# Advocacy for Diversity in Hand Surgery

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**KEYWORDS**

• Allyship • Intersectionality • Pipeline • Concordance • Disparity

**KEY POINTS**

- Hand Surgery as a subspecialty has a lack of diversity in gender and ethnicity.
- The United States is becoming more diverse; however, medicine has not kept pace.
- Advocacy for diversity in Hand Surgery should start early.
- Diversity increases quality and innovation.
- Intersectionality involves overlapping identities in marginalized groups.

## WHERE TO START

To know where to start in advocacy, one must first understand the "why" and understand that advocacy starts early. Although the United States is changing annually in several demographics, Hand Surgery is not. Although we are specifically discussing Hand Surgery as a subspecialty, we would be remiss if we did not note that Orthopedic and Plastic Surgery, which are 2 of the primary pathways to Hand Surgery, have failed to change. The concept of the "leaky pipeline" can be applied to Hand Surgery. This starts with limited exposure during medical school to surgical subspecialties, progressing through challenges in matriculation, compounded by disparities in program completion and academic appointment. Once training is completed, the leakiness of the pipeline is rounded out by low levels of senior executive mentorship and allyship, which make ascension to professorship challenging.

During the last 20 years, the United States has seen an increase in minority group populations reach beyond initial projections. Roughly 4 in 10 Americans identify with ethnic group or race other than White. The decade of 2010 to 2020 was the first in our nation's history where the White population declined.[1] Although the American population grows increasingly diverse each year, the physician workforce has failed to mirror this demographic change. In particular, certain medical specialties (eg, Orthopedic Surgery, Otolaryngology, and Plastic Surgery) have proven less likely to demonstrate significant diversity among physicians and surgeons.[2–5] Compounding the problem is the concept of intersectionality, which combines the ethnic disparity with that of an obvious gender disparity that also exists, with lower female representation in academic and surgical specialties.

Although women comprise approximately 50% of medical school graduates, they represent only 14% of Orthopedic Surgery residents.[6] African Americans and Hispanics comprise 13.3% and 17.6% of the US population but only 4.1% and 2.7% of Orthopedic Surgery trainees, respectively.[6] Furthermore, according to a 2010 study, there were 6.3 male applicants for every female applicant, 13.5 White applicants for every African American applicant, and 14.1 White applicants for every Latino individual applying to Orthopedic Surgery residency.[6] An article by Rao shows that the pipeline from residency to attending surgeons is leaking, with only 1.9% of current Orthopedic surgeons self-reporting as Black/African American, 2.2% as Hispanic/Latino, 1.2% as multiracial

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and 0.4% as Native American.[8] The composition of Plastic Surgery residents and attendings is similarly lacking in diversity with no significant change in demographics of integrated Plastic Surgery applicants between 2010 to 2014 and 2015 to 2020. About 2.9% of all Plastic Surgery residents (integrated and independent) self-reported as Black/African American, 0.8% report as Native American, 11.7% as Hispanic/Latino, and 0.6% as Pacific Islander.[5]

Female representation among trainees has increased greatly but there has been a decline in Black representation of integrated Plastic Surgery residents despite increases in medical school graduates and applicants. The data highlight a discrepancy between the population of applicants and residents suggesting that barriers starting from medical school may contribute to the lack of diversity in Plastic Surgery.[7] Overall the field of Hand Surgery has had a higher female representation than the field of Orthopedic Surgery but below that of Plastic Surgery and significantly below that of General Surgery.[9]

Medical schools have a responsibility to expose students to surgical subspecialties and give students the opportunity to interact with potential mentors. Okike and colleagues[10] reported that musculoskeletal medicine courses in medical school have been shown to increase the likelihood that students will apply to Orthopedic Surgery residency programs, and the observed increases have been disproportionately large among underrepresented in medicine (UIM) and women. Increased exposure to Orthopedic Surgery can lead to the development of mentoring relationships and help to dispel potential negative perceptions of Orthopedic Surgery as a profession. By appealing to all qualified medical students, regardless of race or ethnicity, Orthopedic Surgery residency training programs can ensure that they attract the best and brightest applicants.

Across specialties, residency programs have reported using academic criteria such as United States Medical Licensing Examination (USMLE) scores, class rank, Alpha Omega Alpha membership, and meaningful involvement in research and extracurricular activities as important selection criteria for residency candidates. There is some evidence that using these criteria as residency interview screening tools may maximize training program outcomes such as first-time board certification success.[11] This unfortunately has put a perceived excessive emphasis on standardized testing as a measure of future success. This, in part, has led to the application of a pass/fail system for USMLE testing. Studies have shown disparities in Alpha Omega Alpha (AOA) selection as well as access to research opportunities among minority students.[12]

A study appearing in the *Journal of the AAOS* explored why members of racial and ethnic minority groups have a lower rate of acceptance into Orthopedic Surgery residency programs, resulting in a relative underrepresentation. The study revealed that less than 50% of applicants from black or Hispanic backgrounds actually enroll in residencies, whereas 69% of Asian and 73% of White applicants are accepted and matriculate into Orthopedic Surgery residencies. Underrepresented minority students comprised approximately a third of the applicants and less than a quarter of enrolled candidates.[13] Although several of the prior noted factors may contribute to these numbers, a study by Poon, and colleagues[14] found that ethnicity/race, but not gender, was associated with admission into Orthopedic Surgery residency, even when accounting for academic metrics.

## ADVOCACY FOR DIVERSITY IN HAND SURGERY

Gains in diversity among Orthopedic Surgery fellows has plateaued despite initial improvement from 1995 to 2012.[9,15] Hand Surgery fellows in 2021 (both Orthopedic and Plastic Surgery) are composed of 2.1% Native American, 0.7% African American, 9.2% Hispanic/Latino, and 0% Pacific Islander. It is unclear what the diversity of the Hand surgeon work force is currently. Earp and colleagues[16] noted in 2016 that female surgeons composed 14.3% of the ASSH membership, African Americans 1.7%, Asians 9.8%, Hispanic or Latino 4.3%, and others made up 1.3% of membership among US members. A survey of Black Orthopedic surgeons in the United States showed that greater than 97% thought that racial discrimination in the workplace was a problem and less than 20% thought that Orthopedic Surgery society leaders were sincerely making efforts to end this.[17] Ethnic diversity remains lacking in academic Plastic Surgery groups with only 1.5% of academic Plastic surgeons identifying as African American and 4.9% as Hispanic as of 2004.[2] This unfortunately has not improved much with time with similar rates of diversity in the Plastic Surgery academic workforce in 2019 (1.9% African American and 3.5% Hispanic).[18]

### *Why Are Hand Surgeons from Diverse Backgrounds Needed?*

Physicians and health-care professionals see themselves as "natural history scientists" who

are immune to bias and always remain objective. This is despite volumes of evidence in the literature of patients' documentation of racial bias in health-care settings.[19] Simply increasing the number of traditionally underrepresented people in the workforce is not enough to counteract years of systemic racism, inherent bias, and worse health outcomes for ethnic minorities.[20] Antiracist interventions are needed to counteract this "blindness to race." These interventions can include focused multigenerational mentorship programs, purposeful actions to recruit, support, and maintain underrepresented minority and female surgeons within academia and the medical workforce and antiracism trainings for physicians and staff across health-care systems.

Medical students who participated in mentorship programs that expose them early to surgical subspecialties are more likely to consider and apply to these for match. Successful programs, such as Nth Dimensions, are 14.5 times more likely to apply to an Orthopedic Surgery residency. This has also led to continued mentorship for underrepresented minorities in Orthopedic Surgery residency with focus on minimizing attrition rates and providing support through fellowship and attendinghood.[21] Nth Dimensions has been so successful that its model has been replicated for mentoring future dermatologists and Plastic surgeons.

Residency programs that lack diversity are unappealing to underrepresented minorities. Surgical residencies that promote gender and racial diversity through their websites, through outreach and through recruitment activities are more successful at matching and graduating female and minority surgeons. Ku and colleagues[22] show that females and underrepresented minorities value these activities when making their rank lists. Orthopedic and Plastic Surgery residency programs are lacking in these initiatives though. Examination of program websites and social media accounts show low rates of diversity, equity, and inclusion (DEI) promotion, of diverse faculty or discussion of DEI recruitment events.[23,24]

Continued mentorship and support through residency is critical to preventing attrition of female and underrepresented minority surgeons. In a survey of residents across accredidation council for graduate medical education (ACGME) programs, trainees who had thoughts of withdrawal from residency had significantly lower feelings of sufficient mentorship. Residents with ratings of neutral or negative experience had lower ratings of social isolation. Minority trainees had lower average scores for sufficient mentorship and higher feelings of isolation, along with more challenging execution of physician orders.[25]

## HOW DIVERSITY IN LEADERSHIP LEADS TO MORE DIVERSE HAND SURGEONS IN GENERAL

Despite this, there has been an increase in the number of faculty members across Orthopedic Surgery institutions designated as the DEI department leader. However, there remains suboptimal support for this position, including protected time and funding, which limits the potential for change.[26]

There has been a small increase in the number of female authors from 2006 to 2019 in the Hand Surgery literature with an increase from 10.9% to 20.1% for first authors and from 7.6% to 14.2% in senior authors.[27] There have been some purposeful efforts within Hand Surgery associations to improve gender diversity and highlight female Hand surgeons. Directed efforts were implemented by the American Society for Surgery of the Hand (ASSH) to include women presenters in expert panels. A call for abstract and panel content at the ASSH meeting included strong consideration for proposals that include women, underrepresented minorities, and those from diverse practice backgrounds. This directed effort was proven to increase female authorship to 26% from 20% from the prior year. This also led to a decline in all male speaking panels from 46% to 29% from the year prior. This however did not affect female lead authorship after implementation.[28] Despite these gains, there are fewer female leaders in Hand Surgery leadership positions than would be anticipated (13.6% of available positions are held by women).[29] Hand Surgery fellowship directors are also lacking in diversity. About 13.3% are female, none are African American and only 2 (3.6%) are Hispanic.[30]

Using the business world as a model, we can see how integration of diversity into the leadership structure can reap large benefits to the field as well as our patient population. In a survey of more than 1700 companies examining diversity in management, it was found that companies with more diversity earned more revenue from new products and services, especially when women held greater than 20% of positions.[31] Inclusive workplaces show increased job satisfaction and engagement. Diversity reduces "groupthink" and enhances decision-making, with teams solving problems faster and producing higher quality intellectual property. Mixed gender teams also better manage team and group conflict.

## HOW DIVERSE HAND SURGEONS LEAD TO BETTER PATIENT SATISFACTION

Racial disparities exist in health care even after controlling for sociodemographic variables. The

previously noted meteoric rise in minority groups in the United States makes solving health-care disparities one of the most important aspects in improving our health-care system. African American patients are more likely to report that people of different races than them have different attitudes regarding cosmetic surgery and that a Plastic surgeon of the same race or ethnicity can better address their concerns and provide a more desired result even after adjusting for patients with higher income (above US$125,000 per year).[32] Patients report that physicians who share the same race as them report their visits as more satisfactory and lead to more patient participation.[33–35] Patients with a lower understanding of the health care system, a known barrier to patient satisfaction and outcomes, and is seen at higher rates in underrepresented minority patients, ask fewer questions during Hand Surgery evaluations.[36] Race concordant providers spend on average 2.2 minutes more with their patients, and patients seek physicians who are of concordant race with them, especially if they have had past experiences they deem racist with the health-care system.[37] Racial health disparities can be shortened through racial concordant physician–patient pairings, improving patient-centeredness communication, improving information giving, and focusing on partnership building and patient engagement during clinic visits.[38,39] Research has demonstrated that underrepresented minority physicians are more likely to serve uninsured patients and practice in underserved areas, leading to improved patient satisfaction and access to care for underserved groups.

Literature examining racially and ethnically diverse patients' utilization of total joint arthroplasty (TJA) are limited by disparate access to, utilization of and by worse postoperative outcomes. Racial-ethnic minority groups have worse preoperative comorbidities, are less likely to have private insurance, less likely to seek TJA surgery, and more likely to have longer postoperative length of stays or need skilled nursing facilities, and have increased postoperative readmission rates and more postoperative complications.[40,41] Surgeons are just as likely to recommend total knee arthroplasty to patients with clear indication for surgery for patients regardless of race or gender without high-risk comorbidities in simulation situations but retrospective data show that minority rates of total knee arthroplasty are lower even when adjusting for patient related and health-care system–related characteristics.[42,43] The Hand Surgery literature has a paucity of data documenting differences in access to and outcomes for racial discordant and concordant physician–patient relationships. This needs to be a focus of future research to better understand why a racially diverse Hand Surgery workforce is so critical.

## DEFINING INTERSECTIONALITY

The term "intersectionality" was created by Kimberlé Crenshaw 1989 to describe the compounding social forces, identities, and ideologies through which power structures are legitimized. Initially, she used the term to discuss the exclusion of women of color from distinction in both the feminist and civil rights movements because of their dual identities, which essentially rendered them invisible.[44] Currently, the term is used to describe multiple levels of injustice for those with overlapping identities in marginalized groups. In reference to intersectionality in medicine, Balzora and colleagues said, "intersectional discrimination born from individual, institutional, and systemic racism and sexism is pervasive and embedded in the culture of medicine." Women of color who are UIM, in particular Black women, will be the focus of this discussion because they face some of the biggest ramifications of intersectionality in surgery and academia. Ignatius and colleagues[46] said "If true equality in the workplace is what we are after, sooner, or later we'll have to address the issues that are unique to women of color—and women of color and Black women, in particular in the workforce."

## INTERSECTIONALITY IN ACADEMIC MEDICINE AND SURGERY

The Association of American Medical Colleges reported merely 0.7% of United States medical school faculty were Black women as of 2019. Furthermore, there were 60% more Black male full professors than Black female full professors, even though Black women physicians outnumber Black male physicians. Black women physicians are reported by the Economic Policy Institute to earn 27% less than their White male physician counterparts.[45] There are few Black women in academic surgery, and even fewer holding leadership positions. In fact, less than 1% of academic surgical faculty are Black women, compared with 49% White men and 14.5% White women.[39]

## EXPERIENCES OF INDIVIDUALS WITH INTERSECTIONAL IDENTITIES IN SURGERY

Many studies have captured the experience of those from racial/ethnic or sex minority groups but there has not been extensive study of the experience of people with intersectional identities in academic medicine, surgery, and specifically

Hand Surgery. In a study of residents in training, residents considered sex or racial/ethnic minorities reported the negative impact of their identities on their training. In a cross-sectional national survey of 7409 General Surgery residents, 17% of respondents reported racial discrimination, and 32% reported sex discrimination. In a study by Samora and colleagues of female Orthopedic surgeons, 92% of respondents had experienced some form of microaggressions in residency or practice. Women of color are often omitted from dialogs and data in academic medicine, with the term "women" often referring to "White women," deleting the complex experience of women of color.[46] Recent studies of the effects of intersectionality in academia and clinical medicine have shown that women of color are more likely to feel unsafe in their workplace 40% of the time due to their sex and 28% because of race. Women of color are also more likely to experience racial harassment than their male counterparts of all races. They are equally as likely to experience sexual harassment as White women. The results of a survey of 274 Black Orthopedic surgeons in practice displayed the compounding effects that intersectionality can have on Black women. In comparison to Black men, Black women often reported a statistically significant trend toward diminished occupational opportunity and greater workplace discrimination. Black women also reported experiencing less inclusive and equitable environments and more microaggressions than Black men.[45]

While dealing with the challenges of racism, isolation, lack of mentorship, and unequal compensation, ironically underrepresented faculty of color take on the "minority tax," additional work which includes diversity efforts, mentorship responsibilities, and clinical responsibilities. Such service, although important, often does not meet traditional metrics for academic promotion and success.[47] A survey of attendees of the national women physician's leadership conference reported that nearly 50% of women physicians reported spending more time on service tasks than their male counterparts and a higher proportion of women of color physicians identified race as a factor in feeling obligated to volunteer for academic citizenship tasks.[17] Thus, women of color experience a woman minority tax in which they are expected to handle both minority and gender-related issues. Women of color from underrepresented backgrounds are often tasked with administrative activities, excess committee participation, handling minority and gender affairs, performing outreach and participating in media campaigns, and recruitment and retention of women and minority faculty.[39,48] The woman minority tax has also be called the "invisibility tax," and part of this experience can include Black women neither given credit for their ideas nor given acknowledgment for their hard work, which can lead to anger and resentment, and ultimately burnout.[46]

## IMPACT OF INTERSECTIONALITY IN ACADEMIA AND BEYOND

The ramifications of intersectionality can take a toll on emotional and mental well-being. The internal fear of confirming negative stereotypes of a group is called "stereotype threat." Stereotype threat has been shown to have psychological consequences for Black women, including increased anxiety in health-care settings. Black women can fear being perceived as aggressive, bossy, and selfish when they voice their opinion when compared with White colleagues making the similar statements.[25] Moreover, Black women are more likely to be criticized and punished when in leadership positions. Black women can often think they are unable to be their authentic selves due to status distance, the distance from the perceived norm and power structure in an organization, which in the case of academic medicine would be White men. Ignatius and colleagues[46] states that "when you suffer from status distance, you'll seek to conceal status-confirming information about yourself… many Black women feel they have to dampen aspects of their personality to fit into the culture of their workplace."

## SUPPORT OF INDIVIDUALS FROM INTERSECTIONAL BACKGROUNDS

Despite the challenges of intersectionality, underrepresented women of color have persevered and should be valued and supported for their resiliency, intelligence, and unique perspective. Improving the conditions for Underrepresented Minority (URM) women will undoubtedly improve conditions of other people with intersectional identities as well. Black women need to feel supported in ways that are specific to their background and experience.[25,49] The following are ways to support URM women: (1) Pay women of color equally to their White male colleagues; (2) Acknowledge the minority woman tax and provide monetary compensation for it and protected time; (3) Acknowledge implicit bias and implement ways to eliminate it; (4) Elevate and sponsor URM women; (5) Perform research that includes the experiences of women; (6) promote and protect URM women faculty; (7) Include people of all different backgrounds in diversity and equity efforts; (8)

Provide education and actionable steps to drive out systemic racism and sexism in academic medicine; (9) Learn to be an ally for women of color; and (10) Create an inclusive culture to avoid feelings of isolation for women of color. Steps toward justice and equity for URM women will ultimately make a better experience for all faculty improve the institution of academic medicine.

## SUMMARY

A diverse Hand Surgery workforce is critical for the United States. Patients want to see physicians that mimic the population. The clear advantages are improved quality of care, an advanced variety of innovation, higher concordant patient satisfaction, greater access to care and improved compliance. Advocacy for underrepresented minorities and female Hand surgeons is lacking; however, an understanding of the data makes a compelling argument for change. This advocacy must start early in a surgeon's career, from medical school and continues through training and as an attending but it cannot stop there. Advocacy efforts are necessary to stop the progressive loss of diversity from early to more senior leadership roles. Hand surgeons who are both female and from underrepresented minority groups are especially vulnerable to bias from the health-care system. We must acknowledge the additional weight of burden they take on and provide them focused support and mentoring throughout training and their career.

## DISCLOSURE

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