# Recommended Teaching Strategies to Mitigate Implicit Bias in Minority Healthcare Students

Joyvina Evans[1], Shanteria Watson[2], Tyrah Lacy[3], and Myiah Sturdivant[2]
1.Department of Health Management, Howard University
2.Department of Occupational Therapy, Howard University
3.Department of Health Sciences, Howard University

## ABSTRACT

*Implicit bias, also known as unconscious bias, is a form of bias that occurs automatically and unintentionally. Implicit bias impacts judgment and decisions, which leads to unfair treatment practices and health disparities. A narrative review was conducted to search available literature on using implicit bias teaching strategies within health professions graduate programs. A total of 25 articles were reviewed. The review highlights the need for health professions programs to incorporate multiple educational strategies continuously into the student curriculum. A primary step in this commitment is required formal implicit bias training for all faculty teaching in health professions programs and all students enrolled in health professions programs.*

Academic Editors: Muhammad Sharif Uddin, Uttam Gaulee

# INTRODUCTION

Health disparities continue to increase in the United States. There are numerous reports and discussions around the link between health inequities, discrimination, prejudices, and racism. A study by Gonzalez et al. (2018) reported that patients delayed medical treatment and did not adhere to medication recommendations due to perceptions of discrimination and racism. Implicit bias is at the core of these perceptions and feelings (Gonzalez et al., 2018). Previous studies reported that while health professionals understand the socioeconomic disparities among minorities, they did not believe it impacted their patients' care (Mullett et al., 2022).

Implicit bias, also known as unconscious bias, is a form of bias that occurs automatically and unintentionally. Implicit bias impacts judgment and decisions, which leads to unfair treatment practices and health disparities. Fitzgerald and Hurst (2017) reported that implicit bias towards minority populations was associated with diagnostic uncertainty and poor provider communication, both of which led to more significant disparities and poor health outcomes.

Health professionals' implicit biases, thoughts, and beliefs toward patients can impact their care and overall health outcomes. The impact can result in positive and/or adverse consequences. While it is known that implicit bias negatively impacts minorities, research also indicates the implications of implicit biases towards marginalized populations, such as people with disabilities and people of lower socioeconomic status. These biases lead to inequitable treatment when accessing healthcare services (Job et al., 2022). Implicit bias training and education are becoming more relevant and necessary in health professions programs. Research studies revealed that students/learners have different perceptions, attitudes, and beliefs surrounding implicit bias. Therefore, different educational strategies and behavior models have been used to modify and alter understanding and awareness (Gonzalez et al., 2021a).

Due to the impact of implicit bias on patients and the community, university faculty, and health professionals, students must make an effort to become knowledgeable about identifying, managing, and rectifying their biases. Culturally, health professionals have their own biases and thoughts about health and wellness. This is also true for patients, as health

professionals see it. For instance, people can view Western medicine differently than traditional medicine, such as acupuncture and spiritual healing (Brottman et al., 2019). Of special note are patients with limited English proficiency. Research has shown limited English leads to lower quality and a higher risk of adverse outcomes and events (Kenison et al., 2017).

University faculty acknowledge the changing demographics and diverse healthcare needs and that there is an opportunity to provide more education and training around cultural awareness, disparities, and implicit biases (Brottman et al., 2020). University faculty in health disciplines must be willing to teach and provide students with the tools to become aware of their biases and avoid biased behaviors that can negatively impact patient health outcomes. Different educational strategies have been used; however, there needs to be more information on the impact of implicit bias training on eliciting behavior change within students to reduce potential patient harm during clinical practice. This narrative review aims to identify evidence-based teaching strategies used to mitigate implicit bias in students enrolled in health professions and thus reduce health disparities. The primary research question addressed in this narrative review was: *What teaching strategies or techniques are used to deliver interventions that mitigate implicit bias for healthcare professional students?*

## METHODS

### Research Ethics and Patient Consent

A narrative review was conducted to search available literature on using implicit bias teaching strategies within health professions graduate programs. Since this is a narrative review, no participants were involved, and consent or ethics approval was not required.

### Eligibility Criteria

The interested population was healthcare students enrolled in any healthcare-related discipline higher education program. Studies were eligible for inclusion in this narrative review if they described, developed, proposed, applied, and/or evaluated implicit-bias teaching strategies in

health profession programs education. Implicit bias actions were defined as any activity that addresses or reduces implicit bias experienced by the identified population. The review focused on research studies that targeted racial implicit bias only. Only English-written journal articles published between 2014 and January 2024 were included. All research designs were included. Articles focused on students or universities outside the United States employed health professionals (non-students) and studies where full text was unavailable were excluded. Review articles, conference abstracts, and studies where full-text was unavailable were also excluded.

**Information Sources and Search**

A search strategy was developed to identify published studies. An initial search of Google Scholar and the discovery service Ebsco Discovery Service was conducted to identify relevant keywords and index terms to build the complete search strategy. The search terms were refined and then applied to PubMed, PsycINFO, Web of Science, and CINAHL to identify relevant articles. The following search terms related to the review were used: implicit bias, unconscious bias, stereotypes, teaching strategies, teaching methods, pedagogical approaches and/or educational techniques, college students, allied health programs, health professions, medicine, nursing, occupational therapists, physicians, and pharmacy. We combined these terms using AND and OR. A hand search of articles on the reference list was conducted. The hand- search identified articles that may have been missed in the initial search and captured articles published online first. The final search results were exported to EndNote, and duplicates were removed.

**Selection of Sources**

Two reviewers used Excel software to screen the title and abstract of each article and identify the study as included, excluded, or maybe. Following the screening, the full text was read and reviewed. Reviewers noted comments, including the reasoning for exclusion. Any disagreements between the reviewers at each stage of the selection process were resolved through discussion. Once data was extracted from the included articles, both reviewers analyzed each article separately.

**Data Charting**

Two reviewers developed a data extraction tool to guide data extraction relating to information from each study, including the source, year of publication, purpose or aim of study, population focus, methodology, and implicit bias teaching strategies. Microsoft Excel software was used to chart data from the articles. Any disagreements were resolved through discussion.

**Development of Themes**

Data was extracted and organized using Microsoft Excel software and inductively developed from codes to subthemes and then overarching themes. The first and second authors reviewed several articles as a quality check. This involved separate coding of articles and refinement of the subthemes and overarching themes. Charted data was synthesized, and two reviewers grouped implicit bias teaching strategies according to how they were incorporated into health professions education. The articles were not critically appraised, which is consistent with the purpose of narrative review studies, which is a method to synthesize findings from similar studies.

**RESULTS**

**Study Characteristics**

The search yielded 25 articles, of which 19 were eligible for inclusion in the narrative review. The nine articles included were published between 2014 and 2024. They all describe implicit bias educational strategies for graduate students enrolled in health profession programs. Table 1 describes the included articles. The literature has been synthesized into four themes: increased recognition of implicit bias, curriculum development, simulated learning opportunities, and educational modules and training. Further description is given in Table 2 below.

**Table 1**

*Description of Included Studies*

| Author(s)/ Year | Title | Population | Teaching Strategy |
|---|---|---|---|
| Gonzalez et al., (2014) | Implicit bias and its relation to health disparities: A teaching program and survey of medical students | Medical Students | Faculty delivered training on health disparities and implicit bias<br><br>IAT with survey about results, attitudes, and experiences |
| Gonzalez et al., (2018) | How to make or break implicit bias instruction: Implications for curriculum development | Medical Students | Race IAT w/ reflective narrative.<br><br>Pre-readings related to health disparities and implicit bias.<br><br>Faculty delivered a multimedia presentation with slides, videos, and discussion prompts.<br><br>30-minute small group and faculty co- facilitator sessions.<br><br>Case-based discussions of topics including prevention, professionalism, and ethics, among others. |

| Gonzalez et al., (2019) | A Qualitative study of New York medical student views on implicit bias instruction: Implications for curriculum development | Medical Students | Focus groups<br><br>Discussion on implicit bias perceptions |
|---|---|---|---|
| Gonzalez et al., (2020) | Skills-based elective focusing on implicit bias in medicine | Medical Students | Roleplay<br><br>Active learning exercises |
| Gonzalez et al., (2021a) | Validity evidence for a novel instrument assessing medical student attitudes toward instruction in implicit bias recognition and management | Medical Students | Cognitive Interviews<br><br>Attitudes Toward Implicit Bias Instrument |
| Gonzalez et al., (2021b) | Implicit bias recognition and management in interpersonal encounters and the learning environment: A skills- | Medical Students | IAT as a tool for instruction in IBRM Video clips Presentation slides<br><br>Roleplaying active learning exercises |

| | based curriculum for medical student | | |
|---|---|---|---|
| Hamed et al. (2024) | The use of virtual reality for student training on bias and microaggressions | Occupational Therapy Students | Virtual reality training Reflective writing |
| Kalata et al., (2023) | Addressing Racial Disparities in Maternal and Infant Health Outcomes Through an Antiracism Curriculum | Medical Students Medical Residents Medical faculty | Novel workshops |
| Mabeza & Legha (2023) | Piloted antiracism in mental health module | Medical Students | Three-hour workshops |

| | | | |
|---|---|---|---|
| Mendizabal et al., (2021) | Feasibility and effectiveness appraisal of a neurology residency health equities curriculum | Medical Residents | Lectures<br><br>Roleplaying activities Self-reflection<br>Group Reflections |
| Mullett et al., (2022 | Creation of a curriculum to address equity, Diversity, inclusion, and cultural competency among pediatric residents | Pediatric Residents | Curriculum Needs assessment Case studies |
| Nguemeni Tiako et al., (2022) | Piloting web-based structural competency modules among internal medicine residents and graduate students in public health | Medical Students Public Health Students | Pre-module knowledge quiz Interactive e-learning course Modules |

| | | | |
|---|---|---|---|
| Reed et al. (2022) | Provide SPEAK UP training for health providers working on maternal health | Faculty, Staff, Students | Antiracism and implicit bias training Simulation Exercise |
| Royce et al. (2022) | The time is now addressing implicit bias in obstetrics and gynecology education | Obstetrics and Gynecology Residents | Curriculum design Lecture Examination Critical review of epidemiology |
| Rusiecki et al., (2023) | Exploring the Value of Improvisational Theater in Medical Education for Advancing the Doctor-Patient Relationship and Health Equity | Medical Students | Virtual improv workshop |

| Schultz & Baker (2017) | Teaching strategies to increase nursing student acceptance and management of unconscious bias | Nursing Students | Pre-class IAT<br><br>In class: anonymous audience response polling-multi choice and open-ended<br>Guided debriefing<br>Management strategies<br>Perspective-taking exercises Post class: IAT |
|---|---|---|---|
| Sukhera & Gonzalez (2017) | Implicit bias in health professions: From recognition to transformation. | Medical Students | Transformative learning theory (TLT)<br><br>IBRM-awareness and behavior change |
| Thomas & Booth-McCoy (2020) | Blackface, implicit bias, and the Informal Curriculum: shaping the healthcare workforce and improving health | Medical Students | Clinical vignettes<br>Reflective writing<br>Experiential learning |

| | | | |
|---|---|---|---|
| Venditto & Colon (2022) | Promoting Cultural Humility by Integrating Health Equity Literature into the Pharmacy Curriculum | Pharmacy | Pre-class IAT 8-week course Reading Assignments In-class discussions |

Table 2: Description of Themes and Definitions

| |
|---|
| **Increase Recognition of Implicit Bias:** Using tools or strategies like implicit association tests and reflexivity to increase awareness and understanding of individual biases. |
| **Curriculum Development:** Using theory to develop, implement, and evaluate curricula to decrease biases in clinical practice. The goal was to provide sound, evidence-based strategies in health professions education. |
| **Simulated Learning Opportunities:** Case-based scenarios were used to facilitate active participation and demonstrate how students would respond to critical incidents involving implicit bias. The goal was for students to demonstrate empathy, decrease stereotypes, and develop active actions to mitigate implicit bias. |
| **Educational Module/Training:** Using teaching or workshops to train and evaluate students' understanding of implicit bias. The goal was to provide examples of how to change behavior. |

**Teaching Strategies**

The four themes yielded fourteen strategies used to teach implicit bias: the Implicit Association Test, discussions, lectures, reflective writing, direct observation, anonymous audience polling with open and

closed questions, videos, readings, interviews, focus groups, identification of management strategies, and three different types of simulation case-based learning to increase knowledge, awareness, skills, and behavior change. Many articles recommended multiple strategies that incorporate reflective teaching and application rather than focusing on didactic approaches to decreasing implicit bias in health profession students.

Educators should embed implicit bias content throughout the curriculum rather than solely in specific courses or training workshops (Gonzalez et al., 2018; Gonzalez et al., 2020; Hamed et al., 2024). This supports that students have different learning styles and provide multiple learning opportunities, and topics of implicit bias are seen as necessary across various domains.

## Increase Recognition of Implicit Bias

Implicit association testing (IAT) is a common strategy to increase awareness and perception of biases and discrimination. Six studies discussed the use of IAT within instruction to address individual implicit bias among health profession students (Gonzalez et al., 2018; Gonzalez et al., 2019; Gonzalez et al., 2020; Gonzalez et al., 2021b; Schultz & Baker, 2017; Sukhera et al., 2020). In addition to IAT, all authors incorporated additional types of assessments as a source for teaching implicit bias and increasing recognition. While IAT was used, two articles primarily focused on the teaching and lecturing component, not the IAT (Gonzalez et al., 2021b; Schultz & Baker, 2017; Sukhera et al., 2020).

### *Implicit Association Test as an Instructional Tool*

A large urban medical school study used focus group interviews to determine medical students' perceptions of implicit biases (Gonzalez et al., 2019). Fifty-six students were recruited for the study, and the study team developed the interview questions. The race IAT was used to generate discussions, and components were incorporated into the interview questions; however, completing the IAT was only optional to participate in the study. The interview questions allowed students to discuss their experiences with the IAT (Gonzalez et al., 2019). The study found that the students resisted engaging and discussing implicit biases partially because of shame. This leads to the need for formal facilitator training, ensuring that the learning environment is safe and non-threatening and anticipating

embarrassment or shame.

Additionally, the authors suggest skill-based instruction and creating valuable, high-stakes assessments to ensure students think about perception and awareness and change their behavior. Another study by Gonzelez et al. (2018) discussed student resistance to IAT through anger and denial. Some students even attempted to take the test multiple times to obtain a different result and demonstrate that they 'were not biased.'

Schultz and Baker (2017) discussed teaching strategies in a graduate nursing program. Multiple strategies were used and implemented. However, IAT was one of the first strategies incorporated, along with polling and discussion of individual results. Sukhera et al. (2020) also recommend using the IAT with other teaching and assessments. For instance, they recommend using IAT as a 'trigger' to provoke critical reflection and discussion on biases and stereotypes. This aligns with Gonzalez et al. (2021b), who discussed using IAT to increase awareness and other tools.

### *Reflexivity Exercises*

Various studies have utilized reflective exercises as a teaching strategy to enhance students' awareness of their implicit bias. Findings across many articles included reflexivity practices within the learning environment to facilitate critical reflection of both students and educators examining their thinking and questioning their assumptions before engaging in skill development interventions (Gonzalez et al., 2018; Gonzalez et al., 2020; Gonzalez et al., 2021; Schultz & Baker, 2017; Sukhera et al., 2020). Table 3 introduces examples of reflexivity exercise prompts that support implicit bias teaching in health professions programs.

**Table 3**

**Reflective Exercise Prompts**

| Modality | Prompt to provide students: |
|---|---|
| **Media representation** | Consider the effects of media representation of racial minority groups on both the people who identify with a particular group and people who do not (Gonzalez et al., 2021b). |
| **ersonal lived experiences** | Explore the influence of your lived experiences on developing your own bias (Gonzalez et al., 2020; Gonzalez et al., 2021b). |
| **Video Observations** | Imagine the perspective of the person(s) portrayed and consider how these depictions of each person(s) lived experience could influence their behaviors as patients once in clinical settings (Gonzalez et al., 2021b; Gonzalez et al., 2020). |
| **Implicit bias assessment tools** | Reflect on your experience with your IAT results (Gonzalez et al., 2018). Examine how IAT results may influence your interactions with patients (Gonzalez et al., 2020; Gonzalez et al., 2021b; Schultz & Baker, 2017). |
| **Discussions** | Engage in a "think-pair-share with one another to reflect on and discuss the cultures they belong to (Gonzalez et al., 2020). Discuss an experience where you observed how implicit bias influenced patient care in the learning environment (Gonzalez et al., 2020). |
| **Journaling** | Write a poem or short prose reflecting the needs, vulnerabilities, and feelings of the patient you observed experiencing implicit bias (Schultz & Baker, 2017). |

**Curriculum Development**

      Several articles described the importance of health professions education being informed by learning theories to avoid surface-level understandings of concepts when curricula are designed, implemented, and evaluated (Gonzalez et al., 2018; Gonzalez et al., 2020; Hamed et al., 2024; Mullett et al., 2022;  Royce et al., 2022; Schultz & Baker, 2017). Specifically, within articles, transformative learning theory (TLT) was recommended for the curriculum design of implicit bias training. Transformative learning theory is an adult educational model that describes a specific cognitive process a learner experiences, resulting in the learner's beliefs and behavior shifting. TLT provides a method and conceptual transformation framework consisting of four components. The components consist of 1) the learner experiences an event that provokes the individual to question their beliefs or assumptions, 2) critical reflection, 3) guided discourse, and 4) action (Gonzalez et al., 2019; Gonzalez et al., 2020).

      A Pediatric residency program designed a curriculum to assist with accreditation standards regarding inequalities and Diversity in health care. The Inclusion, Cultural Humility, Diversity, and Equity (INCLUDE) residency program was developed using Kern's 6-step framework, which includes identifying the problem, assessing needs, goals, and objectives, educational strategies, implementation of the program, and evaluation. The program was designed by stakeholder groups, including resident physicians from multiple programs throughout the hospital. The program consisted of pre-curriculum needs assessment and pretests to determine current knowledge and skills. The curriculum had 28 hours of training per academic year. The three components were ten hours of skill building and training, 15 hours of didactic, and three hours of group discussions. The residents shared that they understood the value of these programs and stated the need to ensure the information is transferable and provide evidence-based recommendations (Mullett et al., 2022).

      Another learning theory or framework used in this space is the transformative learning theory combined with evidence-based frameworks. An elective was developed for first-year medical students focusing on implicit bias recognition and management (IBRM). Fifteen students participated, and the framework explains IBRM from absolute denial, reoffense, minimization, and acceptance. The goal is to assess

implicit bias among themselves and the implications for practice. Two of the stages involved adapting their behaviors and integrating new clinical skills. The final curriculum sessions included a dilemma, reflection, and dialogue. While students had foundational knowledge of implicit bias, the curriculum showed promise. The students developed the knowledge and skills needed to avert implicit biases and learned how to advocate for patients when they witness issues (Gonzalez et al., 2020).

Implicit bias was addressed in obstetrics and gynecology by including an educational framework that includes antiracism and social justice. The education included bias awareness and lectures on eliminating stereotypical and biased patient descriptions and analyses. Lastly, the framework allowed for a review of evidence-based research and medicine to look for structural racism (Royce et al., 2022). By utilizing learning theories, educators can ensure a structured approach to curriculum design for implicit bias training. Learning theories offer educators insight into how students learn, perceive, process, and retain information, which can facilitate the creation of effective teaching strategies and outcomes. Another benefit of using learning theories is that educators use evidence-based practices, as learning theories are grounded in research and empirical evidence. Furthermore, using learning theories offers guidelines to assess and evaluate
the effectiveness of curriculum designs. This will allow educators to enhance teaching strategies and improve future curricula evaluation outcomes.

## Simulation Learning Opportunities

Another teaching strategy that can help increase awareness and management of implicit bias is students engaging in simulation learning opportunities. These specific activities include: Roleplaying (Gonzalez et al., 2021b; Sukhera et al., 2020), perspective-taking exercises (Gonzalez et al., 2020; Schultz & Baker, 2017), and virtual reality training (Hamed et al., 2024).

### *Role Playing Exercises*

Health professional educators should seek to enhance learning opportunities about implicit bias by implementing roleplaying as a teaching strategy. Students engaging in roleplaying scenarios increases

their awareness of implicit bias and provides them with strategies to manage it within clinical practice. Gonzalez et al. (2021b) developed a nine-session elective for first-year medical students utilizing roleplay as a fishbowl instructional tool during the final session. The role plays addressed gender, religion, and race bias. Students were provided opportunities to practice observing behaviors during roleplaying and participate in both a scripted and unscripted roleplay scenario. Each roleplay was conducted for 3 minutes, video-recorded with a debrief following each roleplay exercise. When students engaged in the unscripted role play after the debrief, they were allowed to participate in a do-over to implement any changes based on the skill identified during the debrief. Results of the study's pretest and posttest indicated that students had increased self-reported perceptions of knowledge, comfort, and confidence. Students demonstrated an increase of 10.1 points (from M= 32.8, SD = 1.92 to M = 42.9, SD = 1.45, out of a total possible 48; p = .0078). Most importantly, after roleplaying, students demonstrated an increased perception of comfort with debriefing with supervisors about perceived bias in clinical and teaching encounters (Gonzalez et al., 2021b).

Roleplaying exercises were used to engage medical students as active participants when students perceived implicit bias during a witness encounter (Gonzalez et al., 2020). During the sixth session of the study's nine-week course of implicit bias instruction, instructors performed a scenario where either an attending, resident, or student behaved in a biased fashion toward a patient prior to students' engagement in a roleplaying exercise. Students observed the scenario, collaborated, and individually conceived statements to the group, addressing the bias demonstrated during roleplaying safely and respectfully. In Sessions 7 through 9, three roleplays were designed in which students became active participants in the exercises by experiencing or witnessing bias. Students experienced or witnessed bias during an unscripted scenario demonstrated by a faculty member and/or peer during clinical or teaching encounters. The objective of the role play was for students to develop and practice novice skills to address bias within the learning environment. Role plays were video recorded and included supportive debriefing to offer students feedback. Once students were provided with feedback, they were allowed to re-engage with the same scenario and apply any suggestions of strategy implementation to address bias. Researchers conducted focus groups with medical students to evaluate the benefits of this skill-based elective course.

Students demonstrated skill development in implicit bias recognition and management within three clinical care areas. These included interpersonal encounters, advocating for patients when bias is perceived in witness encounters with peers and supervisors, and addressing comments made by others within a learning environment (Gonzalez et al., 2021b).

Carefully constructed stimulated exercises as an instructional tool were also proposed within the Sukhera et al. 2020 study. Authors recommended specific activities for medical students, such as roleplaying, standardized, and virtual patients, that offered educators ways to facilitate skill development related to implicit bias recognition and management. Additional benefits of a simulated environment included: 1) students can transform emotional feelings into motivation for behavior change, 2) challenge learners existing knowledge safely and respectfully through a critical incident, and 3) facilitate learner buy-in and decrease resistance from learners hesitant to engage in implicit bias instruction (Sukhera et al., 2020). Health professional educators must design simulation cases that are relevant to teaching content. For effective simulation case development, educators should codesign simulation scripts with individuals from marginalized populations who have experienced the effects of implicit bias. This ensures students can engage in simulations incorporating diverse individual experiences and real-life examples.

### Perspective Taking Exercises

Two articles discussed using perspective-taking exercises as a teaching strategy (Gonzalez et al., 2020; Schultz & Baker, 2017). Formal perspective-taking exercises were conducted with medical students through video observations and debriefing to address bias within students' interpersonal encounters and encounters with peers and supervisors. To facilitate the active engagement of students, videos from popular culture and online representations of actual users' lived experiences were used for video observations. Study participants reported perspective-taking development skill implementation in two areas: students developed skills and acknowledged real or perceived bias, and they developed language to apologize and/or demonstrate empathy for the other person's perspective in the encounter. Furthermore, students recognized that the perception of bias is influenced by a patient's lived experience, which helped decrease defensiveness among students (Gonzalez et al., 2020).

Within nursing students' education, Schultz and Baker (2017) implemented various teaching strategies to address implicit bias through

an educational module developed by authors. The study included seventy-five graduate-level social justice and diversity course students participating in perspective-taking exercises. During the academic module, the authors presented five patient scenarios. Students were required to select one scenario and write a poem or short prose to reflect the patient's needs, vulnerabilities, and feelings. The students were allowed to voluntarily share their writings aloud or submit them to the class learning management system for peers to view and read. This perspective-taking exercise provided students with a safe environment to develop empathy for others and consider the implications for clinical practice (Schultz & Baker, 2017).

### *Virtual Reality Training*

Virtual reality (VR) training is an innovative strategy to mitigate implicit bias among health profession students. Hamed et al. (2024) study utilized virtual reality as an educational tool for implicit bias and microaggressions training of 48 entry-level occupational therapy students in a master's program. Their study consisted of a 2-hour pre-training session on using VR, the operation of equipment and software, and eight-week VR case scenarios. Students participated in a one-case scenario weekly, experiencing or witnessing a bias or microaggression in a professional setting. During the VR simulation, the software encouraged students to select an action to address the bias or microaggression presented. The VR simulation included various cases with interactions between healthcare professionals of different races and ethnicities, interactions between patients and providers, and interactions between individuals of other sexual orientations, races, and ethnicities occurring within community-based settings. Immediately following the VR session, students completed a reflection essay reflecting on the bias incident, their feelings of inclusion and exclusion, their experience of being the targeted avatar, and their response to address the bias. Results indicated that most students reported the VR training was effective in helping them identify bias and occurrences of microaggressions ($n$=47; 97.92%) and helped students articulate the reason specific behaviors could be interpreted as microaggression ($n$=45; 93.75%). Furthermore, students reported that the experience increased their confidence to report bias or micro-aggressive behaviors ($n$=48; 100%), and the VR experience provided them with adequate time and space to reflect on potential responses as microaggressions ($n$=45; 93.75%) (Hamed et al., 2024).

## Education/Training

In ten articles, teaching and formative assessments (with and without additional strategies) were used to teach and increase awareness of implicit biases (Gonzalez et al., 2014; Gonzalez et al., 2018; Kalata et al., 2023; Mabeza & Legha, 2023; Mendizabal et al., 2021; Nguemeni Tiako et al., 2022; Reed et al., 2022; Ruben & Saks, 2020; Rusiecki et al., 2023; Thomas & Booty-McCoy, 2020; Venditto & Colon, 2022). Thomas and Booty-McCoy (2020) highlighted the need for formal and informal teaching in medical schools focusing on implicit bias and cultural humility. Evaluating students through vignettes and providing experiential learning within diverse underserved communities (race, ethnicity, socioeconomic status, gender, religion, and sexual orientation) can result in awareness and changing perspectives (Thomas & Booty-McCoy, 2020).

Gonzalez et al. (2014) support using an implicit bias educational module and the IAT. Their study consisted of one lecture on health disparities and how implicit biases can contribute to them. After the lecture, all the medical students were surveyed regarding their IAT results. Additional data included their thoughts on health equity within the healthcare systems and the impact of their own implicit biases on adverse patient outcomes and health disparities. The following question was used to gauge students' self-perception, "Unconscious bias might affect some of my clinical decisions or behaviors," Twenty-two percent denied that implicit bias would impact their decisions. In contrast, the remaining students agreed with the statement (Gonzalez et al., 2014).

Ruben and Saks (2020) provided first-year medical students a three-part implicit bias training. The three-part training included a trip to an art museum, a medical anthropology lecture, and a discussion on bias in medical research. The medical students self-selected if they wanted to be in the experimental or control group. Eighteen students were in the experimental group and participated in the training. Twenty-one students were in the control group and did not participate in the training. Regardless of the group, all students were required to complete the skin-tone Harvard implicit association test and a questionnaire that the researchers named "Attitudes Towards Implicit Bias Questionnaire." The results showed that all students were biased and preferred light skin before the intervention. While insignificant, the experimental group showed 'less' bias for the post-intervention. Faculty, students, staff, preceptors, and community members

from medically underrepresented communities received the SPEAK UP training developed by Bingham & Byfield. The training aimed to increase knowledge and self-awareness of implicit and explicit biases. Additionally, conversations on equity and inclusion and macroaggression negatively affected their experiences. Of the 33 participants, only nine completed the evaluation, and the vast majority shared the importance of the training, in addition to one open-ended comment that shared that everyone has some form of bias (Reed et al., 2022).

Improvisational theatre (improv) explored implicit biases among first-year medical students. Sixty students participated in the 90-minute virtual improv workshop, 37 responded to questions (likLikert-scaled open-ended, and 11 responded to structured interviews. The participants highlighted the following six themes: interpersonal skills, personal growth, safe space, limits of traditional communication, the value of improv, and feedback to improve the improv educational module. While many students did not feel that the workshop addressed systemic racism and inequities, the study found that students felt the module could help them with patient-provider communication, including listening skills and relationship-building (Rusiecki et al., 2023). While this is a non-traditional approach, this can be used alongside traditional methods for teaching implicit bias, cultural sensitivity, and relationship building.

A module entitled "Antiracism in Mental Health" was piloted at two medical schools in 2022 and 2023. The pilot examined cultural competencies, disparities, implicit biases, and systemic racism. The researchers deemed that while a lot of curriculum and training include the necessary components, they are still missing pertinent information on systemic racism, and they do not provide tangible tools for health equity and health justice (Mabeza & Legha, 2023). The module was three hours long and included a narrative, education on racist inequities and white supremacy, as well as antiracist action steps. Learners indicated levels of frustration and disgust but were also enlightened by the information and ended with a level of solidarity within the cohort (Mabeza & Legha, 2023).

Gonzalez et al. (2018) also recommended educational modules for students. The authors shared the importance of faculty members understanding their role as educators. As such, faculty themselves must have ongoing professional development centered on their own implicit biases. Then, they are in a position to truly teach and educate students in

their programs on implicit biases and the implications for health disparities and inequities. In addition, the authors recommend formal and explicit educational modules and workshops, as well as required readings on implicit bias and behavior change for students (Gonzalez et al., 2018).

A neurology residency examined the feasibility and effectiveness of the health equities curriculum implemented by the University of Pennsylvania (Mendizabal et al., 2021). The pilot curriculum was embedded within an existing residency program, including seven 1-hour lectures for one academic calendar year. The curriculum consisted of standard lectures, roleplaying activities, self-reflection, such as using the Harvard's Implicit Association Test, and group reflections, with all activities being part of a voluntary "Health Equities Firm" designed for residents interested in health disparities. Twenty-seven residents completed pre-curriculum and post-curriculum surveys, with 81% attending at least one of the lectures, 52% attending 2-3 lectures, and 21% attending 4-5 lectures. Survey results indicated that more than half of the neurology residents previously received training in cultural competency, implicit bias, and health equities. Furthermore, results indicated that residents perceived the curriculum to be 90% effective in addressing health disparities, 81% effective in addressing cultural competency, and 81% in addressing implicit bias. Lastly, residents felt the curriculum effectively increased their preparedness to serve underserved populations.

Kalata et al. (2023) utilized three novel workshops to educate participants on racism in medicine. Seventy-four participants, consisting of students, residents, and faculty, attended workshops to address the racial disparities in maternal and child health. The curriculum increased participants' awareness of racial and ethnic disparities and their effects on health outcomes, identified their implicit bias, increased understanding of how practitioner bias impacts health outcomes, and understanding of patient mistrust in the healthcare system (Kalata et al., 2023).

Internal medicine residents and public health students engaged in an interactive e- learning course, "Health Disparities", consisting of three parts. The study aimed to increase awareness of their personal implicit bias, increase knowledge of existing racial and ethnic disparities, and facilitate behavior change to decrease the effects of bias in interpersonal interactions (Nguemeni Tiako et al., 2022). All participants completed a pre-module and post- module quiz to assess their baseline knowledge and change in knowledge after participating in the module. Forty-nine internal

medicine (IM) residents and twenty-two public health students completed the pre-module quiz; results indicated the IM residents had mean scores of 16.1/25 and 16.6.25 for public health students, with no statistically significant difference between the groups on the pre-module quiz. For the post-module quiz, nineteen IM residents and 18 public health students completed the quiz with IM residents, resulting in a mean score of 16.7/25 and 19.5/25 for public health students. The public health students' post-module quiz average was significantly higher than that of the IM residents (Nguemeni Tiako et al., 2022). Public health students demonstrated a significant increase in knowledge regarding health disparities compared to IM residents. However, the researchers attest this to a more significant attrition of IM residents than public health students who were required to complete the course.

Venditto and Colon (2022) examined the effectiveness of integrating health equity literature into an 8-week Integrated Drugs and Disease Rheumatology course within a pharmacy curriculum to introduce students to unconscious bias and social determinants of health. (SDOH) to develop them as effective healthcare providers. Participants were second-year pharmacy students who were provided with articles related to cultural humility material within the course. Students were required to complete assignments such as discussions of unconscious bias and pain management and completing the age Harvard Implicit Association Test (IAT). Results indicated that information from assigned articles improved students' understanding of SDOH, including race/ethnicity 3.0 to 4.4, $p < 0.0001$ (Venditto & Colon, 2022).

## DISCUSSION

While the IAT is the most commonly used test to assess perception and awareness, it has challenges. Over the years, many papers have been published regarding its validity and reliability (Schimmack, 2021; Blanton et al., 2009). According to Schimmack (2021), the median test-retest reliability of IATs is .50, which is inadequate for accurately assessing attitude, stereotype, racism, self-esteem, or bias. The Medical Student Cognitive Habits and Growth Evaluation Study (CHANGES) involved recruiting 3,547 osteopathic medical students from 49 schools. The study surveyed medical students in year one and year four and focused on three common domains (formal, informal, and interracial contact during school) of implicit racial bias. Students were required to complete the Black-

White IAT during year one and again in year four. The study found that completing the IAT during year one of medical school was a statistically significant predictor of decreased implicit racial bias among Black-White people (vanRyn et al., 2015). This leads to the importance of ongoing education/training, along with assessment and discussion on other racial and ethnic groups and overall areas where implicit bias and disparities exist.

The van Ryn et al. (2015) study and findings from this narrative review demonstrate the importance of ongoing and consistent implicit bias curricula in health professions programs. Implicit bias education should occur more than once within a student's educational journey. Instead, it should be embedded throughout the curriculum and occur annually. The effectiveness of educational strategies waswas the most impactful when implicit bias was longitudinal and combined with role-playing, discussions, and case-based vignettes (Schulz & Baker, 2017).

There is an opportunity to look beyond educational strategies used within the health professions. For instance, a study by Rogerson et al. (2022) supports that social work students' perception and awareness are essential. Students need to critically reflect on their biases and manage the influences of implicit and explicit biases. The authors further state that reflexive assessments encourage social work students to learn about themselves and have uncomfortable conversations with their faculty and peers (Rogerson et al., 2022). While the focus was on social work students, the reflexive assessments may be helpful amongst our target population.

Educators should utilize theories, frameworks, and guidelines to inform their teaching of implicit bias. This involves creating a pedagogy that assesses bias's emotional and intellectual effects on each student. Furthermore, if issues such as bias, social justice, systemic racism, and health disparities are targeted within the curriculum, educators must incorporate a transformational learning approach and reflexivity into their teaching pedagogy (Johnson et al., 2022; Rogerson et al., 2022; Sterman et al., 2022). Educational standards can also be  guidelines for developing specific instructional activities, skill development, and behavior change; however, many health profession standards do not explicitly require programs to include content related to implicit bias. The field of social work is one profession whose education standards offer guidelines for educators. The Council of Social Work Education (CSWE)

Educational and Policy Accreditation Standards requires accredited social work programs to implement core competencies that encompass social, economic, and environmental justice, Diversity, and the advancement of human rights within the curricula (Rogerson et al., 2022). To help streamline implicit bias training throughout all health professions education, individual accreditation bodies must implement standards that explicitly call for content related to the recognition and management of implicit bias to improve patient-client communication and enhance health outcomes.

Regardless of the educational strategy the university faculty selects, there must be a commitment to ongoing training and assessment for faculty and students in health profession programs. It is necessary to ensure that faculty have self-assessed and made transformative changes in their implicit biases. Lastly, guaranteeing committed faculty, time, and resources for ongoing implicit bias training is essential. Dedicating resources to faculty development and training on implicit bias is imperative as faculty are responsible for ensuring students are prepared for industries. There must be an understanding of the importance of administrators, faculty, and students. As such, faculty must create a non-judgmental environment free of shame and guilt. Learners become active learning agents when they can be transparent and honest about their thoughts, feelings, and biases (Gleicher et al., 2022).

## LIMITATIONS

One notable limitation of this narrative review is the selective focus of the articles reviewed. Specifically, the authors only considered studies that examined students in graduate health professions and were published within the last ten years. This time constraint may have excluded relevant studies conducted before this period, potentially omitting critical perspectives and findings that could contribute to a more comprehensive understanding of the topic. Furthermore, several healthcare professions' educational programs lack accreditation bodies' requirements to address implicit bias and health disparities within curricula, which may impact the gap in research for this area.

The articles included represent only healthcare professions as the search only included medical, nursing, occupational therapy students as participants in studies. Additionally, the fact that five of the studies

included in the review were authored by the same primary researcher introduces a potential bias. This leads to a narrower perspective on the subject matter, as the repeated inclusion of work from a single researcher might overrepresent their methodologies, viewpoints, or findings.

## CONCLUSION

This narrative review highlights the need for programs to incorporate multiple educational strategies continuously. A primary step in this commitment is required formal implicit bias training for all faculty teaching in health professions programs and all students enrolled in health professions programs. While race is the most common implicit bias and a significant predictor of health disparities, it is essential to note that other biases need to be addressed in health professions. This provides an opportunity for future research to focus on implicit biases that exist based on different key factors such as socioeconomic status, disability, weight, gender, sexual orientation, and religion.

## REFERENCES

Blanton, H., Jaccard, J., Klick, J., Mellers, B., & Mitchell G. (2009). Strong claims and weak evidence: Reassessing the predictive validity of the IAT. *Journal of Applied Psychology 94*(3), 567–582. https://doi.org/10.1037/a0014665

Brottman, M.R., Char, D.M., Hattori, R.A., Heeb, R., Taff, S.D. (2020). Toward Cultural Competency in Health Care: A Scoping Review of the Diversity and Inclusion Education Literature. *Academic Medicine 95*(5), 803-813 https://doi.org/10.1097/ACM.0000000000002995

FitzGerald, C., & Hurst, S. (2017). Implicit bias in healthcare professionals: a systematic review.*BMC Medical Ethics 18*(19). https://doi.org/10.1186/s12910-017-0179-8

Gleicher, S. T., Chalmiers, M. A., Aiyanyor, B., Jain, R., Kotha, N., Scott, K., Song, R. S., Tram, J., Vuong, C. L., & Kesselheim, J. (2022). Confronting implicit bias toward patients: A scoping review of

post-graduate physician curricula. *BMC Medical Education*, *22*(696), 1-12. https://doi.org/10.1186/s12909-022-03720-0

Gonzalez, C. M., Kim, M. Y., & Marantz, P. R. (2014). Implicit bias and its relation to health disparities: A teaching program and survey of medical students. *Teaching and Learning in Medicine*, *26*(1), 64–71. https://doi.org/10.1080/10401334.2013.857341

Gonzalez, C. M., Garba, R. J., Liguori, A., Marantz, P. R., McKee, M. D., & Lypson, M. L. (2018). How to make or break implicit bias instruction: Implications for curriculum development. *Academic Medicine, 93 (11S)*. S74–S81. https://doi.org/10.1097/ACM.0000000000002386

Gonzalez, C. M., Deno, M. L., Kintzer, E., Marantz, P. R., Lypson, M. L., & McKee, M. D. (2019). A qualitative study of New York medical student views on implicit bias instruction: Implications for curriculum development. *Journal of General Internal Medicine*, *34*(5), 692–698. https://doi.org/10.1007/s11606-019-04891-1

Gonzalez, C.M.,Walker, S.A., Rodriguez, N., Karp, E.,Marantz, P.R.(2020). It can be done! A skills-based elective in implicit bias recognition and management for preclinical medical students. Academic Medicine,  95(12), pp 150-155 https://doi:10.1097/ACM.0000000000003697

Gonzalez, C. M., Grochowalski, J. H., Garba, R. J., Bonner, S., & Marantz, P. R. (2021a). Validity evidence for a novel instrument assessing medical student attitudes toward instruction in implicit bias recognition and management. *BMC Medical Education*, *21*(205), 1-10. https://doi.org/10.1186/s12909-021-02640-9

Gonzalez, C.M., Walker, S.A., Rodriguez, N., Noah, Y.S., & Marantz, P.R. (2021b). Implicit bias recognition and management in interpersonal encounters and the learning environment: A skills-based curriculum for medical students. *MedEdPORTAL, 17*, 1-9. https://doi.org/10.15766/mep_2374-8265.11168

Hamed, R., Gdanski, E., Kim, J., Le, J., Lopez, A., Panjwani, A., Tong, A., & Wilson, G. (2024). The use of virtual reality for student training on bias and microaggressions. *Journal of Occupational Therapy Education, 8*(1). 1-6.

https://doi.org/10.26681/jote.2024.080106

Job, C., Adenipekun, B., Cleves, A., & Samuriwo, R. (2022). Health professional's implicit bias of adult patients with low socioeconomic status (SES) and its effects on clinical decision-making: A scoping review protocol. *BMJ Open*, 12(12), e059837. https://doi.org/10.1136/bmjopen-2021-059837

Johnson, K.R., Kirby, A., Washington, S., Levalley, R., Faison, T. (2022). Linking antiracist action from the classroom to practice. *American Journal of Occupational Therapy, 76*(5), 1–5. https://doi.org/10.5014/ajot.2022.050054

Kalata, M., Zeineddine, S., Lentino, A., & Finnegan, B. (2023). Addressing racial disparities in maternal and infant health outcomes through an antiracism curriculum. *Obstetrics and gynecology*, *141*(6), 1225. https://doi.org/10.1097/AOG.0000000000005187

Kenison, T.C., Madu, A., Krupat, E., Ticona, L., Vargas, I., Green, A.R. (2017). Through the veil of language: Exploring the hidden curriculum for patients with limited English proficiency. *Academic Medicine* 92(1), 92-100, https://doi.org/10.1097/ACM.0000000000001211

Mabeza, R. M., & Legha, R. K. (2023). Reimagining Medical Education Toward Antiracist Praxis. Health equity, 7(1), 598–602. https://doi.org/10.1089/heq.2023.0135

Mendizabal, A., Fan, J. H., Price, R. S., & Hamilton, R. H. (2021). Feasibility and effectiveness appraisal of a neurology residency health equities curriculum. *Journal of the Neurological Sciences*, *431*, 120040. https://doi.org/10.1016/j.jns.2021.120040

Mullett, T.A., Roohalamini, S.N., Gillam, C., McPhillips, H., & Grow, H.M. (2022). Description of a novel curriculum on equity, diversity, and inclusion for pediatric residents. Journal of National Medical Association, 113 (6) pp. 616–624. https://doi.org/10.1016/j.jnma.2021.05.014

Nguemeni Tiako, M. J., Rahman, F., Sabin, J., Black, A., Boatright, D., & Genao, I. (2022). Piloting web-based structural competency modules among internal medicine residents and graduate students in public health. *Frontiers in public health*, *10*, 901523. https://doi.org/10.3389/fpubh.2022.901523

Reed, L., Bellflower, B., Anderson, J. N., Bowdre, T. L., Fouquier, K.,
Nellis, K., & Rhoads, S. (2022). Rethinking nursing education and
curriculum using a racial equity lens. Journal of Nursing
Education, 61(8), 493–496. https://doi.org/10.3928/01484834-
20220602-02

Rogerson, C.V., Prescott, D.E., & Howard, H.G. (2022). Teaching social
work students the influence of explicit and implicit bias: promoting
ethical reflection in practice. *Social Work Education*, 41, (5), pp.
1035–1046. https://doi.org/10.1080/02615479.2021.1910652

Royce, C.S., Kang Morgan, H., Baecher-Lind, L., Cox, S., Everett, E.N.,
Fleming, A., Graziano, S.C., Sims, S.M., Morosky, C., Sutton, J.,
& Sonn, T. (2022). The time is now: addressing implicit bias in
obstetrics and gynecology education. American Journal of
Obstetrics and Gynecology, 228 (4), pp 369–381.
https://doi.org/10.1016/j.ajog.2022.12.016.

Ruben, M., & Saks, N. S. (2020). Addressing Implicit Bias in First-Year
Medical Students: A Longitudinal, Multidisciplinary Training
Program. Medical science educator, 30(4), 1419–1426.
https://doi.org/10.1007/s40670-020-01047-3
Rusiecki, J. M., Orlov, N. M., Dolan, J. A., Smith, M. P., Zhu, M.,
& Chin, M. H. (2023).

Exploring the Value of Improvisational Theater in Medical
Education for Advancing the Doctor-Patient Relationship and
Health Equity. Academic medicine: Journal of the Association of
American Medical Colleges, 98(6S), S46–S53.
https://doi.org/10.1097/ACM.0000000000005183

Schimmack, U. (2021). Invalid Claims About the Validity of Implicit
Association Tests by Prisoners of the Implicit Social-Cognition
Paradigm. *Perspectives on PsychologicalScience: A Journal of the
Association for Psychological Science, 16*(2), 435–442.
https://doi.org/10.1177/1745691621991860

Schultz, P. & Baker, J. (2017). Teaching strategies to increase nursing
student acceptance and management of unconscious bias. *Journal
of Nursing Education, 56*(11), 692-696.
https://doi.org/10.3928/01484834-20171020-1
Sterman, J., Njelesani, J., & Carr, S. (2022). Antiracism and
occupational therapy education: Beyond diversity and inclusion.

*Journal of Occupational Therapy Education, 6* (1).
https://doi.org/10.26681/jote.2022.060103

Sukhera, J., Watling, C.J., & Gonzalez, C.M. (2020). Implicit bias in
health professions: From recognition to transformation. *Academic
Medicine, 95*(5), 717–723.
https://doi.org/10.1097/ACM.0000000000003173

Thomas, B. & Booth-McCoy, A.N. (2020). Blackface, implicit bias, and
the informal curriculum: Shaping the healthcare workforce, and
improving health. *Journal of the National Medical Association,112
(5), 533–540.* https://doi.org/10.1016/j.jnma.2020.05.012

van Ryn, M., Hardeman, R., Phelan, S. M., Burgess, D. J., Dovidio, J. F.,
Herrin, J., Burke, S. E., Nelson, D. B., Perry, S., Yeazel, M., &
Przedworski, J. M. (2015). Medical school experiences associated
with a change in implicit racial bias among 3547 students: A
medical student CHANGES study report. *Journal of General
Internal Medicine*, *30*(12), 1748–1756.
https://doi.org/10.1007/s11606-015-3447-7

Venditto, V. J., & Colón, K. (2022). Promoting Cultural Humility by
Integrating Health Equity Literature into the Pharmacy
Curriculum. *Pharmacy (Basel, Switzerland)*, *10*(5), 116.
https://doi.org/10.3390/pharmacy10050116

**Bios**

**JOYVINA EVANS, PhD** is an Assistant Professor in the College of Nursing
and Allied Health Sciences at Howard University. Her research interests include
women's health, implicit bias, and health disparities. Email:
joyvina.evans@howard.edu

**SHANTERIA WATSON, OTD, OTR/L** is an Assistant Professor in the
Department of Occupational Therapy at Howard University. She is a licensed
pediatric occupational therapist with experience providing school, clinic-based,
and early intervention services to children and families from diverse
backgrounds. Her research focuses on improving health service access and
participation for minoritized children with autism and developmental disabilities

and supporting pathways for minoritized students in occupational therapy education. Email: Shanteria.carr@howard.edu

**TYRAH LACY, BS** is a medical student at Charles R. Drew University of Medicine and Science in California. She earned her Bachelor of Science in Health Sciences from Howard University.

**MYIAH STURDIVANT, OTD** is from Sicklerville, NJ, earned her B.S. in Exercise Science from Rowan University in 2021, where she also joined Alpha Kappa Alpha Sorority, Inc. In May 2025, Myiah completed her Doctor of Occupational Therapy degree at Howard University, pursuing her passion for healthcare and service through occupational therapy.