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The Impact of Bias on the Pathway to Otolaryngology: Time to Level Up

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Abstract

Purpose of Review To frame the nature and extent of barriers adequately in order to raise awareness about the challenges to creating diversity in a surgical subspecialty. We hope to inspire new strategies to augment efforts towards inclusion.

Recent Findings Experiencing microaggressions has been linked to elevated cortisol levels, as well as numerous health conditions such as hypertension, pulmonary disease, pain, depression, and suicidal ideation.

Summary Otolaryngology is currently one of the least diverse fields of medicine. We sought to examine some of the structural phenomena in society that might explain this trend. Understanding causation is a key to developing remedies.

Keywords Bias · Structural bias · Barriers · Diversity · Equity · Inclusion

Introduction

Western Europe and its offshoots comprise only about 16% of the global population [1, 2]. In medicine, however, people of color tend to be under-represented. In our specialty, Otolaryngology, the most readily available statistics are from the USA and show that 65% of the professional constituency is White, Asians are 18%, 9.0% Latinx, 4.8% Black, and less than 1% American Indigenous [3].

Perhaps, the first barrier to achieving diversity in our field is our tacit acceptance of the current framework. Current statistics confirm that this is a White male-dominated field and we have only recently begun to challenge the assumption that this composition is simply a natural order. In truth, our current conceptualization of Otolaryngology, and medicine in general, rests on a foundation constructed by colonialism [4, 5]. Scientific analysis has been filtered through European imperialism and this adulteration influences how we interpret raw data pertaining to demographics. Any thoughtful inquiry would seek to know how and why a small minority of the world's population is so dominant in our field and why efforts to increase diversity in Otolaryngology in the USA have fallen short [6•]. The goal of having a composition of the field to mirror our society should not be so elusive.

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Bria Johnson surveyed medical students and found that many under-represented students have preconceived notions about the field. They also mention lack of mentorship and sponsorship as a barrier to interest [7••]. Prospective Otolaryngologists do need access, mentorship, and sponsorship, but without a complete understanding of barrier systems, it is difficult for senior leaders to be as effective as possible in shifting this tide.

If we are prepared to examine issues with the euphemistic pipeline pathways, we can readily see how bias functions as an inertial force continuing to move us in a predetermined direction. From disparities in the risk of death during childbirth continuing though disparities in completion of higher education, the playing field is anything but even, equitable, and level. Systemic bias affects virtually every aspect of our pathways to improving and sustaining diversity in the field.

Racial Bias

From the cradle to the grave, the chances for successful outcomes are contracted for members of the BIPOC community. Globally speaking, of the twenty countries with the highest infant mortality, more than 15 are in sub-Saharan Africa [8–10]. In the USA, Black infants are 4–5 times more likely to die than their White counterparts [11, 12]. Pathway interventions that begin with high school and college students overlook a disparity that shrinks the pool of potential applicants from the start of life.

Black American infants who successfully clear the first hurdle continue to face challenging odds as they grow and develop. By the time they start preschool, they are more likely to be labeled as disruptive and often face exaggerated and unnecessary disciplinary interventions [13, 14••, 15]. Notably, there are opportunities for practicing Otolaryngologists to affect some of these trajectories. We should be aware of the number of children with under-diagnosed and under-treated hearing loss who are misidentified as having a cognitive learning difference. We should also be cognizant of children with under-diagnosed and under-treated sleep disordered breathing who have been misidentified as having behavioral issues and ADD/HD clinical findings. There are also neurobiological consequences of early childhood trauma and maternal stress [16]. We should appreciate the cycles of bias and their consequences.

Our current public education system is primarily funded by property taxes. However, we must acknowledge the U.S. Federal Government's role is designating Black communities as "high risk" and then disinvesting in their redlined areas and their educational infrastructure. Our objectives to reclaim and sustain diversity in our specialty should acknowledge and recognize the very systems that created and sustain a degree of homogeneity. We should acknowledge that neighborhoods rated "best" were almost exclusively White and the percentage of African-Americans in the neighborhood defined "decline" and "hazard." We can all reflect on this language when we claim to want "the best" applicants for Otolaryngology.

The marathon race to Otolaryngology continues with the hurdle of disparities in high school graduation grates, college acceptance, matriculation, and completion. The interconnected nature of the barriers should also be considered. Namely, the same infants who were at risk of death carry cumulative effects. Their neglected, under-resourced communities are more likely to expose them to environmental toxins [17, 18], and they are at greater risk for being food-insecure. The cumulative effect of these challenges on education performance is often the actual explanation of differences in grade point averages and standardized test scores. Despite consistent improvement in getting students enrolled in college, completion rates have not remained on par.

For the dwindling cohort of students who enter college, they are often stigmatized. Professors are less likely to assume competence in these individuals and, often, less likely to engage them in discussion or seek their perspectives [19]. Young Black males are especially vulnerable to the violence cultivated by community deprivation and decades of neglect. Lack of economic opportunity and access is a part of the underpinning of an illegal, chemical transactional commerce and the risks of violent death that come with it.

College graduation rates reflect the impact of systemic bias. For many historically overlooked and currently under-represented groups, college acceptance and matriculation are terminal events. More than 40% of first-time, full-time students enrolled in accredited, 4-year college or university students fail to complete a degree within 6 years (National Bureau of Economic Research, Rachel Dawson, et al.) [20]. Because students are often navigating their professional preparation with limited guidance, students may not understand degree requirements or be sufficiently prepared to match their skills and interests with a course of study. Many students of the African and Meso-American diaspora lack the support of trustworthy mentors and sponsors who are familiar with the process of higher education and can adequately consider the personal characteristics of the students. This is where generational participation in the process creates an advantage for traditionally over-represented students.

The 65% national majority enjoyed by White Otolaryngologists in the USA facilitates the more durable pipeline of family inheritance. Parent Otolaryngologists are positioned to help their children select majors, find research projects, publish with influential people in the field, and develop recognition and associations early in their careers. Black and Latinx students, in general, have less access to race concordant professional mentors in the field and not infrequently are teaching themselves how to be successful in the system as they progress.

Although Black college graduates have overcome the odds and obstacles, their acceptance rates to medical school lag behind their peers [21]. However, these data also require thoughtful analysis. Indigenous Americans have the highest calculated acceptance rate at 52%. However, the total number of applicants is less than 100. If one compares this to White applicants, the acceptance rate is 44%, but the applicant pool is 22,000. So, while there are those who complain that historically overlooked applicants are "given an unfair advantage," for the current academic year, 55,188 people applied to medical school and 23,810 were admitted. The number of White students who were in a position to apply was nearly the number of people accepted. Twelve thousand Asian-American students applied and 5802 were accepted [3].

As noted when considering the journey through college, acceptance to medical school and completion are two entirely different concepts. American Indigenous applicants may have the highest acceptance at 52%, but matriculation in 2022 was 39%. This 13% gap is the largest of any group [3]. After matriculation, attrition continues to reduce the number of under-represented individuals who will actually become physicians. A recent study demonstrated that 2.3% of White medical students did not complete their training compared to 5.7% of Black matriculants. They considered race, ethnicity, family income, and coming from an under-resourced

neighborhood as a structural fact. They found that participants that fell into multiple indices of marginalization were the most vulnerable [22].

There are those who argue that attempts to address disparities and foster equity result in "reverse discrimination." Gubernatorial efforts to promote equity within the higher education system have been faced with great resistance for decades [23]. Affirmative action laws, which were enacted to advance racial equity and promote diversification of institutions including colleges, businesses, and governments, have been a subject of great controversy since the Civil Rights Movement [24]. Nine states, including two of the most populous California and Florida, have banned affirmative action, which serves to further restrict higher education access for BiPOC applicants. As this article is written, affirmative action programs at Harvard University and the University of North Carolina are being challenged as students claim this process represents "reverse racism" and the admissions process is biased against the majority cohorts which include White and Asian students. This resistance shows that many individuals choose to ignore systemic racism or are focused on their own advancement in society. They, therefore, appear uninterested in supporting any effort to rectify centuries of reprehensible treatment BiPOC individuals have faced in the USA.

Putting aside emotionally charged, inflammatory language, the facts are that this year, 9599 students who believe themselves to be White started medical school joined by 5604 Asian students. There were 1856 Black students, 1444 Latinx, and 2698 multiple race matriculants. Simple addition and comparison informs us that there is little danger of historically overlooked applicants taking over the enterprise of medicine. There were less than 6000 Black, Latinx, or multi-racial students poised to become physicians in 2022. The almost 10,000 White physicians will easily maintain their majority. The use of fear to foment animus is a barrier for diversity. While the acceptance rates for White, Hispanic, and Asian applicants were comparable, Black students had a lower rate (44–47% vs. 39%—see Table 1). Again, we should stress that although Indigenous people have one of the highest percentages, these 37 matriculants press a very small footprint on the over 22,000 American medical school class landscape for 2022–2023. This is also evidence of the fact that we all exist in a system built by White, male, Christian, heterosexual privilege and this has been presented as the norm. This factor is why decentering Whiteness or maleness feels foreign despite its true fairness. It is insufficient to continue long established practices and simply allow a diverse group of people to participate in the process. The process itself should be reviewed and revised by a diverse group of experts.

Gender Bias

Women contribute more than 49% of the global population [2]. While our recent history tempts us to believe that male dominance is a natural state of affairs, the historical record rejects this presumption. The origins of the current iteration of the White male patriarchy are also tied to colonialism, imperialism, and religious institutions [5]. In the same way that the church sanctioned racism, the church also played a role in deeming women unworthy of education and ascending social status.

The same year that women achieved the majority representation in US medical schools, 2019 was the same year that women comprised 18% of the Otolaryngology workforce.

An analysis of the barriers reveals a familiar pattern whereby the narrative is crafted first, and then, any data is filtered through that sieve. The underlying assumption that men are more suited to surgical careers taints many of the analyses of why the specialty does not reflect current population trends. We are still reluctant to consider how we might reimagine the selection process, the training, and the career to fit the diverse needs of a diverse population.

Table 1 AAMC 2022–2023 data [3]. Rates of acceptance and matriculation to US medical schools, 2022–2023

Race/ethnicity	Applicants	Acceptance	%Accepted	Matriculants	%Matriculated
Indigenous American	94	49	52%	37	39%
African-American/Black	4924	1924	39%	1856	38%
Asian-American	12,736	5802	46%	5604	44%
Hispanic/Latinx/Spanish origin	3257	1517	47%	1444	44%
Native Hawaiian/Pacific Islander	52	23	44%	22	42%
White	22,917	10,077	44%	9599	42%
Multiple race/ethnicity	6086	2841	47%	2698	44%
Unknown race/ethnicity	1777	679	38%	642	36%
Non-US citizen/non-permanent resident	1959	382	20%	314	16%
Total	55,188	23,810	43%	22,712	41%

From early ages, female students are infrequently exposed to examples of female scientists and physicians. Women are often graded differently for the same work. Stereotypes govern interactions between teachers and female students.

For the ones who are persistent enough to make it past all the hurdles, they are still likely to face pay inequity and greater attrition [25, 26].

So, like the recycled systems that exclude people based upon a socially constructed racial hierarchy, gender bias also functions as a self-fulfilling set of assumptions. When men are able to define the parameters and benchmarks, they have an advantage that can self-perpetuate. Again, the barrier to increasing the number of women in Otolaryngology begins with dismantling a patriarchal system that provides disparate educational experiences, mentoring opportunities and recognition of abilities for women.

In surgical fields, even the design of the instruments favors male anthropometric reference points [27]. Investigators have shown that women are more prone to musculoskeletal injury related to using instruments designed for men [28]. This, perhaps, is an example of the crucial differences between tolerance, specious invitation, and an authentic welcome.

Looking at work/life balance, family planning is often presented as a rational explanation for the crossroads that results in appreciably different outcomes based upon gender [29, 30]. For the purpose of this discussion, we will consider the condition of a couple in an opposite sex relationship with at least one individual working in the field of medicine. When a male has children during residency, there is little evidence that they develop angst about balancing their career aspirations with child rearing. Based upon available data, it does not appear that they are likely to fear having to suspend residency to raise children. They are, in fact, less likely to take a full, 6-week, parental leave [31, 32].

Our profession often follows societal assumptions that the male will continue along his career trajectory with someone else assuming responsibility for raising children. Female residents, on the other hand, seem to be presented with the "choice" to focus on their families or their careers. Women are assumed to be uniquely suited and primarily responsible for child bearing and child care. At the same time, women have reported experiencing hostility when they shared news of their pregnancies during Otolaryngology training. These divergent assumptions bely the deployed concerns about how women will handle becoming parents when, in general, we do not view parenthood as a barrier to men in their careers.

There are concrete steps like on-site childcare and taking advantage of parental leave for males and females [33]. The general approach to gender disparities could be reframed from asking women to find a way to function in a system built for men to warmly engage women in the construction of norms, customs, expectations, and policies. This could create more meaningful, sustainable equity.

Sexual Orientation Bias

Because some aspects of sexual orientation expression are less externally visible or readily apparent than gender expression or phenotypic traits that have been racialized, there is less literature documenting that awareness of bias begins by preschool age for the LGBTQiA population. However, the governing archetypes about who belongs in Otolaryngology also create a culture of exclusion based on sexual orientation [34, 35].

A 2015 survey of LGBTQiA US medical students, residents, and physicians found a negative correlation between objective specialty prestige, a statistically combined measure of residency match rate and median attending income, and perception of inclusion of sexual/gender minorities [36]. Respondents perceived more prestigious specialties as less likely to be inclusive of sexual/gender minorities. A negative correlation was also found between specialty prestige and the proportion of providers in that specialty who identified as sexual/gender minorities. LGBTQiA medical students who responded to the survey indicated they were more likely to pursue specialties they perceived as inclusive of sexual/gender minorities.

The residency match rate for Otolaryngology in 2022 was 62.9%, the third lowest among all medical specialties [3]; that same year, Otolaryngology ranked in the top five among all medical specialties for median attending income. By these objective measures, Otolaryngology is a specialty with high prestige, and thus may be less likely to be perceived as inclusive of sexual/gender minorities. This raises concerns that LGBTQiA medical students may be less likely to pursue Otolaryngology as a specialty.

Those who can be considered in a sexual preference minority have been shown to perceive increased discrimination, feel less understood, and be more susceptible to burnout [37–39]. We also have data about higher risks of suicidal ideation, discrimination, and maltreatment [40, 41].

Very little has been written about transgender or gender expansive physicians, but the data that exists supports the fear that these individuals experience judgment and discrimination in their respective workplaces [42].

Socioeconomic Status Bias

Disparities in generational wealth are often the product of institutional biases against BiPOC individuals. So, it is not surprising that the prospects of enormous educational debt deter members of these groups from pursuing the rather protracted path to our profession. There is some privilege

involved in the concept of delayed gratification because it assumes the ability and resources to meet basic needs during the waiting period.

For the working poor, this is often not mathematically possible. Recent stories of graduate students relying on food pantries in order to have daily sustenance underscore how the pursuit of higher education has been co-opted by a capitalist structure. The current rubric leaves underfunded students vulnerable to exploitation and has much less effect on students whose families have accumulated and compounded advantages [43, 44]. Food insecurity among medical students is an emerging trend [45, 46].

To be clear, minorities are not always poor. These terms are not synonymous, but the effects of discriminatory policies have tended to enlarge wealth gaps based upon race, ethnicity, and gender. Still, most of our current practices trend towards a plutocratic machine that makes the completion of medical training a less diverse pool of individuals.

Conclusions

One of the most dominant barriers to achieving diversity, equity, and inclusion in Otolaryngology might be the Machiavellian notion that medicine belongs to a single demographic and that this group is uniquely empowered to determine who has the "best fit," before doling out invitations [47]. We need to understand that American institutions rely on a pyramidal foundation of British exceptionalism with the corresponding denigration of everyone else. The term White supremacy rightfully gives us pause, but it is often very much misunderstood. The phenomenon is not limited to cross-burning and extra-judicial lynching, though these extremely violent actions are powerful deterrents to offering any voice of resistance. White supremacy is also embracing or practicing beliefs in a social hierarchy that consistently places White, cis-gendered, heterosexual men at the top and centers them as THE model to follow. This system also favors the male gender as it is a product of the patriarchy that ruled Medieval Europe and ushered in the age of enlightenment that is credited with refining scientific thinking and processes and procedures that lead to modern medical education.

Zinzi Bailey describes structural racism as the totality of ways in which our society nurtures and perpetuates discrimination based on the social construct of race [48••]. She notes the mutually reinforcing systems of housing, education, employment, wages and wealth, criminal justice, and healthcare. Historical and current patterns, practices, policies, and metrics, in turn, reinforce discriminatory beliefs and this belief system dictates the allocation of resources, our value system, and sustains outcomes.

The term "structural racism" often causes people to bristle. So, we can look at an illustrative parallel in order to process some realities. In the 1950s, the Kodak company used a comparative device called the Shirley card [49, 50]. The card was named for a Caucasian woman with brunette hair who worked for Eastman Kodak. The company fashioned a standard around her photograph. They used her skin tone as the basis to calibrate all photos to provide the best balance and narrowly defined superior outcomes when developing their film.

Any photograph of a person with brown skin would necessarily be "suboptimal" in a calibration system that normalized one specific set of attributes, namely, Whiteness. Most importantly, if someone took a photo whose subjects were multiracial, the color film development process enriched Caucasian skin tones while it distorted and diminished more Nubian hues and people of color. If we are open to pondering this situation, we can see how the idea of fairness can be elusive. Is it truly fair to simply give everyone the same opportunity to be photographed? Exploring these questions might help us demystify structural racism as well as the myth of a meritocracy.

The Shirley card idea also reinforced notions of women as objects to be admired for their appearance more than respected for their innovation and creativity. So, we must face gender bias both as a separate factor and how it intersects with race and ethnicity if we are to create diversity in Otolaryngology. The tools to determine who is "best" for the field have mostly been calibrated to Caucasian, Christian, heterosexual, male standards. These myopic beliefs inform current expectations of career trajectories and affect mentorship, sponsorship, and advancement in head and neck surgery.

Bias in the form of racism, sexism, homophobia, Islamophobia and the like is pervasive and enduring. It was present when the founding fathers first trod the pathways to educational and professional success. Bias was present when Charles Eliot convinced Harvard University and the NEA to adopt the use of a standardized entrance exam. He sought to make the institution more geographically diverse, but respected racial segregation and felt women were better suited to Radcliffe than Harvard. The hierarchies of our nation's birth have been meticulously maintained.

Despite clear, perpetuated bias, standardized tests are frequently presented as "objective data," overlooking how the creators of these tests were aligned with the United States Eugenics movement. Their goal was to provide tests that proved White people were superior. The underlying assumption was that the social construct of race imparts intellectual ability. Similar to the Shirley card, the system was calibrated to make "normal" White men look the best.

After complaints to the Kodak company about the quality of photos from wood (darker grained woodwork was not displaying well), the Shirley card was used even as a more diverse array of skin tones contributed to the composition of the photo. The impetus for change was not a

recognition of the depth of the problem. So, the solution was neither specific nor accurate.

While the scope of the challenge in building genuine diversity can feel overwhelming and void of hope, there is a deep well of inspiration in the fact that each of us can contribute because there are so many opportunities to apply our knowledge and desire to effect change to policy and practices that govern our interactions.

We also benefit from looking at systems rather than individuals. It is possible to be a hardworking, industrious individual who still derives benefits for a biased system. Building equity is not a punishment for White males. Quite the contrary, there are immeasurable opportunities for anyone who is empowered to use their voices to recognize, mentor, and sponsor others. We all benefit from growing our allies and building a genuine, welcoming professional community that celebrates diversity.

Anyone sitting on a committee can inquire about whether the members are diverse. Seeking an array of opinions, thoughts, and perspectives provides demonstrable benefits. So, focusing on process improvement could strengthen the specialty and all of our interactions, both with patients and colleagues. The same call for action is applicable to position papers, study groups, recruitment efforts, and developing criteria for promotion.

Fig. 1 Listen to the voices of others with humility and a sincere attempt to gain perspective. We can all benefit from one another, building authentic community. Evaluate our spaces, particularly committees and other decision-making bodies, for diversity. Does the makeup of the committee reflect the population it is representing? Vocalize when we recognize that our spaces lack diversity. When invited to serve on a committee, we can ask "who will represent _____ on this committee?" The voice of a cis-gendered, White, Christian, heterosexual male is absolutely valued to steer organizations. However, we must simultaneously understand and embrace the inherent benefits of diverse perspectives for decision-making and leadership. Emancipate our minds: identify and begin to consciously choose different thought patterns. If we can begin to free our minds, much of the rest will follow. Learn to recognize systemic barriers which contribute to the current lack of diversity in our field. Learn discernment to distinguish between individuals and systemic forces. Uplift students from under-represented backgrounds through early sponsorship and mentorship programs. Promote diversity, equity, and inclusion. People can have wonderful intentions and still function as part of a system that has developed inertial force. This force overcomes pathways comparable to how someone on a motorized people mover enjoys an advantage over someone forging a new pathway with pedestrian power alone. Image used under license from Shutterstock.com

Action Steps

We hope to have highlighted the ways in which social realities reinforce and perpetuate inequities. The next step is to take action in order to create equity. There are enduring forces that have created and worked to sustain imbalances and inequities. Time and serendipity will not be enough to alter the impact of these forces. It is time for us to level up (see Fig. 1).

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