

US Dermatology Residents' Satisfaction With Training and Mentoring

Survey Results From the 2005 and 2006 Las Vegas Dermatology Seminars

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Objective: To evaluate residents' satisfaction with dermatology training and mentorship.

Design: Written survey.

Setting: The Las Vegas Dermatology Seminar in 2005 and 2006.

Participants: Graduating dermatology residents in the United States.

Main Outcome Measures: Satisfaction with and importance of 26 training components, overall training satisfaction, satisfaction with availability and quality of mentors, and time spent outside the clinics and classroom with mentors.

Results: Of dermatology residents attending the 2005 and 2006 seminars, 57 (50%) and 49 (54%), respectively, completed the survey. In 2006, 38 more surveys were received by mail, for a combined total of 144 respondents. In 2005 and 2006, respectively, 44 (77%) and 66 (76%) residents scored training at or above 7 on a 10-

point rating scale. Residents were most satisfied with peer teaching, medical dermatology training, pathology slide sessions, and live patient conferences and least satisfied with business management and dermoscopy training. Discrepancies between perceived importance and satisfaction were greatest for business management, time for independent study, and responsiveness to resident input. Residents spending 30 minutes (the median) or more per month outside of clinics and the classroom with someone they defined as a mentor reported higher training satisfaction (8.0 vs 7.2; $P = .02$). Resident-perceived program mentor availability ($P = .001$ in 2005, $P = .002$ in 2006) and quality ($P = .002$ in 2005, $P \leq .001$ in 2006) were also associated with increased overall training satisfaction

Conclusions: Of 26 training components, residents were most dissatisfied with business management training. Resident training satisfaction was associated with program mentor availability and quality, as well as time spent with mentors.

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RESIDENTS HELP SHAPE MEDICAL education by providing valuable feedback to the programs in which they train.¹⁻⁵ In addition to resident satisfaction, an emerging topic for research is the effect mentorship has on resident training and career choice. Although mentorship has been linked to subsequent research productivity,^{6,7} and dermatology residents have reported that strong faculty mentorship is important,³ the association of mentorship with trainee satisfaction is unknown.

METHODS

A 5-page survey was given to all dermatology residents attending the 2005 and 2006 Las Vegas Dermatology Seminars (November 17-20, 2005, and November 9-12, 2006; [http://www.sdefderm](http://www.sdefderm.com/SeminarInfo.aspx?Eventid=277)

[.com/SeminarInfo.aspx?Eventid=277](http://www.sdefderm.com/SeminarInfo.aspx?Eventid=277)). The seminars addressed clinical adult dermatology, practice management, and cosmetic dermatology. The seminar organizer, the Skin Disease Education Foundation (www.sdefderm.com), annually purchases a list of graduating dermatology residents from the American Academy of Dermatology, invites these residents to attend a seminar, and pays all registration, airfare, and hotel costs. All 389 senior US dermatology residents in 2005 and 390 in 2006 were invited to attend the seminars via personal written letter and letters to department chairs. The 2006 Las Vegas Dermatology Seminar survey was also mailed with each invitation residents received to attend the seminar. Although no incentive was offered in 2005, residents who completed the 2006 survey were entered in a raffle for 1 of 3 dermatology textbooks donated by Elsevier Inc (New York, New York). Survey question design and format were created through focus group sessions and input from dermatology faculty and staff (see 2-part eFigure; <http://www.archdermatol.com>).

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Table 1. Satisfaction and Importance Ratings for Dermatology Residency Training Components

Training Component	Importance Score ^a		Satisfaction Score ^a		Discrepancy ^b	
	2005 Survey	2006 Survey	2005 Survey	2006 Survey	2005 Survey	2006 Survey
Medical dermatology	4.9	4.9	4.4	4.3	0.54	0.54
Clinical unknowns and slides	4.8	4.6	4.1	3.9	0.73	0.69
Pathology slide sessions	4.8	4.7	4.4	4.3	0.44	0.37
Dermatologic surgery	4.7	4.7	4.1	4.0	0.68	0.67
Dermatopathology	4.7	4.6	4.2	4.2	0.54	0.48
Patient-specific teaching, clinics	4.7	4.8	3.9	3.9	0.85	0.89
Responsiveness to resident input	4.7	4.7	3.4	3.4	1.31	1.31
Time for independent study	4.7	4.6	3.3	3.2	1.37	1.41
Didactic lectures	4.6	4.4	3.7	3.7	0.94	0.68
Business management	4.5	4.2	2.5	2.6	1.99	1.60
Availability of faculty mentors	4.5	4.4	3.9	4.0	0.61	0.48
Live patient conferences	4.5	4.4	4.3	4.3	0.13	0.14
Pediatric dermatology	4.5	4.6	3.6	3.5	0.98	1.10
Residents evaluate the faculty	4.5	4.4	3.7	3.9	0.73	0.46
Residents evaluate the program	4.5	4.5	3.6	4.0	0.87	0.57
Bedside teaching on consultations	4.4	4.2	3.5	3.4	0.93	0.77
Peer teaching	4.4	4.5	4.4	4.4	0.04	0.05
Peer textbook review	4.4	4.3	4.1	4.1	0.26	0.21
Professionalism and ethics	4.3	4.3	3.9	3.9	0.46	0.42
Journal club	4.2	4.0	3.9	3.8	0.26	0.22
Cosmetic dermatology	4.1	3.8	3.0	2.9	1.17	0.82
Opportunities to teach students	4.0	3.8	4.1	4.1	0.05	0.25
Wound care	4.0	3.9	3.1	2.9	0.99	0.99
Photodermatology	3.9	4.0	3.1	3.3	0.88	0.72
Support for research	3.6	3.4	3.8	3.6	0.21	0.26
Dermoscopy	3.5	3.5	2.7	2.9	0.82	0.61

^aMean scores are based on a 5-point Likert scale (1, lowest; 5, highest) and are rounded to 1 decimal place.

^bDiscrepancy indicates the absolute difference between the mean importance score and the mean satisfaction score (both rounded to 2 decimal places). The largest 7 differences per year appear in bold font.

An introductory 1-page letter distributed with the questionnaires stated that the survey was voluntary and anonymous and should take 15 to 20 minutes to complete. The letter also explained that individual responses would remain confidential and would be reported only in aggregate. This letter was mailed with the survey to residents invited to the 2006 seminar and was read to residents at both seminars when the survey was distributed. Completed surveys were placed in a box that was sealed at the end of the first day of the conference, then mailed to the University of Colorado at Denver and Health Sciences Center. Two of us (S.R.F. and R.E.G.) independently entered data into a database using Microsoft Access statistical software (Microsoft Corp, Redmond, Washington), and discrepancies were resolved. Residents were asked on the questionnaire to rate on a 5-point scale the importance of and their satisfaction with 26 separate aspects of dermatology training; overall training satisfaction was rated on a 10-point scale. Scores for satisfaction were subtracted from importance for each question, yielding a discrepancy score. All statistical analyses were conducted using SAS statistical software, version 9.1.3 (SAS Institute, Cary, NC). We used χ^2 tests to compare categorical variables. Where needed, the Fisher exact test was used. This study (protocol 05-0497) was approved by the Colorado Multiple Institutional Review Board.

RESULTS

DEMOGRAPHIC CHARACTERISTICS

Residents from 30 states, Washington, DC, and Puerto Rico attended the 2005 or 2006 seminar. A total of 134

respondents indicated that they were in their fourth postgraduate year (PGY) of training, and 10 indicated other training years (2005: PGY2, 2; PGY3, 1; PGY6, 1; 2006: PGY3, 2; PGY6, 1; PGY7, 1; PGY8, 1; PGY9, 1).

We received 57 completed surveys from 113 residents attending the 2005 seminar (response rate, 50%). Of 2005 respondents, 37 were women (65%), 19 were men (33%), and 1 did not respond to the sex question.

We received 49 surveys from 90 residents attending the 2006 seminar (response rate, 54%) and 38 surveys by mail, for a total of 87. Of 2006 respondents, 50 were women (57%), and 37 were men (43%).

TRAINING

Overall, respondents from both years were satisfied with their residency experience, with 44 (77%) and 66 (76%) (2005 and 2006, respectively) scoring training at or above 7 on a 10-point Likert scale, with 10 indicating the highest level of satisfaction (mean score, 7.5). Importance, satisfaction, and discrepancy scores for various residency training components are reported in **Table 1**.

CLINICS

Most residents had a resident-run continuity clinic as part of their training program (43 [75%] in 2005; 57 [66%] in 2006), and most agreed or strongly agreed that there

Table 2. Opinions on Workforce Issues

Issue	Agreement Score ^a		
	2005 Survey	2006 Survey	P Value
	There is a shortage of dermatologists	3.7	3.9
The number of dermatology residency positions should be expanded	2.9	3.2	.12
Industry sponsoring of residency positions is good for the field of dermatology	2.2	2.4	.35
Resident self-sponsoring of residency positions is good for the field of dermatology	1.4	1.5	.32

^aMean scores are based on a 5-point Likert scale (1, strongly disagree; 5, strongly agree).

Table 3. Number of Publications

Characteristic	No. of Publications, Mean (Range)		
	2005 Survey	2006 Survey	P Value
	Peer-reviewed articles authored before dermatology residency	2.5 (0-25)	2.5 (0-21)
Peer-reviewed articles authored during residency	2.7 (0-19)	2.2 (0-13)	.40

Table 4. Predicted Practice Components 5 Years After Residency^a

Practice Component	Respondents, No. (%)	
	2005 Survey	2006 Survey
	Medical dermatology	47 (82)
Surgical dermatology	44 (77)	45 (52)
Private practice	40 (70)	67 (77)
Cosmetic dermatology	40 (70)	45 (52)
Teaching	27 (47)	46 (53)
Academics	21 (37)	33 (38)
Pediatric dermatology	20 (35)	40 (46)
Research	11 (19)	15 (17)
Dermatopathology	9 (16)	16 (18)
Hospital practice	5 (9)	8 (9)
Administration	5 (9)	8 (9)

^aResults total more than 100% because it was possible to select more than 1 response.

should be a resident-run continuity clinic in the last year of training (49 [86%] in 2005; 69 [79%] in 2006). Roughly 90% agreed that the variety of skin diseases and the number of patients seen during training were satisfactory.

WORKFORCE PERSPECTIVES

Residents consistently agreed that there is a shortage of dermatologists, disagreed with industry sponsoring, and strongly disagreed with self-sponsoring of training positions (**Table 2**).

Table 5. Factors Influencing Dermatology Practice After Residency

Factor	Respondents, No. (%)	
	2005 Survey	2006 Survey
	Geographic location of practice	52 (91)
Salary	32 (56)	54 (62)
Workload	27 (47)	45 (52)
Autonomy	24 (42)	36 (42)
Advice of mentors	16 (28)	14 (16)
Loan burden	8 (14)	11 (13)
Research	4 (7)	6 (7)

PUBLICATIONS AND PRESENTATIONS

In 2005 and 2006, 17 (30%) and 27 (32%) respondents, respectively, reported having coauthored no peer-reviewed papers before entering residency (**Table 3**). Two questions regarding residency requirements to publish and present at meetings were added to the 2006 questionnaire (questions 42 and 43; eFigure, part B); 36 (42%) reported being required by the training program to publish an article in a peer-reviewed journal during residency, and 41 (48%) reported being required to present at a national or local dermatology meeting during their residency.

CAREER GOALS AND ACHIEVEMENTS

The components residents listed as most likely to be part of their practices 5 years after completing residency are listed in **Table 4**. One-third of respondents planned to pursue fellowship training. In 2005 and 2006, 4 (7%) and 8 (9%) respondents, respectively, indicated having completed training in another residency, including internal medicine (n=5), family practice (n=2), pediatrics (n=3), occupational medicine (n=1), and pathology (n=1). In 2005 and 2006, 8 (14%) and 13 (15%), respectively, had advance degrees in addition to MD or DO degrees (JD, 1; MBA, 2; MPH, 6; MS, 1; RN, 1; PhD, 10).

Geographic location and salary were the most determinants guiding choice of career for residents in 2005 and 2006. In both years, research opportunities experienced during residency were the least powerful determinant (**Table 5**).

MENTORSHIP

In 2005 and 2006, most respondents were satisfied with the availability (40 [70%] and 60 [69%], respectively) and quality (41 [72%] and 58 [65%], respectively) of mentors. Most residents stated they had mentors (44 [77%] and 62 [72%] in 2005 and 2006, respectively). Of residents with mentors, 15 (35%) (2005) and 11 (17%) (2006) reported spending no time with them outside the clinics and classroom. The median monthly time spent with mentors was 30 minutes per month for both years. Overall, residents who spent the median amount of time or longer with mentors outside of clinics and the classroom reported significantly higher residency training sat-

Table 6. Satisfaction, Anticipation of Academic Practice, and Publishing During Residency by Time Spent With Mentors Outside Clinics and Classrooms

	2005 Survey			2006 Survey			Combined		
	≥30 min/mo	<30 min/mo	P Value ^a	≥30 min/mo	<30 min/mo	P Value ^a	≥30 min/mo	<30 min/mo	P Value ^a
Mean satisfaction score on a 10-point scale (No. of respondents)	8.1 (26)	7.3 (18)	.30	7.9 (32)	7.1 (30)	.02	8.0 (58)	7.2 (48)	.02
Envisioned academics as part of practice 5 y after residency, No. (%)	10/26 (38)	6/18 (33)	.73	12/32 (38)	14/30 (47)	.46	22/58 (38)	20/48 (42)	.70
Published any article during residency, No. (%)	21/26 (81)	13/17 (76) ^b	.51	22/32 (69)	26/30 (87)	.09	43/58 (74)	39/47 (83)	.38

^aP values were generated using the Wilcoxon Mann-Whitney test for mean overall satisfaction scores and χ^2 test for other responses.

^bOne respondent did not answer this question.

isfaction (8.0 vs 7.2 on a 10-point scale; $P=.02$); no association was found between increased mentoring and envisioning academics as constituting a significant part of future practice ($P=.70$) or publishing during residency ($P=.38$) (Table 6). Last, residents perceived program mentor availability and quality to be strongly associated with training satisfaction (Table 7).

COMMENT

This study reports the first multiyear, systematic assessment of dermatology resident satisfaction with training in the United States. Focused questions rating respondent satisfaction with and the importance of 26 various aspects of dermatology training constituted most of the survey and set the stage for the respondent to provide a thoroughly considered satisfaction rating of overall dermatology training. As in a Canadian study,³ US residents reported satisfaction with medical dermatology and dermatopathology training components and dissatisfaction with business management, cosmetic dermatology, and responsiveness to resident input. Business management training was ranked lowest by US (both years) and Canadian residents. Large discrepancies between perceived importance and satisfaction with training in wound care, cosmetic dermatology, and pediatric dermatology suggest areas for curriculum improvement nationwide. It is even more troubling that not all dermatology residents are rating their overall training satisfaction higher than 7.5 on a 10-point scale (in this study, 44 respondents [77%] did so in 2005 and 66 [76%] did so in 2006) and that not all are fully satisfied with the quality and availability of their program mentors (Table 7).

Mentorship has been reported to have an important influence on career guidance and research productivity, and our results showed that perceptions of mentor quality and availability were strongly associated with training satisfaction.⁷ Obstacles to improving mentoring include that mentoring is time intensive, undervalued, more dependent on interpersonal relationships than other training aspects, less available to women and underrepresented minority residents, and not often supported by formal curricula.⁸⁻¹² Programs to improve mentoring have provided salary support and public recognition,^{11,13} cre-

Table 7. Overall Training Satisfaction and Resident-Perceived Availability and Quality of Mentors

	Satisfied ^a	Not Satisfied ^a	P Value ^b
2005 Mentor availability	40 (8.0)	17 (6.3)	.001
2005 Mentor quality	41 (8.1)	16 (6.1)	.002
2006 Mentor availability	60 (7.9)	27 (6.7)	.002
2006 Mentor quality	58 (8.0)	29 (6.6)	<.001

^aData are given as number of respondents (mean training satisfaction score: 1, low; 10, high).

^bWilcoxon Mann-Whitney test P values for satisfied (agreeing or strongly agreeing with the statement "I am satisfied with the availability [quality] of mentors at my program") vs not satisfied (disagreeing, strongly disagreeing, or neutral with the statement).

ated groups of mentors (eg, mentor colleges as opposed to individual mentors),¹³ and provided concrete responsibilities and measurements for mentoring.¹⁴ These measures to improve mentoring should be considered by all dermatology residency programs.

Because maintaining resident interest in academic practice is a growing concern, enriched mentorship experiences have been suggested as a means for increasing the number of residents pursuing academic careers.^{15,16} Although we found an association between increased mentoring and training satisfaction, we found no association between increased mentoring and number of publications during residency or intention to practice academic dermatology.

The study is limited in that the anonymity guaranteed respondents by the approved protocol, a necessity because of the sensitive nature of the information gathered, precludes full delineation of all possible selection biases. Although the residents receiving the survey at the 2005 and 2006 seminars came from 30 states, Washington, DC, and Puerto Rico, and all US graduating residents were mailed the survey in 2006, the pool of potential respondents did not include all senior dermatology residents for both survey years. Respondents constituted approximately 15% and 22% of senior US dermatology residents in 2005 and 2006, respectively, and industry sponsorship of the seminar may have positively or negatively affected responses.

Consistent with previous studies showing high self-reported prevalence of mentoring in medicine, in this study more than 70% of dermatology residents reported having a mentor.⁷ Allowing respondents to self-define what constituted a mentor may have broadened the category of mentor to include less active guidance, such as that provided by role models.

Last, the association of mentoring with training satisfaction in this study does not prove causation, and resident attitudes might change as they enter the workforce; for example, recent graduates might score training differently at various time points after residency, such as after 1, 10, or 25 years of clinical practice. Future studies should survey dermatology residents in the United States and worldwide to better understand the role of mentorship in dermatology training at the national and international levels.^{17,18}

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