

Examining our lens: how bias heightens disparities in trauma research

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SUMMARY

Trauma research is an expansive discipline that informs injury prevention, best practices in care, and novel interventions. However, implicit bias, or the unconscious stereotypical beliefs about groups of people, can have profound implications for traumatic injury research. Several forms of implicit bias can emerge in trauma research, which deepens existing disparities based on race or ethnicity, sex, ability status, socioeconomic status, and other factors. This paper reviews how implicit bias affects the development of research and the application of findings, potentially leading to suboptimal care and misdirected preventive strategies in trauma. We present the recent dialogue and progress on implicit bias in research at the Summit on the Advancement of Focused Equity Research in Trauma (SAFER-Trauma) conference, an Agency for Healthcare Research and Quality-funded assembly of multiple disciplines which was convened to tackle the challenges involved in addressing disparities in traumatic injury. Through this review, we seek to generate momentum for action toward reducing implicit bias and establishing comprehensive equity-focused standards of trauma research and practice.

INTRODUCTION

In the USA in 2020, there were over 22 million emergency department visits for nonfatal injuries and over 300 000 fatal injuries.¹ Traumatic injuries often profoundly impact patients' physical function, life expectancy, and mental health, in turn affecting long-term quality of life and financial well-being. Unfortunately, disparities in traumatic injuries and the care of trauma patients can potentiate these negative effects and adversely affect patient outcomes.^{2,3} It is of paramount importance to critically examine unequal treatment and outcomes and to conduct research establishing best practices for equity in trauma care. Vital to the process of fair and just research is the thoughtful consideration of implicit bias. Unexamined implicit bias can subtly skew study design, participant selection, and data collection, compromising the validity and reliability of research outcomes, which may further perpetuate or amplify existing disparities in trauma care.

In August 2023, the Summit on the Advancement of Focused Equity Research in Trauma

(SAFER-Trauma), organized by the Coalition for National Trauma Research (CNTR) Equity, Diversity, and Inclusion Committee, convened to examine, define, and develop mitigation strategies for the problem of inequity in research.³ By assembling multidisciplinary professionals striving for equity in trauma research, SAFER-Trauma sought to elevate their voices, create synergy, and advance a consensus on high-priority areas of trauma research equity.

One of the major identified themes of the conference was *implicit bias* in trauma research. Identifying and accounting for implicit bias at every stage of the research process is essential to strengthening trauma research integrity and ensuring that proposed solutions to eliminate disparities do not, in fact, further perpetuate inequity. This manuscript discusses the definition of implicit bias in current trauma research, common sources of implicit bias in specific populations, research methodology, and health policy and also discusses safeguards against implicit bias in research.

DEFINING IMPLICIT BIAS

Implicit biases are subconscious negative attitudes and beliefs about people, shaped by learned associations between certain qualities and social categories, such as race or gender.⁴⁻⁶ Many cognitive processes, like implicit bias, operate unconsciously to maintain efficiency and reduce the allocation of finite resources when guiding behavior; however, allowing bias to remain unchecked can lead to errors in decision-making.⁷ Research demonstrates the existence of implicit bias in many societal domains, including the healthcare system and, specifically for the purposes of this discussion, surgical care.⁸⁻¹⁰ Disparities in surgical outcomes are evident based on race, gender, class, and age, among other factors^{11,12}; these disparities are apparent across the continuum of trauma care from the risk of experiencing trauma to the long-term outcomes experienced due to traumatic injury.

While disparities in clinical care are known and recognized to varying degrees, introspective acknowledgment of how implicit bias contributes to trauma research and outcomes is not prevalent in the literature. Because of the direct relationship

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between research and clinical care, especially in emerging care pathways and education, it is critical to consider implicit bias as a contributing factor to disparities in both. When conducting research, the specific ways that implicit bias impacts population engagement, research methodology, and outcome prioritization must be examined, with the aim of clear linkage in how the effects of implicit bias in research translate into inequitable experiences across trauma populations.

SOURCES OF IMPLICIT BIAS FOR SPECIFIC POPULATIONS

People with disabilities

Implicit bias in research can lead to the exclusion or marginalization of people with disabilities due to inaccessible study designs or preconceived notions about ability.^{13 14} Though individuals with disabilities benefit from federal protection against discrimination under the American with Disabilities Act, its focus on daily life does not always cover inclusion in research activities. In fact, in September 2023, the director of the National Institute on Minority Health and Health Disparities acknowledged that people with disabilities experience a wide range of health conditions that lead to poorer health and formally designated people with disabilities as a population with health disparities.¹⁵ Individuals with disabilities can face accessibility challenges related to housing, healthcare facilities, communication accommodations, or transportation, leading to increased rates of compromised quality of life and health.¹⁶ Specific exclusion or inadvertent non-inclusion of people with disabilities in research may widen the already present gap in care, outcomes, and well-being.

The risk of permanent disability for trauma survivors is high, which indicates an undeniable need for disability-focused research beyond the assessment of disability risk alone.¹⁷ As discussed by Mr Andrew Oberle in his SAFER-Trauma presentation, ‘Keep the Miracle Moving: A Trauma Survivor’s Mission to Advance DEI’, the experience of injury-related disability presents challenges that may not be visible to clinicians or researchers.¹³ This includes factors such as working through the complexities of pain, loss, traumatic stress, and hospitalization. Including patients with disabilities in research—whether the disability is new, premorbid, or exacerbated due to injury—provides an opportunity to examine ways to reduce disparity that may not be visible to researchers. Furthermore, the long-term recovery and daily experience of people with disabilities include obstacles (eg, mental health and financial impact) only known by those who have encountered them, often past the period where trauma professionals are involved.¹⁶

People from minority racial and ethnic groups

Individuals from minority racial or ethnic groups often experience systemic barriers in healthcare. Additionally, they have not always experienced the individual or community benefit of trauma research, which was articulated by Dr Cherise Berry in her SAFER-Trauma keynote address, ‘Disparities in Trauma Care: The Impact on Patient Outcomes’.¹⁸ Without the engagement and involvement of people from minority racial or ethnic groups, the likelihood of their unique needs being addressed is reduced or eliminated. Unfortunately, underrepresentation of individuals from racial and ethnic minority groups is not the exception; it is the rule. Although the National Institutes of Health (NIH) Revitalization Act in 1993 was created to increase the inclusion of diverse populations in clinical research,¹⁹ a recent estimate reported that even though the 2018 US Census Bureau estimated that 60.7% of the population is comprised of non-Hispanic white Americans, non-Hispanic whites of European

ancestry comprised more than 90% of the population in clinical trials.²⁰ Although the inclusion of minority race and ethnicity patients is increasing (and is increasing faster in NIH-funded studies than studies funded by other organizations), these groups remain vastly underrepresented.²⁰

The underrepresentation of individuals from minority races and ethnic groups is multifactorial and has its origins in institutional and systemic racism. These origins include lack of trustworthiness of healthcare and research (often stated as lack of trust on the part of individuals; we challenge that view and propose reflection on how that lack of trust arose), lived experiences of discrimination, racism, and marginalization, and logistic difficulties from instability of resources for patients with a high degree of social marginalization.²¹ Research describes unequal risk among racial and ethnic groups in multiple types of traumatic injuries, but not all research exploring disparities and outcomes reflects these proportions, impacting the ability to develop interventions to reduce injury as well as negative sequelae.

Rural communities

Rural environments account for over 85% of the North American land mass, and although rural populations account for a relatively small proportion of the census, they disproportionately contribute to a high number of trauma-related deaths.²² Despite the evidence of poorer outcomes when compared with patients from urban communities, historically, patients from rural communities are underrepresented in trauma research.^{23 24} As Mr Nick Medrano noted in his address ‘Leveraging GIS to Address Disparities in Access’, the clustering of trauma centers in more densely populated areas inherently reduces the opportunity for rural patients to be included in trauma research.²⁵ Since patients from rural areas often lack immediate access to trauma centers, which typically serve as the primary sites for trauma research, their initial assessment and treatment often take place outside the scope of many trauma centers and therefore may not be eligible for inclusion in trauma research. For patients with long travel distances to a trauma center, the time required to return for research-related follow-up visits may be a barrier and contribute to attrition.^{26 27} Cultural factors can also be a barrier to the inclusion of rural populations in trauma research, and rural population engagement in healthcare and research has been shaped by lack of trustworthiness from healthcare settings and subsequent skepticism. Furthermore, patients from rural communities may feel stereotyped or stigmatized by healthcare providers who practice in urban environments, hindering their willingness to participate in research.²⁸

There are also potential implicit biases held by investigators regarding the uniqueness and relevance of the rural segment of trauma patients. Researchers in trauma centers located in urban centers may not be exposed to rural communities, and subsequent research findings may lack generalizability if the research design fails to consider differences in the mechanism of injury, limitations in access to services due to proximity to care, and health beliefs affecting care and recovery. The assumption of homogeneity of traumatic injury and utility of intervention across populations may lead investigators to not prioritize the inclusion of rural populations in studies; however, rural trauma patients may experience trauma differently in terms of unique injury characteristics or patterns and the sociocultural influences of their care and recovery such as limited access and cultural distinctions.^{23 29 30} This was supported by Dr Lucy Wibbenmeyer’s conference presentation ‘Health Equity in Burn Research Cannot Wait’, as she highlighted the paucity of verified burn

centers across the USA and how this can limit capacity for reintegration after burn injury.^{31 32} Acknowledging the disparities experienced by individuals in rural communities and addressing implicit biases in trauma-related investigations are the first steps in addressing the gap in understanding the unique challenges and needs of rural communities.

Socioeconomic disadvantage

Patients from socioeconomically disadvantaged groups are at risk for greater disparities in all healthcare, but specific to trauma care and outcomes,² they experience significant inequity. In evaluating the efficacy of burn prevention campaigns, Dr Wibbenmeyer noted that some prevention efforts were more effective in families from higher socioeconomic status, highlighting the need to include social and economic factors in research that inform care.^{31 33} While the ways in which research examines socioeconomic disadvantage varies,³⁴ insurance type can be used as a proxy, in the USA, to study these outcomes; evidence is clear that lack of insurance predicts poor trauma outcomes, including mortality.³⁵ If social determinants related to socioeconomic status are woven into selection characteristics (eg, inadequate transportation interpreted as non-adherence) favoring higher socioeconomic status, barriers to participation are erected, and it becomes possible to overestimate treatment efficacy if only ideal or somehow advantaged candidates are chosen. These and other bias-influenced practices may unintentionally mislead clinicians and policymakers about the true benefits and risks of care in a complete, inclusive patient population and may compromise adequate evaluation of the impact of socioeconomic disadvantage.^{36 37}

Sex and gender

When used in research, sex is most commonly a binary biological variable. Due to prior gaps in the inclusion of women as research subjects, the 1993 NIH Revitalization Act also set expectations that sex must be thoughtfully included in all research designs.¹⁹ In the USA, males are more likely to experience traumatic injury than females; however, sex-based disparities exist in treatment approaches and outcomes.³⁸ Leveraging research to challenge implicit biases in clinical care is instrumental, but male patients are often used as the default, disallowing the unique experience of those patients who exist in female bodies.

One example of this was highlighted at SAFER-Trauma by Dr Susan Cronn, who presented a talk entitled ‘Motor Vehicle Crashes: A Representative Crash Dummy’, which examined sex as a biological variable and vehicle safety research.³⁹ In this talk, Dr Cronn called attention to how implicit bias in methodology led to limitations in comprehensive injury prevention due to underrepresentation and misrepresentation of biological sex in crash test dummies³⁹; women are significantly more likely than men to be severely injured or killed in similar crashes. Despite this disparity, equitable research to address the differences in male and female crash injury has not been a priority until just this decade.

Crash testing began approximately 60 years ago, an era in which women were less often in the driver’s seat than men. Male-representative crash dummies continue to be used as the primary apparatus to evaluate the safety of vehicles, with much less frequent use of female dummies (which are simply male dummies scaled down to the fifth percentile of female size).⁴⁰ Furthermore, the small female dummies do not account for differences in muscle mass, body composition, or bone density,⁴¹ nor are they required to be used in the driver’s position in all

phases of testing.⁴² This dated, sex-related implicit bias has persisted into modern crash testing and vehicle safety research, contributing to increased risk of injury and death in female occupants of vehicles. The lack of female representation in trauma research has only recently entered the dialogue on vehicle safety, and policy informed by research surrounding vehicle safety does not yet equitably reflect the needs of individuals of all shapes and sizes.

Along similar lines, as defined by the WHO, ‘gender’ refers to the socially constructed characteristics of women, men, girls, and boys, which include norms and behaviors and roles associated with being a man, woman, girl, or boy; gender varies from society to society and can change over time.⁴³ Historically, the spectrum of gender has been unrepresented in the majority of research; any inclusion has defaulted to the binary ‘man’ and ‘woman’ until very recent years. With the use of only a binary variable for gender, we are unable to capture the nuance of how gender contributes to inequity. Trauma research has not yet adequately included people who experience gender as different from the binary sex/gender they were assigned at birth and/or those who have gender identities outside the traditional binary, which indicates that it is yet unknown how gender affects traumatic injury, experience, and outcomes.⁴⁴

METHODOLOGICAL AND POLICY-RELATED SOURCES OF IMPLICIT BIAS

Implicit bias can permeate research at all phases of methodology. The scientific method was developed to reduce subjectivity, yet the decision-making involved in discerning research approaches and methods is subject to implicit bias. Every element of the scientific method requires the researchers to make choices: research topic, study recruitment, resources used for recruitment, inclusion or exclusion criteria, intervention or treatment type, methods of data collection and analysis, choice of tools or materials, and utilization of implicit bias mitigation strategies or avoidance. Each of these choices requires scrutiny through a lens of equity to improve disparities experienced by trauma patients.

Research questions are developed and carried out by people with distinct worldviews and are, therefore, potentially subject to implicit bias.⁴⁵ The rigors of extensive training do not eliminate the human tendency toward implicit bias completely; researchers must be acutely aware of potential pitfalls in their study design. For example, implicit bias can influence the framing of research questions or research hypotheses and unintentionally emphasize research questions that align with their own preconception. Implicit bias can affect the way that data are collected or which variables are selected for inclusion. Take, for instance, even the choice of how to categorize a variable such as gender, race, or insurance type can add unintended implicit bias. In analysis, decisions about which statistical tests to use, how to handle outliers, and reporting on which outcomes can all be affected by implicit bias.

Participant selection

Skewed patient participation in research is an important potential source of methodological implicit bias, which must be addressed intentionally when designing a research participant enrollment strategy.⁴⁶ Selection bias occurs when study participants do not effectively represent the general population, often due to the exclusion of certain demographics, focus on overly narrow criteria, or recruitment methodology that does not reach the broader population.⁴⁷ To minimize implicit bias in research, all populations affected by a problem should have the

opportunity to participate in research addressing the problem, and all should be equitably represented within their studies. This requires special attention to including and safeguarding historically exploited populations, such as people who are incarcerated, to ensure their representation and simultaneously their protection in research.⁴⁸ Implicit bias occurs when researchers prioritize patients who they view as the ‘typical’ trauma patient or when using convenience sampling, which can lead to overrepresenting some populations and missing the experiences or needs of others. In addition, patients who have pre-existing mistrust of the health system may be more likely to decline to participate, leading to a gap in the studied population. Failing to account for patients with variability in experiences and backgrounds can lead to faulty conclusions, incomplete or misleading data, and potential harm to patients (particularly those already affected by health disparities).

Language may be a barrier to recruitment and enrollment in studies for patients with limited English proficiency, as well as a barrier to follow-up participation. For instance, the use of English-only surveys and research protocols that require data collection to occur in English, without appropriate effort to expand protocols to other languages, can reduce or eliminate an entire population.^{49–51} When one in five people in the USA speaks a language other than English in their home,⁵² efforts to adapt research measures to other languages are essential for the inclusion of non-English-speaking trauma patients. Efforts to address barriers, develop and maintain trust, recruit diverse research staff, and engage in transparent, community-engaged research are vital for addressing the underrepresentation of people from minority racial and ethnic groups.

Ensuring adequate representation of patient populations within research often competes with other factors such as the logistics of completing a project, time, and resource allocation.⁵³ A critical piece of acquiring funding is demonstrating these logistics (eg, the feasibility of the study), which often leads to implicit bias by favoring populations that are perceived to be easy to deal with for research purposes. The added effort needed to target specific populations and/or provide accommodations can lead to the exclusion of important voices in favor of feasibility.^{47–54} Outreach strategies such as in-person research activities where patients live, combined with personalized, longitudinal engagement can overcome some of these challenges,^{55–56} but when some populations are seen as more challenging to recruit (eg, rural communities, individuals who are unhoused, or with no access to phone or internet, language barriers), they may become a lower priority or even excluded from a study. Unfortunately, populations typically excluded are often those who already experience systemic barriers and inequity that impact their health and disparities in care, perpetuating a cycle of underrepresentation in research and disparities in care and outcomes.⁵⁷

Implicit biases inherent to large datasets

The use of large datasets in trauma research offers the allure of comprehensive insight, but if demographic variables are omitted, undefined, or unavailable, large dataset use can inadvertently mask disparities among different populations.⁵⁸ As Dr Cheryl Zogg discussed in her address ‘Limitations of Large Trauma Datasets’, though large administrative datasets hold potential for broad and deep understanding, without detailed and inclusive data, users of large datasets risk reinforcing systemic biases and neglecting the needs of some sectors of diverse populations.⁵⁸ If datasets are imprecise or lack comprehensive variables, researchers may miss patterns of injury or outcomes specific to

certain groups,⁵⁹ leading to a fallible, one-size-fits-all approach in interventions. Furthermore, it is challenging to account for omissions in datasets, which can allow for overgeneralization of findings. Large datasets with insufficient granularity may not present a full picture or may lead to researchers overlooking subtle but significant social determinants of trauma care, outcomes, and recovery. Researchers using large datasets without awareness of their limitations may unintentionally contribute to arriving at conclusions lacking nuance or comprehensiveness, possibly impeding equitable care for all trauma patients.

Implicit bias can also be perpetuated in methods researchers use to try to overcome missing data. Using proxies for race, sex, gender, or ethnicity is an oversimplified method that can lead to faulty assumptions, bolstering of biases, and underappreciation of the richness of identities and populations. For instance, researchers might automatically assume race, gender, or ethnicity based on patient name,⁵⁸ which ignores the diversity within and across ethnic groups or names, as well as the various types of relationships by which people acquire a name not representative of their racial or ethnic identity. Making assumptions via proxies can influence perceptions about other variables such as socioeconomic status, education, or other demographic factors, which may compromise data integrity.

While large datasets allow researchers to harness statistical power and identify epidemiological trends, these datasets come with the risk that, while participants will necessarily remain unidentified, the deeper data within cannot be verified. Researchers must take care to understand how these data are collected, what assumptions are made with imputed data, and what limitations cannot be overcome even with sophisticated statistical methods. These limitations underscore the need for careful development and selection of variables for databases within the control of trauma professionals (like trauma registries), including standardization of variables, consensus-driven data use practices, and clear measurement definitions for each data element.

Potential implicit bias in artificial intelligence (AI)

The increasing use of AI in research demands that we evaluate it within the context of implicit bias,⁶⁰ which was discussed by Dr Rachael Callcut in her address, ‘Applying Artificial Intelligence to Address Disparities’, AI, which includes techniques such as machine learning and deep learning, can process enormous amounts of data with the goal of recognizing patterns, making decisions, and arriving at meaningful, useful conclusions. However, the application of AI is not without challenges, and if implicit biases are not addressed when AI is applied, the use of the algorithms developed can amplify or augment disparities. AI learns from training datasets, which can include biased human decisions or reflect historical or systemic/institutional biases in treatment; these can be introduced through the development cycle such as through the variables and algorithm development.⁶¹ When algorithms are not evaluated for the performance characteristics across specific populations and are considered in totality only, implicit bias can be hidden and assumed not to exist. The net result may be that implicit bias is only uncovered when deployed in real-world settings, which has a significant risk of unintended consequences.

Medical research relying on algorithms is not free from implicit bias and can have troubling consequences. One recent example is that race-stratified models of glomerular filtration rate likely contributed to racial disparities in access to kidney transplantation.⁶² Obermeyer *et al* reported on a commercial

algorithm that enrolled patients into high-risk care management programs.⁶³ Once applied to a large patient population, it became apparent that the algorithm was introducing implicit racial bias, directing more white patients into these programs and resulting in less healthcare dollars spent on black patients. There was no scientific basis for the differential assignment of access to white patients over black patients, which is important (and alarming) in understanding the risk of implicit bias when using AI. Implicit bias from AI algorithms has also been shown across gender and socioeconomic status as well.⁶⁴ As AI tools become more ubiquitous in trauma research, researchers must be fastidious in their awareness of the pitfalls of AI related to disparities to avoid methodologies and decisions that compromise equity in data and outcomes.⁶⁵

Implicit bias in policy and funding to address research disparities

Implicit bias affects the entirety of the research process, including the systems and policies that shape research efforts and outcomes. As Dr Joseph Sakran discussed in his presentation, 'Driving Change Beyond the Bedside!' healthcare systems, government agencies, community organizations, and funding entities have vested interests that may consciously or unconsciously shape the prioritization of research and outcomes chosen for study.⁶⁶ Researchers must strive to unveil and challenge implicit bias contributing to preferentially directed funding that marginalizes or underrepresents certain injuries or populations over others, or they risk complicity in preserving disparities in care and outcomes.

Disparities can be further perpetuated by funding agencies focusing on conditions prevalent in affluent or otherwise advantaged populations, sidelining issues more common among people from socioeconomically disadvantaged or minority groups. For example, the decades-long suppression of funding for firearm violence research due to partisan politics created a void in the evaluation of prevention efforts and adequate intervention for firearm-related injury, whose burden is carried disproportionately by black citizens.⁶⁷ Equity in funding requires rigorous attention to the existence and impact of implicit bias, transparency and open discourse, and focused peer review specific to addressing implicit bias in grant proposals, use of funding, and research strategies and aims. Organizations such as the Agency for Healthcare Research and Quality, the Patient-Centered Outcomes Research Institute, the National Institute of Health, and the American College of Surgeons are advocating for this type of equity focus, as evidenced by the 'National Agenda for Surgical Disparities Research'⁶⁸ and SAFER-Trauma; however, challenging implicit bias needs to become a standard pursuit across all trauma research.

SAFEGUARDS AGAINST IMPLICIT BIAS IN RESEARCH

Community engagement

Multiple safeguards against limiting or eliminating implicit bias were presented at the SAFER-Trauma conference. Community engagement was consistently proposed as a positive means of advancing population needs and perspectives into visibility in trauma research. The unidirectional standard of trauma research follows the trajectory of problem identification, hypothesis generation, research completion, and conclusion, without the benefit of the population's input. Within this constant, academia-originated research process, there are multiple points where community engagement can enhance, expand, or enrich the work.⁶⁹ People and communities are deeply impacted by

the institutions and interventions designed to serve them but are often not included in the process of creating these entities.⁷⁰ Working toward improved outcomes is optimized when communities are connected to the work. Developing programs, research, and interventions with patient/community involvement can take several forms, from consultation to regular input to shared power and decision-making.⁷⁰ Community assets, needs, and concerns are centered on effective community engagement, and equity must be embedded in each step of the process.

Dr Punch presented a community-engaged, bias-reducing approach of the Bullet-Related Injury Clinic (BRIC) of St Louis, Missouri, and its inclusion of community stakeholders. The community representation in this clinic drives *deciding* and *assessing* the interventions and setting for bullet injury survivors.⁷¹ Community members led and shaped the intervention, rather than having the intervention delivered and performed upon them without their input. With BRIC's focus on a culturally competent model of care, the clinical environment fits the specific community-stated needs of bullet-related injury patients and creates a truly patient-centered and patient-safe environment. The BRIC clinic is an outstanding example of eliminating the disconnection between healthcare and the community it serves, and Dr Punch's recounting of how the clinic paused operations for deferral to the community's vision demonstrated the BRIC clinic's commitment to meaningful collaboration for equity.

Community-engaged research has the capacity to challenge the implicit bias inherent in conventional methods or aims of research by allowing community members who have traditionally been excluded to provide insight into the research process. Gaps between communities living with an issue or problem requiring research and institutions or individuals attempting to address the issue or problem are common, but within this liminal space exists enormous capacity for accelerating research,⁷² empowering communities, and improving lives.

Diversity in trauma professionals

In her keynote address, Dr Cherisse Berry discussed attrition rates of black learners and trainees in trauma, presenting a clear and compelling pattern of exclusion, undermining, and discrimination against black medical students and residents.⁷³ Bias and systemic discrimination in our medical education system serve as a barrier to inclusion. Research confirms that black patients have better outcomes with black physicians, but the percentage of black medical students and physicians has not increased over time.⁷⁴ The trauma workforce does not currently reflect the proportions of trauma patient populations, so any ability to adequately introspect related to patient needs, gaps in care, and prioritization in outcomes may be weakened and susceptible to implicit bias.⁹ Indeed, systematic reviews of implicit bias show that biases of healthcare providers negatively impact patient-provider interactions by reducing patient-centered conversations and patient involvement in decision-making. Strengthening systems that support, recruit, mentor, and elevate trauma clinicians and researchers from populations historically excluded from these positions is a key strategy in both driving equity in our profession and reducing implicit bias and disparities in trauma research and care.

CONCLUSIONS

Inequity and disparity in trauma are pervasive, and deeply ingrained implicit biases contribute substantially to this problem. It is incumbent upon trauma researchers to act as intentional,

equity-focused stewards of the research process to recognize, reduce, and eliminate implicit bias in trauma care, care delivery, injury prevention, and outcomes. The SAFER-Trauma conference amassed multidisciplinary professionals committed to this action, and the goal of disseminating conference-related information is to shift trauma research paradigms into equity-directed, disparity-conscious methods of generating best practices in trauma care. By examining various examples of implicit bias presented here, the trauma research community can collectively move forward in awareness of equity-related issues and diminish bias in research practices.

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