



Why dermatology is the second least diverse specialty in medicine: How did we get here?

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Abstract Dermatology is currently the second least diverse medical specialty, after orthopedic surgery, with only a minority of physicians identifying as underrepresented in medicine (UIM). To diversify our specialty, our understanding and recognition of multifactorial barriers to inclusivity such as financial barriers, lack of mentorship, and the implicit bias against minorities UIM is critical. With collaborative efforts by national dermatology organizations, dermatology residency programs, and medical schools to increase the presence of UIM dermatology physicians in the US health care, this important issue continues to receive the attention it deserves.

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Introduction

Dermatology involves the diagnosis and management of neoplastic, autoimmune, inflammatory, inherited, environmental, and occupational diseases of the skin, hair, and nails, in patients from all age groups, races, and ethnic backgrounds. Although the field of dermatology is diverse in study, it is one of the least diverse medical specialties in terms of the physicians that make up the field. Dermatology is the second least diverse medical specialty, after orthopedic surgery, with only a minority of physicians identifying as underrepresented in medicine (UIM, [Figure 1](#)).¹ The Association of American Medical Colleges (AAMC) defines UIM as, “...those racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the general population.”² These groups include African American, Mexican American, American Indian, and mainland Puerto Rican. Although the United States has experienced significant

diversification in its population over the past century, diversification of the physician workforce has not followed suit. UIM groups continue to make up a small proportion of physicians.³ The percentage of underrepresented minorities in dermatology is even more strikingly discordant ([Figures 2, 3](#)).^{1,3}

According to AAMC data, only 34% of African-American applicants were accepted to medical school in 2015, which is the lowest rate of acceptance compared with peer applicants. The acceptance rates in White, Asian, and Hispanic or Latino American applicants in 2015 were 44%, 42%, and 42%, respectively. Some reasons cited for this discrepancy include medical school entry, matriculation requirements, and nonacademic factors such as socioeconomic status.^{1,3} In that same year, medical school graduates included 5.7% and 4.6% African-American and Hispanic doctors, respectively.³ African-American and Hispanic dermatologists comprised only 3% and 4.2% of all dermatologists in the United States, respectively.¹ According to the US Census Bureau 2018 report, the minority racial population included Hispanic or Latino people, who represent 18.3% of the US population, followed by African-American (13.4%), Asian (5.9%),

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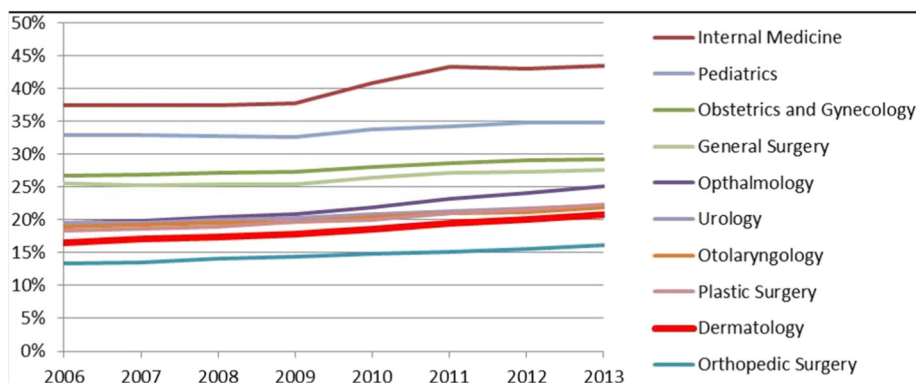


Fig. 1 Total minority representation in Dermatology versus other fields, 2006-2013. Pandya AG, et al, J Am Acad Dermatol 2016; 74:584- 587. Reproduced with permission from Journal of the American Academy of Dermatology.

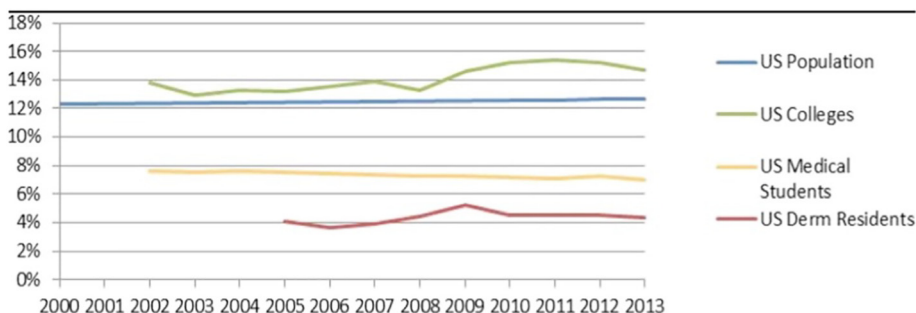


Fig. 2 African American representation among dermatology residents, medical students, college students and United States population 2002-2013. Pandya AG, et al, J Am Acad Dermatol 2016; 74:584- 587. Reproduced with permission from Journal of the American Academy of Dermatology.

American Indian (1.3%), and Native Hawaiian and Pacific Islander (0.2%) individuals.⁴ Although some populations such as Asian Americans are considered racial minority groups according to the census report, they are not UIM as they represent the second-largest proportion of medical school graduates, second only to White Americans.³

Low percentages of UIM dermatologists may perpetuate health disparities and barriers to care for minority patient populations with poor access to health care.^{1,5,6} Physicians from UIM

groups are more likely to provide care for underserved populations, individuals of lower socioeconomic status, patients funded by Medicaid, and patients without insurance.^{1,5,6} Physician allies in these underserved communities may be the key to minimizing pervasive health disparities. Patients may seek providers who are able to relate to their cultural customs, social obstacles, and even skin and hair routines. Race-concordant patient encounters result in higher patient satisfaction.^{1,7-9} It is unclear why this is the case, but patients

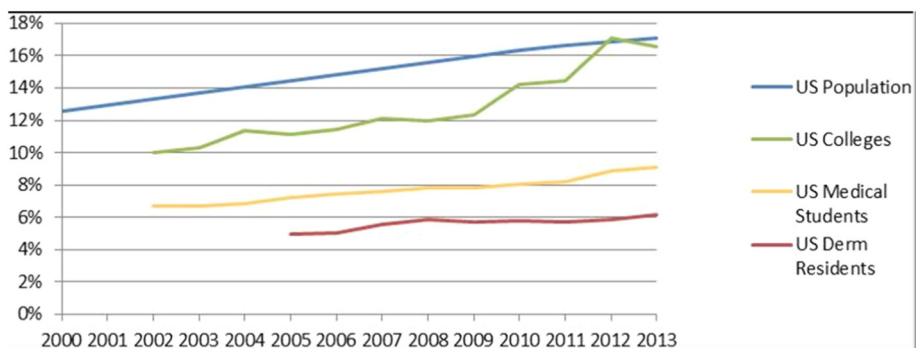


Fig. 3 Hispanic representation among dermatology residents, medical students, college students and United States population 2002-2013. Pandya AG, et al, J Am Acad Dermatol 2016; 74:584- 587. Reproduced with permission from Journal of the American Academy of Dermatology.

may feel most comfortable divulging clinical experiences and clinical manifestations to providers who may be able to personally relate. These preferences may also have historical underpinnings, as some minorities may be distrusting of non-minority physicians due to historic wrongdoings.^{10,11}

Dermatologic clinical trials reflect the progressive diversity of the US population in studies where this demographic information is reported; however, full reporting of demographic data continues to be challenging, especially pertaining to Hispanic research participants. Diverse research cohorts are necessary to identify potential racial or ethnic disparities in the diagnosis and treatment of dermatologic diseases. Medical journals and funding sources can support this effort by prioritizing diversity within the contributions they fund and publish.¹² Diversification within the research realm will undoubtedly affect clinical practice by improving the understanding of diagnosis and management of dermatologic disease in underserved populations.

Barriers to inclusivity in dermatology

The lack of diversity in dermatology is likely multifactorial, and the problem may start early in the students' academic careers. A large percentage of minority students do not progress from high school to college, and even fewer successfully progress from college to medical school. This leaves a smaller pool of UIM students in medical school to consider for dermatology residency programs (Tables 1 and 2).¹³ In a recent attempt to understand some of the specifics related to minority students applying for a dermatology residency, a study from Albert Einstein College of Medicine sent an electronic survey to 242 medical students. With a 64% response rate, all participants cited US Medical Licensing Examination (USMLE) Step 1, clinical grades, and the risk of not matching as the most important barriers to applying for a dermatology residency; however, the UIM students reported the lack of diversity, perceived negative perceptions of minority students by residencies, socioeconomic factors, and lack of mentors as major barriers to applying for a dermatology residency.¹⁵

Table 1 Dermatology residency applicants by race and ethnicity

Race	2015-2016	2018-2019
White, n	392	394
African American, n	46	53
Hispanic/Latino, n	21	43
Asian, n	138	166
Other, n	25	83
Total, n	622	739

Note. The source for this information is from the Association of American Medical Colleges Data Tables C-5: Residency Applicants from US MD-Granting Medical Schools by Specialty, Race/Ethnicity, 2018-2019.¹³

A lack of academic dermatology faculty mentors that are UIM, as well as poor early exposure of dermatology to students who are UIM are recognized contributive factors.¹⁶ Generally, medical students do not receive extensive exposure to dermatology until the third or fourth year of medical school, as many medical school curricula do not prioritize early subspecialty experience; however, students who wish to pursue clinical exposure to dermatology may be able to arrange for elective rotations in the specialty earlier in medical school. Arranging these electives is generally easier at an institution with a dermatology residency program. Students who attend medical schools without dermatology residency programs may need to travel to other institutions to take advantage of these experiences. Lack of early exposure to the field of dermatology decreases the chance that medical students UIM would commit to the challenging pursuit of dermatology residency.¹⁶

Other potential barriers to diversifying dermatology include the emphasis on extrinsic motivators, such as the USMLE Step examination scores, research publications, and Alpha Omega Alpha honor society membership. According to National Resident Matching Program data, 82% of residency programs require a target Step 1 score in the interview selection process.¹⁷ A survey study found that USMLE Step 1 scores, clinical grades, and risk of not matching were the most pressing obstacles when considering applying for dermatology residency. UIM medical students were more likely to cite socioeconomic factors, such as lack of loan forgiveness, lack of diversity, perceived negative perception of minority students by residencies, and poor accessibility to mentors as major barriers to applying for dermatology residency.¹⁵ UIM groups of a moderate or lower socioeconomic status may feel compelled to work and provide for their families rather than seek unpaid educational opportunities and additional costly USMLE preparation courses; furthermore, pursuit of clinical or research rotations at outside institutions that allow students the opportunity to network, build clinical acumen, and gain research experience may not be feasible if financial resources are limited.

Research fellowships may provide an important level of exposure to dermatology that could increase the success of matching. In fact, the number of research publications of US medical students applying for dermatology residency has been steadily rising. In 2018, the average number of publications per successful applicant was 14.7, compared with 11.5 in orthopedic surgery (Figure 1).¹⁸ Many students who have amassed these publications have completed research fellowships during or after medical school. For instance, in 2011, 27% of medical students who successfully matched into dermatology had completed an additional research or nonresearch fellowship.¹⁹ This highlights the dilemma of financial capability, as many research fellowships for undergraduate medical students are unpaid. As the AAMC has reported, only 23% of students participating in a research fellowship receive significant assistance in applying for funds to support their fellowships.²⁰ Although research grants are available, they

Table 2 Number of all residents and dermatology residents by race and ethnicity

Race	2011-2012		2012-2013		2013-2014		2014-2015	
	Total	Derm	Total	Derm	Total	Derm	Total	Derm
White, n	49,070	663	50,740	668	52,063	680	52,877	699
African American, n	5,317	50	5,517	46	5,594	45	5,649	40
Hispanic, n	5,529	35	5,588	36	5,790	44	5,942	47
Total, n	115,293	1,214	117,717	1,240	120,108	1,262	121,579	1,275

Note. The source for this information is the number of residents by specialty and subspecialty and ethnicity, from the Accreditation Council of Graduate Medical Education Graduate Medical Education Data Resource Books.¹⁴
Derm, dermatology.

are highly competitive and sparse compared with the number of interested candidates. In addition, the high interest rates associated with student loans result in significant cost accumulation, even over just one additional year of research training. Thus, filtered selection for students who have completed research fellowships or amassed many research publications may exclude candidates who simply could not afford to pursue a research fellowship. This systemic bias may have detrimental effects on inclusivity in the field of dermatology.²¹

An additional barrier to consider is implicit bias against UIM minorities. Several studies have highlighted implicit bias among residents, pediatricians, primary care providers, medical students, pharmacy students, and nursing students.²²⁻²⁵ In a study assessing physicians' implicit and explicit attitudes about race using the Race Attitude Implicit Association Test, there was a strong physician implicit preference for White Americans among all physician groups studied, except for African-American physicians. White physicians showed the strongest implicit preferences for White Americans. African-American physicians, on average, did not show an implicit preference for either White Americans or African Americans.²⁶ Implicit biases may manifest in less positive interactions, less allowance of time to speak, less smiling, fewer impromptu social comments, less visual contact, and more speech errors and hesitations.²⁷ Given that medical school admissions committees and dermatology residency interview committees are largely composed of physicians, implicit bias may disadvantage minority applicants. To prevent this, committee members must be aware of their implicit biases to prevent discrimination during the application process. The Race Attitude Implicit Association Test can assist in identifying such biases within oneself so that strategies to eliminate or minimize bias can be employed.²⁸

Actions to increase inclusivity in dermatology

It has been proposed that measures that increase the visibility of UIM residents and faculty physicians in dermatology residency programs, encouraging minority students and clinical educators to take on leadership positions within the field, prioritizing the recruitment and retention of UIM faculty and

resident physicians, and developing programs focused on dermatology in skin of color can help bridge the gap and increase diversity within the dermatology physician pool.^{1,27,28} Efforts to support the "pipeline" through mentorship outreach programs for high school, undergraduate, and medical school students may nurture an early interest in dermatology at various levels of education.³¹ Studies have highlighted the importance of community outreach by medical residents and faculty. For example, an outreach program implementing a brief dermatology lecture curriculum can plant the seed of interest and encourage UIM high school students to pursue careers in the field of dermatology.³²

Given the lack of minority representation, the AAMC has expressed commitment to ensuring access to medical education and medicine-related careers for individuals of racial and ethnic backgrounds that are UIM.³³ Encouraging early medical student participation in the Student National Medical Association, an organization committed to supporting current and future underrepresented minority medical students, may also increase diversity within the field of dermatology. By fostering relationships between medical students, dermatology residents, and dermatology faculty while medical students are in their first and second year, mentorship can begin earlier and may therefore be more effective.²⁹ Medical school didactics pertaining to diagnosis and management of dermatology conditions which disproportionately affect UIM minorities may inspire medical students to further explore this niche in dermatology.

A concerted effort was made by the American Academy of Dermatology Diversity Task Force, the Association of Professors of Dermatology, the Society for Investigative Dermatology, the Dermatology Interest Group Association, and the Skin of Color Society to increase the number of practicing board-certified dermatologists that are UIM by supporting the Diversity Mentorship Program. By linking medical students with academic dermatology mentors across the country, a close relationship between clinician and learner can be established. One-on-one mentorship and guidance foster students' interests in the field. This program aims to increase UIM medical student interest in dermatology and the number of these students ultimately matched into dermatology residency. In addition, the program provides a \$1,500 stipend to alleviate

the financial burdens of travel, housing, and other resource costs so that students may participate in the program without limitations.²⁹ Increased advertisement of programs such as these may greatly expand the number of UIM students interested in dermatology which could translate into a greater number of applicants and ultimately dermatologists from UIM groups.³⁰

Another important mechanism to increase inclusivity in dermatology is to educate colleagues about the lack of diversity in dermatology. Proposed mechanisms to spread awareness and enhance the process of resident selection include diversity training, such as the Diversity Champion Workshop, which is currently executed during a live seminar at the annual meeting of the Association of Professors of Dermatology.²⁹ It is critical that seminars are also open to other faculty members who are interested in medical student mentorship. In addition to the workshop, the American Academy of Dermatology Diversity Task Force has developed the Diversity Champion Initiative, a program aimed at utilizing successful diversity activities at medical schools nationwide in hopes of implementing similar activities at other institutions.²⁹

Conclusions

Through the concerted efforts of national dermatology organizations, dermatology residency programs, and medical schools, improving the presence of UIM dermatology providers in the US health care system may be possible. Efforts to increase diversity should involve an understanding of the disparity, identification of potential implicit racial biases, development of strategies to reduce or eliminate bias, and action to intervene early on in students' academic careers. The US has experienced significant diversification in its population over the past century, and a larger percentage of UIM dermatologists may help match the richly diverse US population.

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