Achieving a diverse, equitable, and inclusive environment for the Black orthopaedic surgeon: Part 1: Barriers to successful recruitment of Black applicants

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Lack of racial diversity remains a persistent problem in medicine, most notably in the field of orthopaedic surgery. In 1999, an analysis by England and Pierce of orthopaedic residents who had been selected for residency programs from 1983 to 1995 found that the percentage of Blacks, Hispanics, and Native Americans had changed minimally over that 12-year period. During that time, the rate of Black orthopaedic residents in training never surpassed 3.5%. In the >2 decades that have followed, there has been a continued call to increase recruitment of underrepresented minorities (URMs), particularly Blacks, into orthopaedic surgery. Despite these directed efforts, orthopaedic surgery remains the least racially and ethnically diverse field among both surgical and nonsurgical specialties. Lack of racial diversity correlates with substantial disparities in the culturally competent care of minority patients, with well-documented negative implications. Improving diversity within our specialty is essential to achieving equitable postoperative and functional outcomes in our diverse patient population. While barriers to improving gender diversity have been and should continue to be explored, the profession of orthopaedic surgery must critically evaluate the barriers to recruiting URM applicants, particularly Black applicants. This is essential to help usher in the next decade with a racially diverse, inclusive, and equitable workforce.

The article is to examine the barriers to successful recruitment of Black applicants and provide tangible recommendations for improving racial diversity in residency.

What Obstacles Do Black Candidates Face in Matching into Orthopaedic Surgery?
The barriers to Black students’ pursuit of orthopaedic surgery as a career are both intrinsic and extrinsic. Intrinsically, Black students assess the career choices that are available to them by evaluating what those in their own communities are doing or are expected to do. In a 2013 article, Hill and Vaughan explored the concept of “paradigmatic trajectories” to explain ways that students self-select out of pursuing surgical specialties. Black medical students are frequently unable to see, identify, or interact with orthopaedic surgeons who look like them. These students are repeatedly informed about the difficulty of getting into orthopaedics and are denied “experiences of participation,” which leads them to being unable to see themselves as orthopaedic surgeons. By contrast, their majority peers often have the opposite experience: they see many available role models in orthopaedics who match their demographic, serve as role models, and provide hands-on experiences. As this scenario is repeated each academic year, the disparity between the racial backgrounds of our orthopaedic residents will likely continue to grow.

Achieving a Diverse, Equitable, and Inclusive Environment for the Black Orthopaedic Surgeon

Part 1: Barriers to Successful Recruitment of Black Applicants

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Extrinsically, the pipeline of minority students to orthopaedic residency positions is filled with detours due to the redirection of minority students to other career pathways. This discouragement begins early for Black students, particularly Black male students, especially in educational environments in which their teachers are White. A study using survey data from the Education Longitudinal Study of 2002, which was conducted by the U.S. Department of Education’s National Center for Education Statistics, evaluated how teacher expectations influenced student performance among 6,000 high school students\(^5\). It found that there were clear racial disparities in teacher expectations of student performance. For example, the study found that teachers expected 58% of White high school students to obtain a 4-year college degree, but expected only 37% of Black students to do so. Furthermore, when considering these same Black students, White teachers were significantly less likely than their Black colleagues to expect the students to achieve a 4-year college degree. This difference was even more pronounced when the student was a Black male. Ultimately, the study concluded that negative expectation bias contributed to a self-fulfilling prophecy: only 29% of Black students in the study obtained a 4-year degree. Certainly, diminished expectations of Black students may carry similar consequences in higher education.

For Black medical students, the lack of early exposure to orthopaedic surgery and the elimination of student-generated stereotypes regarding their potential fit for the specialty are critical roadblocks to increasing applications to residency programs. Schmidt et al. noted that the timing of exposure and student-perceived stereotypes, among other factors, were major determinants in a medical student’s decision to pursue surgery\(^6\). An early introduction to the field of surgery was particularly important in increasing a student’s interest in a surgical career.

For those Black students who persevere in choosing orthopaedics, being chosen for an orthopaedic residency program is still problematic. The benchmarks that are used for resident selection are arbitrary at best, and biased and discriminatory at worst. In the 2018 National Resident Matching Program (NRMP) survey of program directors\(^6\), 91% of orthopaedic residency program directors cited the United States Medical Licensing Examination (USMLE) Step-1 score as the most important factor for selecting students to interview. Membership in the Alpha Omega Alpha (AΩA) honor society was the third most important factor listed, and the Medical Student Performance Evaluation (MSPE) was noted as the seventh factor. Rampa-temporal groups\(^5\), Boatright et al. reported that Black students were less likely than an equivalent White student to be selected for the AΩA honor society, even after controlling for Step-1 scores, research, leadership roles, and membership in the Gold Humanism Honor Society\(^5\). The data reveal that there is inherent bias in the objective measures that are used by orthopaedic surgery programs to vet their applicants. Although the current measures select excellent future orthopaedic surgeons, these measures ultimately favor a specific group, which is defined by Rubright et al. as “a native English-speaking White male U.S. citizen of average age\(^1\)” at the expense of applicants who do not fit this mold.

**What Current Strategies Have Been Implemented to Increase the Number of Black Medical Students Applying into Orthopaedic Surgery?**

In 2020, racial inequality, health disparities, and social injustice have played a central role in the civil discourse within and outside of the field of medicine. The lack of racial and ethnic diversity in orthopaedic surgery deprives the specialty of the diversity of ideas and lived experiences that can speak to social issues that affect our diverse patient population. Different national organizations have attempted to champion diversity efforts in orthopaedics. The American Academy of Orthopaedic Surgeons (AAOS) has incorporated diversity initiatives into its strategic goals. These goals include understanding and responding to the diversity of the patient population, enhancing the delivery of culturally competent care, and supporting efforts to diversify the profession and the orthopaedic workforce. Despite these efforts, orthopaedic surgery still critically lags behind other subspecialties with regard to increasing the diversity of its surgeon workforce, which speaks to a critical need to further prioritize diversity in orthopaedics through a coordinated multidisciplinary approach.

At the 2011 AAOS/ORS (Orthopaedic Research Society)/ABJS (Association of Bone and Joint Surgeons) Musculoskeletal Healthcare Disparities Research Symposium, Dy and Nelson proposed that cross-cultural communication and workplace diversity should be valued by all orthopaedic surgeons and should be championed by the leaders of academic orthopaedic departments\(^1\). They suggested that structured collaborative initiatives should be implemented by departmental leadership at each medical school in coordination with female and URM orthopaedic surgeon role models. Furthermore, they recommended that national orthopaedic societies like the AAOS should work in concert with diversity-
Dimensions has developed a longitudinal pipeline curriculum that is designed to engage medical students in their first year of medical school. The program has multiple phases that maintain contact after exposure, including webinars, symposia, and an immersive summer internship program, as well as longitudinal mentorship and professional development. The program intentionally exposes students to multiple hands-on experiences through bioskills workshops and physician-shadowing. In addition, Black students are exposed to an extensive network of Black orthopaedic surgeons with a wide variety of lived experiences. From the initial contact through residency completion, the Nth Dimensions “community” reinforces orthopaedics as a viable career. This exposure was found to significantly increase the odds of URM participants applying to orthopaedic residencies by 15-fold. To our knowledge, no other pipeline programs that focus on improving racial diversity within medicine exist with data to support their success.

For Programs That Historically Lack Ethnic Diversity, How Can Residency Program Leadership Increase Recruitment of Black Orthopaedic Residents?

A study by Adelani et al. recently reported that the number of orthopaedic training programs with no Black residents actually increased from 40 programs in 2002 to 60 programs in 2016, with the worst year being 2011, when 76 programs had no Black residents.51 Recently, McDonald et al. surveyed program directors and coordinators on perceived barriers to increasing the diversity of their individual orthopaedic programs. Nearly 70% of respondents said that the lack of enough URM faculty hindered their ability to recruit URM applicants. Fifty-six percent of programs responded that they consistently ranked URM applicants to match, but these applicants matched elsewhere. Fifty-five percent of programs felt that their programs could be more diverse, but the programs simply did not receive enough applications from URMAs. Interestingly, 32% of programs were not specifically trying to recruit URM applicants at all.

While pipeline programs such as Nth Dimensions provide a solid foundation for improving the number of Black students pursuing orthopaedics, future strategies need to implement program-level initiatives to further these goals. Orthopaedic residency programs that are affiliated with medical schools should nurture an early interest in orthopaedic surgery and musculoskeletal care among Black and other URM applicants through endorsement of a musculoskeletal education curriculum for medical students. Early exposure to orthopaedic surgery fosters more interest in the field, particularly among minorities and women. Bernstein et al. found that those with low URM representation among orthopaedic faculty (<4.0%) and orthopaedic residents (<6.1%) submit that simply hiring Black faculty is not sufficient to move the needle toward a more diverse workforce. To improve racial equity and inclusion, there needs to be a concerted effort to support and advocate for Black faculty in leadership roles within orthopaedic departments and on a national level.

We also suggest that orthopaedic department leadership become actively involved in diversity-related orthopaedic organizations such as the JRGOS and Nth Dimensions. This offers opportunities to interact with the majority of Black residents, fellows, and faculty within the orthopaedic specialty nationwide, and goes a long way toward improving a culture of inclusion within the field. Nearly every medical school in the U.S. has local chapters of medical student URM groups such as the Student National Medical Association (SNMA) and the Latino Medical Student Association (LMSA). Sponsorship of an SNMA or LMSA meeting by the affiliated orthopaedic department provides a rich opportunity to interact with Black and other URM students and provides exposure to the orthopaedic specialty. This also allows faculty to interact with more Black students, developing critical mentorship and sponsorship opportunities for these students that not only foster a more inclusive environment within that orthopaedic program but develop critical pipelines for future Black faculty recruitment and development.

In “Ten Key Steps for Chairs, Program Directors, and Faculty to Serve as Allies During This Racial Crisis,” Ross et al. highlighted the importance of developing transparent nationwide metrics on racial diversity in orthopaedics. This concept mirrors that of the value-based care philosophy that links financial incentives to surgeon performance on a set of defined measures. The JRGOS has the most comprehensive database of Black orthopaedic surgeons in the U.S. Based on their data, a diversity ranking was created for the 2020-2021 academic year. Of the 56 orthopaedic residency programs that had Black residents this academic year, the following programs were ranked in the top 5 in terms of the highest percentage of Black residents: Howard University (70%), Tulane University (27%), Kingsbrook Jewish Medical Center (20%), New York University (15%), and Stanford University (14%). One argument against ranking metrics such as these is that they could potentially foster competition between programs for a small finite population of qualified Black applicants. However, the counterargument to this would be that the applicant pool is not truly finite. Poon et al. evaluated orthopaedic applicants between 2005 and 2014 and found that 5.7% were Black applicants and 71% were White applicants. However, during that same period, only 3.8% of orthopaedic matriculants were Black while 74.7% of
underrepresented populations in orthopaedics should be readily available through national orthopaedic associations such as the AAOS or the American Orthopaedic Association (AOA). Furthermore, programs should perform an objective and critical analysis of negative factors that have impeded the recruitment and retention of Black residents and faculty at their programs. These factors could contribute to the outward perception of a noninclusive, even hostile, environment, which could deter Black applicants from considering a program. Exploring the root causes that impede diversity may not achieve immediate gains in recruitment, but may help prepare a program for future Black applicants. These applicants will eventually recognize concerted efforts by a program for achieving inclusive culture, and they may choose to attend a program that may not historically have been diverse.

The successful recruitment of Black applicants into the field of orthopaedic surgery also requires that the resident selection process eliminate unconscious biases in the screening of potential applicants. One means of achieving a diverse selection pool is to modify the screening criteria of potential applicants. Blind screening of potential candidates has been proposed as a way to mitigate racial, ethnic, gender, and medical school bias in the screening process. Fadem et al. found a significant correlation between the income level of a medical student’s parents and that student’s Medical College Admission Test (MCAT) and USMLE scores for both minorities and nonminorities. A study evaluating general surgery applicants found that discrete USMLE cutoffs eliminated URM applicants at a higher rate than non-URM applicants. The concept of “distance traveled” is another screening process that is used in the technology and corporate sectors as a means of mitigating unconscious bias in hiring practices, which have favored more privileged and homogeneous applicants. The “distance-traveled” concept factors in where a job candidate came from and how many obstacles he or she had to overcome to get to where he or she is currently. Recently, medical schools have used “distance-traveled” metrics to admit a more racially/ethnically, culturally, and financially diverse group of medical students while deemphasizing reliance on standardized test scores in screening practices. As the USMLE Step-1 shifts to a pass/fail format from the numerical score format that has been perceived as disadvantageous to minority students, use of a “distance-traveled” screening measure may allow for the prioritization of candidates from diverse backgrounds who demonstrate higher levels of resilience and “grit,” which are considered desirable traits among successful orthopaedic residents.

Furthermore, we recommend that all selection committee members at residency programs should complete bias/aliciation training for the Black orthopaedic surgeon. 48% admitting that they were conscious of their individual results when interviewing candidates during the next application cycle. This information resulted in measurable change: the class that matriculated following the IAT exercise was the most diverse in OSUCOM’s history at that time. The implementation of comparable bias training programs within orthopaedic residencies may achieve a similar effect.

Summary
Orthopaedic surgery has the lowest percentage of Black representation of any specialty, and there has been minimal to no improvement on this front over the last 2 decades. As racial and ethnic inequities in America are increasingly highlighted, it is clear that orthopaedic surgery as a field has fallen short regarding diversity. Orthopaedic surgery can improve its racial diversity with concerted effort and the active engagement of future applicants of color. We recommend active recruitment of Black applicants with the utilization of established pipeline programs and organizational resources. Furthermore, strategies to increase the number of Black applicants to orthopaedic residency programs require paradigm shifts in medical students’ perception of orthopaedics as a viable career path and strategic preparation of residency program environments for URM-resident recruitment. Most importantly, programs must take a proactive role in creating a safe and fair working environment for their URM residents. Our hope is that these strategic collaborations can contribute to measurable change in racial diversity in orthopaedics over the next decade.

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