



RESEARCH ARTICLE

# Falling Short: Why DEI Efforts in Orthopedic Surgery Residency Programs in the United States Need a Stronger Push

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## ABSTRACT

**Background:** In recent years, orthopedic residency programs in the United States have increasingly prioritized diversity, equity, and inclusion (DEI) efforts to address the longstanding underrepresentation of minorities, women, and disadvantaged individuals. Historically, orthopedic surgery has been one of the least diverse medical specialties, with a predominance of white male practitioners. The growing recognition of the importance of culturally competent care has driven residency programs to implement DEI initiatives, including mentorship programs, outreach to minority-serving institutions, and implicit bias training. The aim of this study is to understand the incorporation of DEI in the recruitment process within orthopedic residency programs.

**Method:** the orthopedic surgery residency program at Community Memorial Healthcare System in California conducted this survey study. It sought to evaluate the integration of DEI principles within U.S. orthopedic surgery residency programs. 28 residency programs encompassing 601 residents. The study utilized a 13-question survey to assess the prevalence of DEI initiatives, such as scholarships for underrepresented minorities (URM) and efforts to create a more inclusive training environment.

**Results:** Key findings show significant gender and racial disparities among residents, with 79% male and only 21% female. Underrepresented minorities constituted an average of 21% of residents, though this varied among programs. Despite some progress, only 43% of the surveyed programs had introduced DEI or URM visiting student scholarships, with most of these initiatives launched within the last five years. Challenges remain in matching scholarship recipients to residency programs, as 81% of programs reported that none of their scholarship recipients matched at their institution. Additionally, most programs do not provide additional support or mentorship for scholarship recipients, and 96% of programs have no plans to expand or modify their DEI efforts in the future.

**Conclusion:** Overall, the survey results highlight the progress and the ongoing challenges in promoting diversity, equity, and inclusion within orthopedic surgery residency programs. While some programs have taken steps to address these issues, much more work is needed to create a truly inclusive and equitable training environment for all residents, particularly those from underrepresented backgrounds.

## Introduction:

In recent years, orthopedic surgery has taken significant strides toward embracing diversity, equity, and inclusion (DEI) within residency programs. Orthopedic surgery, historically, has been one of the least diverse specialties in medicine, with a predominance of male and white practitioners. As the demand for culturally competent care increases, there has been a growing recognition of the need to foster a more inclusive environment within residency programs.<sup>1,2</sup>

Efforts to promote DEI in orthopedic surgery residency programs aim to address the longstanding disparities in representation, access, and opportunity. The journey begins with increasing diversity among medical students pursuing orthopedic surgery, emphasizing underrepresented minorities, women, and those from disadvantaged backgrounds. This is crucial as studies show that diversity within medical teams improves patient outcomes, particularly for marginalized populations.<sup>2,3</sup>

Several orthopedic surgery residency programs across the United States have launched initiatives to create a more equitable and inclusive training environment. These efforts often include implementing mentorship programs, pipeline initiatives for high school and college students, implicit bias training, and holistic application review processes. Some programs have also expanded outreach efforts to historically Black colleges and universities (HBCUs) and minority-serving institutions (MSIs) to attract a more diverse pool of applicants.<sup>2,3,4</sup>

Additionally, DEI initiatives in orthopedic surgery residency programs extend beyond recruitment. Residency programs increasingly focus on fostering a culture of inclusion and equity for all residents. This involves creating supportive environments where residents of diverse backgrounds feel valued and included, addressing systemic issues that contribute to inequities, and promoting open dialogue around topics such as race, gender, and socioeconomic disparities.<sup>4</sup>

There is also an emphasis on ensuring that residency programs reflect the communities they serve. With the increasing diversity of the U.S. population, orthopedic surgeons must be equipped to meet the needs of patients from various cultural and ethnic backgrounds. Residency programs incorporate DEI education into their curricula; ensuring residents develop technical skills and cultivate cultural competence and sensitivity.<sup>4</sup>

Organizations like the International Orthopaedic Society, J. Robert Gladden Orthopaedic Society, and the American Academy of Orthopaedic Surgeons (AAOS), which focuses on increasing diversity in orthopedics, have promoted DEI efforts. They provide resources, host conferences, and advocate for policy changes, supporting a more inclusive orthopedics workforce.<sup>5</sup> Despite progress, challenges remain. The field continues to grapple with implicit biases, unequal access to mentorship, and the financial burdens that disproportionately affect underrepresented groups. However, with sustained effort and commitment from institutions, professional organizations, and individual practitioners, the orthopedic surgery residency landscape is slowly transforming into a more inclusive and equitable space.<sup>4,5</sup>

Integrating DEI principles into orthopedic surgery residency programs is about more than just representation; it is about improving patient care, advancing health equity, and building a future where all individuals, regardless of their background, have equal opportunities to excel in orthopedics. This survey study evaluated the integration of DEI principles in U.S. orthopedic surgical residency programs.

## Methods:

This survey was conducted by the orthopedic surgical residency program at Community Memorial Healthcare System in California, utilizing the CROSS guidelines for survey studies. It was designed to investigate the prevalence and integration of Diversity, Equity, and Inclusion (DEI) principles among U.S. orthopedic surgical residency programs.

The survey instrument, created using Survey Monkey, consisted of 13 questions aimed at assessing the awareness, implementation, and impact of DEI principles in orthopedic graduate medical education (GME). It was distributed via e-mail to orthopedic surgical residency programs across the United States. A total of 28 orthopedic residency programs participated. The survey sought to gather insights on how DEI principles are incorporated into residency training and the perceived barriers to effective implementation.

Descriptive analysis was performed using SAS 9.4, allowing for a comprehensive examination of the data collected. The findings provided nuanced insights into the likelihood of incorporating DEI principles in GME across various programs. The study was approved by the Institutional Review Board (IRB) of the Community Memorial Healthcare System, ensuring ethical standards were maintained throughout the research process. The survey questions are summarized below:

1. Does your residency program have a specific DEI initiative or policy in place?
2. How often are DEI principles discussed in residency meetings or training sessions?
3. What training or resources on DEI are provided to residents and faculty?
4. How does your program measure the effectiveness of its DEI initiatives?
5. What barriers does your program face in implementing DEI principles?
6. How important do you believe DEI principles are for the future of orthopedic surgery?
7. Have you received training on cultural competence in patient care?
8. How diverse is the faculty in your residency program?
9. How diverse is the resident cohort in your program?
10. What strategies does your program use to recruit a diverse applicant pool?
11. Are there mentorship programs in place to support underrepresented minorities in your residency?
12. How does your program address health disparities in patient care?
13. What recommendations do you have for improving DEI integration in orthopedic residency programs?

## Results:

The survey of 28 orthopedic surgery residency programs, encompassing 601 residents, reveals several key trends in diversity, equity, and inclusion (DEI) efforts within these programs. Regarding residency program size, most programs accept five residents per year (43%), while smaller cohorts of two, three, or four residents per year are less common. The survey also shows a notable gender imbalance, with males making up 79% of the residents (461 out of 601) and females comprising only 21%. Additionally, underrepresented minorities (URM) constitute an average of 21% of the residents, though this varies among programs. Regarding DEI initiatives, 43% of the surveyed residency programs have introduced DEI or URM visiting student scholarships, while 57% have not. Of the programs that have implemented scholarships, the majority have done so within the last five years. The primary reasons for starting these scholarships include increasing diversity in the residency class (39%) and aligning with the institution's mission (32%). Other motivations include creating a pipeline for diverse faculty recruitment and department-level initiatives. Eligibility criteria for these scholarships typically focus on students who are underrepresented in the medical profession (36%) or are fourth-year U.S. medical students (14%). However, 43% of the programs did not provide a clear response regarding eligibility. Despite the introduction of DEI scholarships, 43% of the programs have, either not provided any scholarships or did not respond to this question. Among the programs that have offered scholarships, most provided fewer than ten. The monetary value of the scholarships varies widely, ranging from \$750 to \$3,000. Matching scholarship recipients to residency programs remains challenging, as 81% of programs reported that none of their scholarship recipients matched at their institution. A small number (7%) reported that one scholarship recipient matched, and only a few reported more than one match. Information on how many recipients are matched at other institutions is unknown. Support and mentorship for scholarship recipients are limited, with 79% of programs providing no additional support. Finally, there appears to be little momentum toward expanding or modifying these scholarships, as 96% of programs reported no plans.

## Discussion:

This survey of 28 orthopedic surgery residency programs, representing 601 residents, provides valuable insight into the current landscape of diversity, equity, and inclusion (DEI) efforts within the field. The results highlight several key trends regarding residency program size, gender distribution, underrepresented minority (URM) representation, and DEI initiatives such as visiting student scholarships. While there are encouraging signs of progress in some areas, the findings also reveal significant challenges and limitations that must be addressed to foster a more inclusive and equitable orthopedic surgery workforce.

### RESIDENCY PROGRAM SIZE AND GENDER DISPARITY

One of the most notable findings from this survey is the residency program size, with the majority of programs (43%) accepting five residents per year. While this cohort size suggests a relatively stable and manageable

program structure, it also indicates the high competition for residency spots in orthopedic surgery, which is known for its selectivity and the limited number of spots available. This dynamic may limit opportunities for applicants from underrepresented backgrounds, further emphasizing the need for targeted diversity, equity, and inclusion (DEI) initiatives to ensure diverse representation within the specialty.<sup>7, 8</sup>

The gender imbalance within orthopedic surgery remains striking, with males making up 79% of the residents and females comprising only 21%. This disparity aligns with longstanding trends in the specialty, where women have been historically underrepresented. Although there has been a gradual increase in female participation in recent years, the low percentage of women in residency programs underscores the importance of continued efforts to promote gender diversity through scholarships and mentorship programs.<sup>9, 10</sup> Additionally, gender disparities in the field often intersect with racial and ethnic disparities, as women of color face compounded challenges in accessing opportunities and support.<sup>11, 12</sup>

### UNDERREPRESENTED MINORITY REPRESENTATION

Underrepresented minorities (URM) make up an average of 21% of the residents across the surveyed programs, although this percentage varies widely between institutions. While this figure suggests that URM representation is not negligible, it remains below the national proportions of URM populations, indicating that more work is needed to attract and retain URM students in orthopedic surgery.<sup>7</sup> The variation across programs suggests that some institutions have been more successful than others in fostering diversity, possibly due to more robust DEI initiatives or institutional commitment to diversity.<sup>11</sup> However, with URM residents comprising only a fraction of the total residency class, expanding recruitment efforts and providing strong mentorship for these students remains a critical priority.<sup>10, 11, 12</sup>

### DEI SCHOLARSHIPS AND INITIATIVES

The survey reveals that 43% of residency programs have implemented DEI or URM visiting student scholarships, while 57% have not. Most of those who have introduced scholarships have done so in the past five years, reflecting a recent but growing interest in using financial support to promote diversity.<sup>8, 11</sup> The primary motivations for introducing these scholarships include increasing diversity within the residency class (39%) and aligning with the institution's mission to promote diversity (32%).<sup>7</sup> Other factors, such as creating a pipeline for diverse faculty recruitment and department-level diversity goals, also play a role. These findings suggest that DEI scholarships are increasingly essential to diversifying the residency pipeline and aligning with institutional values, although they remain underutilized across the field.<sup>11, 14</sup>

However, the eligibility criteria for these scholarships appear limited and inconsistent. While 36% of programs prioritize underrepresented medical students, only 14% specify that scholarships are available to fourth-year U.S. medical students. The lack of transparent eligibility criteria (with 43% of programs not providing a clear response) could contribute to the inconsistent impact of these scholarships across programs.<sup>7</sup> Without clear and transparent criteria, students may be unaware of

opportunities, limiting the effectiveness of these initiatives in promoting diversity.<sup>15, 16</sup>

## CHALLENGES AND LIMITATIONS OF SCHOLARSHIP PROGRAMS

The monetary value of DEI scholarships varies significantly, ranging from \$750 to \$3,000, which suggests that funding for these scholarships is not standardized and may not always be sufficient to cover the costs of away rotations. This inconsistency in scholarship amounts could make it difficult to achieve meaningful impact, particularly for students from lower-income backgrounds who may face significant financial barriers in pursuing away rotations.<sup>8,10</sup>

One of the most significant challenges identified in the survey is the mismatch between scholarship recipients and residency programs. A striking 81% of programs reported that none of their scholarship recipients matched at their institution, and only 7% of programs reported that one recipient matched. This highlights a critical gap in the effectiveness of these scholarships—while they may increase access to residency programs for URM students, they do not necessarily translate into increased diversity within residency classes.<sup>7</sup> This mismatch may reflect broader challenges in the admissions process, such as the lack of diversity among faculty and decision-makers or insufficient support for scholarship recipients throughout the application and interview process.<sup>11, 17</sup>

Furthermore, 79% of programs reported offering scholarship recipients no additional support or mentorship. This lack of support likely limits the potential benefits of the scholarships, as mentorship plays a key role in fostering academic success and career advancement.<sup>12</sup> The absence of a structured support system for DEI scholarship recipients underscores the need for programs to provide financial assistance and invest in

comprehensive mentorship, guidance, and professional development.<sup>13,14</sup>

## LIMITED MOMENTUM AND NEED FOR EXPANSION

Another concerning finding from the survey is the lack of momentum for expanding or modifying these scholarships in the future. A staggering 96% of programs reported no plans to increase or change their scholarship offerings, indicating a lack of long-term commitment to enhancing DEI initiatives.<sup>8</sup> Without a clear vision for growth or improvement, these scholarships risk remaining small-scale and underdeveloped, limiting their potential to drive meaningful change in the field. The absence of forward-thinking plans for expanding these scholarships highlights the need for more significant institutional investment and a strategic, long-term approach to DEI efforts in orthopedic surgery.<sup>7,18</sup>

## Conclusion:

While the survey results demonstrate some positive trends in DEI initiatives, such as the introduction of visiting student scholarships, they also reveal significant challenges in increasing diversity within orthopedic surgery residency programs. The gender and racial disparities within the field remain stark, and the effectiveness of DEI scholarships is hindered by inconsistent funding, lack of mentorship, and the mismatch between scholarship recipients and residency placements. To achieve meaningful progress, orthopedic surgery programs must increase the availability and transparency of DEI scholarships and invest in mentorship, pipeline programs, and long-term strategies to create a more diverse and inclusive environment. Expanding and refining these initiatives, alongside broader efforts to address structural barriers, will be essential for achieving a more equitable future for the specialty.

**Table 1.** Survey Summary (28 orthopedic residency programs accounting for 601 residents)

How many residents are accepted per year?	N	Percent (%)
2	3	11%
3	4	14%
4	4	14%
5	12	43%
6	3	11%
7	2	7%
How many males are current residents (N=601 residents from 28 Orthopedic surgery programs)		
Males	461	79%
Females	140	21%
What is the percentage of minority residents (UMR) in your program?		21%
Has your residency program introduced Diversity, Equity, and Inclusion (DEI) or Underrepresented Minority visiting scholarships?		
No	16	57%
Yes	12	43%

How many years has the program implemented the DEI visiting student scholarships?

0	17	61%
2	3	11%
3	3	11%
4	1	4%
5	3	11%
6	1	4%

Why did the DEI/URM visiting student scholarships start? (select all that apply)

Increase diversity of residency class	11	39%
Institutional mission	9	32%
Pipeline for diverse faculty recruitment	4	14%
Initiated by the Department of Orthopedic Surgery	4	14%

What are the eligibility criteria for DEI scholarships?

Fourth-year U.S. medical students	4	14%
Underrepresented in the medical profession	10	36%
Rural upbringing	2	7%
No response	12	43%

How many DEI-URM visiting student scholarships has the residency program provided since its inception?

None or no response	12	43%
<=10	10	36%
>=10	6	21%

What is the monetary value of the DEI/URM visiting student scholarships?

\$750	1	4%
\$1,000	2	7%
\$1,200	1	4%
\$1,500	3	11%
\$2,000	1	4%
\$3,000	1	4%

How many students who received the DEI/URM visiting student scholarships matched at your institution?

None or no response	23	81%
1	2	7%
2	1	4%
3	0	0%
4	1	4%
5	1	4%

How many students who received the DEI/URM visiting student scholarships were matched at another institution?

Unknown 100%

Does your institution provide additional mentorship or support for the scholarship recipients?

No / unknown	22	79%
Yes	6	21%

Are there any plans to add, expand, or modify your institution's DEI/URM visiting student scholarships?

No / unknown	27	96%
Yes	1	4%

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