

Differences in Underrepresented in Medicine Applicant Backgrounds and Outcomes in the 2020-2021 Dermatology Residency Match

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PRACTICE POINTS

- Underrepresented in medicine (UIM) dermatology residency applicants (Black and Latinx) are more likely to come from disadvantaged backgrounds and to have financial concerns about the residency application process.
- When choosing a dermatology residency program, diversity of patients and faculty are more important to UIM dermatology residency applicants than to their non-UIM counterparts.
- Increased awareness of and focus on a holistic review process by dermatology residency programs may contribute to higher rates of matching among Black applicants in our study.

Dermatology is one of the least diverse medical specialties. Although there have been studies addressing barriers faced by underrepresented in medicine (UIM) applicants to dermatology, there is little information about how UIM applicants approach and fare in the dermatology residency match process. This study aimed to assess differences between UIM and non-UIM applicants in the dermatology match process. A survey was administered to 2020-2021 dermatology applicants (N=232) to evaluate applicant

characteristics, approaches, and outcomes in the match process. Survey responses were analyzed to determine if differences between variables were statistically significant. An additional survey was administered to dermatology residency program directors to evaluate their approach to the 2020-2021 application process. Our findings are important in identifying interventions to improve equity in the dermatology application process and to improve diversity in the dermatology workforce.

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Dermatology is one of the least diverse medical specialties with only 3% of dermatologists being Black and 4% Latinx.¹ Leading dermatology organizations have called for specialty-wide efforts to improve diversity, with a particular focus on the resident selection process.^{2,3} Medical students who are underrepresented in medicine (UIM)(ie, those who identify as Black, Latinx, Native American, or Pacific Islander) face many potential barriers in applying to dermatology programs, including financial limitations, lack of support and mentorship, and less exposure to the specialty.^{1,2,4} The COVID-19 pandemic introduced additional challenges in the residency application process with limitations on clinical, research, and volunteer experiences; decreased opportunities for

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Ms. Rinderknecht reports no conflict of interest. Dr. Brumfiel and Ms. Jefferson held leadership roles in the Dermatology Interest Group Association while work was being done on this study. Drs. Worswick and Rosman are dermatology residency program directors at their respective institutions and serve on the Association of Professors of Dermatology Residency Program Directors Section steering committee. Dr. Rosman also is the chair of the committee. These are elected positions without financial compensation. This article was not sponsored by any of the aforementioned organizations. The eTable is available in the Appendix online at www.mdedge.com/dermatology.

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in-person mentorship and away rotations; and a shift to virtual recruitment. Although there has been increased emphasis on recruiting diverse candidates to dermatology, the COVID-19 pandemic may have exacerbated existing barriers for UIM applicants.

We surveyed dermatology residency program directors (PDs) and applicants to evaluate how UIM students approach and fare in the dermatology residency application process as well as the effects of COVID-19 on the most recent application cycle. Herein, we report the results of our surveys with a focus on racial differences in the application process.

Methods

We administered 2 anonymous online surveys—one to 115 PDs through the Association of Professors of Dermatology (APD) email listserve and another to applicants who participated in the 2020-2021 dermatology residency application cycle through the Dermatology Interest Group Association (DIGA) listserve. The surveys were distributed from March 29 through May 23, 2021. There was no way to determine the number of dermatology applicants on the DIGA listserve. The surveys were reviewed and approved by the University of Southern California (Los Angeles, California) institutional review board (approval #UP-21-00118).

Participants were not required to answer every survey question; response rates varied by question. Survey responses with less than 10% completion were excluded from analysis. Data were collected, analyzed, and stored using Qualtrics, a secure online survey platform. The test of equal or given proportions in R studio was used to determine statistically significant differences between variables ($P < .05$ indicated statistical significance).

Results

The PD survey received 79 complete responses (83.5% complete responses, 73.8% response rate) and the applicant survey received 232 complete responses (83.6% complete responses).

Applicant Characteristics—Applicant characteristics are provided in the eTable; 13.2% and 8.4% of participants were Black and Latinx (including those who identify as Hispanic/Latino), respectively. Only 0.8% of respondents identified as American Indian or Alaskan Native and were excluded from the analysis due to the limited sample size. Those who identified as White, Asian, multiple races, or other and those who preferred not to answer were considered non-UIM participants.

Differences in family background were observed in our cohort, with UIM candidates more likely to have experienced disadvantages, defined as being the first in their family to attend college/graduate school, growing up in a rural area, being a first-generation immigrant, or qualifying as low income. Underrepresented in medicine applicants also were less likely to have a dermatology program at their medical school (both Black and Latinx) and to have been

elected to honor societies such as Alpha Omega Alpha and the Gold Humanism Honor Society (Black only).

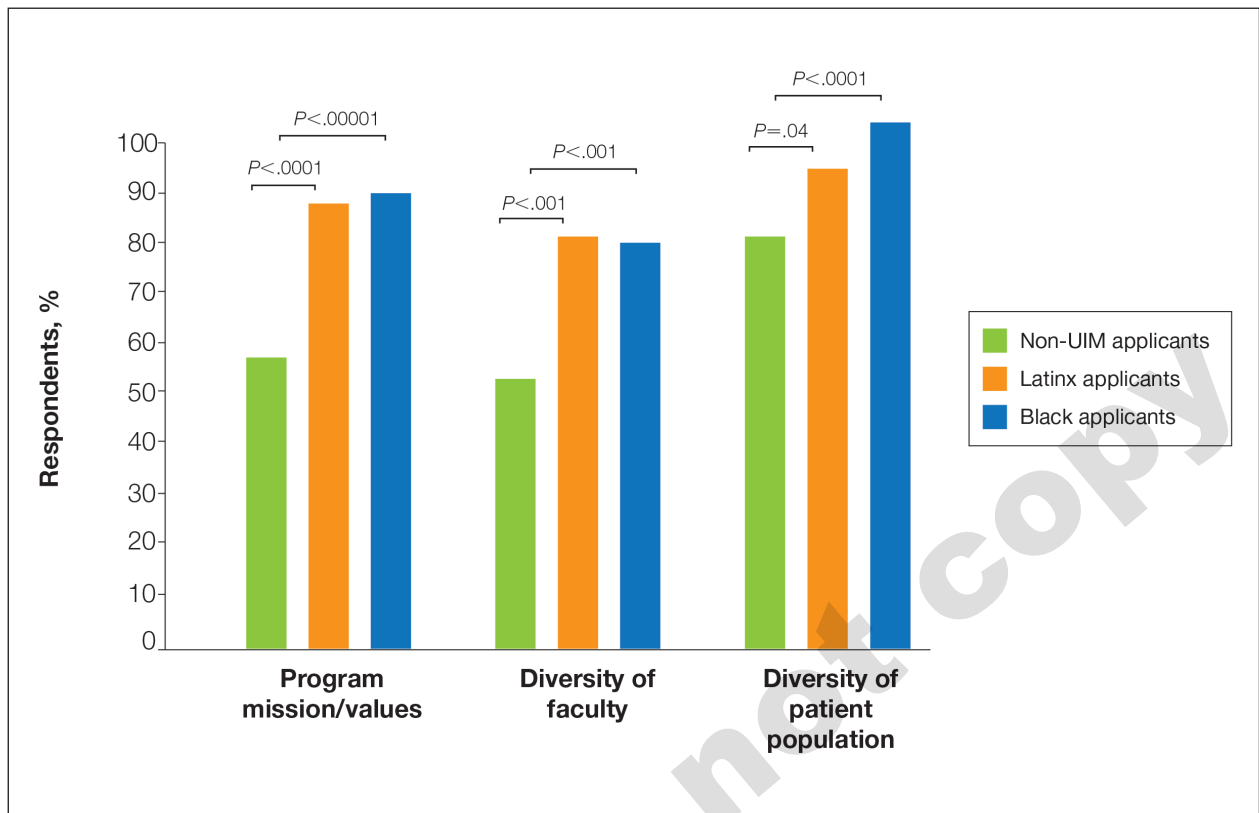
Underrepresented in medicine applicants were more likely to complete a research gap year (eTable). Most applicants who took research years did so to improve their chances of matching, regardless of their race/ethnicity. For those who did not complete a research year, Black applicants (46.7%) were more likely to base that decision on financial limitations compared to non-UIMs (18.6%, $P < .0001$). Interestingly, in the PD survey, only 4.5% of respondents considered completion of a research year extremely or very important when compiling rank lists.

Application Process and Match Outcomes—The Table highlights differences in how UIM applicants approached the application process. Black but not Latinx applicants were less likely to be first-time applicants to dermatology compared to non-UIM applicants. Black applicants (8.3%) were significantly less likely to apply to more than 100 programs compared to non-UIM applicants (29.5%, $P = .0002$). Underrepresented in medicine applicants received greater numbers of interviews despite applying to fewer programs overall.

Match Outcomes

Outcome	Proportion of respondents (%)	P value
Applying to their first cycle		
Black	22/27 (81.5)	.04
Latinx	16/17 (94.1)	.8
Non-UIM	159/172 (92.4)	N/A
Received greater than 21 interviews		
Black	5/23 (21.7)	.003
Latinx	2/16 (12.5)	.2
Non-UIM	10/161 (6.2)	N/A
Matched into dermatology		
Black	21/23 (91.3)	.04
Latinx	15/16 (93.8)	.008
Non-UIM	126/157 (80.3)	N/A
Matched into top 3 residency choice		
Black	20/21 (95.2)	.0002
Latinx	10/15 (66.6)	.2
Non-UIM	95/126 (75.4)	N/A

Abbreviations: N/A, not applicable; UIM, underrepresented in medicine.



Factors dermatology residency applicants considered when compiling rank lists (non-UIM applicants, $n=156$; Latinx applicants, $n=16$; Black applicants, $n=23$). UIM indicates underrepresented in medicine.

There also were differences in how UIM candidates approached their rank lists, with Black and Latinx applicants prioritizing diversity of patient populations and program faculty as well as program missions and values (Figure).

In our cohort, UIM candidates were more likely than non-UIM to match, and Black applicants were most likely to match at one of their top 3 choices (Table). In the PD survey, 77.6% of PDs considered contribution to diversity an important factor when compiling their rank lists.

Comment

Applicant Background—Dermatology is a competitive specialty with a challenging application process² that has been further complicated by the COVID-19 pandemic. Our study elucidated how the 2020-2021 application cycle affected UIM dermatology applicants. Prior studies have found that UIM medical students were more likely to come from lower socioeconomic backgrounds; financial constraints pose a major barrier for UIM and low-income students interested in dermatology.⁴⁻⁶ We found this to be true in our cohort, as Black and Latinx applicants were significantly more likely to come from disadvantaged backgrounds ($P < .000008$ and $P = .006$, respectively). Additionally, we found that Black applicants

were more likely than any other group to indicate financial concerns as their primary reason for not taking a research gap year.

Although most applicants who completed a research year did so to increase their chances of matching, a higher percentage of UIMs took research years compared to non-UIM applicants. This finding could indicate greater anxiety about matching among UIM applicants vs their non-UIM counterparts. Black students have faced discrimination in clinical grading,⁷ have perceived racial discrimination in residency interviews,^{8,9} and have shown to be less likely to be elected to medical school honor societies.¹⁰ We found that UIM applicants were more likely to pursue a research year compared to other applicants,¹¹ possibly because they felt additional pressure to enhance their applications or because UIM candidates were less likely to have a home dermatology program. Expansion of mentorship programs, visiting student electives, and grants for UIMs may alleviate the need for these candidates to complete a research year and reduce disparities in the application process.

Factors Influencing Rank Lists for Applicants—In our cohort, UIMs were significantly more likely to rank diversity of patients ($P < .0001$ for Black applicants and $P = .04$ for Latinx applicants) and faculty ($P < .001$ for Black

applicants and $P < .001$ for Latinx applicants) as important factors in choosing a residency program. Historically, dermatology has been disproportionately White in its physician workforce and patient population.^{1,12} Students with lower incomes or who identify as minorities cite the lack of diversity in dermatology as a considerable barrier to pursuing a career in the specialty.^{4,5} Service learning, pipeline programs aimed at early exposure to dermatology, and increased access to care for diverse patient populations are important measures to improve diversity in the dermatology workforce.¹³⁻¹⁵ Residency programs should consider how to incorporate these aspects into didactic and clinical curricula to better recruit diverse candidates to the field.

Equity in the Application Process—We found that Black applicants were more likely than non-UIM applicants to be reapplicants to dermatology; however, Black applicants in our study also were more likely to receive more interview invites, match into dermatology, and match into one of their top 3 programs. These findings are interesting, particularly given concerns about equity in the application process. It is possible that Black applicants who overcome barriers to applying to dermatology ultimately are more successful applicants. Recently, there has been an increased focus in the field on diversifying dermatology, which was further intensified last year.^{2,3} Indicative of this shift, our PD survey showed that most programs reported that applicants' contributions to diversity were important factors in the application process. Additionally, an emphasis by PDs on a holistic review of applications coupled with direct advocacy for increased representation may have contributed to the increased match rates for UIM applicants reported in our survey.

Latinx Applicants—Our study showed differences in how Latinx candidates fared in the application process; although Latinx applicants were more likely than their non-Latinx counterparts to match into dermatology, they were less likely than non-Latinx applicants to match into one of their top 3 programs. Given that Latinx encompasses ethnicity, not race, there may be a difference in how intentional focus on and advocacy for increasing diversity in dermatology affected different UIM applicant groups. Both race and ethnicity are social constructs rather than scientific categorizations; thus, it is difficult in survey studies such as ours to capture the intersectionality present across and between groups. Lastly, it is possible that the respondents to our applicant survey are not representative of the full cohort of UIM applicants.

Study Limitations—A major limitation of our study was that we did not have a method of reaching all dermatology applicants. Although our study shows promising results suggestive of increased diversity in the last application cycle,

release of the National Resident Matching Program results from 2020-2021 with racially stratified data will be imperative to assess equity in the match process for all specialties and to confirm the generalizability of our results.

REFERENCES

- Pandya AG, Alexis AF, Berger TG, et al. Increasing racial and ethnic diversity in dermatology: a call to action. *J Am Acad Dermatol*. 2016;74:584-587. doi:10.1016/j.jaad.2015.10.044
- Chen A, Shinkai K. Rethinking how we select dermatology applicants—turning the tide. *JAMA Dermatol*. 2017;153:259-260. doi:10.1001/jamadermatol.2016.4683
- American Academy of Dermatology Association. Diversity In Dermatology: Diversity Committee Approved Plan 2021-2023. Published January 26, 2021. Accessed July 26, 2022. https://assets.ctfassets.net/1ny4yoiyrqia/xQgnCE6ji5skUlcZQHS2b/65f0a9072811e11afcc33d043e02cd4d/DEI_Plan.pdf
- Vasquez R, Jeong H, Florez-Pollack S, et al. What are the barriers faced by under-represented minorities applying to dermatology? a qualitative cross-sectional study of applicants applying to a large dermatology residency program. *J Am Acad Dermatol*. 2020;83:1770-1773. doi:10.1016/j.jaad.2020.03.067
- Jones VA, Clark KA, Patel PM, et al. Considerations for dermatology residency applicants underrepresented in medicine amid the COVID-19 pandemic. *J Am Acad Dermatol*. 2020;83:E247. doi:10.1016/j.jaad.2020.05.141
- Soliman YS, Rzepecki AK, Guzman AK, et al. Understanding perceived barriers of minority medical students pursuing a career in dermatology. *JAMA Dermatol*. 2019;155:252-254. doi:10.1001/jamadermatol.2018.4813
- Grbic D, Jones DJ, Case ST. The role of socioeconomic status in medical school admissions: validation of a socioeconomic indicator for use in medical school admissions. *Acad Med*. 2015;90:953-960. doi:10.1097/ACM.0000000000000653
- Low D, Pollack SW, Liao ZC, et al. Racial/ethnic disparities in clinical grading in medical school. *Teach Learn Med*. 2019;31:487-496. doi:10.1080/10401334.2019.1597724
- Ellis J, Otugo O, Landry A, et al. Interviewed while Black [published online November 11, 2020]. *N Engl J Med*. 2020;383:2401-2404. doi:10.1056/NEJMp2023999
- Anthony Douglas II, Hendrix J. Black medical student considerations in the era of virtual interviews. *Ann Surg*. 2021;274:232-233. doi:10.1097/SLA.0000000000004946
- Boatright D, Ross D, O'Connor P, et al. Racial disparities in medical student membership in the Alpha Omega Alpha honor society. *JAMA Intern Med*. 2017;177:659. doi:10.1001/jamainternmed.2016.9623
- Runge M, Renati S, Helfrich Y. 16146 dermatology residency applicants: how many pursue a dedicated research year or dual-degree, and do their stats differ [published online December 1, 2020]? *J Am Acad Dermatol*. doi:10.1016/j.jaad.2020.06.304
- Stern RS. Dermatologists and office-based care of dermatologic disease in the 21st century. *J Invest Dermatol Symp Proc*. 2004;9:126-130. doi:10.1046/j.1087-0024.2003.09108.x
- Oyesanya T, Grossberg AL, Okoye GA. Increasing minority representation in the dermatology department: the Johns Hopkins experience. *JAMA Dermatol*. 2018;154:1133-1134. doi:10.1001/jamadermatol.2018.2018
- Humphrey VS, James AJ. The importance of service learning in dermatology residency: an actionable approach to improve resident education and skin health equity. *Cutis*. 2021;107:120-122. doi:10.12788/cutis.0199

APPENDIX

eTABLE. Applicant Characteristics

Characteristic	Proportion of respondents (%)	P value	Characteristic	Proportion of respondents (%)	P value
Gender			Disadvantaged family background		
Female	148/227 (65.2)	N/A	Black	22/27 (81.5)	<.000008
Male	76/227 (33.5)	N/A	Latinx	12/17 (70.5)	.006
Race			Non-UIM	87/172 (50.6)	N/A
American Indian or Alaskan Native	2/227 (0.8)	N/A	Dermatology program affiliated with school		
Asian	49/227 (21.6)	N/A	Black	19/26 (73.1)	.2
Black	30/227 (13.2)	N/A	Latinx	13/18 (72.2)	.1
Hispanic/Latino/Latinx	19/227 (8.4)	N/A	Non-UIM	141/172 (82.0)	N/A
White	115/227 (50.6)	N/A	Nominated to Alpha Omega Alpha Honor Society		
Multiple races	6/227 (2.6)	N/A	Black	3/27 (11.1)	<.00001
Other	9/227 (4.0)	N/A	Latinx	7/17 (41.2)	.8
Prefer not to answer	7/227 (3.0)	N/A	Non-UIM	66/172 (38.4)	N/A
Medical school location			Nominated to Gold Humanism Honor Society		
50 US states or Puerto Rico	221/232 (95.3)	N/A	Black	3/27 (11.1)	.2
International	7/232 (3.0)	N/A	Latinx	4/17 (23.5)	.4
Caribbean	4/232 (1.7)	N/A	Non-UIM	31/172 (18.0)	N/A
Degree			Took a research year		
MD	214/232 (92.2)	N/A	Black	12/27 (44.4)	.02
DO	14/232 (6.0)	N/A	Latinx	8/17 (47.1)	.008
Other	4/232 (1.7)	N/A	Non-UIM	48/172 (27.9)	N/A
Match outcomes					
Matched	164/198 (82.8)	N/A			
Did not match	34/198 (17.2)	N/A			

Abbreviations: N/A, not applicable; UIM, underrepresented in medicine.