



Feasibility of an Antiracism Curriculum in an Academic Pulmonary, Critical Care, and Sleep Medicine Division

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ABSTRACT

Background: Structural health inequities and racism adversely affect patient health and the culture of academic medicine. Formal training to educate fellows and faculty on antiracism is lacking.

Objective: Our objective was to design, implement, and assess the feasibility and preliminary efficacy of a year-long antiracism curriculum within a pulmonary, critical care, and sleep medicine division.

Methods: This was a pre- and postintervention observational study conducted between July 2020 and June 2021. The curriculum was offered during an allotted educational meeting time slot at a single-center pulmonary, critical care, and sleep medicine division at a large academic institution to fellows and faculty. The curriculum consisted of 13 1-hour virtual interactive workshops delivered by local experts in diversity, equity, and inclusion topics. Surveys assessed knowledge on racism in medicine; opinions, understanding, and comfort surrounding race and racism in medicine; as well as additional questions to solicit feedback on the curriculum itself via visual analog scale and write-in comments.

Results: Before initiating the curriculum, 74% ($n = 28$) of respondents reported interest in an antiracism curriculum, and the majority (95%, $n = 36$) believed that discrimination affects medical staff and patients. Respondents reported only moderate comfort in talking about race (median, 58; interquartile range 41–70 on visual analog scale 0–100, where 100 is strongly agree with “I feel comfortable talking about race”). The postintervention survey demonstrated stability of the belief of the presence of racial discrimination and a 15% increase in self-directed learning about related topics. Although knowledge related to the use of race in medical algorithms improved, 14% fewer participants reported interest in continuing to engage in a division-wide structured antiracism curriculum.

Conclusion: Implementation of a curriculum on justice, equity, diversity, and inclusion within a fellowship program is feasible and addresses an unmet need within graduate medical education.

Keywords:

racism; diversity; equity; graduate medical education

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Racism, bias, and health inequities are significant barriers to patient care and contribute to poorer health among patients from racially and ethnically minoritized groups across a wide range of conditions, including pulmonary disease, critical care, and sleep disorders (1–7). Racism is embedded in U.S. history and the history of modern medicine. Despite this legacy, academic medicine has been passive about addressing this history and the negative effects of racism on the health of our citizenry (8). For example, until recently, most health disparities research focused on the search for biological differences to explain higher rates of disease among racially minoritized groups, rather than investigating how institutionalized, systemic, interpersonal, and internalized racism contribute to worse health outcomes among these patients (6, 9–12).

Racism impacts the day-to-day practice of pulmonary, critical care, and sleep medicine (PCCSM) on multiple levels. For instance, the use of race variables in pulmonary function test algorithms that are rooted in the American slave trade is an example of institutionalized racism (13), and delays in lung cancer screening and treatment in

marginalized groups highlight systemic barriers to health equity (14). Prolonged exposure to racism may be internalized and lead to worse outcomes for Black and Hispanic patients with chronic diseases such as asthma and insomnia (2, 11). In 2020, the American healthcare system began confronting the coronavirus disease (COVID-19) pandemic and its disproportionate effects on Black and Hispanic communities, while at the same time events steeped in anti-Black racism escalated across the country, often with deadly consequences. These parallel crises intensified awareness of the need for antiracism education for members of the healthcare workforce, including at our institution, where our fellows advocated for educational activities for faculty and trainees about racism and health disparities.

This report describes our experience piloting a year-long antiracism curriculum that focused on individual, institutional, and systemic racism in a PCCSM division in a large tertiary care center. We assessed feasibility as well as the preliminary efficacy of the curriculum in changing attitudes and self-efficacy and for improving knowledge about racism in medicine and health disparities.

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This work was presented at the 2021 Association of Pulmonary and Critical Care Medicine Program Directors Conference (15).

METHODS

Study Setting and Participants

This was a pre- and postintervention observational study. The curriculum was implemented in the Division of PCCSM at Brown University. Participants in the curriculum were division faculty members ($n = 41$) and pulmonary and critical care fellows ($n = 12$). The curriculum started in July 2020, and the lectures were announced to the division through e-mails and during division-wide conferences. Division and fellowship leaders strongly encouraged all division members to attend the sessions. Members of the Justice Equity Diversity and Inclusion (JEDI) committee (three faculty and three fellows) who helped create the curriculum were excluded from the study. Of note, in 2019 all division faculty participated in Bias Reduction in Internal Medicine, an implicit bias training created by Dr. Molly Carnes at the University of Wisconsin (16). In addition, one faculty member on the JEDI committee had antiracism training as part of the Brown Advocates for Social Change and Equity program (17). This study was approved by the Lifespan Institutional Review Board (#1634342).

Precurriculum Assessment

We invited fellows and faculty to complete an electronic precurriculum survey to assess interest in an antiracism curriculum, current knowledge on racism in medical practice, and comfort with discussing and identifying racism (*see* Figure E1 in the data supplement). We developed the survey in REDCap, a secure online database, and leveraged REDCap's survey

distribution tools to send unique links to participants (18). This distribution approach enabled us to link each participant's precurriculum responses with their postcurriculum responses (postcurriculum assessment described further below). The survey included questions about level of training and years in practice but intentionally left out other demographic identifiers to protect confidentiality given the small sample size. To maximize participation, potential participants received the initial survey invitation and a maximum of three reminders. The survey questions were developed by the authors and included 31 questions adapted from an open-access assessment created by Living Cities, a New York-based network of foundations and financial institutions dedicated to addressing race-based income and wealth gaps in urban areas (19). The survey included questions on experience and competency in identifying racism, perceptions regarding institutional support to address racism, and individual experiences discussing or addressing racism. Additional survey questions were designed by study authors with expertise in antibias training to ask about clinical tools used in the field of pulmonary and critical care medicine and to specifically elicit feedback on the curriculum.

The Antiracism Curriculum

The curriculum was developed by the JEDI committee to address knowledge gaps identified in the planning stages and in response to needs expressed in the precurriculum assessment. Our goal for the curriculum was to provide foundational knowledge about racism in medicine, including topics specific to PCCSM, and improve comfort in discussing racism. Acknowledging that the target audience had varying amounts of

previous exposure to antiracist didactic content, the committee began with foundational concepts when planning the curriculum. We also sought content that addressed how health disparities and institutionalized racism may impact health conditions specific to pulmonary medicine. Sessions were led by guest lecturers who were content experts, including a medical student and a resident who had antiracism expertise and training in leading diversity, equity, and inclusion workshops. Session leaders received an honorarium, provided by the PCCSM division and Department of Medicine.

The curriculum consisted of 13 1-hour sessions over the course of the academic year and varied in both topic and format (Figure 1). To facilitate attendance, the sessions were scheduled during an existing didactic timeslot and were delivered via the video-conferencing application, Zoom; this also allowed us to comply with in-person meeting restrictions due to the

COVID-19 pandemic. All sessions were recorded for educational purposes.

Postcurriculum Assessment

We administered a postintervention curriculum survey, which contained the same knowledge questions, to assess changes in perception, understanding, and comfort surrounding race and racism in medicine as well as additional questions to solicit feedback on the curriculum itself.

Statistical Analysis

All analyses were conducted in Stata version 17.0 (StataCorp LP). Counts (percentages) and medians (interquartile range) of examined variables are presented. We performed bivariable analyses to assess the distribution of respondent characteristics and self-appraised interest, knowledge, and comfort by curriculum status (pre or post). We subsequently used generalized estimating equation models to evaluate the differences between pre- and postcurriculum self-appraisal of interest,

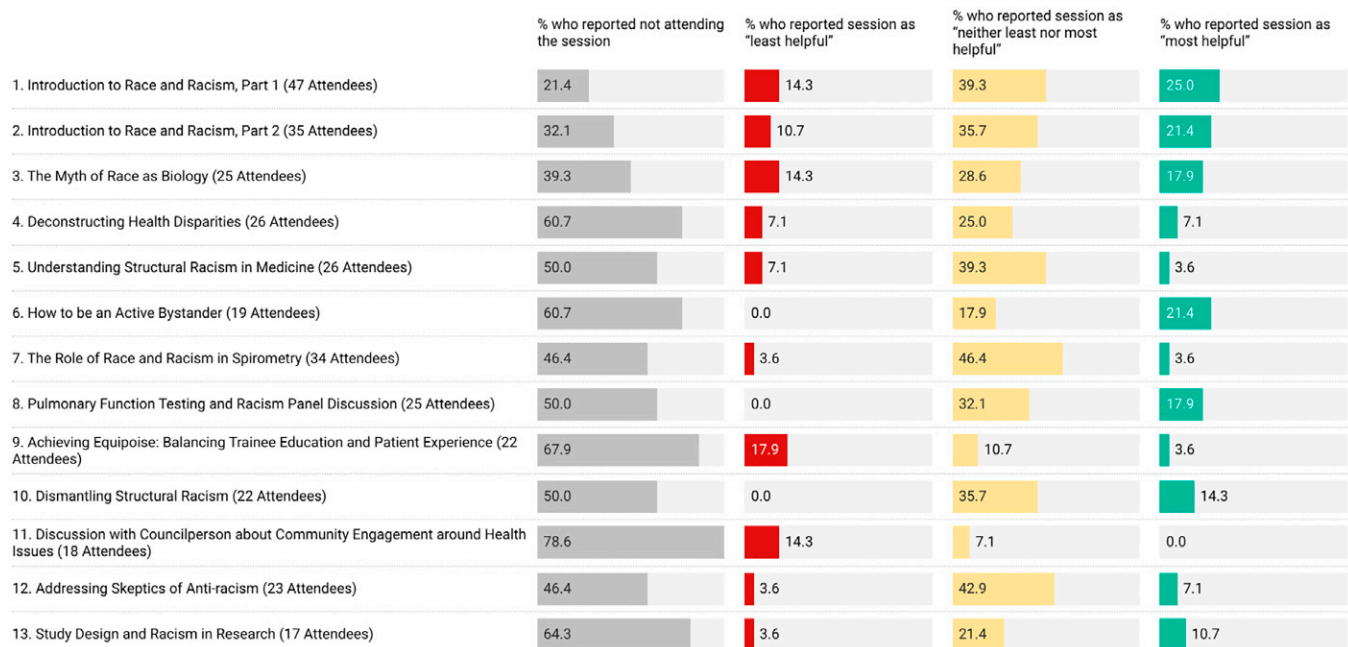


Figure 1. Outline of the curriculum schedule, video conference attendance by topic, and the self-reported session attendance and utility appraisal in 28 postcurriculum assessment survey respondents.

knowledge, and comfort. Applying generalized estimating equation models enabled us to use all available data for each participant regardless of whether or not they participated in both the pre and post surveys and to take into account within-participant correlation of data (i.e., the correlation of one's pre data with their own post data). Risk ratios and 95% confidence intervals (CIs) were estimated for dichotomous variables by specifying Poisson distribution, log link, and robust standard errors.

RESULTS

Precurriculum Assessment

A total of 27 out of 41 faculty members and 11 out of 12 fellows responded to the precurriculum survey, yielding an overall response rate of 72%.

Attitudes about racism in medicine. On questions about the impact of racism in health care, the majority of participants acknowledged that racism occurs in medicine and has consequences for medical providers, staff, and patients alike (Table 1). Of those who agreed with the statement that racism directed toward patients occurs, 83% ($n = 30$) agreed that it has significant consequences for patients.

Interest in antiracism training. With respect to the need for antiracism training, the majority (74%, $n = 28$) of respondents reported wanting a structured curriculum. Most respondents (66%, $n = 25$) had actively sought out education regarding race in medical decision making, research, and patient care, and most had participated in activities to learn how to advance racial equity (76%, $n = 29$) before implementation of the JEDI curriculum.

Knowledge-based questions. Most participants (76%, $n = 29$) correctly identified all examples of microaggressions

in the survey, and 86% correctly identified whether or not race was incorporated in at least five of the eight clinical algorithms on the preintervention survey—estimated glomerular filtration rate, pulmonary function testing, National Cancer Institute: Breast Cancer Risk Assessment Tool, Thrombolysis in Myocardial Infarction Risk Score, Fracture Risk Assessment Tool, Model for End-Stage Liver Disease, Pulmonary Embolism Rule-out Criteria, and Get With the Guidelines–Heart Failure Risk Score (Table 2). The algorithms Fracture Risk Assessment Tool and Get With the Guidelines–Heart Failure Risk Score were the least likely to be identified as having a race variable, with only 18% and 21% of participants, respectively, responding correctly. Moreover, fewer than half of respondents accurately defined the term “code switching” as the phenomenon in which an individual who identifies as a person from a racially minoritized group adjusts their appearance, speech, and/or behavior in response to their environment, particularly in the workplace (20).

Confidence and comfort in addressing racism. Participants' ratings about confidence in their aptitude to take active measures to address racism and health inequities were equivocal. When asked to rate how strongly they agreed with knowing how to identify examples of institutional, interpersonal, and structural racism on a scale ranging from 0–100 (0 = strongly disagree, 100 = strongly agree), participants yielded median scores of 59, 59, and 55, respectively (Figure 2a). Respondents neither agreed nor disagreed that they were actively involved in advancing racial equity in their daily medical practice (median scores for fellows and faculty of 50 and 55, respectively). Fellows felt slightly less strongly than faculty that

Table 1. Characteristics of respondents for the pre- and postcurriculum survey

| | All Surveyed Respondents, Precurriculum (n = 38) | All Surveyed Respondents Completing Both Pre- and Postcurriculum (n = 28) | | Risk Ratio (95% Confidence Interval) for Post vs. Pre* |
|--|--|---|----------------|--|
| | | Precurriculum | Postcurriculum | |
| | | Percent (%) | | |
| Stage | | | | |
| Fellow | 28.9 | | 35.7 | |
| Faculty, ≤10 yr in practice | 31.6 | | 28.6 | |
| Faculty, ≥10 yr in practice | 39.5 | | 35.7 | |
| Do you want a continued structured curriculum on antiracism and bias awareness available to you during your fellowship training or medical practice? | | | | |
| Yes | 73.7 | 75.0 | 64.3 | 0.86 (0.68–1.09) |
| No | 5.3 | 7.1 | 14.3 | Referent |
| Not sure | 21.0 | 17.9 | 21.4 | |
| Do you believe discrimination based on race occurs in medicine? | | | | |
| Yes | 97.4 | 96.4 | 96.4 | 0.99 (0.90–1.08) |
| No | 0.0 | 0.0 | 0.0 | Referent |
| Not sure | 2.6 | 3.6 | 3.6 | |
| Are you concerned about the existence of discrimination in medicine? | | | | |
| Yes | 94.7 | 92.9 | 96.4 | 1.02 (0.91–1.13) |
| No | 2.6 | 3.6 | 0.0 | Referent |
| Not sure | 2.6 | 3.6 | 3.6 | |
| Do you believe there is discrimination against physicians, PAs, and/or NPs based on race? | | | | |
| Yes | 94.7 | 96.4 | 96.4 | 1.02 (0.91–1.13) |
| No | 0.0 | 0.0 | 0.0 | Referent |
| Not sure | 5.3 | 3.6 | 3.6 | |

Table 1. Continued.

| | All Surveyed Respondents, Precurriculum (n = 38) | All Surveyed Respondents Completing Both Pre- and Postcurriculum (n = 28) | | Risk Ratio (95% Confidence Interval) for Post vs. Pre* |
|---|--|---|----------------|--|
| | | Precurriculum | Postcurriculum | |
| Do you believe there is discrimination against nurses, nursing assistants, physical therapists, occupational therapists, and respiratory therapists based on race? | | | | |
| Yes | 94.7 | 96.4 | 100.0 | 1.06 (0.98–1.14) |
| No | 0.0 | 0.0 | 0.0 | Referent |
| Not sure | 5.3 | 3.6 | 0.0 | |
| Do you believe patients are treated differently based on their race? | | | | |
| Yes | 94.7 | 92.9 | 96.4 | 1.02 (0.91–1.13) |
| No | 0.0 | 0.0 | 0.0 | Referent |
| Not sure | 5.3 | 7.1 | 3.6 | |
| Do you think it has significant consequences for patients? | | | | |
| Yes | 83.3 | 76.9 | 81.5 | 0.97 (0.80–1.16) |
| No | 0.0 | 0.0 | 0.0 | Referent |
| Not Sure | 13.9 | 19.2 | 18.5 | |
| Missing | 2.9 | 3.8 | 0.0 | |

Definition of abbreviations: IQR = interquartile range; NP = nurse practitioner; PA = physician assistant. Referent group includes respondents answering “no” or “not sure” for a given question. *Risk ratios and 95% confidence intervals were estimated by specifying Poisson distribution, log link, and robust standard errors in generalized estimating equations. Although we are only able to provide frequencies and percentages for post data for those who participated in the post survey, we estimated risk ratios leveraging all available data (i.e., including those who only participated in the pre survey).

they had the tools to achieve racial equity (median scores 40 and 50, respectively).

Attendance

Out of 41 total faculty and 12 fellows in the Brown University PCCSM division, the mean attendance for the curriculum was 28 users on Zoom (Figure 1); however, for every meeting there was at least one log-in with multiple users (usually three people social distancing in a conference space).

The best attendance was during the first session (89% of the division). Curriculum topics were appraised by participants (Figure 1). Survey respondents attended a median of 6 of the 13 sessions (interquartile range, 4–9), with only one respondent attending all 13 sessions.

Postcurriculum Assessment

Twenty-eight fellows and faculty completed both pre- and postcurriculum

Table 2. Responses to questions assessing knowledge concepts pre- and postcurriculum

| | All Surveyed Respondents Completing Precurriculum (n = 38) | All Surveyed Respondents Completing Both Pre- and PostCurriculum (n = 28) | | Risk Ratio (95% Confidence Interval) for Post vs. Pre* |
|--|--|---|----------------|--|
| | | Precurriculum | Postcurriculum | |
| | Percent or Median (IQR) | | | |
| Correct identification of clinical algorithms that do and do not incorporate race [†] | 6 (5–7) | 6 (5–7) | 6 (6–7) | 1.03 (0.86–1.24) [†] |
| ≤4 of 8 correctly identified | 13.2 | 14.3 | 10.7 | |
| 5–6 of 8 correctly identified | 60.5 | 53.6 | 57.1 | |
| 7–8 of 8 correctly identified | 26.3 | 32.1 | 32.1 | |
| Knowledge: recognized the definition for code switching | | | | |
| Yes | 42.1 | 50.0 | 64.3 | 1.40 (1.00–1.95) |
| No | 57.9 | 50.0 | 35.6 | Referent |
| Correct identification of microaggressions | | | | 1.02 (0.77–1.34) [†] |
| 3 out of 3 | 76.3 | 85.7 | 82.1 | |
| 2 out of 3 | 7.9 | 3.6 | 3.6 | |
| 1 out of 3 | 15.8 | 10.7 | 14.3 | |
| I have sought out materials to educate myself regarding the role race plays in medical decision making, research, and patient care | | | | |
| Yes | 65.8 | 64.3 | 75.0 | 1.15 (0.93–1.42) |
| No | 34.2 | 35.7 | 25.0 | Referent |
| I have taken the time to read, attend workshops, watch films, and educate myself about what people of color experience in this country and how I can advance racial equity in my current position. | | | | |
| Yes | 76.3 | 67.9 | 82.1 | 1.14 (0.94–1.38) |
| No | 23.7 | 32.1 | 17.9 | Referent |

Definition of abbreviations: IQR = interquartile range.

*Risk ratios and 95% confidence intervals were estimated by specifying Poisson distribution, log link, and robust standard errors in generalized estimating equations. While we are only able to provide frequencies and percentages for post data for those who participated in the post survey, we estimated risk ratios leveraging all available data (i.e., including those who only participated in the pre-survey).

[†]Operationalized as count data.

[‡]Numbers for this row represent median (interquartile range).

surveys (26% lost to follow-up) and were not required to have attended all the sessions to complete both surveys. Faculty comprised the majority of those lost to follow-up.

Attitudes about racism in medicine.

There was little to no change in the proportion of respondents who felt that racism occurs in medicine (Table 1). All respondents felt that racism against nurses, nursing assistants, physical therapists, occupational therapists, and respiratory therapists exists (6% increase relative to precurriculum; 95% CI, 0.98–1.14). In addition, the proportion of respondents reporting that patients are treated differently based on race increased by 2% relative to the precurriculum survey (95% CI, 0.91–1.13).

Interest in antiracism training. Relative to precurriculum, 14% fewer respondents wanted a continued structured antiracism curriculum after the completion of the first year (95% CI, 0.68–1.09), including 21% who were unsure. Excerpts from qualitative data elicited about the curriculum are shown in Table 3.

Knowledge-based questions. We observed largely null or weak positive change in self-appraised knowledge and comfort from pre- to postintervention. Participants performed similarly on knowledge questions pre- versus postcurriculum, except for the knowledge question on code switching, which participants were 40% more likely to answer correctly upon completion of the curriculum (95% CI, 1.00 to 1.95; Table 2). In addition, participants were 15% more likely to report seeking out materials to educate themselves and taking the time to attend workshops relative to precurriculum (95% CI, 0.93 to 1.42). Relative to precurriculum,

on a scale of 0–100, participants increased their appraisal of ability to identify examples of institutional racism by 7.1 points (95% CI, –1.08 to 15.23; Figure 2b), their ability to identify examples of interpersonal racism by 10.6 points (95% CI, 1.60 to 19.61), and their ability to identify structural racism by 6.6 points (95% CI, –2.38 to 15.67).

Confidence and comfort in addressing racism.

There were small increases from pre- to postcurriculum in comfort with talking about race, being actively involved in advancing racial equity, and having resources to achieve racial equity. Similarly, there was a small increase in respondents who felt that the PCCSM division was more committed to racial equity and created a more equitable environment for everyone to advance after completion of the course.

Curriculum assessment and feedback.

The first two foundational lectures discussing definitions and examples of racism were regarded as the most useful of the series (Figure 1). Although poorly attended relative to other sessions, the session on how to be an active bystander was also regarded as useful by those who attended. Most respondents did not answer items on scheduling and structural changes to future JEDI sessions; however, the most common suggestions were scheduling monthly sessions and having a group discussion format, respectively; Table E1).

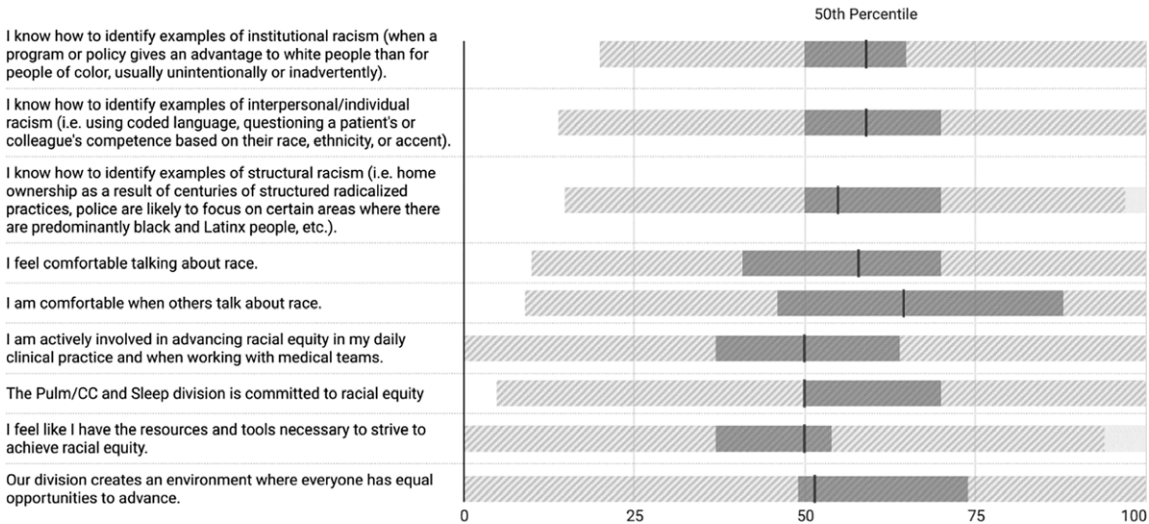
DISCUSSION

In this pre- and postinterventional pilot study of the implementation of a year-long antiracism curriculum for faculty and fellows in the Brown University PCCSM division, we found high interest in an anti-racist curriculum and identified areas of

A

Pre-curriculum responses

■ 25th to 75th Percentile ▨ Minimum - Maximum



B

Estimated change post-curriculum¹

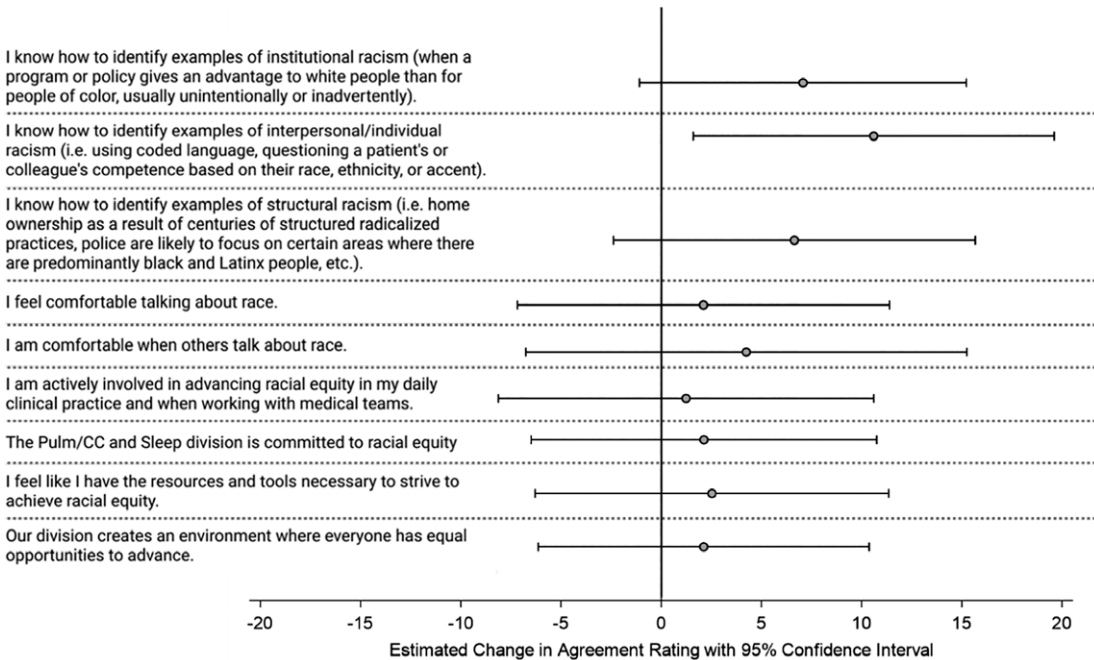


Figure 2. Responses to questions assessing ability to identify racism on a visual analog scale (0–100, with 0 representing “strongly disagree,” 100 representing “strongly agree”). Generalized estimating equations were used to estimate the difference between (A) precurriculum and (B) postcurriculum agreement ratings. ¹Estimated change in absolute points out of 100.

Table 3. Selected responses from participant postcurriculum surveys evaluating the course

| Question | Response |
|--|--|
| Has this course allowed you to notice more occasions of systemic racism in medicine? | <p>“Yes, has made me pay closer attention and particularly has made me feel strongly about the importance of being an active antiracist.”</p> <p>“Just a bit. I would welcome more discussion about it.”</p> |
| Was this curriculum helpful to your role as a healthcare provider? | <p>“Excellent foundation in looking at these issues in a different way than I have my whole life, but I need more info.”</p> <p>“It made me more conscious of the times I had implicit bias. I felt awful about oversimplifying my conversations with a young Latina patient who had an accent who turned out to be a psychologist.”</p> |
| Which session was most helpful, instructive, and/or illuminating? | <p>“The discussions exploring the biology of race were incredibly important for me as a healthcare provider as this requires unlearning things we were taught in medical school. The talks where we were given practical tools were also great for pragmatic people.”</p> |
| Which session was least helpful, instructive, and/or illuminating? | <p>“Did not necessarily agree with all of it.”</p> <p>“[...] It would be helpful to see more explanation or evaluation of data to support a causal link for inequity.”</p> |
| What would you change about the curriculum? | <p>“I would add discussion of race/ethnicity representation to journal club discussions. I would like to learn how to interpret the data and how not to write about race and ethnicity.”</p> <p>“There needed to be a more balanced discussion about how to effectively study race in research.”</p> |

discomfort surrounding the discussion of racism. We also received feedback on sessions, both positive and negative, to help improve the curriculum for our division, other divisions and departments at our institution, and outside institutions who might be considering a similar curriculum.

There were key similarities and differences in our curriculum compared with previously published curricula. Our curriculum spanned both implicit bias training on the interpersonal level (21) and

also systemic antiracism and intradivisional analysis. In contrast to antiracism workshops that typically run over the course of a day or less (22–24), our study followed prior studies that sought to provide shorter sessions over the course of a year or longer (25), which is likely to be more effective (26). Another important component of our curriculum was the incorporation of small group sessions, which previous studies have found helpful in creating a more open environment for sharing personal beliefs

or experiences (27). Unlike studies that have relied on consultants or outside experts (24), we invited local guest speakers and colleagues with expertise in different aspects of the curriculum to help facilitate the different sessions. We acknowledge that access to local experts may not be feasible for all institutions. Finally, rather than focusing on diversity training, this curriculum focused on antiracism to first identify structural racism in the healthcare system and then provided opportunities to discuss ways to achieve equity (28).

Prior studies have shown that incorporation of antiracism curricula in graduate medical education can improve comfort in discussing topics on race among fellows and faculty (22). In response to calls to address education on health inequity from organizations such as the Accreditation Council for Graduate Medical Education, prior studies have advocated for protected time and resources for residents and fellows to learn about healthcare disparities and participate in quality improvement projects on health equity (29, 30). Despite this, few programs have instituted curricula. A study from 2020 among internal medicine residencies found only 39.6% of programs reported having a curriculum on health disparities (31). Moreover, there is evidence that the task of providing education focused on health disparities and racism falls disproportionately on trainees and faculty from racial and ethnic groups that have been historically underrepresented in medicine, often without resources or support, a phenomenon known as the “minority tax.” (32) Of the limited number of publications on health disparities training in residency, 94% originate from primary care (33). There

remains a dearth of evidence examining the impact of formal antiracism training among PCCSM divisions.

Our study found that a large proportion of respondents were interested in antiracism curricula. Almost all believed that racism occurs in medicine, with some respondents commenting that they had witnessed instances of discrimination. Therefore, lack of significant change postcurriculum likely reflects the already high knowledge and engagement of the study participants before the curriculum was initiated. Fewer participants reported wanting a continued curriculum in the post survey than had done so in the initial survey; however, a majority of our PCCSM respondents reported the desire to see this curriculum continue.

Reductions in interest may be due to the intensive nature of this curriculum, time taken out of clinical work duties to attend, or assigning lower value to the curriculum content in that they may not have felt that the discussions properly addressed areas in their daily practice. For example, one participant might have wanted more time spent on race in research, whereas another participant may have wanted more discussion on action items to minimize differences in intensive care unit outcomes based on race. It is also possible the survey question failed to distinguish between interest in continuation of the same curriculum versus interest in a curriculum that introduces new concepts each year. Despite these small reductions in interest, 93% of the participants reported that they found the curriculum to be helpful. In addition, the curriculum was successful in stimulating self-directed study, which will likely perpetuate the knowledge base and facility with antiracism work among participants.

We demonstrated that the division felt more committed in moving toward racial equity, and we anticipate that this will have positive effects on fellowship and faculty recruitment and retention. Few studies have looked at how diversity training affects recruitment, although one study in the private business sector found that the creation of diversity committees increased the odds of Black men and women and White women to be hired into management positions (34). In assessing the effects of diversity training, most studies have focused on outcomes such as knowledge, skills, and attitudes, all of which have been shown to improve with diversity training (26, 35). Even after the training ends, knowledge, for instance regarding cultural diversity, was maintained for up to 2 years, although there appears to be a decline over time in attitudes toward diversity and self-efficacy (26).

The successful implementation of the curriculum may be due to several factors. First, the use of a preexisting educational conference block to ensure protected time for fellows was helpful in seamlessly integrating the curriculum into a busy academic fellowship program and division. Second, the curriculum was started without any additional funding (other than honoraria for speakers), staff, or protected time, and local topic experts were engaged to deliver the content. Third, participation in the curriculum remained high throughout the year and likely reflects the general interest in having a curriculum on antiracism as seen in the precurriculum survey responses. This may also be due to selecting topics relevant to the audience, specifically pulmonary and critical care physicians. Another explanation for high participation may have been leadership role-modeling, as the division chief was

present for the majority of sessions (36). Last, the sessions were held over video-conference because of the COVID-19 pandemic, which meant that the sessions were easily accessible from any location, including the inpatient and outpatient settings and multiple sites across the Brown University medical system.

Limitations

Limitations to this study include a single-center design, contribution of social desirability effect on the survey, lack of a control arm, limited ability to examine the heterogeneity of potential effects by participant characteristics, and inability to assess the impacts on patient outcomes. The curriculum served to improve awareness of racism in medicine and specifically of racism against healthcare workers and patients, although we cannot estimate Hawthorne effect or external influences on outcomes without a control group. In addition, our curriculum was directed toward physicians and did not include other healthcare workers (e.g., nurses, advance practice providers, medical assistants), who may have less training in health inequity (37). The negative effects of racism on health outcomes are not likely to be eliminated without engagement of the entire clinical workforce. Another limitation is the use of a few knowledge-based questions to measure the efficacy of the curriculum. Assessing baseline knowledge, while important, was not the primary intention of the study. Rather, integration of concepts into daily clinical practice is the ultimate goal, although this is difficult to measure. Future directions include providing a structured curriculum that can be tailored to other divisions and/or departments using a train-the-trainer model (38); performing a longitudinal study on the diversity of PCCSM fellowship recruitment and match as well

as faculty composition; and, importantly, seeing if there are any significant changes in patient outcomes. The year-long curriculum was curated into a series that can be disseminated to any center on request.

Conclusions

A longitudinal, antiracism curriculum is feasible and effective in a busy academic PCCSM division and addresses a

deficiency within graduate medical education.

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