HHS Public Access

Author manuscript

Curr Probl Pediatr Adolesc Health Care. Author manuscript; available in PMC 2020 February 06.

Published in final edited form as:

Curr Probl Pediatr Adolesc Health Care. 2019 February ; 49(2): 34–44. doi:10.1016/j.cppeds.2019.01.003.

Implicit Bias: What Every Pediatrician Should Know About the Effect of Bias on Health and Future Directions

Jeanette Schnierle, BA^{a,b}, Nicole Christian-Brathwaite, MD^c, Margee Louisias, MD, MPH^{d,e,f,*}

^aHarvard T.H. Chan School of Public Health, 677 Huntington Avenue, Boston, MA 02115, United States

^bOhio State University College of Medicine, United States

^cRiverside Community Care, 270 Bridge Street, Dedham, MA 02026, United States

^dBoston Children's Hospital, Division of Allergy and Immunology, 1 Autumn Street, 3rd Floor, Boston, MA 02115, United States

^eBrigham and Women's Hospital Division of Rheumatology, Immunology and Allergy, United States

^fHarvard Medical School, United States

Abstract

Implicit bias has entered modern discourse as a result of our current sociopolitical climate. It is an area that has been largely explored in the social sciences, and was highlighted in the landmark 2003 IOM report, *Unequal Treatment*, as a contributor to racial/ethnic health disparities. Implicit bias is the process of unconscious societal attitudes affecting our individual understanding, actions and decisions, thus leading to assumptions about groups. Immigrant populations are particularly at risk in our present-day environment, and as a result experience limited healthcare access and higher levels of psychological distress. There are many measures of implicit bias, but the most highly regarded tool is the Implicit Association Test (IAT), as it is valid and reliable. Some level of pro-White/anti-Black bias has been found in most systematic reviews and studies, although there are less studies on bias towards Latinx populations. Limited evidence exists about the association between implicit bias and health outcomes. However, existing publications have demonstrated clear associations between bias and treatment recommendations, nonverbal communication, adverse birth outcomes and provider communication styles. Implicit biases can be unlearned via debiasing strategies, but these have not been examined extensively amongst health care providers. Future research must rely on more than pre- and post-IAT measurements to examine the effect of these strategies on improving patient outcomes. Additionally, healthcare system leadership must prioritize implicit bias trainings for students and medical staff and make greater tangible efforts to improve workforce diversity as a debiasing strategy.

*Corresponding author at: Boston Children's Hospital, Division of Allergy and Immunology, 1 Autumn Street, 3rd Floor, Boston, MA 02115, United States., mlouisias@bwh.harvard.edu.

Conflict of interest

All authors have no conflicts of interest.

What Is Implicit Bias? Where Does It Stem From?

Implicit bias has recently gained greater attention in our current sociopolitical climate and has even entered daily discourse. However, most of us are not aware of our own implicit bias, how it differs from explicit bias, and the sources of implicit bias. Implicit bias refers to the societal attitudes or stereotypes that unconsciously affect our individual understanding, actions and decisions. Implicit associations cause people to have attitudes about others based on age, gender, race/ethnicity, weight, and appearance. These biases allow one to create unfavorable and favorable assessments without a person's awareness or control.¹

Although implicit bias is distinct from explicit bias, they are not mutually exclusive and can reinforce each other.² As a result, this type of bias may affect a person's actions even when they are unaware or may consciously not think they are biased against another group. In the United States, for example, someone's unconscious bias against racial and ethnic minorities often reflects the country's historical and cultural view that non-white persons are inferior.³

Why Should We Care About Implicit Bias in Medicine?

Physicians should be most concerned about how implicit biases can negatively affect clinical assessments and judgments. According to dual-process decision making theories, people have two systems to help them make decisions. While one system is primarily responsible for making slow, careful, controlled, rational cognitive decisions, the other aids in automatic, effortless, associative decision-making. A reliance on mental shortcuts in the latter system can result in implicit bias, especially in fast-paced environments with multiple demands that encourage rapid, automatic decision-making.^{4,5} This is especially relevant in medicine, where health care providers are subjected to fatigue, time constraints, and information overloads; these circumstances make physicians highly dependent on mental short-cuts, leading to an increased reliance on stereotypes in the clinical setting.⁶ Implicit bias may cause providers to unintentionally make assumptions about their patients based on stereotypes, such as having a lower expectation for patients to comply with medication regimens or assuming a patient is exaggerating symptoms based on their socioeconomic status or racial/ethnic background.⁷ Though they may not align with providers' explicit beliefs, these implicit biases can potentially impact health outcomes and further contribute to health disparities.

In the United States, people who are racial and ethnic minorities experience higher rates of morbidity and mortality on average.⁸ The Institute of Medicine Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health's 2003 landmark report named "Unequal Treatment" highlighted that implicit bias and other discriminatory processes contributing to these health outcomes were intolerable and must be addressed.

Immigrants are especially vulnerable as the current sociopolitical climate creates barriers for patients to access quality health care. After the 2016 Presidential election, for example, hostility towards racial ethnic minorities, Muslims, and immigrants increased; this animosity has been tied to increased fear, psychological distress and even premature births among these minority groups.^{9,10} These negative social attitudes are particularly relevant to health

because perceived discrimination has been linked with decreased utilization of health care and social services, delays in seeking treatment, and decreased adherence to medication regimens.^{9,11} The number of children of immigrant families is increasing, and these children disproportionately face barriers to quality care as they often rely on caregivers' socioeconomic and immigration status, may have experienced trauma before arriving to the U.S., and are more likely to be uninsured and/or have unmet health needs.^{12–14} To effectively reduce disparities, achieve health equity, and provide quality, culturally-competent health care for immigrants and minorities, it is crucial to understand and address implicit bias in the medical setting.

This review focuses on the importance of implicit bias to the pediatric health care provider; the role of implicit bias in care of the pediatric patient; and the most recent literature in this area, noting gaps in the evidence and providing guidance in moving the field forward.

How Can You Diagnose Implicit Bias?

Extensive research has shown that self-report of implicit bias is unreliable as we are unable to critically and objectively evaluate our own thoughts and assessments.^{2,5} Additionally, self-reported bias is influenced by our need to be accepted by others, which has prompted investigators to create measures of implicit attitudes.⁵ The main measures of implicit bias are: physiologic instruments (e.g. functional MRI focusing on the amygdala;¹⁵ facial electromyography;¹⁶ cardiovascular response);¹⁷ priming methods;¹⁸ and response latency measures (e.g. Implicit Association Test [IAT]).¹⁹

Despite these many measures of implicit attitudes, the IAT is most widely used. The IAT was developed by Anthony Greenwald and his colleagues in 1998.^{5,19} It measures the strength of association between concepts (e.g. race/ethnicity, weight, age) and evaluations (e.g. good/bad, smart). Since its creation, many versions of the IAT have been developed. While some versions focus on social attitudes (race, skin tone, presidential popularity, religion), other versions focus on mental health (depression, anxiety).²⁰ Users are asked to associate words or images by pressing specific keyboard keys. The IAT effect is reported as a D score (Cohen *d* score), an effect size measure – the higher the score, the higher the implicit bias.²¹ The IAT score is a standardized difference in the response time to the two tasks (difference in latency measures) divided by the standard deviation.²² IAT scores range from –2 to +2. For example, for the race IAT which is examining anti-white bias, a negative score indicates bias against whites and positive scores indicate pro-white bias and zero meaning no bias. More specifically 0.15–0.34 is slight bias, 0.35–0.63 is moderate bias, and >0.64 is strong bias.^{21,23} The underlying premise is that strong associations will be performed quickly, and will reveal implicit associations of the user. Therefore, if an individual has negative stereotype about a group, he/she will more quickly associate an image with a negative word or concept.

Although studies have demonstrated that the IAT is valid²⁴ and reliable,²⁵ the IAT has been criticized. The controversy stems from the fact that some versions of the test (e.g., the race IAT) demonstrate bias (high latency score) in almost everyone who takes it, suggesting this finding could be confounded by another cause besides implicit bias.²⁶ Fiedler et al. explored

potential problematic features of the IAT which included the test-taker's general processing speed, deliberate faking, appropriate causal inference and correlation between the IAT score and the user's actual attitudes.²⁷ Deliberate faking is a concern that is likely easiest to comprehend, as the user is consciously aware that the task to measure his/her bias about a group, and then attempt to control his/her answers to appear unbiased. Despite these criticisms, the IAT is widely published and used in implicit bias training and assessments.²

Given the presence of implicit bias amongst health care professionals, it would be prudent to ask what factors are associated with bias amongst us. Regarding evaluating demographic factors associated with implicit bias, several studies have found that Black health care professionals have less bias compared to their White counterparts. Sabin et al. analyzed data from more than 400,000 visitors to the IAT website between 2004 and 2006.²⁸ They found that the white physicians had the highest implicit bias whereas Black physicians did not have implicit preference for either Whites or Blacks. When gender was examined, implicit preference for Whites was higher for male physicians compared to female physicians.

Implicit bias investigators have appropriately noted that implicit bias research in medicine is a budding area of research without any clear standards.²⁹ Nonetheless, it is clear from the current published literature that it is an area with significant impact and should be evaluated further.

How Much of It Is Present in Medicine?

Although social stereotyping is not inherently part of our medical education, due to its presence in society and our need to make efficient clinical decisions, our training has the unintended consequence of reliance on stereotypes. Hall et al. published a systematic review of 15 research studies to identify if there is evidence of bias among health care workers and patients of color and the association between bias and health outcomes.³⁰ 14 of the 15 studies used the IAT to examine implicit bias (1 study utilized sequential priming to examine Latinx versus White faces). These included studies used varying versions of the IAT including: race, race–quality of care, race and quality of medicine, race attitude, race medical cooperative/compliance, race cooperative, race preference, medical compliance, and skin tone. 13 out of 14 studies found low-moderate levels of negative associations with Blacks. In the studies measuring prevalence, rates of anti-Black bias in health care providers ranged from 42% to 100%. When Blacks were evaluated as patients, 4 of the included studies found moderate levels of anti-Black bias. Bias against Latinxs has not been as robustly evaluated compared to Blacks. Four of the included studies found moderate levels of bias against Latinxs among health care providers. The authors also conducted a meta-analysis of the included studies and found that there was no significant variability of the implicit bias measurements across the studies, suggesting that their conclusions are generalizable. Similar findings of health care providers having some level of pro-White/Anti-Black bias were replicated in systematic reviews published by 2017 and 2018.^{29,31}

Given the time-pressured setting of the emergency room and the reliance on mental shortcuts, there has been increasing research on examining the presence of implicit bias in the ED. One study examined the association between IAT pre- and post-shift in residents

rotating through the pediatric ED and cognitive stress (measured by several variables, including fatigue, ED overcrowding, number of shifts worked that week, and number of patients cared for during the shift).³² Forty-five percent of the sample were pediatric residents. Pre- and post-shifts IAT scores showed that 84% of residents had pro-white bias that did not significantly differ pre- and post-shift. IAT scores did not vary significantly by residency or demographics. However, there was a significant association between ED overcrowding and higher post-shift implicit bias. The same research group conducted a secondary analysis specifically examining implicit bias towards children compared to adults using the IAT.³³ Close to 90% of the residents had pro-white bias on both the adult and child IAT, suggesting similar amounts of bias towards both age groups.

Is Implicit Bias Associated With Worse Health Outcomes?

The major questions lurking about implicit bias amongst health care professionals include, does it lead to worse health outcomes? Does it impair one's ability to make objective clinical-decisions? There is a large body of research showing that minority patients receive poorer quality of care despite similar disease severity, clinical presentation and medical insurance.⁸ Fewer studies have been conducted involving more thorough analyses indicating how these findings could be linked back to implicit bias in health care providers or structural discrimination of healthcare institutions/systems.

Orchard and Price conducted a unique analysis by combining data from the project IAT website (1.5 million respondents) and U.S. Natality Files (31.5 million births) between 2002 and 2012.³⁴ They examined the association between county-level racial prejudice, as measured by results from the racial IAT, and adverse birth outcomes for Black mothers. The authors noted that prejudice leads to adverse health outcomes in general via several pathways: structural discrimination in the health care system; hostile interpersonal interactions; maladaptive coping strategies; and emotional/psychological stress. Psychological stress was highlighted as a critical factor in adverse birth outcomes such as preterm delivery or low birth weight. In counties with higher levels of implicit prejudice, black mothers experienced higher rates of preterm births (7.8 more preterm births/1000 births) and low birth weights (4.1 more low birth weights/1000 births) compared to average rates of black women in the study's sample. The authors also found that the county of birth was more strongly correlated with the adverse birth outcomes than the county of maternal residence. This latter finding suggests that the bias (perhaps from medical staff, hospital employees, etc.) experienced by the mother during her labor has a critical impact on birth outcomes.

In 2016, Elliot et al, investigated the association between non-verbal communication during end-of-life discussions of simulated patients and race of the simulated patients using a randomized factorial design.³⁵ The investigators hypothesized that implicit bias would manifest via the nonverbal communication of participating physicians as demonstrated in previous literature. However, the authors noted that it was unknown how this nonverbal communication impacted end-of-life treatment preferences, as less positive nonverbal cues are known to impair patient rapport, trust, and satisfaction. The study consisted of 32 primarily white, male attending physicians who were audio and video recorded during

prognostically similar, simulated patients. The authors developed an innovative nonverbal communication construct adjusted by the length of the encounter including measures such as percent time with open body language; percent time interacting with patient/surrogate, percent time non-diagnostically touching the patient; and distance from the patient. Nonverbal communication scores were significantly lower with black vs. white patients.

Hoffman et al. examined the prevalence of false beliefs about biological differences (e.g. Black people have thicker skin; Blacks age more slowly; Whites have larger brains) between blacks and whites amongst laypeople, medical students and residents and investigated if said biases impacted pain ratings and treatment during clinical vignettes.³⁶ About 12% of medical students and residents endorsed false beliefs about biological differences compared to 23% of laypeople, although no statistical comparison was performed. 82% of the false beliefs received affirmative responses. Medical students and residents who held more false beliefs about Blacks provided lower pain ratings and were less likely to recommend appropriate pain treatment of narcotics during the clinical vignettes. Interestingly, study results were not impacted by comparatively less education of the medical students. Nonwhite participants were only offered clinical vignettes and there was no difference for pain ratings or treatment.

A systematic review of 10 studies examined the association between health outcomes and implicit bias.³⁰ The authors categorized health outcomes into: patient-provider interactions, treatment decisions, patient treatment adherence and patient health outcomes. Unfortunately, a meta-analysis could not be done on the associations due to concern of lack of independent observed effect estimates. Several of the included studies are highlighted here for the reader. Higher scores of pro-white bias among adult primary care providers were significantly associated with patient's lower ratings of interpersonal treatment, trust, contextual knowledge, communication and trust.³⁷ In another study, the interaction between racial implicit bias, racial stereotypes about medical compliance, and beliefs about preferred care was examined among attending pediatricians and pediatricians-in-training using clinical vignettes, the IAT and explicit bias survey questions. Pro-white bias was associated with recommending the best treatment option for ADHD in both white and Black patients. However, pro-white bias was associated with recommending the best treatment option for ADHD in both white and Black patients. Pro-white bias was associated with not agreeing with recommendation of narcotics for a Black patient after femur fracture repair.³⁸

Another area in pediatrics where there is concern of bias playing a role is in child abuse. Between 2012, and 2014, two convenience samples of pediatricians were emailed child injury vignettes and asked to rate suspicion of abuse but were unaware of researcher's objective to assess racial implicit bias.³⁹ The authors did not find any statistical significant associations between abuse ratings and race. However, there were many limitations including very low response rates and the authors' failure to use a validated implicit bias measure such as the IAT.

Types of implicit attitudes among health care professionals may differentially impact care. Cooper et al. explored two types of implicit attitudes amongst primary care clinicians (90% physicians, 10% nurse practitioners) and outpatient visit communication and patient ratings

in a cross-sectional study.²² They hypothesized that the two forms of attitudes impacted medical care via different pathways. General racial bias would reflect in the communication style (e.g. tone, emotion) and nonverbal behaviors (e.g. eye contact). Implicit race and compliance stereotyping would manifest in the clinician's management and discussion of patient adherence (e.g. physician verbal dominance). For White patients, higher implicit stereotyping on the race and compliance IAT was significantly associated with 25% less clinician-verbal dominance, 21% shorter outpatient visit, higher patient-centeredness ratio (ratio of the sum of psychosocial, rapport-building, and facilitative behaviors by clinicians and patients representing the patient's agenda to the sum of biomedical questions, information giving, and closed-ended questions representing the clinician's agenda), and higher clinician positive affect e.g. friendliness (measured by independent coders who analyzed audiotapes of primary care visits). For Black patients, higher implicit stereotyping on the race and compliance IAT was significantly associated with 20% longer outpatient visit and decreased speech speed for Black patients. There was no significant association for clinician-verbal dominance, patient-centeredness, and clinician positive affect although they all trended in the opposite direction compared to White patients.

Does Implicit Bias Effect the Health and Care of Immigrant Populations?

Discrimination towards immigrants has been found to have deleterious effects on health, and can unfortunately impact health very early on in a child's life. Sociopolitical events such as September 11, 2001; the 2008 immigration raid on Mexican immigrants in Iowa; and the 2016 Presidential Election have been associated with high levels of discrimination-based fear, psychological distress, poor birth outcomes and impact the ability of caregivers to comfortably access important health and social services.^{9,10,40}

In the medical setting, implicit bias also impacts early childhood health. A 2016 cross-sectional study about both explicit and implicit biases against American Indian children and their caregivers involved emailing ED physicians, nurses and advanced practice providers a survey about their explicit biases against Native Americans, asking them to complete an IAT with Native American versus white subjects, and obtaining responses to clinical vignettes of American Indian versus non-Hispanic white subjects.⁴¹ The investigators found that ED health care providers had high levels of implicit and explicit preferences for non-Hispanic white persons compared to Native American families. Furthermore, there was no difference in implicit bias by the number of years in practice or by type of health care provider.⁴¹

In another study about racial and ethnic disparities in pediatric EDs, investigators used a retrospective case-control design to examine disparities in laboratory and radiological testing charges among 49,164 pediatric patients discharged to home from two community EDs from 2009 to 2010.⁴² Speaking Spanish at home and classification as Latinx, African American, and Native American were associated with decreased odds of receiving radiological testing compared to non-Hispanic white pediatric patients. Interestingly, use of an interpreter in the ED versus no interpreter use was associated with increased odds of receiving both laboratory and radiologic testing. Although not discussed, this finding may suggest provider use of additional testing to circumvent challenges in communicating with non-English speaking patients and interpreters. Additionally, a greater number of visits to the ED during the study

period was associated with a statistically significantly decreased odds of having laboratory or radiologic charges. This may suggest that providers deem “frequent flyers” to the ED as needing these tests less than those who use the ED less often. This may be problematic because previous studies have demonstrated an increased likelihood of using of the ED for pediatric primary care visits among racial minorities, families living in poverty, and in patients whose mothers have lower educational attainment.^{43,44} Despite these concerning results, the authors found no statistically significant disparities in tests ordered for patients who had been diagnosed with a head injury, which the authors note is reassuring considering clinical evaluation (and thus any radiologic testing orders) should have been based on the CHALICE algorithm (Children’s Head injury Algorithm for the prediction of Important Clinical Events).⁴⁵ This specific finding demonstrates the potential of clinical algorithms to reduce influences of bias and thus disparities in such medical settings.

Discrimination may also lead to physiologic changes that place immigrants at higher risk of experiencing chronic diseases. For example, a study among Latinx immigrants in Oregon suggested that higher stress scores on self-reported questions adapted from a validated perceived discrimination scale were associated with increased systolic blood pressure in males, and increased body mass index and fasting blood glucose measurements in women.⁴⁶ Furthermore, many studies have shown that both health outcomes and self-reported health of immigrants are better than that of their American counterparts upon arrival but paradoxically worsen when they move to the U.S., with some outcomes worsening with each subsequent generation.^{47–50} Although the explanations for these changes are complex and may involve a lack of social mobility and the process of acculturation, researchers also discuss social bias and discrimination as likely contributors to these negative outcomes.^{50,51}

Are There Any Solutions for Implicit Bias?

Despite their negative impact, biases can be unlearned and changed with repeated and constantly reinforced practice and training. This “debiasing” consists of strategies such as counter-stereotypic training (replacing stereotypes with non-stereotyped attitudes); exposure to individuals with counter stereotypes, increasing intergroup contact, education about implicit bias, accountability for bias, understanding other’s viewpoints and increasing empathy, and self-monitoring.¹ Given that physicians often rely on mental shortcuts for clinical decision-making, the purposeful use of debiasing strategies may help to minimize the impact of clinician bias on patient care.^{52,53}

Interventions intended to establish awareness about unconscious biases and improve health care providers’ cultural competency may help to reduce implicit bias,³¹ although only two such studies have been conducted to date with mixed results. In their intervention for first-year graduate students in counselor education programs, Castillo et al. used a 15-week long multicultural training course that aimed to increase self-awareness about biases, to understand the histories and culture of racial and ethnic minority groups, and to improve students’ ability to effectively cater certain interventions for certain cultural backgrounds.⁵⁴ Using the Race IAT and the previously validated Multicultural Counseling Inventory, a self-reported instrument assessing participants’ awareness, knowledge, and skills about working with clients from different cultures, the authors demonstrated a 9% decrease in implicit bias

in the multicultural training group when compared to a control group. In another study in 2009, cultural competency training in the form of a virtual reality module featuring racial and ethnic minority patients to attempt to decrease bias in occupational therapists. Based on pre- and post-intervention results on the Racial Argument Scale and Race Implicit Association Test, there was no significant difference in implicit bias scores after implementation of the intervention.⁵⁵ However, it should be noted study included only 13 participants, and the intervention was a one-day training experience.

Other interventions targeting groups outside the healthcare setting have demonstrated promise in addressing implicit bias. For example, a 2012 study on undergraduate students participating in an introductory psychology class utilized an intervention which included education about implicit bias and training sessions with implicit bias reduction strategies, including counter-stereotype training; visualizing person(s) who counter common stereotypes; individuation, meaning focusing on individual rather than group-level characteristics; taking the perspective of members in a stereotyped group; and seeking out opportunities to interact with members of other groups.⁵⁶ This resulted in a reduction on Black-White IAT scores in the intervention group compared to those students in the control group, with this change being sustained 2 months after intervention.

A more recent study on implicit bias training among non-Black Amazon workers involved an online-administered counter-stereotyping tasks, Race IAT, and self-regulation tasks demonstrated that compared to those who did not receive counter-stereotyping tasks, those who completed counter-stereotyping tasks experienced reduced implicit bias as measured by Race IAT scores.⁵⁷ Moreover, participants reporting more discontent with the discrepancy between their responses to questionnaires regarding scenarios of what they 'would' versus 'should' do during encounters with Blacks made less stereotyping when tasked to describe photos of people with brief descriptions. The authors concluded that when participants feel disappointed in their own racial biases, they may have increased motivation to self-regulate their racial biases. These interventions highlight the potential for such training strategies to reduce individuals' implicit bias.

Capers et al. also used the Black-White IAT and implicit bias training to address bias among admissions committee members at The Ohio State University College of Medicine.⁵⁸ Despite having low levels of explicit bias based on a self-reported survey, committee members had high levels of implicit preference for whites versus black subjects. Results were presented to committee members (which included physician faculty members and medical students) with strategies to reduce implicit bias, and a follow-up survey was sent out to members to assess their attitudes about their own biases and the potential effects on medical school admissions. Although not statistically significant, the following admissions cycle resulted in an increase from 17% to 20% underrepresented minority matriculation. This study demonstrates the potential impact of increasing self-awareness about implicit bias and its effect on increasing diversity in the workforce, which is also crucial to reducing health care disparities.⁸

Diversifying the workforce has the benefit of not only increasing intergroup contact, aforementioned as a debiasing strategy, but also improving patient-provider relationships

and decreasing health care disparities. For example, a 2016 study found that when presented with clinical cases about patients with ankle fractures or kidney stones with patient race as the only differing factor between cases, white medical students and residents who were more likely to believe in false biological differences between Blacks and Whites on a questionnaire (such as Black skin being thicker than white skin, or whites having larger brains than black persons) were also more likely to rate black patients as likely feeling less pain and not requiring the same levels of pain medications as white patients.³⁶ These findings underscore the role of a diverse workforce to hopefully change and reduce these misconceptions, and their subsequent impact on clinical recommendations and patient care. The Institute of Medicine has stated increasing racial and ethnic diversity in the health sector as one of their recommendations to eliminate racial and ethnic healthcare disparities,⁵⁹ as shared racial/ethnic backgrounds between patients and their providers has been associated with greater patient satisfaction and compliance with medical treatments, and racial/ethnic providers are more likely to work in underserved communities compared to white providers.⁸ Consistent with these findings, a recent 2018 study found that black male patients who were randomized to black doctors were more likely to participate in preventive care and were more willing to discuss health problems compared to those who were randomized to a white doctor, further highlighting the impact of a health provider work force that reflects the patient population it serves.⁶⁰

Considering that there are many upstream factors affecting patient care, Metzl and Hansen note it is also important to consider the “structural competency” of institutions, as the culture of health systems and sociopolitical structures influences the way providers interact with patients, and the way that organizations are equipped (or are failing) to support certain patient populations.⁶¹ For example, a qualitative study among students, staff, and faculty members at six hospitals and various health schools in a university system asked participants to submit narratives about the extent of inclusion at their respective organizations.⁶² A few of the many themes emerging from these narratives included the presence of discrimination often perpetuated by superiors; the resulting fear and psychological distress from feelings of exclusion and disrespect; and the desire to increase workforce diversity, implicit bias training and accountability among organization leaders. The authors emphasize that inclusive and diverse workforce environments may in turn promote an environment that improves patient care. Another qualitative study including semi-structured interviews with medical school faculty members based on their experiences or interest in implicit bias training elicited various themes surrounding faculty reflections on implicit bias instruction, such as the influence of culture and support of the institution on their training; resistance from students and other faculty members in learning about health disparities and implicit bias; and the importance of empowering leaders to discuss bias and mandate training in the medical setting.⁶³ These findings illustrate the importance not only of the makeup and diversity of the health care workforce, but also the influence of an organization’s culture on its ability to address implicit bias and establish an inclusive environment that prepares clinicians to provide culturally-competent and equitable care.

Much of the focus in current implicit bias literature is documenting bias in healthcare settings, but further provider-based intervention studies are necessary to demonstrate how clinicians can address implicit biases in efforts to improve patient care. Moreover, current

interventional studies rely on pre- and post-intervention comparisons of IAT results and self-reported scales, but do not include process or outcome measures that reflect the effects of reducing implicit bias. Additional studies are necessary to illustrate how implicit bias interventions should be implemented in health care settings and to describe the intended improvements in patient health outcomes after adoption of these interventions.

Conclusions

Minority populations experience worse health outcomes due to multifactorial causes. Implicit bias is an under-recognized contributor to these racial/ethnic health disparities and should be explored further. Implicit bias development starts in early childhood from repeated reinforcement of stereotypes through media, life experiences and community and family observations.^{2,64} It is distinct from explicit bias, as it is unconscious. There are numerous ways to measure implicit bias but the most widely utilized tool is the IAT, which has been found to be reliable and valid. Pro-white/anti-Black bias has been demonstrated in mostly all studies examining the prevalence of implicit bias amongst health care providers. There are fewer studies specifically investigating the impact of implicit bias on health outcomes but there is significant evidence to suggest implicit bias affects decision-making, treatment recommendations, and nonverbal communication. Immigrant populations are presently even more vulnerable given our country's current sociopolitical climate.

There is growing literature on interventions to reduce implicit bias, however research specifically amongst health care providers is lacking. There is also a need to include patient outcomes in these interventions to ensure that reductions in implicit bias truly improve our intended targets. Although it is essential that we individually take the initiative to tackle our biases, it is also important that our healthcare institution/system leaders take ownership and incorporate implicit bias trainings into medical, graduate medical and continuing medical education and prioritize increasing diversity of our medical workforce.

Acknowledgments

Funding and Support

This manuscript was conducted with the support of grants AHRQ K12HS022986, BWH H. Richard Nesson Fellowship.

References

1. Staats C, Capatosto K, Wright RA, Contractor D. State of the science: Implicit Bias Review 2015, 3 Kirwan Institute for the Study of Race and Ethnicity, The Ohio State University; 2015.
2. Staats C State of the Science: Implicit Bias Review 2014 Kirwan Institute; In:2014.
3. Williams DR, Wyatt R. Racial bias in health care and health: challenges and opportunities. *JAMA* 2015;314(6):555–6. [PubMed: 26262792]
4. Evans JSB. Dual-processing accounts of reasoning, judgment, and social cognition. *Annu Rev Psychol* 2008;59:255–78. [PubMed: 18154502]
5. Greenwald AG, Banaji MR. Implicit social cognition: attitudes, self-esteem, and stereotypes. *Psychol Rev* 1995;102(1):4. [PubMed: 7878162]
6. Burgess DJ, Fu SS, Van Ryn M. Why do providers contribute to disparities and what can be done about it. *J Gen Intern Med* 2004;19(11):1154–9. [PubMed: 15566446]

7. Van Ryn M, Fu SS. Paved with good intentions: do public health and human service providers contribute to racial/ethnic disparities in health? *Am J Public Health* 2003;93(2): 248–55. [PubMed: 12554578]
8. Smedley BD, Stith AY, Nelson AR. Institute of medicine, committee on understanding and eliminating racial and ethnic disparities in health care. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Healthcare* Washington, DC: National Academies Press; 2003.
9. Williams DR, Medlock MM. Health Effects of Dramatic Societal Events—Ramifications of the Recent Presidential Election. *Mass Medical Society*; 2017.
10. Krieger N, Huynh M, Li W, Waterman PD, Van Wye G. Severe sociopolitical stressors and preterm births in New York City: 1 September 2015 to 31 August 2017. *J Epidemiol Commun Health* 2018;72(12):1147–52.
11. Williams DR, Mohammed SA, Leavell J, Collins C. Race, socioeconomic status, and health: complexities, ongoing challenges, and research opportunities. *Ann N Y Acad Sci* 2010;1186(1): 69–101. [PubMed: 20201869]
12. Javier JR, Festa N, Florendo E, Mendoza FS. Children in immigrant families: the foundation for America's Future. *Adv Pediatr* 2015;62(1):105. [PubMed: 26205111]
13. Percheski C, Bzostek S. Public health insurance and health care utilization for children in immigrant families. *Matern Child Health J* 2017;21(12):2153–60. [PubMed: 28702865]
14. Yun K, Fuentes-Afflick E, Curry LA, Krumholz HM, Desai MM. Parental immigration status is associated with children's health care utilization: findings from the 2003 new immigrant survey of US legal permanent residents. *Matern Child Health J* 2013;17(10):1913–21. [PubMed: 23329165]
15. Lieberman MD, Hariri A, Jarcho JM, Eisenberger NI, Bookheimer SY. An fMRI investigation of race-related amygdala activity in African-American and Caucasian-American individuals. *Nat Neurosci* 2005;8(6):720. [PubMed: 15880106]
16. Vanman EJ, Saltz JL, Nathan LR, Warren JA. Racial discrimination by low-prejudiced Whites: facial movements as implicit measures of attitudes related to behavior. *Psychol Sci* 2004;15(11): 711–4. [PubMed: 15482441]
17. Blascovich J, Mendes WB, Hunter SB, Lickel B, Kowai-Bell N. Perceiver threat in social interactions with stigmatized others. *J Person Soc Psychol* 2001;80(2):253.
18. Cameron CD, Brown-Iannuzzi JL, Payne BK. Sequential priming measures of implicit social cognition: a meta-analysis of associations with behavior and explicit attitudes. *Person Soc Psychol Rev* 2012;16(4):330–50.
19. Greenwald AG, McGhee DE, Schwartz JL. Measuring individual differences in implicit cognition: the implicit association test. *J Person Soc Psychol* 1998;74(6):1464.
20. Nosek B, Banaji MR, Greenwald AG. Project implicit. Project Implicit 2010 <http://www.easbib.com/reference/guide/apa/website>
21. Greenwald AG, Nosek BA, Banaji MR. Understanding and using the implicit association test: I. An improved scoring algorithm. *J Person Soc Psychol* 2003;85(2):197.
22. Cooper LA, Roter DL, Carson KA, et al. The associations of clinicians' implicit attitudes about race with medical visit communication and patient ratings of interpersonal care. *Am J Public Health* 2012;102(5):979–87. [PubMed: 22420787]
23. Dehon E, Weiss N, Jones J, Faulconer W, Hinton E, Sterling S. A systematic review of the impact of physician implicit racial bias on clinical decision making. *Acad Emerg Med* 2017;24(8):895–904. [PubMed: 28472533]
24. Greenwald AG, Poehlman TA, Uhlmann EL, Banaji MR. Understanding and using the implicit association test: III. Meta-analysis of predictive validity. *J Person Soc Psychol* 2009;97(1):17.
25. Bosson JK, Swann WB Jr., Penebaker JW. Stalking the perfect measure of implicit self-esteem: the blind men and the elephant revisited? *J Person Soc Psychol* 2000;79 (4):631.
26. Fiedler K, Bluemke M. Faking the IAT: aided and unaided response control on the implicit association tests. *Basic Appl Soc Psychol* 2005;27(4):307–16.
27. Fiedler K, Messner C, Bluemke M. Unresolved problems with the “I”, the “A”, and the “T”: a logical and psychometric critique of the Implicit Association Test (IAT). *Eur Rev Soc Psychol* 2006;17(1):74–147.

28. Sabin DJA, Nosek DBA, Greenwald DAG, Rivara DFP. Physicians' implicit and explicit attitudes about race by MD race, ethnicity, and gender. *J Health Care Poor Underserved* 2009;20(3):896. [PubMed: 19648715]
29. FitzGerald C, Hurst S. Implicit bias in healthcare professionals: a systematic review. *BMC Med Ethics* 2017;18(1):19. [PubMed: 28249596]
30. Hall WJ, Chapman MV, Lee KM, et al. Implicit racial/ethnic bias among health care professionals and its influence on health care outcomes: a systematic review. *Am J Public Health* 2015;105(12):e60–76.
31. Maina IW, Belton TD, Ginzberg S, Singh A, Johnson TJ. A decade of studying implicit racial/ethnic bias in healthcare providers using the implicit association test. *Soc Sci Med* 2018;199:219–29. [PubMed: 28532892]
32. Johnson TJ, Hickey RW, Switzer GE, et al. The impact of cognitive stressors in the emergency department on physician implicit racial bias. *Acad Emerg Med* 2016;23(3):297–305. [PubMed: 26763939]
33. Johnson TJ, Winger DG, Hickey RW, et al. Comparison of physician implicit racial bias toward adults versus children. *Acad Pediatr* 2017;17(2):120–6. [PubMed: 27620844]
34. Orchard J, Price J. County-level racial prejudice and the black-white gap in infant health outcomes. *Soc Sci Med* 2017;181:191–8. [PubMed: 28404321]
35. Elliott AM, Alexander SC, Mescher CA, Mohan D, Barnato AE. Differences in physicians' verbal and nonverbal communication with black and white patients at the end of life. *J Pain Symptom Manag* 2016;51(1):1–8.
36. Hoffman KM, Trawalter S, Axt JR, Oliver MN. Racial bias in pain assessment and treatment recommendations, and false beliefs about biological differences between blacks and whites. *Proc Natl Acad Sci* 2016;113(16):4296–301. [PubMed: 27044069]
37. Blair IV, Havranek EP, Price DW, et al. Assessment of biases against Latinos and African Americans among primary care providers and community members. *Am J Public Health* 2013;103(1):92–8. [PubMed: 23153155]
38. Sabin JA, Greenwald AG. The influence of implicit bias on treatment recommendations for 4 common pediatric conditions: pain, urinary tract infection, attention deficit hyperactivity disorder, and asthma. *Am J Public Health* 2012;102(5):988–95. [PubMed: 22420817]
39. Rojas M, Walker-Descartes I, Laraque-Arena D. An experimental study of implicit racial bias in recognition of child abuse. *Am J Health Behav* 2017;41(3):358–67. [PubMed: 28376980]
40. Rousseau C, Hassan G, Moreau N, Thombs BD. Perceived discrimination and its association with psychological distress among newly arrived immigrants before and after September 11, 2001. *Am J Public Health* 2011;101(5):909–15. [PubMed: 20724695]
41. Puumala SE, Burgess KM, Kharbanda AB, et al. The role of bias by emergency department providers in care for American Indian children. *Med Care* 2016;54(6):562. [PubMed: 26974675]
42. Payne NR, Puumala SE. Racial disparities in ordering laboratory and radiology tests for pediatric patients in the emergency department. *Pediatr Emerg Care* 2013;29(5):598–606. [PubMed: 23603649]
43. Arnett M, Thorpe R, Gaskin D, Bowie J, LaVeist T. Race, medical mistrust, and segregation in primary care as usual source of care: findings from the exploring health disparities in integrated communities study. *J Urban Health* 2016;93 (3):456–67. [PubMed: 27193595]
44. Halfon N, Newacheck PW, Wood DL, Peter RF St. Routine emergency department use for sick care by children in the United States. *Pediatrics* 1996;98(1):28–34. [PubMed: 8668408]
45. Dunning J, Daly JP, Lomas J, Lecky F, Batchelor J, Mack-way-Jones K. Derivation of the children's head injury algorithm for the prediction of important clinical events decision rule for head injury in children. *Arch Dis Child* 2006;91 (11):885–91. [PubMed: 17056862]
46. McClure HH, Snodgrass JJ, Martinez CR Jr., Eddy JM, Jiménez RA, Isiordia LE. Discrimination, psychosocial stress, and health among Latin American immigrants in Oregon. *Am J Hum Biol* 2010;22(3):421–3. [PubMed: 19844904]
47. David RJ, Collins JW Jr. Differing birth weight among infants of US-born blacks, African-born blacks, and US-born whites. *N Engl J Med* 1997;337(17):1209–14. [PubMed: 9337381]

48. LaVeist TA, Isaac LA. Race, Ethnicity, and Health: A Public Health Reader, Vol. 32 John Wiley & Sons; 2012.
49. Lee S, O'Neill AH, Ihara ES, Chae DH. Change in self-reported health status among immigrants in the United States: associations with measures of acculturation. *PloS One* 2013;8 (10):e76494. [PubMed: 24098515]
50. Williams DR, Haile R, Gonzalez HM, Neighbors H, Baser R, Jackson JS. The mental health of Black Caribbean immigrants: results from the National Survey of American Life. *Am J Public Health* 2007;97(1):52–9. [PubMed: 17138909]
51. Viruell-Fuentes EA, Miranda PY, Abdulrahim S. More than culture: structural racism, intersectionality theory, and immigrant health. *Soc Sci Med* 2012;75(12):2099–106. [PubMed: 22386617]
52. Betancourt JR, Ananeh-Firempong O. Not me! Doctors, decisions, and disparities in health care. *Cardiovasc Rev Rep* 2004;25:105–9.
53. Stone J, Moskowitz GB. Non-conscious bias in medical decision making: what can be done to reduce it? *Med Educ* 2011;45(8):768–76. [PubMed: 21752073]
54. Castillo LG, Brossart DF, Reyes CJ, Conoley CW, Phoummarath MJ. The influence of multicultural training on perceived multicultural counseling competencies and implicit racial prejudice. *J Multicult Couns Dev* 2007;35 (4):243–55.
55. Steed R Cultural Competency Instruction in a 3D Virtual World Nova Southeastern University; 2009.
56. Devine PG, Forscher PS, Austin AJ, Cox WT. Long-term reduction in implicit race bias: a prejudice habit-breaking intervention. *J Exp Soc Psychol* 2012;48(6):1267–78. [PubMed: 23524616]
57. Burns MD, Monteith MJ, Parker LR. Training away bias: the differential effects of counterstereotype training and self-regulation on stereotype activation and application. *J Exp Soc Psychol* 2017;73:97–110.
58. Capers Q, Clinchot D, McDougale L, Greenwald AG. Implicit racial bias in medical school admissions. *Acad Med* 2017;92 (3):365–9. [PubMed: 27680316]
59. Chapman EN, Kaatz A, Carnes M. Physicians and implicit bias: how doctors may unwittingly perpetuate health care disparities. *J Gen Intern Med* 2013;28(11):1504–10. [PubMed: 23576243]
60. Alsan M, Garrick O, Graziani GC. Does Diversity Matter for Health? Experimental Evidence from Oakland National Bureau of Economic Research; 2018.
61. Metz J, Hansen H. Structural competency: theorizing a new medical engagement with stigma and inequality. *Soc Sci Med* 2014;103:126–33. [PubMed: 24507917]
62. Aysola J, Barg FK, Martinez AB, et al. Perceptions of factors associated with inclusive work and learning environments in health care organizations: a qualitative narrative analysis. *JAMA Netw Open* 2018;1(4):e181003. [PubMed: 30646094]
63. Gonzalez CM, Garba RJ, Liguori A, Marantz PR, McKee MD, Lypson ML. How to make or break implicit bias instruction: implications for curriculum development. *Acad Med* 2018;93 (11S):S74–81. [PubMed: 30365433]
64. Sinclair S, Dunn E, Lowery B. The relationship between parental racial attitudes and children's implicit prejudice. *J Exp Soc Psychol* 2005;41(3):283–9.