, n = 2,078.

have a mentor, but the difference was not statistically significant.

### Characteristics Associated with Satisfaction with Mentoring

Respondents who identified a mentor were significantly more likely to be satisfied with mentorship: 79% of men-

tored faculty reported satisfaction with mentorship compared with 19% of those faculty who did not identify a mentor ( $P < 0.01$ ). In the multivariable analysis, women, URMs, and assistant professors had lower satisfaction with mentorship, but the associations were not statistically significant (Table 3).

Respondents who had a current mentor, and indicated their degree of satisfaction with the 21 specific characteristics of mentoring (n = 705), were included in the analysis to examine the association between specific qualities of a mentoring relationship and overall satisfaction with mentoring. As shown in Table 4, seven specific qualities of mentoring were significantly associated with increased overall satisfaction with mentoring, after adjusting for sex, ethnicity, and academic rank. In the domain of personal communication, keeping in touch regarding progress and not abusing power were significantly associated with satisfaction with mentoring. In the domain of professional development, providing counsel on professional decisions and providing help with building professional networks were associated with satisfaction. In the domains of skills, research, and academic guidance, providing advice relative to career plans and research and providing opportunities to develop communication skills were significantly associated with satisfaction with mentoring. Our analysis with interaction terms showed that “taking into account gender issues” was not more important to women than men. Similarly, “taking into account ethnic and/or cultural issues” was not more important to URM respondents than non-URM respondents.

## DISCUSSION

Our study examined the prevalence of mentoring relationships within an academic medical center and identi-

**Table 2.** Factors Associated with Having a Current Mentor (n = 2,168)

Factor	Percentage of Respondents with a Current Mentor	Unadjusted Odds Ratio	Adjusted Odds Ratio*	95% Confidence Interval
<b>Sex:</b>				
Male	38%	1.00	1.00	Reference group
Female	41%	1.12	1.18	(0.97–1.44)
<b>Ethnicity:</b>				
Non-underrepresented minority	39%	1.00	1.00	Reference group
Underrepresented minority	36%	0.88	0.78	(0.49–1.25)
<b>Academic rank:</b>				
Instructor	41%	1.00	1.00	Reference group
Assistant professor	36%	0.81 <sup>†</sup>	0.70 <sup>†</sup>	(0.57–0.86)
<b>Committed to a career in academic medicine:</b>				
Yes	44%	1.00	1.00	Reference group
No	16%	0.24 <sup>†</sup>	0.20 <sup>†</sup>	(0.15–0.29)

\* Adjusted for sex, ethnicity, academic rank, and commitment to academic medicine.

<sup>†</sup>  $P < 0.05$ .

**Table 3.** Factors Associated with Satisfaction with Mentoring (n = 2,168)

Factor	Percentage of Respondents Satisfied with Mentoring	Unadjusted Odds Ratio	Adjusted Odds Ratio*	95% Confidence Interval
Sex:				
Male	53%	1.00	1.00	Reference group
Female	50%	0.87	0.90	(0.72–1.13)
Ethnicity:				
Non-underrepresented minority	52%	1.00	1.00	Reference group
Underrepresented minority	46%	0.77	0.75	(0.44–1.26)
Academic rank:				
Instructor	54%	1.00	1.00	Reference group
Assistant professor	49%	0.81	0.81	(0.64–1.02)
Committed to a career in academic medicine:				
Yes	53%	1.00	1.00	Reference group
No	45%	0.73	0.70	(0.49–1.00)

\* Adjusted for sex, ethnicity, academic rank, commitment to academic medicine. Note: Having a current mentor was not included as a potential covariate because this factor was highly correlated with satisfaction with current mentoring.

fied specific factors that are significantly associated with satisfactory mentoring relationships. We found that one half of all respondents are satisfied with mentoring, although we were concerned to find that only 39% of the instructors and assistant professors identify a mentor. Women and members of underrepresented minority groups are nearly as likely to find satisfying mentoring relationships as their majority counterparts. Respondents at a lower academic rank (instructors) and respondents planning an academic career are significantly more likely to have a current mentor.

Previous studies examining the association between sex, ethnicity, and mentoring have been inconsistent. The majority of studies, both in medical and nonmedical fields, have suggested that women and minorities are less likely to find satisfying mentoring relationships than their counterparts. Our study showed nonsignificant differences in the prevalence of mentoring based on URM status or respondent sex. Our findings are comparable with those of a recent study that showed that women and minorities in academic medicine receive mentoring of similar quality as their counterparts (10).

In this study, we identify several specific qualities of the mentoring relationship that are associated with mentee satisfaction. Prior research has described clinical skills and teaching as highly valued by residents when they choose role models (7). Our study shows that the similar personal qualities of keeping in close touch regarding progress and not abusing a position of power are equally essential to the development of a satisfying mentoring relationship. However, our findings also illustrate the active quality of the role of mentors, emphasizing the importance of providing useful advice and guidance as their mentees build a professional network and consider directions for their research. Similarly, the long-term nature of the mentoring relationship is seen in the importance of

providing counsel on important professional decisions and career plans. These are factors that have not been described in prior studies and that help to distinguish further a mentor from a role model or advisor. From our data, specific qualities of the mentoring relationship that are not associated with satisfaction tend to be task oriented issues, such as providing help locating funding sources or help writing grants. These may reflect roles that are also held by other advisors and help to clarify the personal nature of the mentoring relationship.

Our findings should be interpreted in the context of their limitations. Respondents were limited to one medical school, so it is not clear if these findings are applicable to all academic medical centers. In addition, although the response rate was 60%, the sample of underrepresented minorities in this population may be too small to have adequate power to draw conclusions about characteristics of mentoring relationships associated with satisfaction in this subgroup. Even though the response rate is in a range considered acceptable for physician surveys (11), we were limited by the small number of underrepresented minority faculty at our institution. Although sex, ethnicity, and academic rank were not significantly associated with mentoring, the confidence intervals for these results are wide, so we cannot exclude a possible important effect.

To ensure confidentiality, we did not collect specific data about the mentor nor did we examine the relationship from the mentor's perspective. We also do not have data on how long mentees had been on faculty when they completed our questionnaire. This limits our ability to understand whether identifying a mentor is dependent upon the length of time the mentee was at his or her institution. We do not have data on the sex, ethnicity, or commitment to a career in academic medicine among the nonrespondents to our survey. This limits our ability to

**Table 4.** Multivariable Analysis: Qualities of Relationship Associated with Satisfaction with Mentoring, among Respondents with Current Mentor (n = 705)

Factor	Adjusted Odds Ratio* (95% Confidence Interval)
Personal communication:	
Keep in touch regarding progress	4.69 (2.75–8.01) <sup>†</sup>
Does not abuse power	2.95 (1.68–5.20) <sup>†</sup>
Skills, research and academic guidance:	
Provides advice on my goals relative to my career plans	3.12 (1.68–5.77) <sup>†</sup>
Provides opportunities to develop communication skills	2.04 (1.19–3.49) <sup>†</sup>
Thoughtful advice on research	1.90 (1.08–3.34) <sup>†</sup>
Professional development:	
Provide counsel on professional decisions	3.40 (1.86–6.19) <sup>†</sup>
Instrumental in building my professional networks	1.86 (1.07–3.24) <sup>†</sup>

\* Adjusted for sex, ethnicity, academic rank and confounders.

<sup>†</sup>  $P < 0.05$ .

Other qualities of the relationship that were either included or tested in the model but were not significant were personal communication (takes into account gender issues, takes into account ethnic and/or cultural issues, takes a respectful attitude toward my interests and work, provides timely feedback); skills research and academic guidance (discusses pitfalls in my academic growth, provides help locating funding sources, provides opportunities to develop organizational skills, provides opportunities to develop teaching skills, provides opportunities to develop leadership skills, provides help with time management, provides assistance writing grants, provides assistance editing and/or writing paper); and professional development (provides guidance on finding a job or postdoctoral appointment, helps me envision a career plan).

calculate response rates for each ethnic group, so the data presented may not be equally representative for each ethnic group. The percentages of respondents mirror those estimated for the overall faculty, however, so are likely to be representative. Finally, our study did not examine factors associated with dissatisfaction with mentoring. Nevertheless, we believe that mentoring relationships that do not emphasize the qualities identified in our study might result in mentee dissatisfaction.

Despite these limitations, there are several important implications of our findings. Although a fundamental goal of academic medicine is to teach and foster the development of trainees and junior faculty, faculty development programs are infrequently directed at training mentors how to promote the development of residents and fellows. Given the importance of mentoring in career development and satisfaction, faculty development programs should emphasize the importance to both mentors and mentees of the key aspects of mentoring relationships that are identified in this study.

Formal programs to increase mentoring are likely to be well received. One study suggested that formal mentoring programs might have greater benefits than an informal program (12). This is more likely to be apparent if the program is based on clear goals, if it is highly visible to the mentees, if it allows the mentor to be chosen by the mentee, and if the relationship is supported by ongoing activities and evaluation (12). In the only published evaluation of a formal mentoring program for residents, nearly 80% of residents reported that having a mentor was either “very useful” or “crucial” to surviving residency (13).

Mentoring programs may be more likely to be successful and effective if they are based on the specific characteristics of successful mentoring identified in this study, with an emphasis on providing advice and building the mentor-mentee relationship. Asking mentors to keep in close touch regarding their mentee’s progress and to provide thoughtful advice on career plans may seem intuitive to mentors, but formal instruction on mentorship is likely to increase the frequency and effectiveness of these activities. Similarly, by teaching mentors the importance of helping their mentees plan for the future by building professional networks and providing counsel on professional decisions, mentorship development programs are likely to yield more satisfying relationships for junior faculty.

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