Implicit Bias Before and During COVID-19 Epidemics Among US Healthcare Providers

Taina Joseph

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Implicit Bias Before and During COVID-19 Epidemics Among US Healthcare Providers

by

Taina Joseph

Under the Direction of Ike Okosun, MS, MPH, PhD, FTOS, FACE

A thesis submitted to the graduate faculty of Georgia State University in partial fulfillment of the requirements for the degree of

Master of Public Health

2022
ABSTRACT

This study describes implicit bias among healthcare workers in the United States (US) before and during the COVID-19 pandemic (2018 and 2020 respectively), and the rate of implicit bias in the US from 2006 to 2020. Using the Implicit Association Test (IAT), which is a component of the publicly available data from Project Implicit, linear regression analysis between demographic data and mean IAT score, and trend analysis were performed. All statistical analyses were done using SAS 9.4, and the trend analysis graph was created through Microsoft Excel. Our analysis shows that healthcare professionals’ race, gender, and political spectrum were the most consistent predictors of implicit bias. Healthcare providers’ implicit bias decreased from pre- to during COVID-19. Furthermore, healthcare workers’ implicit bias decreased from 2013 to 2016 but saw an increase in 2017. We conclude that the COVID-19 pandemic had no significant impact on the implicit bias of healthcare providers, but there was a significant relationship between implicit bias and healthcare workers’ race, gender, and political affiliation which may impact the health outcome of their patients.
Implicit Bias Before and During COVID-19 Epidemics Among US Healthcare Providers

by

Taina Joseph

Committee Chair: Ike Okosun

Committee: Barbara Yankey

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Office of Graduate Services
College of Arts and Sciences
Georgia State University
May 2022
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AUTHOR’S STATEMENT

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Taina Joseph
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CHAPTER I: INTRODUCTION

According to a study published in *Jama Network Open*, 1 in 5 patients in the United States have experienced discrimination in the health care system due to their education level, sex, race, or any other aspect of their identity, and the most reported type of discrimination among these individuals was based on race/ethnicity (Nong et al., 2020). This discrimination is often a result of bias, a prejudice toward or against a group over another. There are two types of bias: explicit (conscious) bias and implicit (unconscious) bias. Implicit bias is the process of associating stereotypes, preconceived beliefs, or attitudes about a certain group of people outside of conscious awareness, and “it can be in direct contradiction to a person’s espoused beliefs and values” (*Unconscious bias and healthcare*, n.d.; *Two types of bias*, n.d.). Researchers have found that these preconceived beliefs begin to develop at an early age due to repeated exposure to racial stereotypes from social and cultural influences (Ruhl, 2020).

Implicit bias can permeate different socioecological levels and poses negative consequences, including adverse health outcomes among patients in the health care systems. Implicit bias contributes to the growing racial health disparities, especially among black individuals (Bridges, n.d.). Since the beginning of the COVID-19 pandemic, there has been an increase in reports of explicit and implicit bias (Rose & Flores, 2020). The ongoing COVID-19 pandemic has made implicit bias more relevant since the disproportionate number of black deaths has been attributed to racial bias (Williams, 2021). However, few studies have investigated the existence of implicit racial bias among health care workers in the United States. Those that did focused on physicians instead of including other healthcare professions, and many did not explore associations between healthcare provider characteristics and implicit bias (Maina et al., 2017). Hence, this study is designed to compare implicit racial bias among healthcare professionals in the United States...
from 2006 to 2020. We will also determined the impact of the COVID-19 epidemics by comparing rates of implicit racial bias before and during the COVID-19 pandemic.
CHAPTER II: LITERATURE REVIEW

Discrimination Faced by Black Patients

To understand the impact of implicit bias in healthcare, it is important to understand how it affects black patients. Three studies used focus group approach in examining implicit bias since it is one of the most effective methods for obtaining valuable insight into healthcare experiences. One study conducted by Wang et al. (2021) carried out a focus group study consisting of women of different races with a history of severe maternal morbidity discussing their childbirth experience. While each race experienced varying degrees of low-quality healthcare, the researchers found a stark difference between the experiences reported by blacks and whites. Some women in the black group revealed poor communication among healthcare providers and substandard continuity of care, which prevented the establishment of patient-provider trust (Wang et al., 2021). On the other hand, some women in the other focus group had a positive experience due to the providers' education and care, which put them at ease during their prenatal care (Wang et al., 2021).

Samuel et al. (2018) also focused on the differences in healthcare experiences between black and white patients by having female breast cancer survivors participate in a focus group study. The black participants reported more negative patient experiences than their white counterparts, such as feeling that the clinicians disregarded their symptoms and concerns (Samuel et al., 2018). The researchers also noted that the black participants more commonly reported that their healthcare providers failed to diagnose them or properly provide medication for their symptoms.

Chambers et al. (2021) conducted a focus group study consisting of black women to highlight their encounters with discrimination. Several “domains of structural racism” were discussed for the purpose of the study, but inadequate medical care was brought up as a topic of
concern (Chambers et al., 2021). One of the women detailed the lack of collaboration between healthcare facilities during her pregnancy, which resulted in her seeking care at the emergency room in hopes of receiving a more integrative healthcare experience (Chambers et al., 2021). Moreover, the researchers noted that many women reported other forms of discrimination during their care, and they expressed for more culturally competent care so providers would be more equipped to treat them.

**Implicit Bias and Health Disparities**

A systemic review of implicit bias in health care was conducted by Hall et al., (2015). The researchers reviewed 15 published studies and found that all but one of the studies found evidence of implicit racial bias among health care workers. Many of the black patients in these studies reported poor patient-provider interactions compared to their white counterparts (Hall et al., 2021). The review presented common accounts from black patients such as “verbal dominance by physicians” and feeling disrespected. This evaluation highlighted the prominence of implicit bias within healthcare and how it plays a role in black patients’ negative health care experience.

Other research has shown that implicit bias among healthcare professionals has contributed to health disparities. One study conducted by Hagiwara et al. (2017) explored specific interactions between patients and their providers by examining physicians’ word use. The study found that non-black physicians used certain terminology during their examinations with their black patients that makes them more likely to take complete control over the patient’s visit and treatment options. Additionally, there was significant association between implicit racial bias and the use of anxiety-related words (i.e. afraid, nervous) during these examinations (Hagiwara et al., 2017). These improper patient-provider interactions prevent the patient from
being an active participant in the medical-decision making process and may contribute to patients’ anxiety.

Another study found a relationship between stressful working conditions among healthcare providers and implicit bias (Saluja & Bryant, 2021). High stress working conditions that are often found in the emergency department and childbirth care make clinicians rely on their automatic processes for medical decision making or performing medical procedures. The unfortunate side effect reflects the tendency to activate their unconscious beliefs and stereotypes since they do not have time to carefully process a situation and thwart any hidden prejudice (Saluja & Bryant, 2021).

Mulchan et al. (2021) examined this idea further by analyzing implicit bias in pediatric care and how the COVID-19 pandemic could exacerbate it. The researchers discussed how the pandemic has resulted in increased stressful working conditions due to understaffing, longer work hours, and other COVID-19 protocols healthcare organizations must follow. This can cause healthcare professionals to experience burnout and depersonalization, which can also activate implicit bias when interacting with patients. Mulchan et al. anticipate increased cases of health disparities during the pandemic due to providers “reinforc[ing] negative stereotypes” while treating and interacting with patients unless a call to action is made to diminish implicit bias.

Implicit Bias and Medical Decision Making

A retrospective cohort study by Wood et al. (2022) was carried out to examine the effect of implicit bias on chlamydia trachomatis screening since previous research identified clinicians screening a higher proportion of black patients compared to white ones. After analyzing clinicians’ characteristics and their screening practices, the authors found a significant association between the patient’s race and chlamydia screening which indicates that implicit
racial bias has an impact on their screening decisions. Although a higher chlamydia screening rate can be seen as a positive effect since it allows for early detection and possible treatment, these results show that health care providers are using race to make their medical decisions regarding their patient’s sexual health.

Hoffman et al. (2016) conducted a two-part study to analyze the association between racial bias and pain assessment along with treatment recommendations. The first part of the study consisted of white participants without a medical background rating the pain of black and white individuals assigned at random in different scenarios (Hoffman et al., 2016). The results showed that the participants reported lower pain ratings for the black individuals and higher pain ratings for the white individuals (Hoffman et al., 2016). The second part of the study focused on how white medical students and residents assessed the pain of black and white people. Each participant was given mock medical cases of black and white patients and were tasked with rating their pain (Hoffman et al., 2016). The researchers found that a significant number of participants believed that black people felt less pain than white individuals much like the participants in the first part of the study. Furthermore, they found that the medical students and residents who held these false beliefs were more likely to recommend an inaccurate treatment for the black patient than the white one. This proves to be concerning since this supports the idea that implicit bias in healthcare can lead to black patients suffering from a negative health outcome.

Another study done by Green et al. (2007) examined the relationship between implicit bias among healthcare providers and thrombolysis for myocardial infarction on their black and white patients. The researchers discovered that the physicians’ race was a significant predictor of implicit bias since black physicians had a minimal bias against their black patients while non-
black physicians had a significant amount. Moreover, the physicians with more implicit racial bias against black people had a higher likelihood of not recommending thrombolysis for their black patients (Green et al., 2007).
CHAPTER III: METHODS

Study Design

We conducted a trend analysis to evaluate implicit bias among healthcare workers for the periods of pre- vs during COVID-19 (2018 and 2020 respectively) and describe the pattern for mean IAT D score from 2006-2020.

Data Source

Publicly available data from Project Implicit, a non-profit organization run through the collaborative effort of researchers, was used for this study. Project Implicit collected data on implicit bias by using the Implicit Association Test (IAT; Greenwald et al., 1998), which is a computer-based measure in which respondents had to simultaneously categorize faces as “White people” and Black people” and positive and negative words (i.e. pleasant, despise) as “Good” or “Bad” (See Appendix A). Implicit bias is measured by the IAT $D$ effect which calculates the speed and accuracy with which each respondent categorized the racial groups and words. We used published guidelines to interpret the results of the IAT D score: possible scores ranged from -2 to +2, scores of zero indicate no racial bias between White and Black people, positive scores indicate prowhite bias, and negative scores indicate problack bias (Greenwald et al., 2003). Since data prior to 2006 did not assess occupation, we excluded data in those previous years.

Study Participants

Project Implicit collects data from individuals all over the world that visit their research website. Prior to taking the IAT test, all participants are required to fill out a questionnaire for demographic data collection. For this study, we only used data on individuals that self-reported as U.S. citizens and identified their occupation as a “Diagnosing and Treating Practitioners”, “Nursing and Home Health Assistants”, or “Occupational and Physical Therapist Assistants”. 
We only focused on these three specific healthcare worker occupations to analyze implicit bias of those that interact with patients. Participants that reported being 16 or 17 years old at the time of taking the IAT were also included since they resided in states that have a minimum age requirement of 16 years or older. We excluded participants younger than 16. Table 1 summarizes the demographic characteristics of the participants stratified by the year of the IAT session date.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>2018 Population n (%)</th>
<th>2020 Population n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall</strong></td>
<td>18478</td>
<td>41034</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-19</td>
<td>1399 (7.57%)</td>
<td>1438 (3.50%)</td>
</tr>
<tr>
<td>20-29</td>
<td>8493 (45.96%)</td>
<td>15646 (38.13%)</td>
</tr>
<tr>
<td>30-39</td>
<td>3878 (20.99%)</td>
<td>9996 (24.36%)</td>
</tr>
<tr>
<td>40-49</td>
<td>2224 (12.04%)</td>
<td>6068 (14.79%)</td>
</tr>
<tr>
<td>50-64</td>
<td>1962 (10.62%)</td>
<td>5901 (14.38%)</td>
</tr>
<tr>
<td>65+</td>
<td>522 (2.82%)</td>
<td>1985 (4.84%)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>13462 (72.85%)</td>
<td>31274 (80.06%)</td>
</tr>
<tr>
<td>Black or African</td>
<td>1820 (9.85%)</td>
<td>2973 (7.61%)</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>743 (4.21%)</td>
<td>1847 (4.73%)</td>
</tr>
<tr>
<td>American Indian or Alaska Natives</td>
<td>105 (0.59%)</td>
<td>171 (0.44%)</td>
</tr>
<tr>
<td><strong>Political Spectrum</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conservative</td>
<td>4297 (23.25)</td>
<td>8256 (20.12%)</td>
</tr>
<tr>
<td>Neutral</td>
<td>4192 (22.69)</td>
<td>6963 (16.97%)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>4641 (25.12%)</td>
<td>10377 (25.29%)</td>
</tr>
<tr>
<td>Female</td>
<td>13837 (74.88%)</td>
<td>30657 (74.71%)</td>
</tr>
<tr>
<td><strong>Education Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School Student or High School Degree</td>
<td>1107 (6.00%)</td>
<td>1236 (3.01%)</td>
</tr>
<tr>
<td>College Degree</td>
<td>8680 (47.02%)</td>
<td>15055 (36.72%)</td>
</tr>
<tr>
<td>Postgraduate or Professional Degree</td>
<td>8675 (46.99%)</td>
<td>24707 (60.26%)</td>
</tr>
</tbody>
</table>
Variables

The main independent variables in this study included demographic characteristics (Age, Race, Gender, Education Level, Political Spectrum, and Occupation). The outcome variable is the mean IAT D score.

Statistical Analysis

Basic descriptive statistics were used to characterize the study participants among different demographic factors. Trend analyses were done to examine the change in mean IAT scores among the different occupational groups. We performed univariate analysis using linear regression to estimate the relationship between each demographic characteristic and implicit bias before and during the COVID-19 pandemic. IAT scores were reported as means and standard deviations. One sample t-test was computed to assess for statistical significance between IAT score and gender. The one-way ANOVA test was used to assess the significance between all other demographic characteristics and IAT score. A stepwise multiple regression analysis was used to determine the most useful subset of predictors among the demographic characteristics. We performed analyses using SAS version 9.4 (SAS Institute, Cary, NC), and the trend analysis graph was created through Microsoft Excel. The level of significance for both tests was set to a confidence level of alpha = 0.05.
CHAPTER IV: RESULTS

Linear Regression Analysis

A total of 18,478 individuals completed the IAT in 2018, and 41,034 individuals completed it in 2020. The stepwise regression analysis depicted in Table 2 shows that healthcare providers’ race, age, gender, and political affiliation are all statistically significant predictors of IAT score. Table 3 outlines the IAT score of each demographic characteristic group. Healthcare professionals’ race was the most consistent predictor of mean IAT score in each year due to significant mean difference. In 2018, white participants had the highest average of implicit bias (M=0.37, SD=0.42), while black participants had the lowest (M=0.05, SD=0.44). In 2020, white and black participants also had the most significant difference in mean IAT scores: 0.32 (SD=0.42) and -0.03 (SD=0.43) respectively. Although there is no obvious linear trend between age and mean IAT score, each year saw a significant positive increase from 40–49-year-olds (M=0.33, SD=0.44 in 2018; 0.26, SD=0.45 in 2020) to participants 65 and older (0.43, SD=0.47 in 2018; 0.43, SD=0.44 in 2020). The mean IAT scores among men and women in 2018 were 0.34 (SD=0.44) and 0.31 (SD=0.43) respectively. In 2020, men had a mean IAT score of 0.30 (SD=0.44) and women had a score of 0.26 (SD=0.43). There was significant difference in mean IAT scores among individuals that identify as conservative and liberal. In 2018, conservatives had a mean score of 0.42 (SD=0.41), and liberals had a mean score of 0.28 (SD=0.44). In 2020, these two groups had mean scores of 0.37 (SD=0.42) and 0.24 (SD=0.44) respectively. All other characteristics did not show significant difference in mean IAT score.
Table 2 Stepwise Multiple Regression Analysis

<table>
<thead>
<tr>
<th>Year</th>
<th>Predictor</th>
<th>$B$</th>
<th>Standardized Error</th>
<th>$Beta$</th>
<th>$T$ value</th>
<th>Model p values</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>Age</td>
<td>0.002</td>
<td>$2 \times 10^{-4}$</td>
<td>0.063</td>
<td>8.55</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td></td>
<td>Race</td>
<td>0.013</td>
<td>0.003</td>
<td>0.035</td>
<td>4.76</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>-0.024</td>
<td>0.007</td>
<td>-0.024</td>
<td>-3.28</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Political</td>
<td>-0.037</td>
<td>0.002</td>
<td>-0.142</td>
<td>-19.34</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>2020</td>
<td>Age</td>
<td>0.003</td>
<td>$1.5 \times 10^{-4}$</td>
<td>0.084</td>
<td>17.04</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td></td>
<td>Race</td>
<td>0.012</td>
<td>0.002</td>
<td>0.033</td>
<td>6.82</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>-0.031</td>
<td>0.005</td>
<td>-0.031</td>
<td>-6.27</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td></td>
<td>Political</td>
<td>-0.034</td>
<td>0.001</td>
<td>-0.130</td>
<td>-26.44</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

Table 3 Characteristics and Mean IAT Scores of Health Care Providers Before and During COVID-19

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>IAT D Score</th>
<th>2018</th>
<th>P-value</th>
<th>2020</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td></td>
<td></td>
<td>M (SD)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-19</td>
<td>0.31 (0.43)</td>
<td></td>
<td>&lt;.0001</td>
<td>0.25 (0.41)</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>20-29</td>
<td>0.32 (0.42)</td>
<td></td>
<td></td>
<td>0.26 (0.43)</td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td>0.28 (0.44)</td>
<td></td>
<td></td>
<td>0.25 (0.44)</td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td>0.33 (0.44)</td>
<td></td>
<td></td>
<td>0.26 (0.45)</td>
<td></td>
</tr>
<tr>
<td>50-64</td>
<td>0.37 (0.44)</td>
<td></td>
<td></td>
<td>0.31 (0.45)</td>
<td></td>
</tr>
<tr>
<td>65+</td>
<td>0.43 (0.47)</td>
<td></td>
<td></td>
<td>0.43 (0.44)</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td>&lt;.0001</td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>White</td>
<td>0.37 (0.42)</td>
<td></td>
<td></td>
<td>0.32 (0.42)</td>
<td></td>
</tr>
<tr>
<td>Black or African American</td>
<td>0.05 (0.44)</td>
<td></td>
<td></td>
<td>-0.03 (0.43)</td>
<td></td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>0.30 (0.43)</td>
<td></td>
<td></td>
<td>0.26 (0.44)</td>
<td></td>
</tr>
<tr>
<td>American Indian or Alaska Natives</td>
<td>0.34 (0.38)</td>
<td></td>
<td></td>
<td>0.22 (0.38)</td>
<td></td>
</tr>
<tr>
<td>Multiracial</td>
<td>0.25 (0.44)</td>
<td></td>
<td></td>
<td>0.14 (0.45)</td>
<td></td>
</tr>
<tr>
<td>Other or Unknown</td>
<td>0.22 (0.45)</td>
<td></td>
<td></td>
<td>0.18 (0.43)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>&lt;.0001</td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Male</td>
<td>0.34 (0.44)</td>
<td></td>
<td></td>
<td>0.30 (0.44)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.31 (0.43)</td>
<td></td>
<td></td>
<td>0.26 (0.43)</td>
<td></td>
</tr>
<tr>
<td>Education Level</td>
<td></td>
<td></td>
<td>&lt;.2444</td>
<td></td>
<td>&lt;.2093</td>
</tr>
<tr>
<td>High School Student or High</td>
<td>0.29 (0.41)</td>
<td></td>
<td></td>
<td>0.25 (0.42)</td>
<td></td>
</tr>
<tr>
<td>School Degree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Degree</td>
<td>0.34 (0.43)</td>
<td>0.28 (0.43)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postgraduate or Professional</td>
<td>0.31 (0.44)</td>
<td>0.27 (0.44)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Political Spectrum**

| Conservative | 0.42 (0.41) | 0.37 (0.42) |
| Neutral | 0.32 (0.43) | 0.27 (0.43) |
| Liberal | 0.28 (0.44) | 0.24 (0.44) |

**Occupation**

| Diagnosing and Treating Practitioners | 0.31 (0.44) | 0.27 (0.44) |
| Nursing and Home Health Assistants | 0.33 (0.43) | 0.28 (0.43) |
| Occupation and Physical Therapist Assistants | 0.32 (0.42) | 0.26 (0.44) |

Mean IAT scores: positive scores mean pro-white bias, negative scores mean pro-black bias

**Trend Analysis**

There was no consistent decrease in mean IAT score among participants from 2006 to 2017. Implicit bias among occupational and physical therapists decreased from 2013 to 2016, and all three healthcare occupations saw a decrease in 2016 followed by an increase in 2017. The figure below shows the detailed trend analysis graph.

![Figure 1 Implicit Bias Among US Healthcare Workers from 2006-2020](image)
CHAPTER V: DISCUSSION

Findings from this quantitative study indicate that healthcare workers’ race was the main predictor of implicit bias, which supports the evidence found in the study performed by Green et al. (2007). Before and during the COVID-19 pandemic, white healthcare workers had the highest amount of pro-white implicit bias while black healthcare workers were the only race group to have pro-black implicit bias among all other races during the COVID-19 pandemic. Moreover, there was a significant difference in healthcare workers’ political affiliation and implicit bias. Participants that identified as conservative had higher levels of pro-white bias than those that identified as liberal. The results also showed consistent increase in implicit bias from participants that were 40-49 years old to those 65 years old and older. Prior research supports this finding as they found older adults had greater racial implicit bias than younger adults; however, this association was due to an age-related loss in their ability to inhibit automatic biased associations instead of a positive association between age and racial bias (Gonsalkorale et al., 2009; Stewart et al., 2009). Gender was also found to have a significant association with IAT score, which is consistent with findings from previous studies since women tend to have more liberal racial attitudes compared to men (Chapman et al., 2013; Sabin et al., 2009).

Additionally, the findings showed a decrease in implicit bias from pre- and during COVID-19 pandemic. This contrasts the findings of Mulchan et al. (2021) since they found that COVID-19 increased stressful working conditions for healthcare workers, which is one of the main drivers of implicit bias. This discrepancy is likely due to the increased media attention to the Black Lives Matter movement during the pandemic following the deaths of Breonna Taylor and George Floyd. Between 15 million and 26 million individuals in the United States participated in a Black Lives Matter protest during the height of the movement with nearly 95%
counties that protests were held were majority white, and 60% of white individuals were in support of the movement (Buchanan et al., 2020; Parker et al., 2020). It sparked major conversations about racism in the nation which may have caused individuals to be more aware of their own preconceived beliefs and reflect on their own potential biases (Adams, 2020; Pope et al., 2018).

There was a decrease in implicit bias from 2013 to 2016 followed by an increase the next year among US healthcare workers. Several events over those years may have caused this decline. Black Lives Matter was created (2014) in response to George Zimmerman’s acquittal for the shooting death of Trayvon Martin, and it continued to grow nationally due to continued coverage of police brutality (A brief history of civil rights, n.d.). Moreover, the 2016 election exposed deep rooted racism within the country due to the constant “racially charged imagery and flat-out racist statements” throughout its run (Henderson, 2016). Previous research supports this trend by suggesting that the Black Lives Matter movement has helped reduce racial prejudice among white individuals, and continued awareness of racial injustice is an important step to overcome racial bias (Devine et al., 2012; Mazumder, 2019; Sawyer & Gampa, 2018). Data from the Federal Bureau of Investigation explains the sharp increase in implicit bias from 2016 to 2017. They reported a 17% increase in hate crimes with more than half of these cases being race-related (FBI, 2018). Moreover, the increase in these reports was “the highest total in over a decade” (Levin et al., 2018).

Limitations

All demographic data collected from each participant is self-reported, so there is a possibility of reporter bias among participants especially on establishing topics (i.e. age, education level, etc). Furthermore, the generalizability of the results is limited since many
participants took the IAT of their own volition rather than coming from a probability sample. Moreover, the IAT is only accessible through internet access which might have resulted in under coverage of the true population. We must also acknowledge that psychologists question the validity of the IAT since they found that IAT scores were weak predictors of behavior and perception and lack appropriate psychometric assessment to accommodate social behavior (Oswald et al., 2013; Blanton et al., 2006). However, countless research supports the validity and reliability of the IAT through stable test-retest reliability (Nosek et al., 2007; Williams & Steele, 2016) and suggesting that the predictive validity of the IAT exceeds that of other implicit bias measures (Nosek et al., 2005; Greenwald et al., 2009). We recommend future studies to randomly select healthcare workers from medical organizations or facilities to better represent this group.

Conclusion

The aim of the study was to analyze implicit bias among US healthcare workers before and during COVID-19 as well as their trend of implicit bias from 2006 to 2020. Despite minorities being disproportionately affected by the COVID-19 pandemic, the implicit bias of healthcare workers decreased. This result indicates that the pandemic did not influence providers’ implicit bias. Their race was the biggest characteristic that indicated the amount of implicit bias they held. Black healthcare workers had the lowest implicit bias, while their white counterparts had the highest. Also, there is a marked difference in implicit bias between healthcare workers that identify as conservative and those that identify as liberal; the latter held the least amount of implicit bias. Moreover, female healthcare providers had less implicit bias than males. Furthermore, there was a decrease in implicit bias from 2013 to 2016, but a significant increase was seen in 2017. Although implicit bias has decreased during these different periods, it is still
prevalent among healthcare professionals. This exploratory research helped demystify the existence of racial implicit bias among healthcare workers, but further research is needed to analyze the impact it plays in negative healthcare outcomes and identify strategies to lower implicit bias among healthcare providers.
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Figure 2 Race Implicit Association Test Sample Screen

These sample screens display examples of the series of black and white individuals and descriptive words participants are shown during the race-based Implicit Association Test. Participants must quickly press “E” or “I” on a keyboard to select the correct answers.