

Who Cares about Diversity? Trends in Gender and Racial Authorship and Publications in Plastic Surgery over Time

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Background: The literature in scientific journals represents current standards for plastic surgery (PS) and new observations contributed by leaders in the field. Observations of these trends over time define our progress and document our ever-changing specialty. This study aims to assess the racial/ethnic and gender makeup of authors who have published on the topic of diversity in PS, and to define trends over time, as well as geographic and journal representation of these publications.

Methods: Existing published literature was queried through PubMed with the search terms “plastic surgery” AND “diversity” from 2008 to 2021. The race/ethnicity and gender of collated authors were adjudicated using NamSor software. Trends over time regarding quantity and topics covered, as well as gender and race of authors of these publications, were identified.

Results: A total of 208 papers were identified with our search strategy; 74 met inclusion criteria, representing 398 authors. White, non-Hispanic authors represented the majority of first authors (45%) and the majority of senior authors (54%). Black/African American authors comprised 18% first authors and 19% senior authors. Male authorship predominated, with 58% of first authorship and 64% of senior authorship.

Conclusions: Publications on the topic of diversity have increased in recent years. Trends show a significant shift in authorship, with prevalence of white male contributions rising. Women constitute most authors on the topic of gender diversity. These findings provide important insight into who cares about diversity within our specialty and who shapes its future. (*Plast Reconstr Surg Glob Open* 2022;10:e4590; doi: 10.1097/GOX.0000000000004590; Published online 19 October 2022.)

INTRODUCTION

Academic plastic surgery (PS), through its literature, defines standards of our specialty that determine acceptable norms and opportunities for change. The individual authors of these works are leading voices in the field and, as a group, represent a cohort of plastic surgeons that are invested in the topic and seek to enrich our knowledge or

provoke change. It is through their lens that we see their chosen topics, results, and conclusions. Therefore, if we are to understand this research, it is worth characterizing the author’s viewpoint. Race, ethnicity, gender, and geographic background provide critical cultural context for the work. Furthermore, it is important to understand the timeframe in which work is published; this provides an understanding of how publications can reflect worldwide current events or trends. As we seek inclusive, equitable, and unbiased care, not only in our focused field but in our society at large, it is also essential that our literature have a similar mission. The goal of this article is to quantify the groups that have published on diversity in PS and identify trends over time.

The number of publications focused on the topics of diversity in PS has increased considerably compared to the prior decade. Many of these newer additions to the literature have shed light on the lack of diversity within our specialty.¹⁻⁶ This research provides scientific data or documented facts followed by conclusions and

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Disclosure: The authors have no financial interest to declare in relation to the content of this article.

recommendations from the expert authors. As readers, we rely on these authors to present the information from an unbiased perspective. The demographic characteristics of the authors themselves reveal a secondary conclusion—their quantification and qualification can demonstrate trends in gender, race, and geographic determinants of leaders and experts in our field.

METHODS

Study Design and Setting

A cross-sectional study was conducted to extract all diversity-related studies in PS from 2008 to 2021. The current literature was queried through PubMed with the search terms “plastic surgery” AND “diversity” through April 2021.

All papers from the search underwent a two-stage screening process by a two-person independent review team (N.D. and V.P.B) to select and include articles that met our eligibility criteria. The first stage consisted of a selection of articles based on titles and abstracts, and the second stage was a full-text review. A third reviewer (E.A.M.) moderated the discussion if discordance was encountered, and a joint agreement was made. All papers written in English, within the realm of PS and focused on a specific aspect of diversity were included. Standalone abstracts were excluded.

Data Collection

The review team (N.D. and V.P.B) extracted the following information from each article: year of publication, related topic, journal, institution of the senior author to identify region and country, and the first and last name of every author.

To identify each author’s likely gender, race, and ethnicity, NamSor software (NamSor Applied Onomastics, France) was used.⁷ This software, frequently used in the literature, generates individual scores, scales, and calibrated probabilities for an individual’s likely binary gender and race/ethnicity based on their first and last name. In cases where there was a low probability for accuracy generated by the software, defined by less than 80%, we performed individual analysis for a more accurate identification. An internet search was conducted to corroborate the gender or race/ethnicity by the review team (N.D. and V.P.B). If disagreement was found, a third reviewer (E.A.M.) conducted an independent internet search, and a joint agreement was made.

Outcomes

The primary outcome of this study is to describe the trends of authors’ race/ethnicity and gender among all current diversity studies in PS over time. Secondary outcomes include (1) identifying trends in the number of diversity-related studies that focus on either race/ethnicity or gender; (2) identifying institutions and geographic regions that lead in publication of diversity studies; and (3) exploring the common journals that publish diversity-related topics.

Statistical Analysis

Descriptive statistics were conducted to quantify the racial/ethnic and gender composition of the cohort of

Takeaways

Question: What are the authorship trends in gender and racial diversity over time for plastic surgery publications?

Findings: We found recent changing trends in gender and race with respect to both authorship and volume of articles.

Meaning: An author’s gender and race can provide valuable perspective to their published work.

authors. Categorical variables were presented in percentage and frequency. All statistical analyses were conducted using Stata/IC 16.1 (StataCorp LLC, College Station, Tex.). For further analysis, the papers were divided into two cohorts for comparison based on publication date (before 2015 and since 2015). The year 2015 was chosen to allow an equal span of time between both comparison groups. For inferential analysis, a Fisher exact test was performed to assess differences between the cohorts before and after 2015 when analyzing authors’ gender and race/ethnicity.

RESULTS

General Findings

A total of 208 studies were collected in the initial literature review, with publication dates ranging from 2008 to 2021. Of those, 74 articles met inclusion criteria, representing the work of 398 authors. Ninety-five percent of the publications in our search were from institutions in the United States, with most of the publications coming from academic institutions in Pennsylvania (26%), California (15%), and Washington state (9%). The University of Pennsylvania has published the largest number of papers on diversity in PS, with 12 papers representing 63% of the publications from the state of Pennsylvania and 16% of total publications on the topic (Fig. 1).

In the past 3 years, there were 49 papers published on diversity in PS compared to 25 total papers published from 2008 to 2018, representing increased attention to this important issue (Fig. 2). We examined the distribution of journals that publish on diversity topics. Overall, the *Plastic and Reconstructive Surgery (PRS)* journal accounted for 20% (n = 15) of total publications from the cohort. *PRS* is followed by the *Plastic and Reconstructive Surgery Global Open* journal, publishing 9% of papers (n = 7) and *Annals of Plastic Surgery* publishing 8% of papers (n = 7). Interestingly, the majority of publications came from journals that published less than three articles on diversity, which when combined make up 45% of all publications on diversity topics in PS.

Race/Ethnicity Findings

White, non-Hispanic authors represented the majority of first authors (45%) and the majority of senior authors (54%). Black/African American authors comprised the second-largest racial/ethnic group of authors, with 18% first authors and 19% senior authors. Notably, four of the 13 senior authorships and two of the 14 first authorships

Number of Diversity Studies in U.S.

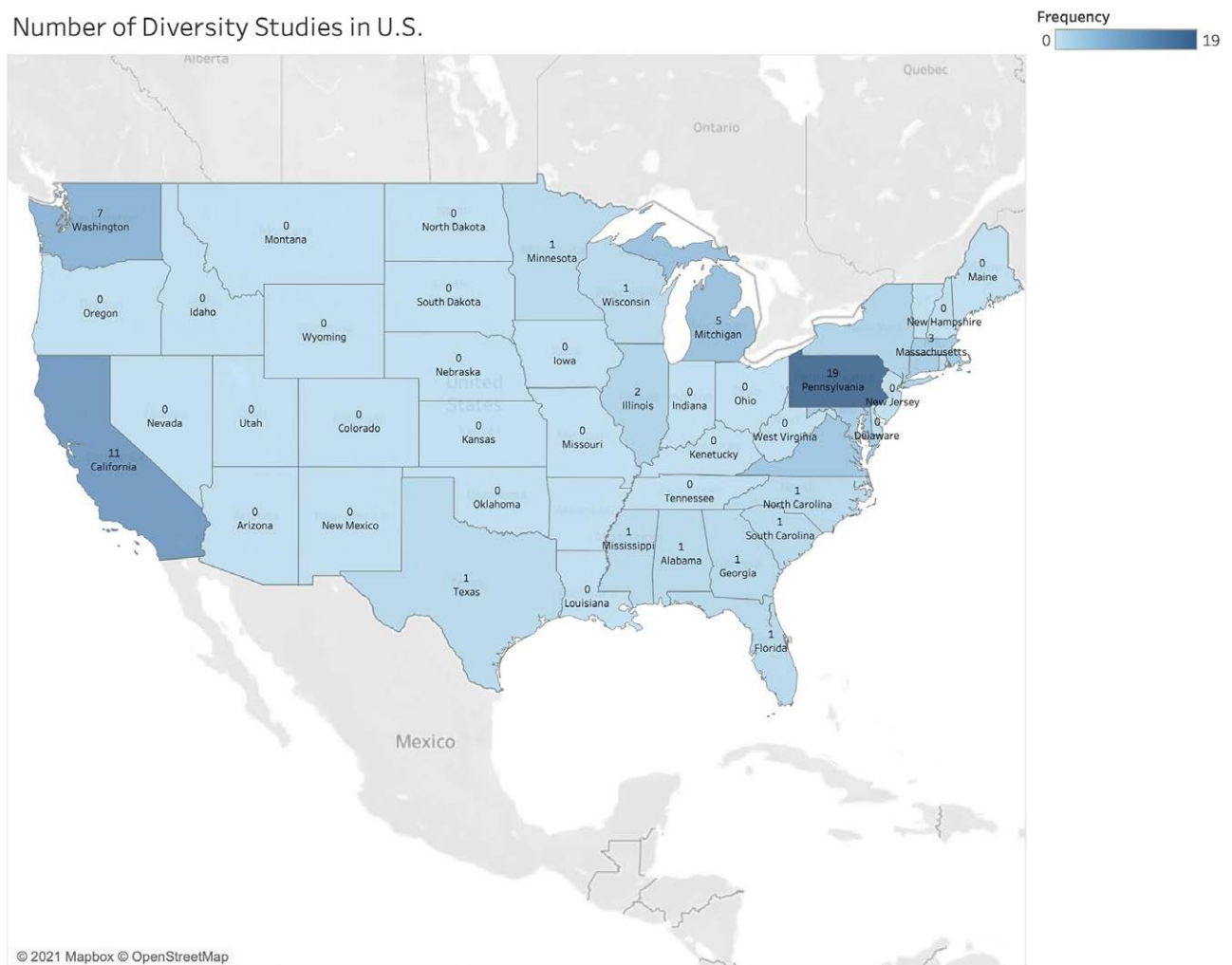


Fig. 1. Heatmap of number of diversity-related studies in the United States.

are attributed to one individual. The remainder of first and senior authorships are represented by West/South Asian authors (16%, 9%), Hispanic authors (10%, 3%), East Asian authors (7%, 15%), and Pacific Islander authors (4%, 0%), respectively.

When comparing authorship trends for diversity papers before 2015 versus after 2015, 33% versus 13% of authors were Black/African American, 46% versus 58% were White, non-Hispanic, 4% versus 5% were Hispanic, 6% versus 13% were East Asian, and 10% versus 11% were South/West Asian, and 0% versus 0.29% were Pacific Islander (Fig. 3). Of note, among all the racial groups, the Black/African American authors were the only group that, when comparing before 2015 versus after 2015, showed a decreased proportion of authors. No statistically significant difference was found in the racial makeup of authors before and after 2015 (P value = 0.421).

Gender Findings

Twenty-two of the papers (30%) in this study pertained to gender diversity specifically. The prevalence

of papers related to gender diversity has increased in more recent years, with zero papers published before 2010, four from 2011 to 2018, and 18 from 2019 to 2021. In the 22 gender diversity–related papers, authorship (first and senior authors) showed female predominance at 59%. Of those, women represented 59% in both first authors and senior authors. When considering all papers on diversity (74 papers), authorship (first and senior authorship) showed male predominance (61%). Of the 39% female authorship, women represented 21% of first authors and 18% of senior authors (Fig. 4). Over the past 3 years, there has been an increase in both men and women authors publishing on the topic of gender diversity within PS (Fig. 5).

When comparing gender authorship trends for diversity papers before 2015 versus after 2015, 54% of authors were male, and 46% were female before 2015; 58% were male, and 41% were female after 2015. No statistical differences in authorship before and after 2015 were found (P value = 0.641). Of note, both male and female authors increased over time, however, male authors increased in a greater degree when compared to female authors.

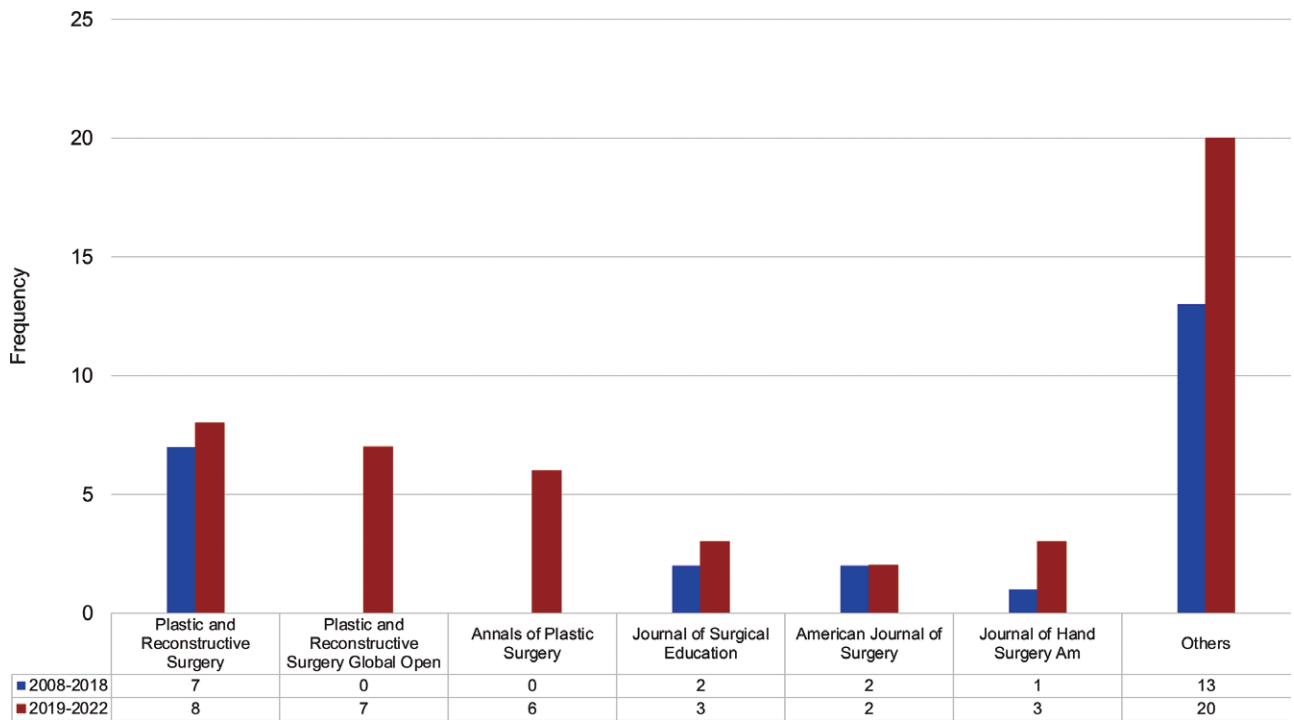


Fig. 2. Journals publishing diversity-related studies.

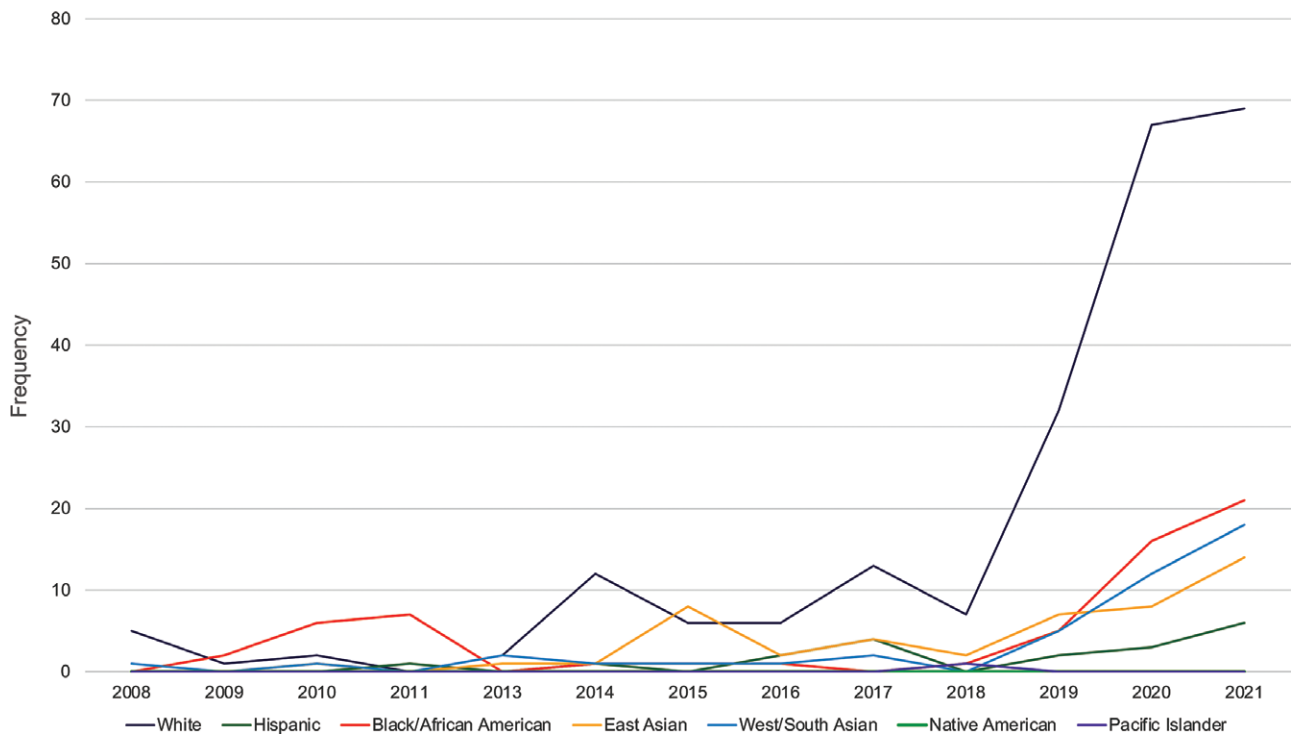


Fig. 3. Trends in race among authors in PS diversity-related articles.

DISCUSSION

Diversity in medicine, especially PS, is in need of growth and expansion. Studies have shown that white individuals account for 68.7% of PS trainees and 82% of tenured academic professors.^{8,9} Women make up a handful of program

directors and department chairs in academic PS.⁹ Black and Hispanic individuals comprise a small portion of the field. These statistics highlight deficiencies in representation at the leadership level for all groups except for white men. It is well documented that diverse teams have been

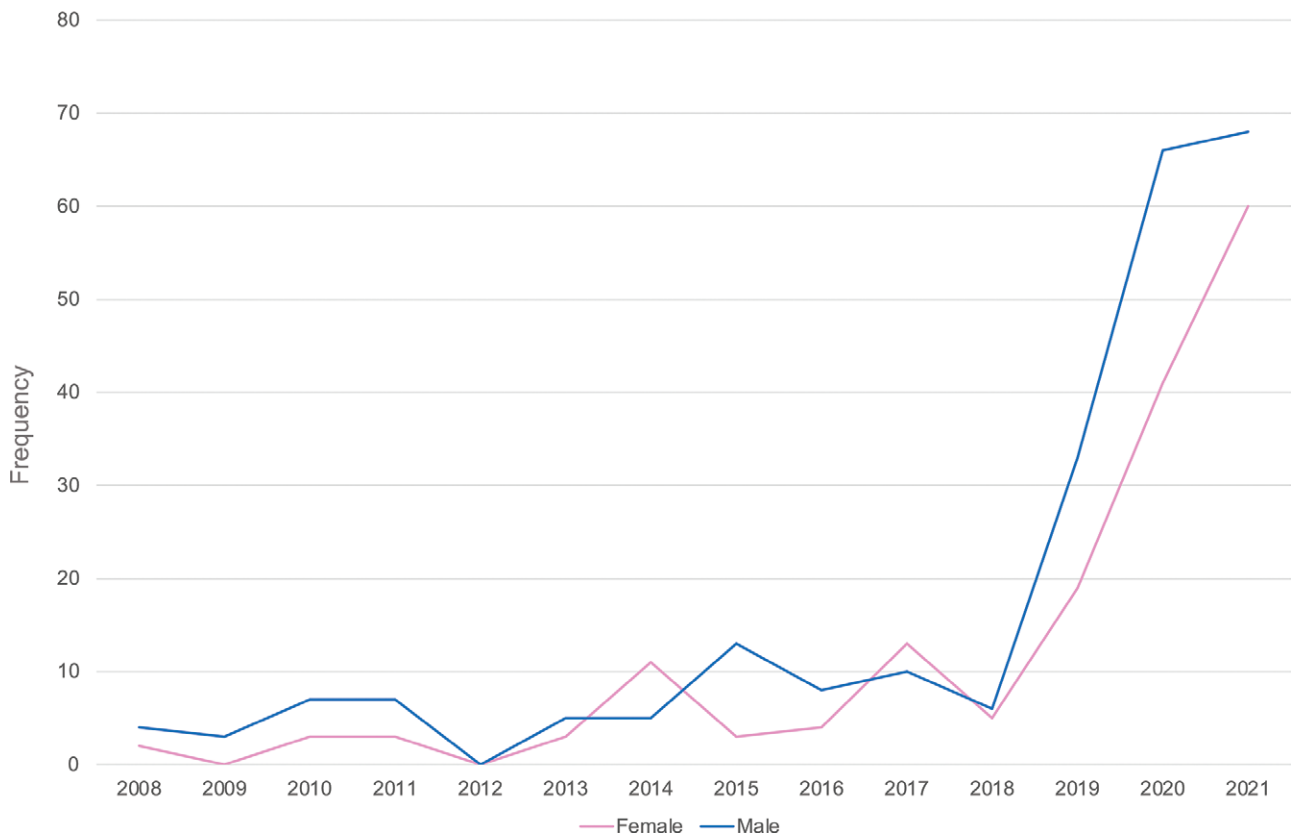


Fig. 4. Trends in gender among authors in PS diversity-related articles.

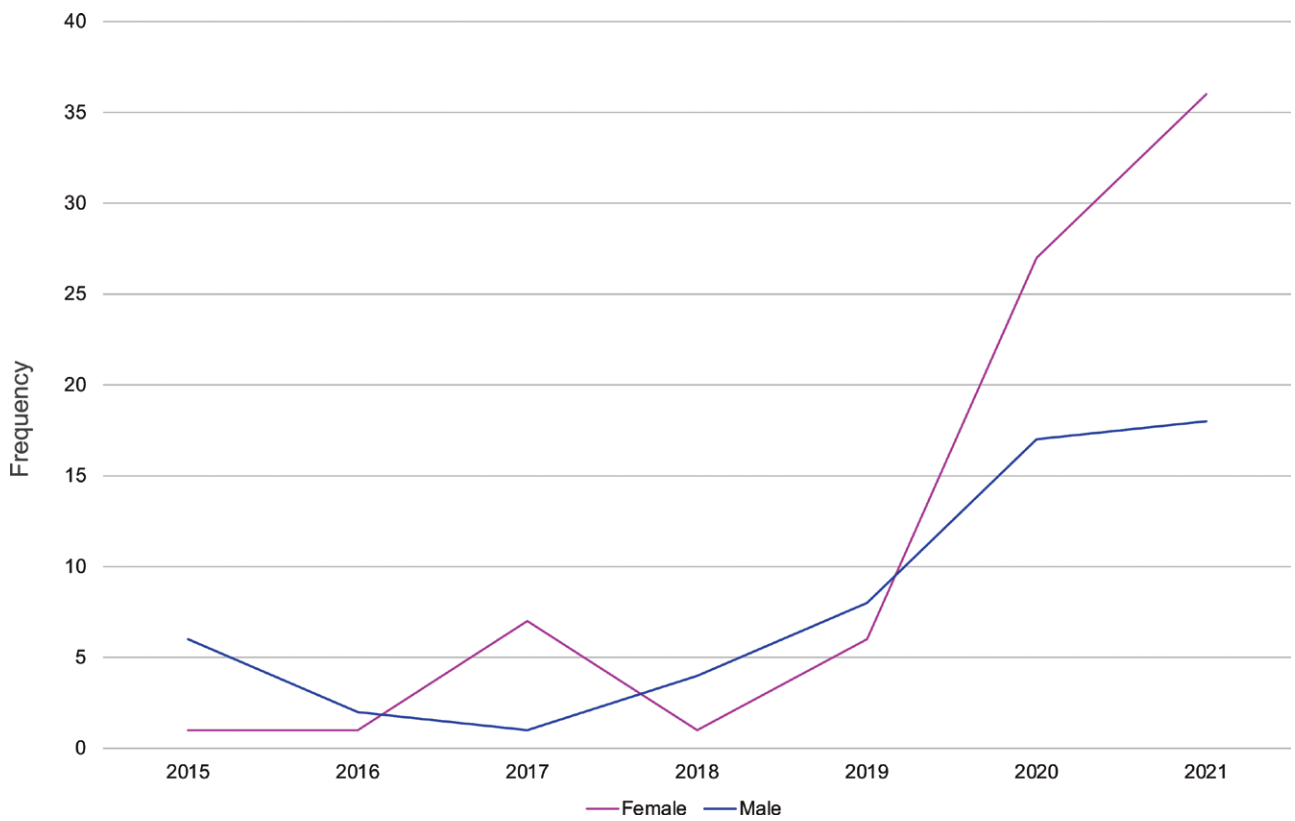


Fig. 5. Trends in gender among authors in PS gender-related articles.

found to be more effective, and that workplace diversity in healthcare results in higher quality patient care and better financial results.¹⁰ We believe that it is through increased visibility in leadership and mentorship that we could help change the pipeline and end the perpetuation of inequity. Interestingly, as we call for increased diversity in our field, this study has elucidated that despite slight improvement, there is still work to be done to achieve equity in authorship among racial/ethnic and gender groups. Therefore, major efforts should be put into place in developing new initiatives/strategies to properly target the racial/ethnic and gender disparities found in our study.

We consider that diversification of our field is of utmost importance for many academic institutions, which is represented by the spike in publications on the subject, particularly from the west and east coasts. In the past 3 years, the number of publications focused on topics of diversity in PS has almost doubled compared to the prior decade. We believe that this influx of information is a useful tool for implementing change, sharing ideas, and advancing our specialty. Many of these diversity publications focus on uncovering the “bottle-neck” that exists that makes diversification of PS a “slow trickle” instead of a steady wave.^{1,2,8,9} These publications also focus on how the scarcity of under-represented in medicine (URiM) and female surgeons in the field has detrimental effects on patients.^{1,2,8,9} Furthermore, they outline how expanding the diversity of our workforce can have a positive impact on team productivity and innovation.^{8,11-13} Increased diversity brings opportunities for cultural exposure and cultural competence for trainees and can have a positive impact on patient care and the doctor–patient relationship.¹⁰

The goal of our work was to examine trends in gender and racial authorship and publications in PS over time. Our methods used NamSor software to analyze gender and race based on their statistical probability. We acknowledge potential bias and limitations to this methodology including binary assignments and lack of confirmation with self-reported authors’ identities. We also recognize the categories of race that were used in the paper are not inclusive. For example, Alaska Native, American Indian, and multiracial groups were not included in our categorization. We believe our results to be reliable despite these limitations, since statistically, these low numbers would not change our findings. However, this points to the bigger picture that hidden system biases can eclipse groups and skew conclusions if not created inclusively.

This study has found a statistically significant increase in women’s authorship on the topic of gender. This is an important finding given the history of women in medicine. It is known that women historically have faced challenges regarding career advancements in medicine.^{6,11,14-20} Despite the equal representation of males and females in medicine today, there is still a disproportionate number of female physicians in leadership positions compared to male physicians.^{6,20,21} When comparing female and male faculty, female faculty are likely to be employed as assistant professors instead of higher leadership roles (full professor, program directors, and/or program chairs) when controlling for postresidency experience and time

since completion of training.^{6,21,19} In fact, a recent review exploring the challenges faced by women in PS highlights the need to recognize and articulate gender-based disparity present in the field.²² Our study results show a parallel shift, with an enhanced focus on gender diversity, as evidenced by the explosion of publication on the topic. Moreover, these publications are also addressing the gender disparity in publication, as many of these studies are led by female first and senior authors. Female authors provide invaluable insight on topics such as fertility during training, sexual harassment, microaggression, and leadership, providing a critical perspective to understanding and addressing these issues.

Surprisingly, similar parallels in authorship in the racial/ethnic diversity literature were not seen. White, non-Hispanic authorship prevailed in papers related to racial/ethnic diversity. In fact, White, non-Hispanic first authorship is increasing (46% before 2015; 58% after 2015), while Black/African American first authorship is decreasing (33% before 2015; 13% after 2015). This shift may represent an attempt at current leaders (mostly white) to take an interest in addressing issues regarding retention, recruitment, and education. This shows forward progress in terms of both awareness and engagement but also highlights the importance of representation of the Black or African American voice in the literature related to this topic and how easily minority viewpoints can be eclipsed. Our study also elucidated the burden of “minority tax,” with the majority of papers written by a small number of institutions. This speaks to the lack of diverse plastic surgeons in our field and the burden of representation forced upon a small group. We are pleased to report a recent increase in diversity publications peppered throughout less popular PS journals. This may represent hope that the topic of diversity in our field is gaining awareness and recognition of the work that needs to be done to better our specialty.

We believe that inequitable authorship in publications represents a symptom of a more global problem. The key to creating a more equitable environment can be found through intervention in (1) early stages of training (eg, medical school rotations, residency) and (2) faculty and leadership levels. For example, such pipeline initiatives have been implemented recently for medical student away rotations, providing diverse students financial support to rotate on PS services and increase their chances to match into PS.²³⁻²⁵ This may encourage institutions to provide a diverse faculty and environment to promote the future generation of plastic surgeons and thus produce diverse leaders and authors.^{19,22}

CONCLUSIONS

This article investigates who cares about diversity in the PS literature and establishes trends over time. We have found that while attention to diversity in PS is improving, the lack of representation in academic publications persists. The slow integration of women plastic surgeons and the paucity of physicians from non-white racial groups in the field of PS, especially in positions of leadership,

has been highlighted in the literature^{2,8,12} and is mirrored in its authorship. Research without diverse authors will lack the enriching perspective and experience they provide and will be void of the downstream benefit of the work, such as providing mentorship and a resource for change. This study provides a report on the current state of authorship in PS diversity publications and serves as a call to action to promote diverse representation in its authorship.

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