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**The Impact of Diversity, Equity, and Inclusion on Spinal Research - Asking Different Questions**

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Spine, Spinal Surgery, Diversity, Equity, Inclusion

## Abstract

In recent years, the field of spine surgery has seen significant advancements in surgical techniques alongside a growing emphasis on diversity, equity, and inclusion (DEI). This review explores the significant impact of DEI on spine surgery, recognizing its potential to drive innovation, improve patient outcomes, and address healthcare disparities. Shifting paradigms in research through diverse perspectives is crucial, as they broaden the scope of inquiry and challenge existing standards. Efforts to promote diversity in medicine, including targeted outreach and mentorship initiatives, are essential in cultivating a more inclusive workforce. Despite progress, ongoing challenges such as unconscious biases and systemic barriers persist, underscoring the need for continued commitment to DEI principles. Embracing diverse perspectives and asking unconventional questions pave the way for a comprehensive understanding of spinal health and equitable healthcare delivery.

## Introduction

In recent years, the field of spine surgery has undergone significant advancements not only in surgical techniques and technologies but also in its interest in encouraging diversity, equity, and inclusion (DEI). Across the U.S., we have seen perceptions on DEI change over the past 4 years. Regardless of how the pendulum has swung, there are benefits that have been shown for DEI initiatives in healthcare. A workforce that is composed of people from different backgrounds working as a team towards a common goal is more successful in innovation, productivity, engagement, and recruitment.<sup>1</sup> In terms of medicine and specifically spine surgery,

racial and ethnic disparities within spine surgery have been thoroughly documented in the United States with worse perioperative outcomes for minority patients when compared to their white counterparts.<sup>2,3,4</sup> As the terrain of scientific research continues to grow and evolve, there is a growing recognition that acknowledgement of diverse perspectives, not only in spinal surgery, but in medicine serves as a means for innovative breakthrough and a means to breakdown the disparities we sometimes observe in the profession.<sup>5</sup> This paper explores the significant impact of DEI on spine surgery, highlighting the need to ask different questions to explore new insights and drive the field of spine surgery forward.

#### Addressing Healthcare Disparities with Patient Centered Research

Contemporary research exploring race and musculoskeletal surgical outcomes has shown that minority patients experience worse outcomes than White patients.<sup>6,7,8</sup> This has been particularly true for Black and Hispanic patients.<sup>9,10</sup> The causes are multifactorial. Certain contributing factors have been identified: social determinants of health, physician bias, and distrustful patient-physician relationships, to name a few.<sup>11,12,13</sup>

Another factor to consider is how racial/ethnic diversity relates to anatomic differences and how these differences could impact treatment. In spine surgery, imaging plays a vital role in addressing pathology, such as central stenosis, foraminal stenosis, and even spinopelvic deformity<sup>14,15</sup>. Therefore, a particular procedure or more specifically measurable outcome parameter may be more appropriate for one subset of patients compared to another.<sup>16</sup> Thus far, the spine literature has shown that there are differences in foraminal dimensions among patients with different race, ethnicities, and genders.<sup>14,15</sup> Similarly, some studies have shown that spinopelvic parameters vary amongst these groups.<sup>16</sup> So far we have the knowledge that these parameters differ. The effect of these differences on clinical practice including treatment is

unknown and should be studied. From other fields in medicine, we have examples that a “one size fits all” treatment outcome may not be ideal. In the field of cardiology, it has been noted that the lack of ethnic-specific risk scores for Hispanics and Asians can lead to under- or overtreatment of hypertension in those populations. The lower risk of atherosclerotic cardiovascular disease (ACVD) in East Asians and Hispanic whites compared to non-Hispanic whites (NHW) may lead to overestimation of cardiovascular risk in these groups.<sup>17,18</sup> The idea of patient centered research focuses on acknowledging and addressing the unique needs of a diverse patient population. By considering how cultural, socioeconomic, demographic, and anatomic factors influence risk factors and patient outcomes, we can ask more relevant and impactful questions. Acknowledging and proactively addressing these risk factors to minimize them will not only significantly impact observed health inequalities but will also contribute to the development of health care treatment options that are accessible and tailored to a diverse range of patients.

#### Shifting Paradigms in Research Through a Diverse Lens

Historically, most medical research has been influenced by a narrow perspective which has contributed to the disparity in medicine we see today. Progress and breakthroughs in science are made by the questions we as researchers ask and attempt to answer. Our backgrounds and identities shape the curiosities we have about the world. For example, a study looking at NIH awards noted that Black researchers were more likely to study health disparities than white researchers.<sup>19</sup> There is a similar study that found that female researchers were more likely to enroll more female participants in their study when compared to their male counterparts.<sup>20</sup> The impact of diverse backgrounds and perspectives has the potential to be significant in opening this limited scope of questioning, allowing us to better address the overlooked aspects of spinal

health. The inclusion of diverse voices encompassing different genders, races, ethnicities, socioeconomic status, and experiences can help broaden the range of questions asked and challenge existing standards currently observed in spinal research. This is essential in addressing the evolving healthcare disparities and ensuring inclusive research.

Efforts to promote diversity in medicine have taken various forms and have been implemented in many of the different surgical subspecialties. Medical schools and residency programs have implemented initiatives to support applicants from underrepresented minority (URM) groups. Inclusive mentorship programs, sponsorship, and outreach programs are a few tools that have been used to encourage diversity in the applicants entering the field of medicine.<sup>5,21</sup> Within the field of orthopaedic surgery, data supports that programs with higher percentages of URM faculty tended to have higher percentages of URM residents.<sup>5</sup> With this, it is crucial to implement targeted outreach programs that actively recruit from underrepresented background. Early exposure to medicine and spine surgery is an ideal way to expose URM students to the field. Establishing mentorship initiatives as seen in pipeline programs such as Nth Dimensions can provide guidance and support to aspiring surgeons, helping them navigate the challenges of pursuing a career in spine surgery.<sup>5,9,21</sup>

### Future Challenges

Although progress has been made in promoting DEI in spine surgery, significant challenges persist. Promoting an inclusive culture while addressing unconscious biases and systemic barriers are ongoing challenges. For there to be improvement, the medical community must make a commitment to acknowledge these challenges and actively work towards fostering an environment that encourages the exploration of those different questions.

### Conclusion

The impact of diversity, equity, and inclusion has the potential to be transformative to the field of spinal surgery. This impact will serve to address the healthcare disparities we observe in the field. Exploring the cultural, socioeconomic, demographic, and anatomic factors and their correlations to risk factors and patient outcomes is crucial. Physicians and researchers from URM backgrounds can bring a different lens to research and ask different questions - questions that today might seem unconventional. By asking different questions and embracing diverse perspectives, researchers create a path to a more comprehensive understanding of spinal health which will be reflected in the care supplied to patients. As the field continues to evolve, a commitment to DEI principles ensures spinal health not only remains at the forefront of scientific inquiry but also becomes a stimulus in promoting health equity.

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