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Conflicts of interest

Dr Kwatra is an advisory board member/consultant for Abbvie, Celldex Therapeutics, Galderma, Incyte Corporation, Pfizer Inc, Regeneron Pharmaceuticals, and Kiniksa Pharmaceuticals and has received grant funding from Galderma, Pfizer Inc, and Kiniksa Pharmaceuticals. Authors Sutaria, Adawi, Brown, Parthasarathy, Roh, Choi, Bordeaux, Trinh, Le, and Deng and Drs Semenov and Kwatra have no conflicts of interest to disclose.

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Medical schools as gatekeepers: A survey and analysis of factors predicting dermatology residency placement

To the Editor: Dermatology is among the most competitive specialties for residency applicants. With an increasingly rigorous match process, successful applicants typically have strong US Medical Licensing Examination scores alongside extensive research experience. Additionally, 41% of matched applicants attended the top 40 ranked US medical schools (by National Institutes of Health funding), the second highest of any specialty (Supplemental Table I available via Mendeley at https://data.mendeley.com/datasets/gr8w4dg2dv/1.)[1]

Although students cite many reasons for their interest in dermatology, exposure to dermatology in medical school curricula is limited.[2,3] Given less available data on what factors influence dermatology choice and successful matching, we sought to identify schools matching the most dermatology residents and assess associations between school characteristics with successful matching of students.

Table I. Top medical schools ranked by the number of medical students matching to dermatology residency (2017-2020)*

Rank	Name of Medical School	Number of Matched Students	Ratio of Matched Students to Class Size[†]
1	Baylor College of Medicine	27	0.15
2	Harvard University	26	0.15
3	University of Michigan	24	0.14
4	Louisiana State University−New Orleans	23	0.12
4	Northwestern University	23	0.14
4	University of Pennsylvania	23	0.15
7	New York University	22	0.22
7	Columbia University	22	0.16
9	Yale University	21	0.21
10	University of Miami	19	0.09
11	Duke University	18	0.15
11	SUNY Downstate	18	0.09
13	Stanford University	17	0.20
13	University of Central Florida	17	0.14
13	Wayne State University	17	0.06
13	Washington University in St. Louis	17	0.16
17	Johns Hopkins University	16	0.13
17	University of California, Los Angeles	16	0.09
17	University of Texas Southwestern	16	0.07
20	Temple University	15	0.07
20	Texas A&M	15	0.09
20	Drexel University	15	0.06

*The ratio of the number of matched students to medical school class size was calculated to provide a normalized comparison between schools.
[†]Bivariate analysis via 2-tailed *t* test of the mean number of students matched per medical school by variable is described.

Table II. Demographics of current dermatology residents in the 2020-2021 academic year

	Number of matched students	Mean number of matched students	Statistical value
Total number of residents analyzed	1406	-	-
Median, mean (SD) of matched students per medical school	-	6, 7.65 (5.9)	-
Medical school affiliated with a dermatology residency program*			
Yes	1175 (83.6 %)	8.9	P < .001
No	171 (12.2 %)	3.9	
US news medical school research ranking[†]			
1-20	331 (23.5 %)	16.6	r = −0.64
21-40	248 (17.6 %)	10.8	P < .001
41-60	150 (10.7 %)	8.3	
61-80	158 (11.2 %)	7.9	
81-100	205 (14.6 %)	5.3	
Not ranked	314 (22.3 %)	5.5	
Dedicated preclinical dermatology course*			
Yes	626 (44.5 %)	10.3	P = .083
No	577 (41.0 %)	8.5	
Available clerkship year dermatology rotation*			
Yes	858 (61.0 %)	10.7	P < .001
No	357 (25.4 %)	7.3	

*Bivariate analysis via 2-tailed *t* test of the mean number of students matched per medical school by variable is described.
[†]Pearson correlation coefficient (r) reported for US News and World Report 2021 research rank and the number of matched students. *P* < .05 was considered statistically significant. Some medical school residency affiliation, dedicated preclinical dermatology course, and available clerkship year dermatology rotation data were unavailable.

This study was exempted by the University of Pennsylvania Institutional Review Board.

In April 2020, we sought reported medical schools attended for all 2020-2021 dermatology residents among 143 dermatology residency programs listed by the American Medical Association's Fellowship and Residency Electronic Interactive Database database. Available data were obtained from residency websites, supplemented by surveys of program coordinators. For each medical school, we collected their US News and World Report 2021 research rank, affiliated with dermatology residencies by Fellowship and Residency Electronic Interactive Database listings and school websites, class size, and dermatology exposure (dedicated preclinical course and available clerkship year rotations as described by Cahn et al[2]). The ratio of matched students to medical school class size was calculated to provide normalized comparison between schools. Bivariate statistical analysis included 2-tailed t-tests and calculation of Pearson's correlation coefficient.

We obtained complete resident records for 118 of 143 programs, comprising 1406 total residents (83% response rate). Table I lists the top medical schools ranked by the number of students who matched. Baylor, Harvard, and University of Michigan matched the most students of dermatology in the period studied. Adjusting for class size, New York University, Yale, and Stanford proportionately matched the most students. On average, schools with dermatology residency affiliation matched more students from 2017-2020 than did schools without (8.9 vs 3.9; P < .001), as did schools with dermatology clerkship rotations versus those without (10.7 vs 7.3; P < .001) (Table II). Medical schools with higher research rankings matched more students per year than those with lower rankings (r = −0.64; P < .001). The limitations include dependence on data from websites that may have been incomplete or inaccurate, and graduation and gap year information was not available.

Twenty-two medical schools (11% of US medical schools) account for nearly a third (427) of 1406 current dermatology residents. More students matched from schools affiliated with dermatology residency programs and clerkships, suggesting that clinical exposure had an influence. Furthermore, US News and World Report research rank correlated with the number of matched residents, suggesting the importance of research. Medical student publications are a significant factor in residency selection[4] and future dermatology academic productivity.[5] Although school rank correlated with matching, several schools, such as Louisiana State University—New Orleans and University of Central Florida, bucked this trend, ranking outside the top 70 in US News and World

Report yet matching among the most residents. We suggest that qualitative factors, including student-attending mentorship, constitute their success.

Our findings should prompt further research in identifying additional factors that influence increased dermatology matching.

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Conflicts of interest

None disclosed.

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The disproportionate burden of electronic health record messages with image attachments in dermatology

To the Editor: Clinicians face an increasing burden of electronic health record (EHR) notifications.[1] Dermatologists may receive 50 EHR messages per day, associated with increasing burnout symptoms.[2] Recently, health care systems have enabled patients to send unsolicited images to their physicians within patient-generated messages (PGMs). Although patient-generated images may reduce the overtreatment of surgical site infections, to our knowledge, no study has evaluated the role of patient-generated images in dermatology.[3] We sought to characterize the burden of patient-generated imaging sent to Duke University Health System (DUHS) and Duke Dermatology between 2017 and 2019.

We retrieved EHR logs of PGMs sent to DUHS from August 21, 2017, to August 20, 2018, before attachment functionality (preimage period), and from August 21, 2018, to August 20, 2019, after attachments were enabled (postimage period). We used the chi-square test to compare image message burden, the Wilcoxon rank sum test to compare reply time, and a paired t test for mean burnout scores and considered $P < .05$ significant, assuming that each message was an independent observation. We distributed a survey on message behavior and burnout in 2017 and in 2021, adapted from the validated Maslach Burnout Inventory.[4,5]

In total, 1,056,169 and 1,346,444 PGMs, respectively, were sent in the preimage and postimage periods, including 14,079 and 19,450 messages sent to dermatology. PGMs increased in the postimage period by 5.4 messages per 100 arrived visits in nondermatology departments and 7.8 messages per 100 arrived visits in dermatology departments (Fig 1). The proportion of messages in the postimage period with image attachments was significantly higher in dermatology (n = 2797, 14.4%) than in nondermatology departments (n = 45,444, 3.4%; Fig 2; $P < .05$). In Duke Dermatology, the message reply times were significantly shorter in the postimage period (median, 13.3 hours; interquartile range, 2.3-28.9 hours) than in the preimage period (median, 16.5 hours; interquartile range, 2.7-43.5 hours; $P < .05$).

Twenty-seven (77%) clinicians responded to the 2021 survey (Supplemental Material available via Mendeley at https://data.mendeley.com/datasets/t7cbvvdw46/1). Almost all clinicians (93%) agreed that the EHR messages benefit patient communication; however, only 44% of clinicians agreed that