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# Publication rates on the topic of racial and ethnic diversity in dermatology versus other specialties

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## Abstract

**Background:** The population of the U.S. is becoming more diverse every year. The field of dermatology is not following the same trend.

**Objective:** To assess the promotion of diversity in the field of dermatology by analyzing publications focused on diversity, compared to other specialties.

**Methods:** The PubMed database was systematically searched to identify publications focused on diversity from January 2008 to July 2019. The search criteria were as follows: dermatology/radiology/ophthalmology/anesthesiology/orthopedic surgery/family medicine/internal medicine/general surgery AND diversity/diverse/racial/race/ethnic/ethnicity/cultural/culture/competency/competence. Comparisons were made using single-factor ANOVA and two-group t-tests. A qualitative analysis was performed for publications in the field of dermatology.

**Results:** From January 2016 to July 2019, there were 25 publications focused on diversity in dermatology (Mean=6.25, SD=2.06), compared to 6 in radiology (Mean=1.50, SD=1.29, P=0.01), two in ophthalmology (Mean=0.50, SD=0.58, P=0.01), two in anesthesiology (Mean=0.50, SD=1.00, P=0.01), 12 in orthopedic surgery (Mean=3.00, SD=1.41, P=0.04), 23 in family medicine (Mean=5.75, SD=2.22, P=0.75), 9 in internal medicine (Mean=2.25, SD=1.71, P=0.02), and 7 in general surgery (Mean=1.75, SD=0.50, P=0.02).

**Conclusions:** Although the field of dermatology has suffered from a lack of racial/ethnic diversity, efforts to promote diversity via increased publications in the last four years have been stronger in dermatology compared to many other fields.

*Keywords: dermatology, diversity, racial, cultural, ethnicity, ethnic, journals, publications*

## Introduction

Although the U.S. population is becoming increasingly diverse, the population of dermatologists is following a different trend: 3% of dermatologists are Black, whereas 12.8% of Americans are Black; 4.2% of dermatologists are Hispanic by origin, whereas 16.3% of Americans are Hispanic [1]. When compared to other medical fields, dermatology has the second lowest percentage of underrepresented minorities in its workforce; the only specialty with a smaller percentage is orthopedics [2]. Underrepresentation of minority dermatologists is worrisome since access to healthcare and outcomes for underrepresented patients can both be improved by increased racial diversity of providers [3].

The ideal racial/ethnic diversity in medicine should mean parity between a specialty's workforce and the population it serves [1]. To date, there is no documentation of how commonly racial/ethnic diversity is emphasized in the publications from various medical specialties. In this study, we sought to assess the efforts demonstrated in the dermatology literature regarding the promotion of diversity in the workforce. We analyzed the trend in total publications focused on diversity in the field of dermatology in comparison with radiology, ophthalmology, anesthesiology, orthopedic surgery,

family medicine, internal medicine, and general surgery.

## Methods

The PubMed database was systematically searched for relevant articles focused on diversity. The search criteria were as follows in the title and/or abstract section for relevant articles published between January 2008 to July 2019: dermatology/radiology/ophthalmology/anesthesiology/orthopedic surgery/family medicine/internal medicine/general surgery AND diversity OR diverse AND racial OR race OR ethnic OR ethnicity OR cultural OR culture OR competency OR competence.

We considered these specialties to be a fair comparison of broad and specialized fields. The search terms were selected based on keywords from papers written by experts who have pioneered diversity in dermatology [1, 2].

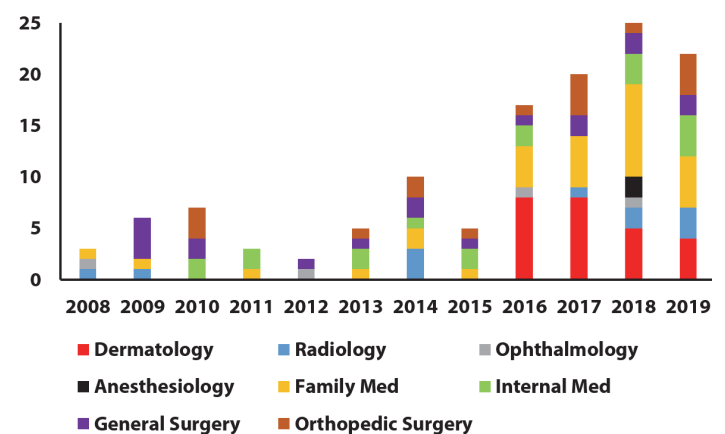
Our PubMed search included studies published in English between January 2008 to July 2019. The initial search resulted in a total of 168 articles. Studies that overlapped between search criteria were counted once and duplicates were eliminated, which resulted in a total of 127 articles. To determine eligibility, we reviewed the titles and abstracts of the 127 articles. The following were our inclusion criteria: research articles, editorial/opinion letters, reports, and/or reviews published in English; titles/abstracts that contained at least one of the following keywords: diversity/diverse, race/racial, ethnic/ethnicity, and culture/cultural. Studies solely focused on gender disparities were excluded.

This literature review performed in an academic medical setting included research articles, editorial/opinion letters, reports, and reviews focused on racial, ethnic, and cultural diversity. Each study from our systematic search in PubMed was recorded by year of publication and medical field of interest. Additionally, we performed a qualitative analysis of the identified dermatology papers to determine the article type of each publication and journals in which they were published.

Single-factor ANOVA and two-group t-tests were used to make comparisons between the total number of publications from the fields of dermatology, radiology, ophthalmology, anesthesiology, orthopedic surgery, family medicine, internal medicine, and general surgery. P values of <0.05 were considered significant.

## Results

There was a statistically significant variation in the number of publications focused on diversity in the fields of dermatology, radiology, ophthalmology, anesthesiology, orthopedic surgery, family medicine, internal medicine, and general surgery for the past decade [ $F(7,88)=2.48, P=0.02$ ], (**Figure 1**). From January 2016 to July 2019, there was a total of 25 publications focused on diversity in the field of dermatology (Mean=6.25, SD=2.06), compared to 6 in radiology (Mean=1.50, SD=1.29,  $P=0.01$ ), two in ophthalmology (Mean=0.50, SD=0.58,  $P=0.01$ ), 2 in anesthesiology (Mean=0.50, SD=1.00,  $P=0.01$ ), 12 in orthopedic surgery (Mean=3.00, SD=1.41,  $P=0.04$ ), 23 in family medicine (Mean=5.75, SD=2.22,  $P=0.75$ ), 9 in internal medicine (Mean=2.25, SD=1.71,  $P=0.02$ ), and 7 in general surgery (Mean=1.75, SD=0.50,  $P=0.02$ ), (**Figure 2**).



**Figure 1** Comparison of the total number of publications focused on diversity per specialty. Regarding dermatology, there was a total of 25 publications from January 2008 to July 2019, compared to 11 in radiology, 4 in ophthalmology, 2 in anesthesiology, 19 in orthopedic surgery, 30 in family medicine, 18 in internal medicine, and 18 in general surgery [ $F(7,88)=2.48, p=0.02$ ].

A qualitative analysis was performed to identify the type of publications addressing diversity in the field of dermatology. Among the 25 publications discussing diversity in dermatology, 16 were categorized as research articles, whereas 9 were categorized as editorial and/or opinion letters, reports, or reviews. These publications were found in the following journals: *Journal of the American Academy of Dermatology*, *JAMA Dermatology*, *Journal of Investigative Dermatology*, *Dermatology Online Journal*, *Journal of Drugs in Dermatology*, *Dermatology*, *International Journal of Dermatology*, *Pediatric Dermatology*, *Cutaneous Medicine and Surgery*, *Cutis*, *PLOS One*, and *Arthritis Care and Research*.

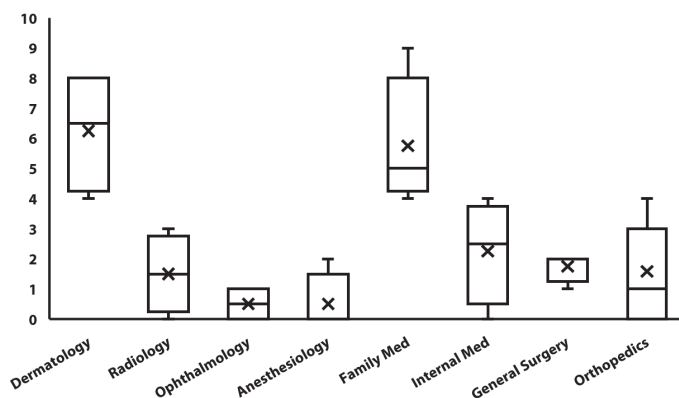
## Discussion

By the year 2044, the U.S. Census Bureau estimates that greater than 50% of the population in the U.S. will identify as a race other than non-Hispanic White [4]. However, the field of dermatology lacks such diversity in its workforce, clinical trials, and other forms of research in which patients are recruited in

cohorts [1, 5, 6]. Despite increases in diversity in recent years, the field of dermatology is still dominated by White faculty and residents [3]. The percentage of diversity decreases significantly with increasing faculty level [3, 7]. Thus, a gap exists in the field of dermatology regarding racial/ethnic equality. However, our results show that dermatology literature displays increased publications regarding diversity of the workforce over the past decade.

A potential explanation for the increase in publications focused on diversity in the field of dermatology might be related to increased diversity awareness and cultural competence in recent years. Prior to 2016, there were no publications focused on diversity in the field of dermatology. Despite this finding, the number of publications on diversity from dermatology quickly caught up to the field with the most (family medicine) and surpassed all other fields analyzed, although these fields all began producing such publications beginning about eight years earlier than dermatology. One of the first papers to spread diversity awareness in the field of dermatology [1] was entitled, "Increasing Racial and Ethnic Diversity in Dermatology: A Call to Action." This call to action was the harbinger for 24 more articles emphasizing diversity, all published in a span of 4 years. In the same time period, this is more than all of the publications regarding diversity from the fields of radiology, ophthalmology, anesthesiology, and orthopedic surgery combined, as well as all of internal medicine and general surgery's publications combined. Many of these publications are titled with words meant to inspire others to promote diversity in dermatology; for example, "Diversity in Dermatology: Roadmap for Improvement" and "Diversity in Dermatology: A Society Devoted to Skin of Color [4, 8]." If healthcare providers in the field of dermatology respond to these calls to action, this will improve the diversity of the workforce and benefit patients.

Dermatology patients have expressed that their overall healthcare satisfaction would increase if dermatologists underwent enhanced residency training in skin of color, cultural competency, cost-conscious care, and empathic communication skills, and if there were greater dermatology workforce



**Figure 2.** Comparison of the average annual number of publications focused on diversity per specialty from 2016 to 2019. From January 2016 to July 2019, there were a total of 25 publications focused on diversity in the field of dermatology (Mean=6.25, SD=2.06), compared to 6 in radiology (Mean=1.50, SD=1.29, P=0.01), two in ophthalmology (Mean=0.50, SD=0.58, P=0.01), two in anesthesiology (Mean=0.50, SD=1.00, P=0.01), 12 in orthopedic surgery (Mean=3.00, SD=1.41, P=0.04), 23 in family medicine (Mean=5.75, SD=2.22, P=0.75), 9 in internal medicine (Mean=2.25, SD=1.71, P=0.02), and 7 in general surgery (Mean=1.75, SD=0.50, P=0.02). Boxes depict 25<sup>th</sup> and 75<sup>th</sup> quartiles. Error bars indicate maximum and minimum scores. Mean scores are indicated by the "X" for each specialty.

diversity [9]. Increased diversity can improve both healthcare access and outcomes for patients from underrepresented communities [3]. Diversity and cultural competence among healthcare providers has been shown not only to enhance patient adherence, satisfaction, and outcomes, but also leads to efficient and cost-effective healthcare and better community integration into healthcare systems [2]. Thus, a lack of racial, ethnic, and/or cultural diversity in dermatology providers may lead to underserved patients who are unable to connect with their physicians, which may ultimately result in feelings of distrust, lack of confidence, fear, and thus worse patient outcomes.

The number of underrepresented minorities who apply to and enter a dermatology residency is disproportionately small [10]. For example, for the 2018-2019 residency application cycle, 7% of applicants were classified as Black or African American, 6% were Hispanic/Latino/Spanish origin, 0.1% were American Indian or Alaskan Native, none were Native Hawaiian or Pacific Islander, whereas 53% were classified as White only [11]. Furthermore, only 3% of all dermatologists in the U.S. are Black and only 4.2% are Hispanic, indicating the significant lack of underrepresented minorities in the dermatology pipeline [1].

The lack of diversity in dermatology resident selection ultimately leads to a lack of diversity in the total pool of dermatologists, including practitioners and faculty in academic programs [3]. Despite the majority of patients seeing dermatologists in a community setting, rather than an academic department, the lack of diversity in the academic setting may have a negative impact on the training of medical students and residents. Trainees are more likely to lack cultural competence, which may lead to worse outcomes for patients [2]. For example, care satisfaction for Black patients has been shown to have the strongest association with a dermatologist's social/technical skill and specialized knowledge in the care of black skin and hair [9]. The same idea may be assumed for patients of any skin of color, ethnicity, and/or cultural background [12].

This study has limitations. There might be publications focused on diversity that did not match our search criteria. Furthermore, publications may not capture all efforts to address diversity within a specialty. However, the results may still indicate the relative efforts to promote diversity in dermatology compared to other fields.

## Conclusion

Increased diversity in the healthcare workforce can help improve medical care for patients in underserved communities [13]. Although the field of dermatology has suffered from a lack of racial and ethnic diversity [3, 18], efforts to promote diversity via increased publications in the last four years have been stronger in dermatology compared to other fields such as radiology, ophthalmology, anesthesiology, orthopedic surgery, internal medicine, and general surgery. Thus, an increase in diversity awareness in dermatology via increased publications gives hope for creating a more diverse pool of dermatologists, as well as enhancing cultural competence among current dermatologists, and thus closing the gap between the racial/ethnic/cultural disparities that currently exist. Overcoming these disparities can lead to a more diverse workforce, and therefore, better access to healthcare and outcomes for patients of all backgrounds [3, 9, 13].

## Potential conflicts of interest

S.R.F. has received research, speaking and/or consulting support from a variety of companies including Galderma, GSK/Stiefel, Ammirall, Leo Pharma, Baxter, Boeringer Ingelheim, Mylan, Celgene, Pfizer, Valeant, Taro, Abbvie, Cosmederm, Anacor, Astellas, Janssen, Lilly, Merck, Merz, Novartis, Regeneron, Sanofi, Novan, Parion, Qurient, National Biological Corporation, Caremark, Advance Medical, Sun Pharma, Suncare Research, Informa, UpToDate and National Psoriasis Foundation. He is founder and majority owner of [www.DrScore.com](http://www.DrScore.com) and founder and part owner of Causa Research, a company dedicated to enhancing patients' adherence to treatment. A.J.M. has received research, speaking



and/or consulting support from a variety of companies including Aclaris, Allergan, Bioniz, Cassiopea, Concert Pharmaceuticals, Covance, eResearch Technology, Inc., Galderma, Incyte,

Informa Healthcare, Johnson & Johnson, Keranetics, Merck & Co., Inc., Pfizer, Proctor & Gamble, Samumed, and UpToDate.

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