

# The Impact of Brief Health Equity/Implicit Bias Education on Patient-Centered Communication Among Clinical Teaching Faculty

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**Purpose:** A patient-centered approach to clinical care is related to improved outcomes. Patient -centered communication (PCC) includes eliciting the patient's agenda, active listening, partnering with patients and expressing empathy. Clinicians' implicit bias is associated with low quality PCC.

**Materials and Methods:** We explored whether brief health equity/implicit bias education improves academic clinicians' PCC and if implicit and explicit race and gender bias are associated with PCC improvement. This mixed methods online survey of clinical teaching faculty included tests of implicit and explicit race and gender bias, demographic and practice characteristics, a brief online health equity implicit bias educational intervention, and a pre-and-post course simulated clinical interaction using case vignettes. Emotional elements (empathy, reassurance, concern and partnering) of PCC were assessed to determine the impact of the course on PCC.

**Results:** Of 103 participants, 70.9% were female, 71.8% were White and 57.3% were MDs. We found that participants held moderate implicit bias favoring White People versus Black people (Cohen's  $d = 0.66$ ) and a strong implicit association of males rather than females with the concept of "career" (Cohen's  $d = 1.15$ ). Overall, brief implicit bias education did not significantly change participant PCC, however, early career clinicians and those who identified as medical doctors showed significantly greater post-course PCC improvement. Implicit and explicit bias were not associated with PCC scores.

**Conclusion:** The impact of brief health equity/implicit bias education may go beyond knowledge acquisition and influence PCC if tailored to a specific discipline and stage of career, regardless of clinicians' personal biases.

**Keywords:** implicit bias education, patient-centered communication, implicit bias, explicit bias, clinical teaching faculty

## Introduction

A patient-centered approach to clinical care is related to an increase in medical adherence, greater patient satisfaction, more clinician satisfaction, greater trust in the clinician, better recovery from illness, reduced patient anxiety, lower risks of death for patients with heart failure and improved quality of care.<sup>1-3</sup> Patients may experience lower quality interpersonal clinical interactions and clinician patient-centered communication (PCC) based upon their race, ethnicity, sexual orientation, gender, socioeconomic status and other characteristics.<sup>2,4</sup> PCC is a well-established construct and is comprised of a set of skills that aim to improve the clinician-patient relationship and patient care.<sup>5</sup> Important dimensions of PCC include overall process (time spent), partnership building, socioemotional exchange, and the emotional tone of the interaction.<sup>6</sup> Olson et al, 2021 highlight the important work of Stewart who identified six components of patient-centered communication; the patient experience, understanding the patient's world, finding common ground, disease prevention, have an ongoing patient-clinician relationship,

and realistic expectations.<sup>5</sup> Patient-centeredness can be applied to multi-level healthcare practices and policies through quality improvement mechanisms.<sup>7</sup> PCC skills at the individual clinical relationship level that signify emotional responsiveness include eliciting the patient's agenda, active listening, partnering with patients and expressing empathy.<sup>8-10</sup> Clinician empathy is associated with improved patient experience.<sup>11</sup> Emotional responsiveness includes expressions of empathy, reassurance, concern and partnering, all important components of PCC.<sup>10</sup>

Implicit bias in clinical interactions can contribute to disparities in interpersonal interactions and affect PCC.<sup>12</sup> Implicit bias is defined as "attitudes or stereotypes that affect our understanding, decision-making and behavior without our even realizing it."<sup>13</sup> Patient trust and satisfaction are reduced when clinicians hold strong implicit bias.<sup>14</sup> Cooper et al found that clinician implicit racial bias is associated with less patient-centeredness, less patient trust of the clinician, and patients' feeling less respected by their clinician.<sup>2</sup> Implicit bias of clinicians in racially discordant clinical interactions is associated with less PCC, and patients' having less confidence in treatment recommendations.<sup>15,16</sup> One study piloted an educational simulation and found that as clinician implicit race biased increased standardized patients rating of clinician communication decreased.<sup>17</sup>

Education for health care providers on health equity/implicit bias is prevalent and can be effective, but little is known about whether this education can have an effect on clinicians' PCC.<sup>18</sup> Helitzer et al found that brief communication training can have a positive and enduring impact on PCC.<sup>19</sup> To our knowledge, no prior studies have measured pre and post PCC after participants engaged in brief, online education in health equity/implicit bias education and improvement in PCC. Our research objective was to examine whether completing a brief online course on health equity/implicit bias in healthcare would impact clinicians' PCC. Our exploratory research questions were: 1. Does a brief health equity/implicit bias educational intervention affect clinicians' PCC?, and 2. Are the strength of clinic of clinician implicit and explicit biases associated with a pre-post course change in clinicians' PCC?

## Materials and Methods

### Study Sample

From August to December 2019, we recruited a sample of physicians (MDs/DOs), nurse practitioners (NPs), physician assistants (PAs) and "other" clinical teaching faculty in US academic medical institutions using public information from institutional websites. We chose to recruit clinical teaching faculty because the course was originally designed for medical clinical faculty who teach or mentor. Using the *Association of American Medical Colleges (AAMC) US Medical School Faculty by Medical School and Department Type, 2018*,<sup>20</sup> we chose four medical schools, two public and two private, two nursing schools within each of the nine US Census divisions, and 19 US PA programs, purposefully striving for geographic diversity. We identified publicly available emails on university/program websites by departments in three specialties providing primary care services (internal medicine, family medicine, gerontology) as well as emergency medicine and excluded individuals who did not have clinical credentials or faculty who were listed as research only. Because NP and PA subspecialty could not be determined, we invited all clinical faculty from these schools to participate. Our prospective participant Email list included 7,671 emails recruited from a total of 144 schools of medicine, nursing, and physician assistant, representing all nine US Census Divisions. Eligibility criteria included both direct patient contact and teaching or mentoring students/trainees. All participants completed the informed consent process ([Supplemental Information 1](#)). All participants engaged in the process of informed consent per University of Washington Human Subjects Division requirements. Because this was an online study with Email recruitment, to enter the study participants needed to read the consent form then click the following consent to participate- "I have read the Information Statement, and I wish to proceed."

Participants were offered a \$40.00 gift card and certificate of course completion as incentive. The University of Washington Institutional Review Board approved the study as minimal risk [IRB#00006878].

### Study Design

We invited study participants to complete a 40-minute online implicit bias course, *Implicit Bias in the Clinical and Learning Environment*, [[http://depts.washington.edu/somalt/implicitbias-pi/story\\_html5.html](http://depts.washington.edu/somalt/implicitbias-pi/story_html5.html)], which was previously developed as

a foundational course for academic clinicians who teach or mentor by a team of educators and clinicians at the University of Washington that included two authors (JS, LM). We collected demographic information via survey ([Supplemental Information 2](#)) and pre- and post-course measures of PCC. The course is described in detail in a prior publication, which found that participants bias awareness increased after engaging in the course.<sup>21</sup> The course was delivered online, which created a safe learning environment and, due to the demands on clinicians' time, was purposefully designed to be completed within 40-minutes. Course content included: the history of racism in medicine, extensive information about the social determinants of health and health inequities, evidence of discrimination in healthcare, the science of implicit bias, understanding implicit bias as a normal phenomenon, evidence on how implicit bias manifests in the learning environment and clinical practice, and strategies to mitigate the impact of bias in the learning environment and on patient care. The course had three core learning objectives: 1. Define implicit bias and how it is manifested in health care, 2. Recognize how implicit bias may be operating in the clinical setting and learning environment, and 3. Apply strategies that can be used to minimize impact of implicit bias in healthcare.

## Study Implementation

Participants completed a single-session study implemented by Project Implicit Research Web Services (<https://www.projectimplicit.net/>) which enabled participants to move through the study in a seamless and uninterrupted manner. The study measures were presented in the following sequence: the Race Implicit Association Test (IAT), Gender IAT (order randomized), one case vignette role play (diabetes), bias awareness measures, the course, explicit race and gender explicit measures, a second case vignette role play (heart failure), and bias awareness measures. For the case vignette role play, participants responded to written patient dialog by writing their verbal response to the patient dialog in a text box. Patient race (White, Black) and gender (Male, Female) in the case vignettes were randomized across clinicians.

## Demographic and Practice Characteristics

Demographic information included age, sex assigned at birth, gender identity, ethnicity, and self-identified race. Practice characteristics included area of practice and degree, years in practice, years in position, number of patients per week, direct patient contact hours, as well as questions about continuing education.

## Implicit Measures

We measured participant implicit race and gender bias using the Race IAT and the Gender-Career IAT; race and gender are two areas with known disparities in healthcare.<sup>22</sup> ([Supplemental Information 3](#) Implicit Association Tests) The Race IAT measures implicit attitudes toward Black People and White People and the Gender-Career IAT measures implicit stereotypes associated with gender and career versus family. The IAT is a widely used, indirect measure of implicit social cognition that measures the relative strength of positive and negative associations toward one social group compared with another. The IAT asks test takers to quickly sort and pair facial images of two target concepts (ie, Black People and White People) and words that represent “good” or “bad” as they appear on a computer screen. The difference in the time it takes to sort and pair these images and words, measured in milliseconds, demonstrates the strength of their association. The Gender-Career IAT measures gender stereotypes using the target concepts of “male” versus “female” and “career” versus “family.” The IATs in this study were designed by scientists at Project Implicit ([implicit.harvard.edu](http://implicit.harvard.edu)) according to best practices for IAT development.<sup>23</sup> In this study, we used the IATs and corresponding explicit questions for the purpose of measurement and did not provide personal feedback.

## Explicit Measures

We used standard explicit measures that correspond with IAT measures.<sup>24</sup> The explicit measure for the Race IAT was “Which statement best describes you?” using a 7-point scale. *I strongly/moderately/slightly prefer Black People to White People. I like Black People and White People equally. I slightly/moderately/strongly prefer White People to Black People.* For the Gender IAT, we used two separate similar explicit measures that corresponded with the target concepts of “gender-career” and “gender-family.”

## Case Vignette Development

To measure characteristics of PCC related to emotional responsiveness within a clinical interaction, we used two case vignettes that were publicly available that portrayed a case of uncontrolled diabetes and a case of heart failure, each imbued with mild patient non-adherence and difficulties in following a treatment plan due to social circumstances.<sup>25</sup> ([Supplemental Information 4](#). Pre-course Case Vignettes, [Supplemental Information 5](#)., Post-course Case Vignettes). For example, patient dialog:

Everything has gotten worse in the last few days – not sleeping, not breathing right. And my life is being taken over by drugs. I have to take so many every day. I live on my own, Doctor, my husband died last year, and my daughter lives in another state. It's not easy, you know?

Another example:

Well, if I'm honest, I'm not sure that my employer would be happy knowing that I'm diabetic. He doesn't like people to take more breaks than they need to, and he doesn't like it when people get sick. I don't want him to think about me as someone who's goin' to get sick all the time.

Two physician advisors designed the vignettes and usability testing was conducted with two community physicians with several years of practice and four resident physicians. Clinical experts further reviewed the cases to ensure that they were relevant, and believable. In addition, community members of the groups portrayed reviewed the case vignettes for accuracy, relevance, and sensitivity.

## Simulated Clinical Interaction Role Play

To simulate a clinic visit and mimic verbal communication, each case role play was presented online in text format with a patient description and photo. Patient dialog was provided in text form and after each patient statement, study participants were asked, "What would you say next?" Participants wrote their response in a text box. Two case vignettes representing four patient groups—Black Female, White Female, Black Male, and White Male—were assigned at random, with all participants engaging in the uncontrolled diabetes case pre-course and the heart failure case post-course, depicting one of four conditions—Black female, White female, Black male, and White male—assigned at random.

## Measuring Patient Centered-Communication in Case Vignettes

We coded the pre- and post-course case vignettes for PCC by identifying clinicians' statements demonstrating four socio-emotional categories of the Roter Interaction Analysis System (RIAS),<sup>26</sup> specifically, showing, 1. *Concern, worry*, 2. *Reassurance, encouragement, optimism*, 3. *Empathy*, or 4. *Partnership*, a subset of provider talk codes previously used in research to signify clinician "emotional responsiveness."<sup>10,27</sup>

## Patient-Centered Communication Ratio Score

We developed a PCC ratio score for each interaction to identify PCC talk versus medical and other talk such as greetings using the total number of responses in each vignette that were coded as emotional responsiveness, divided by the total number of possible participant responses in that vignette (minus any missing responses). For example, if a participant responded using a PCC statement to 4 of the 11 possible participant responses in the heart failure case, this demonstrated that 36% of the communication in the case vignette was patient-centered. A similar coding scheme identifying presence of PCC talk versus other talk has been used by others in research.<sup>27</sup>

## PCC Pre-Post Difference Score

To determine the PCC Pre-Post Difference Score, we calculated the difference between the PCC ratio score from the pre-intervention case vignette and the PCC ratio score from the post-intervention case vignette [Post PCC ratio score – Pre-PPC ratio score] = PCC Pre-Post Difference score.

## Analysis

We used descriptive statistics (means, standard deviations, and frequencies) to characterize the sample. We used ANOVA, t-tests, to determine PCC change across participants and associations with participant demographic, practice characteristics, and calculated Pearson product-moment correlations ( $r$ ) to determine the association of implicit and explicit bias measures with PCC change. For the implicit measures, we calculated the IAT score according to the standard IAT scoring algorithm coded from  $-2$  to  $+2$ , centered on zero (no bias).<sup>28</sup> Explicit measures were recoded from  $1-7$  to center on zero (no preference), with a score ranging from  $-3$  to  $+3$ , centered on zero (no bias). To determine standardized effect size for implicit and explicit measures we use Cohen's  $d$  [ $M - (M = 0)/SD$ ]. A value of  $d = 0.2$  is considered a "small" effect size,  $d = 0.5$  a "medium" effect size, and  $d = 0.8$  a "large" effect size.<sup>29</sup> We conducted statistical analyses using SAS (version 9.4; Cary, NC: SAS) and IBM SPSS Statistics for Macintosh (version 26.0, Armonk, NY: IBM Corp).

## Case Vignette Dialogue Qualitative Analysis

First, study team members (JS, GG, RW) independently coded a subset of 10 participant cases. For each case vignette participant dialog entry, coders assigned a "0" if the statement did not exhibit one of our four PCC communication components. Examples of "0" statements included a simple greeting or medical information. If one of the four patient-centered components of emotional responsiveness was identified, it was coded 1-4, with final analysis using 0, and collapsing 1-4 to 1 representing any PCC statement. Team members engaged in an iterative process of reviewing, refining, and finalizing codes. Overall, interrater reliability between coders ranged from 89.47% to 100%. If there was disagreement, the code given by two of three reviewers was used.

## Results

### Sample

Of 103 participants, 73 (70.9%) were female, 74 (71.8%) White, and 59 (57.3%) identified their discipline as MD, 22 NP (21.4%), 0 PA and 22 (21.4%) as "other." (Table 1). Distribution of participants from the four US Census Regions were as follows: Northeast  $n = 22$  (21.2%); Midwest  $n = 20$  (19.4%); South  $n = 43$  (41.8%); and West  $n = 18$  (17.5%).

**Table 1** Participant Characteristics (N = 103)

	<b>N (%)</b>
<b>Age</b>	
30-39	36 (35.0)
40-49	28 (27.2)
50-59	23 (22.3)
60+	16 (15.5)
<b>Gender</b>	
Male	30 (29.1)
Female	73 (70.9)
<b>Ethnicity</b>	
Hispanic or Latino	8 (7.8)
Not Hispanic or Latino	95 (92.2)

(Continued)

**Table 1** (Continued).

	<b>N (%)</b>
<b>Race</b>	
White	74 (71.8)
Black	9 (8.7)
Asian	12 (11.7)
Mixed/Other	8 (7.8)
<b>Practice Area</b>	
Physician (MD/DO)	59 (57.3)
Nurse Practitioner (NP)/Physician Assistant (PA)	22 (21.34)
Other (Registered Nurse, Clinical Nurse Educator, other)	22 (21.4)
<b>Region</b>	
Northeast	22 (21.34)
Midwest	20 (19.4)
South	43 (41.8)
West	18 (17.5)
<b>System Type</b>	
Academic Healthcare System	76 (74.5)
Community Healthcare System	19 (18.6)
Other	7 (6.8)
<b>Continuing Education Diverse Populations</b>	
Yes	69 (66.3)
No	34 (33.7)
<b>Continuing Education Gender Equity</b>	
Yes	58 (56.3)
No	45 (43.7)
	<b>Mean (SD)</b>
Years in Practice	18.72 (12.27)
Years Current Position	8.31 (7.74)
Number of Patients/Week Direct Clinical Contact	20.58 (10.97)

**Abbreviation:** SD, Standard Deviation.

## Race and Gender Implicit Measures

Overall, we found moderate implicit bias favoring White People versus Black People on the Race IAT (Cohen's  $d = 0.66$ ). (Table 2) There was a difference in Race IAT scores by participant race, with Black participants implicitly favoring Black People over White People, with other racial categories favoring White People over Black People ( $p < 0.001$ ). There were no differences in Race IAT scores by any other participant characteristics (an in-depth analysis of scores can be found in a prior

**Table 2** Participant Implicit and Explicit Bias Measures (N = 103)

	<b>M (SD)<sup>a</sup></b>	<b>Cohen's <i>d</i><sup>b</sup></b>
Implicit Race	0.29 (0.44)	0.66
Implicit Gender	0.38 (0.33)	1.15
Explicit Race	0.02 (0.75)	0.03
Explicit Career	0.64 (0.98)	0.65
Explicit Family	-0.85 (1.01)	0.76

**Notes:** <sup>a</sup>Implicit measures range from -2 to +2, and explicit measures range from -3 to +3, both centered on "0". A positive implicit mean score favors White People and associates male with. A negative score on the explicit measure favors female with family. <sup>b</sup>Cohen's *d* effect size values are interpreted as follows: *d* = 0.2, small effect; *d* = 0.5, medium effect; and *d* = 0.80, large effect, (Cohen, 1988) Cohen's *d* compares the implicit and explicit measure means to the mean of "0", divided by the standard deviation.

**Abbreviation:** SD, Standard Deviation.

report from the same study).<sup>21</sup> We found strong implicit bias associating males rather than females with "career" on the Gender-Career IAT (Cohen's *d* = 1.15). There was no significant difference in Gender-Career IAT by participant gender.

## Race and Gender Explicit Measures

Participants showed no explicit race bias (Cohen's *d* = 0.03). (Table 2) Males rather than females were explicitly associated with "career" and females rather than males with "family" (Cohen's *d* = 0.65 and Cohen's *d* = 0.76, respectively) (Table 2).

## Pre and Post Patient-Centered Communication (PCC)

Participants remained in character for the duration of the clinical interaction role play, with 97.2% responding throughout with dialog as though they were communicating with an actual patient ("Mr. Johnson, I think we should..."). Overall, the difference in pre-post PCC was not significant (PCC mean difference score = 0.03, SD = 0.02, *p* = 0.06). We found significant differences in PCC improvement (PCC pre-post difference score) by participant age (PCC mean difference score = 0.10, SD = 0.20 for participants age 30–39, compared to other age groups which showed less or no improvement, *p* = 0.026), with the youngest participants showing greatest improvement. We found that MDs showed the greatest improvement compared to NPs/PAs and "others" (PCC mean difference score = 0.08, SD = 0.19, compared to NP/PAs showing no improvement and others showing slightly reduced PCC scores, *p* = 0.008). (Table 3).

## PCC Difference by Implicit and Explicit Measures

We explored whether implicit and explicit measures of race and gender bias were associated with Pre-Post PCC change as the result of engaging in the course. (Table 4). There was no significant correlation between the PCC difference score and implicit and explicit race and gender bias measures. We found a significant association between implicit race and gender bias (*r* = 0.26, *p* < 0.01), suggesting that an individual with implicit bias in one area may have implicit bias in another area. We found a significant weak association between implicit race bias and explicit race bias (*r* = 0.21, *p* < 0.05) demonstrating that implicit and explicit race attitudes are related but distinct constructs. Implicit and explicit gender biases were weakly associated (*r* = 0.21, *p* < 0.05) showing that they are related but distinct constructs.

**Table 3** Pre-Post Change in Patient-Centered Communication (PCC) by Participant Characteristics (N = 103)

	<b>N</b>	<b>Pre-Course PCC Ratio<sup>a</sup> (%) Score Mean (SD)</b>	<b>Post-Course PCC Ratio<sup>a</sup> (%) Score Mean (SD)</b>	<b>PCC Ratio Difference [Post-Pre] Score<sup>b</sup> Mean (SD)</b>	<b>P<sup>c</sup></b>
Overall	103	0.23 (0.15)	0.27 (0.18)	0.03 (0.02)	0.06
<b>Age</b>					
30-39	36	0.23 (0.14)	0.33 (0.18)	0.10 (0.20)	0.026*
40-49	28	0.25 (0.13)	0.29 (0.14)	0.04 (0.16)	
50-59	23	0.23 (0.17)	0.21 (0.21)	-0.02 (0.16)	
60+	16	0.22 (0.16)	0.18 (0.14)	-0.05 (0.17)	
<b>Gender</b>					
Female	73	0.24 (0.14)	0.27 (0.17)	0.03 (0.18)	0.661
Male	30	0.22 (0.17)	0.27 (0.19)	0.05 (0.20)	
<b>Ethnicity</b>					
Hispanic or Latino	8	0.19 (0.16)	0.28 (0.21)	0.08 (0.15)	0.438
Not Hispanic or Latino	95	0.24 (0.14)	0.27 (0.18)	0.03 (0.19)	
<b>Race</b>					
White	74	0.24 (0.15)	0.28 (0.19)	0.04 (0.19)	0.387
Black/African American	12	0.24 (0.16)	0.22 (0.15)	-0.02 (0.20)	
Asian	9	0.18 (0.12)	0.30 (0.11)	0.12 (0.18)	
Mixed/Other	8	0.18 (0.12)	0.19 (0.11)	0.01 (0.08)	
<b>Practice Area</b>					
Medical Doctor	59	0.22 (0.15)	0.30 (0.18)	0.08 (0.19)	0.008**
Nurse Practitioner/Physician Assistant	22	0.23 (0.13)	0.24 (0.15)	0.01 (0.13)	
Other	22	0.27 (0.16)	0.21 (0.19)	-0.06 (0.19)	
<b>Region</b>					
Northeast	22	0.26 (0.16)	0.30 (0.21)	0.03 (0.15)	0.506
Midwest	20	0.27 (0.14)	0.29 (0.20)	0.02 (0.24)	
South	43	0.21 (0.13)	0.27 (0.16)	0.06 (0.18)	
West	18	0.21 (0.14)	0.20 (0.13)	-0.01 (0.17)	
<b>System Type</b>					
Academic Healthcare	76	0.22 (0.14)	0.27 (0.16)	0.05 (0.18)	0.679
Community Healthcare	19	0.27 (0.15)	0.27 (0.22)	0.004 (0.22)	
Other	7	0.24 (0.16)	0.27 (0.22)	0.04 (0.09)	

(Continued)

**Table 3** (Continued).

	N	Pre-Course PCC Ratio <sup>a</sup> (%) Score Mean (SD)	Post-Course PCC Ratio <sup>a</sup> (%) Score Mean (SD)	PCC Ratio Difference [Post-Pre] Score <sup>b</sup> Mean (SD)	P <sup>c</sup>
Continuing Education Diverse Populations					
Yes	69	0.23 (0.15)	0.27 (0.16)	0.04 (0.18)	0.792
No	34	0.24 (0.14)	0.26 (0.21)	0.03 (0.20)	
Continuing Education Gender Equity					
Yes	45	0.25 (0.15)	0.28 (0.18)	0.03 (0.20)	0.935
No	58	0.22 (0.14)	0.26 (0.18)	0.04 (0.17)	

**Notes:** \* Denotes a *p*-value at <0.05. \*\* Denotes a *p*-value at <0.01. <sup>a</sup>Patient Centered Communication (PCC) Score: Ratio of provider PCC dialog in a simulated clinical interaction vs other talk <sup>b</sup>Patient Centered Communication Difference Score: [Post PCC-Score – Pre PCC-Score] <sup>c</sup>ANOVA, Value = 0. **Abbreviation:** SD, Standard Deviation.

**Table 4** Implicit and Explicit Bias and Patient-Centered Communication Change Correlation (n = 103)

	PCC Difference Score	Implicit Race	Implicit Gender	Explicit Race	Explicit Gender (Career)	Explicit Gender (Family)
PCC Difference Score	1.00					
Implicit Race	-0.32	1.00				
Implicit Gender	-0.14	0.26**	1.00			
Explicit Race	-0.11	0.21*	0.04	1.00		
Explicit Gender (Career)	0.66	0.03	0.21*	0.76	1.00	
Explicit Gender (Family)	-0.20	-0.01	-0.14	-0.21*	-0.43**	1.00

**Note:** Pearson Product Moment Correlation, \* Denotes a *p*-value at <0.05. \*\* Denotes a *p*-value at <0.01.

## Examples of Participant Communication

Examples of quotes from participants' communication that convey empathy, concern, reassurance, and partnership are found in [Box 1](#).

**Box 1** Paraphrased Examples of Patient-Centered Communication: Empathy, Reassurance, Concern, Partnership

Paraphrased Response to a Patient Statement
<b>Empathy Statements</b>
<ul style="list-style-type: none"> <li>• This is a lot to take on.</li> <li>• I know that these are very challenging issues.</li> <li>• I would be worried about that too.</li> <li>• Yes, I get that it is difficult to check your glucose at work.</li> <li>• Any of us would be overwhelmed. Let us try to simplify your medications.</li> </ul>
<b>Reassurance</b>
<ul style="list-style-type: none"> <li>• I agree, it's really important to work at getting stronger.</li> <li>• I want to reassure you that we can work together on managing your diabetes.</li> <li>• Thank you, it was great to hear about your concerns today.</li> <li>• It's clear you are trying to take care of yourself by taking your insulin regularly.</li> <li>• You are struggling but give yourself credit for working hard to manage your diabetes and weight.</li> </ul>

(Continued)

**Box 1** (Continued).

<p><b>Shows Concern</b></p> <ul style="list-style-type: none"> <li>• I am concerned about you.</li> <li>• I would like to help you as much as possible.</li> <li>• There are some things we cannot change but let us find some things that we can.</li> <li>• Perhaps we can help with your home situation so that you can better manage your health.</li> <li>• I am worried about your heart function, which is affecting your breathing.</li> <li>• I am worried that you may be feeling overwhelmed or depressed.</li> <li>• I am worried about your heart function and that you have not been taking the water pills.</li> </ul>
<p><b>Partnership Statements</b></p> <ul style="list-style-type: none"> <li>• It's clear that you are working really hard on your health and we can continue to work together so that you feel better.</li> <li>• Let us develop a plan to manage your medications.</li> <li>• Hi Jennifer, let's discuss your health goals and work on a plan together.</li> <li>• Let us work together to monitor your numbers and go from there.</li> </ul>

## Discussion

Our study found that there were two groups that showed significant improvement in PCC following the course compared to other participants; early career participants and those who were Doctors of Medicine (MD). We explored whether the course content which aimed to increase awareness of social determinants of health, health inequities among populations, implicit bias as a human condition, and strategies to overcome the impact of bias would motivate clinicians to express greater concern, reassurance, empathy, and partnership dialog (greater patient-centeredness) in clinical conversations and it did for early career clinicians and MDs. Although implicit bias education has previously been shown to have a positive effect on health care workers' knowledge, attitudes and skills in the ability to identify bias,<sup>18</sup> to our knowledge this is the first study to measure the impact of health equity/implicit bias education, and clinician implicit and explicit attitudes and beliefs on clinician PCC. A review article of implicit bias training, a field in its "early state", found gaps in evaluation of implicit bias education and no studies that evaluated communication behaviors.<sup>30</sup>

Research has found that early-career clinicians need to improve their skills, have less confidence in their communication skills and do not yet have the insight that time in practice confers incorporated into their own PCC competencies.<sup>31</sup> Additionally, early career clinicians may have had more prior exposure to health equity/implicit bias education throughout their training, may have gleaned more from the educational experience than those with many years in practice. A better understanding of uptake of health equity/implicit bias education in relation to stage of clinical career is a topic in need of further study.

Following the course, improvement in PCC was significantly greater for MDs than for participants in other areas of practice. The course was designed by and for medical school faculty, therefore the information in the course may have been more relevant to MDs' practice and settings compared to those in other disciplines. Although specific PCC skills were not taught in the course, learning about how implicit bias in the clinical and learning environment is manifest in patient care may have motivated early career and MD participants to be more attentive to being patient-centered in their communication in the post-course role play. While approaches to health equity/implicit bias education may be generalizable, it appears to be most effective when educational content is discipline specific. Research has found that for new communication skills to be implemented in clinical practice, continuing education should be routinized, institutionalized, and rewarded.<sup>32,33</sup>

We expected that there may be an association between strength of biases and uptake of course content which might affect PCC, however implicit and explicit race and gender biases were not associated with PCC improvement, suggesting that all can benefit from health equity/implicit bias education regardless of their biases.

## Limitations

Our study has several limitations. Our sample is not representative of all academic clinicians who teach. Participants who chose to complete this one-hour study on implicit bias in healthcare are likely highly interested and engaged in the topic; therefore, our findings may not generalize to all clinicians. There are similarities and differences between racial and gender characteristics of our sample compared to the US primary care provider population (see [Supplementary Table 1](#) from our previous report and [Supplemental Information 6](#)).<sup>21</sup> Overall, our sample held implicit race bias that is similar to other samples of clinicians and the public.<sup>9</sup> Provider communication in a simulated clinical interaction role play does not necessarily reflect communication in real-world settings, participants may have been using their best possible communication skills in this simulation rather than how they would communicate in a busy clinic. Another limitation is that our method of written dialog prompted by asking, “What would you say next?” gave participants the opportunity to be deliberate and may have not captured automatic implicit bias-driven behavior.

## Conclusion

Brief health equity/implicit bias education resulted in an increase in PCC (measured by participants’ written response to a series of patient dialog and the question, “What would you say next?”) among early career academic clinicians and MDs. In this sample of academic clinicians who teach, the strength of their implicit and explicit biases was not associated with PCC improvement, suggesting that health equity/implicit bias education can have an impact on PCC, regardless of personal biases. Future health equity/implicit bias education for clinicians should be tailored to clinician needs, knowledge level, discipline and stage of career.

## Data Sharing Statement

Due to ethical and security reasons and the need to protect data and participant privacy, we are not able to publicly share the data because we do not have adequate consent from our participants. In the case of this study, even deidentified transcripts may be identifiable because of specific examples (eg, specific actions participants reported) and contexts (setting specific information, etc.) participants shared, thus confidentiality may not be protected. Violation of confidentiality is of particular concern in this study due to the sensitive information that participants shared. For example, if a participant were identified, this could result in penalties. This study was approved by the University of Washington Institutional Review Board. For queries related to ethics of data access, contact Marya Kinsler from the UW IRB at 206-543-0471 or [maryaj@uw.edu](mailto:maryaj@uw.edu). Please contact Drs. Sabin ([sabinja@uw.edu](mailto:sabinja@uw.edu), or Bianca Frogner ([bfrogner@uw.edu](mailto:bfrogner@uw.edu)) to discuss with researchers replication of the study.

## Ethics

The University of Washington Institutional Review Board approved the study as minimal risk [IRB#00006878]. All participants engaged in the process of informed consent per University of Washington Human Subjects Division (HSD) requirements. Because this was an online study with Email recruitment, to enter the study participants needed to read the consent form then click the following consent to participate – “I have read the Information Statement, and I wish to proceed.” In addition, UW HSD and the UW IRBs draw upon a variety of ethical codes, such as the Declaration of Helsinki, the Council for International Organizations of Medical Sciences (CIOMS) and the International Council for Harmonization (ICH) when developing policies. This study complies with the Declaration of Helsinki.

## Acknowledgments

We would like to acknowledge Rachel Wittenauer’s work, [University of Washington] on assisting with coding of the case vignettes, and Dr. Debra Roter [Johns Hopkins University] for consultation on use of RIAS categories. We would like to acknowledge and thank our study participants. The abstract of this paper was presented at the 2024 Academy Health, Annual Research Meeting (ARM), June 29, 2024–July 2, 2024, as a poster presentation with interim findings. The poster’s archived abstract is available on the 2024 Academy Health ARM meeting website. <https://academyhealth.confex.com/academyhealth/2024arm/meetingapp.cgi/Paper/65571>

## Funding

This publication was supported by the Health Resources and Services Administration (HRSA) of the US Department of Health and Human Services (HHS) as part of award 6 U81HP32114-04-02, totaling \$594,466 with zero percentage financed with non-governmental sources.

## Disclosure

The authors have no relevant financial or non-financial interests to disclose for this work.

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