A Strategic Approach to Implementation of Medical Mentorship Programs

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ABSTRACT

Background Mentors influence medical trainees' experiences through career enhancement and psychosocial support, yet some trainees never receive benefits from involved mentors.

Objective Our goals were to examine the effectiveness of 2 interventions aimed at increasing the number of mentors in training programs, and to assess group differences in mentor effectiveness, the relationship between trainees' satisfaction with their programs given the presence of mentors, and the relationship between the number of trainees with mentors and postgraduate year (PGY).

Methods In group 1, a physician adviser funded by the graduate medical education department implemented mentorships in 6 residency programs, while group 2 involved a training program with funded physician mentoring time. The remaining 89 training programs served as controls. Chi-square tests were used to determine differences.

Results Survey responses from group 1, group 2, and controls were 47 of 84 (56%), 34 of 78 (44%), and 471 of 981 (48%, $P = .38$), respectively. The percentages of trainees reporting a mentor in group 1, group 2, and the control group were 89%, 97%, and 79%, respectively ($P = .01$). There were no differences in mentor effectiveness between groups. Mentored trainees were more likely to be satisfied with their programs ($P = .01$) and to report that faculty supported their professional aspirations ($P = .001$). Across all programs, fewer first-year trainees (59%) identified a mentor compared to PGY-2 through PGY-8 trainees (84%, $P < .001$).

Conclusions A supported mentorship program is an effective way to create an educational environment that maximizes trainees' perceptions of mentorship and satisfaction with their training programs.

Introduction

A mentor is defined as a supporting person who provides career enhancement and psychosocial support to another individual.[1–3] Career enhancement refers to the mentor's ability to prepare the mentee for the "next step" by providing advocacy, offering challenging assignments, and transmitting ethics.[1,3,4] Mentors provide psychosocial support by enhancing the mentee's sense of identity and work role effectiveness.[1] The first postgraduate year (PGY-1) is a critical period for mentorship, given the unique stressors placed on residents, which include relocation, separation from friends, and long hours that contribute to an increased risk of depressive symptoms.[5,6]

Trainees and faculty mentors mutually benefit from mentorship. Trainees develop enhanced professional skills, greater confidence, and increased scholarly productivity.[7–9] Faculty mentors gain increased academic productivity and accelerated professional recognition.[1,10,11]

The goal of this study was to examine the effectiveness of 2 interventions on increasing the number of mentor relationships in graduate medical education (GME) programs at Stanford University Medical Center and Lucile Packard Children's Hospital. Secondary goals included describing differences in mentor effectiveness, relationship between trainees' satisfaction with their programs given the presence of mentors, and distribution of trainees with mentors across training years.

Methods

Setting and Study Design

We conducted a prospective cohort study at Stanford University Medical Center and Lucile Packard Children's Hospital between January 2014 and January 2015. The institutions collectively have 1143 medical trainees in 96 Accreditation Council for Graduate Medical Education (ACGME)–accredited programs.

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The 2 interventions were aimed at increasing the number of mentor relationships. In group 1, the GME department funded a physician faculty adviser (0.2 full-time equivalent [FTE]) to implement countermeasures against barriers to effective mentorship. The adviser had a master's degree in education for health professionals, with a focus on educational leadership and mentorship. In group 2, the intervention involved funded physician mentoring time for trainees. Faculty coaches were funded by the pediatrics department (0.2 FTE for the coaching director and 0.1 FTE each for the 8 coaches). Scholarly concentration leaders were funded by the department, Lucile Packard Children's Hospital, and Stanford University School of Medicine (0.2 FTE each for 5 leaders).

What was known and gap

Mentors provide career enhancement and psychosocial support to trainees, yet few studies have assessed the effectiveness of different approaches to support mentor programs.

What is new

Two approaches to supported mentorship in selected residency programs were compared to a control group at a single institution.

Limitations

Single institution and lack of randomization reduce generalizability.

Bottom line

Supported mentorship programs maximized trainees' perceptions of mentorship and satisfaction with their training program.

Study Population

Group 1 consisted of 6 residency programs: medical genetics (n = 5), neurological surgery (n = 20), ophthalmology (n = 10), pediatric anesthesiology (n = 6), pediatric cardiology (n = 21), and radiation oncology (n = 15). The designated institutional official chose these programs as a cross-section of residency and fellowship programs. Group 2 consisted of the pediatrics residency (n = 78), the control group, and the remaining 89 accredited programs, which had variable mentorship requirements. Non–ACGME-approved programs were excluded.

Intervention

In group 1, the GME faculty adviser used a 5-step, evidence-based strategy to improve mentoring.

Step 1: Identified Program Rationale The GME adviser met with the program director to highlight the rationale and to provide a 1-hour interactive session on the attributes of successful mentors and the benefits of effective mentorship to faculty.[12] The session emphasized the role of emotional intelligence and traits, such as empathy, humor, and patience, in successful mentoring,[1,8,13] and, given the potential for apathy or incompatibility, also highlighted that not all faculty members make suitable mentors.[1]

Step 2: Provided Trainee Educational Session The GME adviser provided a 1-hour interactive session to trainees, outlining strategies for successful mentorship.[14] It included a discussion regarding mentee roles and relationship engagement, with active follow-through on tasks and solicitation of feedback.[14] These responsibilities were shared with faculty at their session.

Step 3: Designed Structured Program The GME adviser met with program directors to initiate a structured mentorship program and to address the fact that many mentorships fail due to forced relations, random assignment, and lack of trust.[1,15] To address the issue of forced relations, program directors solicited faculty mentors who would volunteer their time outside of clinical commitments for mentorship.[1] Trainees entered into mentor relationships voluntarily.

Step 4: Developed Mentor Profiles To circumvent random assignment of mentors to mentees, volunteer mentor faculty developed profiles of their personal and academic interests, which were used to facilitate early matching of mentors.[16] Trainees selected mentors based on shared interests identified through the profiles.[11]

Step 5: Fostered Mentor Relationships As effective mentor relationships are built on trust, relationships were developed through meetings at least every 4 months.[11] To provide structure for mentor-mentee meetings, a discussion guide was distributed, which highlighted 6 areas of effective mentorship[1]: clinical skill development, posttraining career planning, networking opportunities, sponsorship and advocacy during training, research pursuits, and mentoring on challenging or sensitive issues. The program director reviewed the mentee-mentor relationships annually to facilitate change as needed.

Group 2 was the pediatrics residency program, and it implemented a mandatory resident mentoring

TABLE 1
Resident Survey Completion Rate by Intervention[a]

	PGY-1	PGY-2 to PGY-8	Total
Group 1			
Response	3	44	47
Total trainees	3	81	84
Percentage	100	54	56
Group 2			
Response	12	22	34
Total trainees	26	52	78
Percentage	46	42	44
Control			
Response	59	411	471
Total trainees	121	860	981
Percentage	49	48	48
Institution			
Response	74	478	552
Total trainees	150	993	1143
Percentage	49	48	48

Abbreviation: PGY, postgraduate year.
[a] Group 1, graduate medical education faculty adviser intervention group; Group 2, dedicated time intervention group; χ^2 test, $P = .38$.

program that included funded and volunteer faculty mentors who volunteered time beyond clinical commitments. Each resident received mentorship in 4 areas:

1. Clinical skill development by funded faculty coaches.
2. Scholarship development by funded scholarly concentration leaders and individual volunteer research mentors.
3. Career development by volunteer faculty advisers.
4. Resident wellness taught by volunteer humanism leaders.

An associate program director oversaw mentorship in all domains. Faculty coaches promoted self-reflection, provided feedback, and helped residents strengthen clinical skills. The scholarly concentration leaders mentored residents in developing research skills. Humanism leaders met monthly with residents to discuss topics, such as coping with patient death, workplace conflict, and work-life integration.

Outcomes

The annual GME resident survey measured, among groups, differences in the number of mentors, mentor effectiveness, program satisfaction, and PGY distribution of mentors (provided as online supplemental material). The survey was electronically distributed to trainees between November 4, 2014, and December 15, 2014.

The Institutional Review Board approved this research.

Statistical Analysis

Data were electronically collected via Qualtrics (Qualtrics LLC, Provo, UT). SPSS version 22 (IBM Corp, Armonk, NY) was used to analyze the results. PGY-1 trainees were analyzed separately, given their unique stressors.[5]

Chi-square tests were used to determine group differences between trainees with a mentor and those without ($P < .016$ denoted statistical significance after Bonferroni correction as a conservative measure against multiple comparisons).

Median Likert scores were used to compare mentor effectiveness between groups. Chi-square tests measured the relationship between trainees' satisfaction with programs, resident perception of faculty support and presence of a mentor, and relationship between the presence of a mentor and PGY of training. An alpha level of $< .05$ indicated statistical significance.

Results

The survey was distributed to 1143 trainees, and 552 responses (48%) were received (TABLE 1). In group 1, the response rate was 56% (47 of 84); in group 2, the rate was 44% (34 of 78 trainees); and in the control group, 471 of 981 trainees (48%) responded. There were no significant differences in response rates between group 1, group 2, and the controls ($P = .38$).

Establishment of Mentor Relationships

The percentages of trainees reporting a mentor in group 1, group 2, and the control group were 89%, 97%, and 79%, respectively ($P = .01$). A subgroup pairwise analysis using χ^2 indicated a statistically significant difference between the intervention groups and the control group (TABLE 2).

Description of Mentor Effectiveness

For trainees who reported mentors, there were no differences in mentor effectiveness between group 1, group 2, and the control group. The median Likert

TABLE 2
Incidence of Trainees With Mentors[a]

	No. of Respondents With Mentors	Total No. of Respondents	Percentage	Pairwise *P* Value of Intervention Group Versus Control
Group 1	41	46	89	.10
Group 2	33	34	97	.01[b]
Control	368	466	79	

[a] Group 1, graduate medical education faculty adviser group; Group 2, dedicated time intervention group. Overall χ^2 test, $P = .01$. *P* values considered significant when $P < .016$ after Bonferroni correction.
[b] Denotes significance.

score was 5 out of 6 in each category, indicating that faculty mentors were viewed as effective.

Description of Trainee Satisfaction With Program and Faculty

In the analysis of all groups, trainees with mentors were more satisfied with their programs compared to trainees without mentors (χ^2, $P = .01$; TABLE 3) and were more likely to report that faculty supported their professional aspirations (χ^2, $P = .001$; TABLE 4).

Description of Mentor Distribution

Fewer PGY-1 trainees (44 of 74, 59%) identified a mentor compared with PGY-2 through PGY-8 trainees (399 of 473, 84%), and this difference was statistically significant (χ^2, $P < .001$).

Discussion

Our findings demonstrate a significant increase in reported mentorship from trainees with funded faculty mentors. Faculty mentors received high effectiveness ratings. Mentored trainees were more likely to report greater satisfaction with their program and higher likelihood of feeling that faculty supported their professional aspirations. Finally, of the 21% of trainees without mentors, the majority were PGY-1s, highlighting the need for early mentor identification.

Although funding for mentorship has been examined, this study is the first known to the authors to directly compare 2 funded mentorship models.[17–21] A survey in internal medicine showed that clinician investigators were more likely than noninvestigators to have mentorship funding, with the majority originating from federal grants.[19] A study in surgery confirmed that federal funding for mentorship has increased over the last 20 years for clinician investigators.[20] Although mentorship funding is available through external sources, there is little published on internally funded mentorships.[19,21]

The benefits of our group 1 intervention included the low cost (0.2 FTE) and deployment across multiple programs. Group 2, which was most effective, included a multifaceted approach, with several mentors per trainee at an expense of 2 FTE. The higher cost of the group 2 intervention should be weighed against its benefits. Previous studies report that trainees consider mentors influential to career growth, since those with mentors report an increased likelihood to enter academic medicine and achieve promotion.[18,22,23] Several studies have established that trainees with mentors allocate more time to

TABLE 3
Institutional Comparison of Mentorship Status and Trainees' Program Satisfaction[a]

Program Satisfaction Score	No Mentor, No. (%)	Mentor, No. (%)	Total, No. (%)
Extremely unsatisfied	3 (2.9)	5 (1.1)	8 (1.5)
Very unsatisfied	6 (5.8)	11 (2.5)	17 (3.1)
Unsatisfied	4 (3.8)	15 (3.4)	19 (3.5)
Satisfied	35 (33.6)	97 (21.9)	132 (24.1)
Very satisfied	42 (40.4)	205 (46.3)	247 (45.1)
Extremely satisfied	14 (13.5)	110 (24.8)	124 (22.7)
Total	104 (100)	443 (100)	547 (100)

[a] χ^2 test, $P = .01$.

TABLE 4
Comparison of Mentorship Status and Faculty Support of Professional Aspirations[a]

Faculty Members Support Professional Aspirations	No Mentor, No. (%)	Mentor, No. (%)	Total, No. (%)
Unsatisfied (Likert score 1–3)	9 (8.7)	10 (2.3)	19 (3.5)
Satisfied (Likert score 4–6)	94 (91.3)	431 (97.7)	525 (96.5)
Total	103 (100)	441 (100)	544 (100)

[a] χ^2 test, $P = .001$.

research and produce more publications.[20,23–25] Given the competing demands of faculty physicians, our findings support the need for institutions to consider mentor compensation.

The analysis of secondary aims demonstrated a correlation between those with mentors and program satisfaction, aligning with a previous study that reported the presence of mentors to be associated with higher satisfaction.[26] The majority of trainees without mentors were PGY-1s. PGY-1s have previously been shown to be at an increased risk of having depressive symptoms.[5,27] A longitudinal study confirmed elevated depression and anxiety scores during training and recommended continuous support and counsel by a mentor.[28] Close relationships with mentors have led to improved psychological well-being in young adults with depression.[29] Given the psychological benefits of mentoring, PGY-1 trainees represent a population worthy of mentorship.

This study has several limitations. First, as with all self-reported surveys, data may be subject to recall bias. Because there was no measure of content validity, respondents may not have interpreted questions as intended. Second, data may not be representative of all trainees due to selection bias from some respondents. Selection bias may have also been present in relation to trainees who chose to pursue mentoring. Third, the intervention groups were not formally randomized to ensure a representative cross-section of different trainees in different settings. Group 2 consisted of 1 program due to financial constraints that limited support of a widespread mentoring program.

The results represent findings from a 1-year pilot intervention. Future studies should include pre-post data to better quantify effectiveness. Longitudinal studies to examine quantifiable benefits of mentorship are also needed as a balancing measure against the costs of funded mentorship programs.

Conclusion

Residency programs with a funded mentorship program reported a higher number of mentors compared with programs that were supported by a GME faculty adviser and programs serving as controls. Trainees with a mentor were more likely to report overall program satisfaction and faculty support of their aspirations.

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