

## ORIGINAL ARTICLE

# Racial and oral health equity in dental school curricula

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## Abstract

**Objectives:** The objective of this study was to assess the current efforts to move dental school curriculum beyond diversity and inclusion toward an anti-racism approach to racial equity.

**Methods:** In this cross-sectional study, an electronic Qualtrics survey was sent to 67 Dental School Associate Deans/Deans of Academic Affairs and 15 Dental Public Health (DPH) Residency Program Directors. Survey topics included oral health equity, Critical Race Theory (CRT), racism and the physiologic impacts of racism on oral health. Descriptive statistics were used to demonstrate frequencies.

**Results:** Overall response rate was 31.7% (DPH = 6, predoctoral Dental = 20). The majority of respondents that answered the question stated that the educational program offered instruction in oral health equity (96.2%), racism (75%), and the physiologic impacts of racism on oral health (83.3%). Only 17.4% of the respondents stated that the educational program offered instruction in CRT. The main barriers to providing the instruction was limited faculty trained in the topics to offer the instruction or there was limited time to offer additional content in the curriculum.

**Conclusions:** Findings demonstrate that oral health equity, racism and the physiologic impacts of racism are being discussed in dental education to some extent, but there is limited instruction in CRT. More robust efforts are needed to ensure dental students and DPH residents are competent in providing anti-racist and unbiased health care; there should be an incorporation of anti-racism standards in the Commission on Dental Accreditation (CODA)'s predoctoral and Advanced Education Program standards.

## KEYWORDS

anti-racism, commission on dental accreditation standards, dental education, health equity, oral health, public health dentistry

## INTRODUCTION

The state of the dental public health education with regard to the impact of racism on oral and overall health of individuals has focused primarily on diversity. Based on current standards from the Commission on Dental Accreditation (CODA), dental schools must have policies and practices in place to systematically evaluate comprehensive strategies to improve the institutional climate for diversity (CODA Standard 1–4, 2019) [1]. As defined by CODA, the institutional climate diversity, also referred to as interactional diversity, focuses on the general

environment created in programs and institutions that support diversity as a core value and provide opportunities for informal learning among diverse peers [1]. The classroom diversity concept is more inclusive in nature since it covers both the diversity-related content that promotes shared learning and the integration of skills, insights, and experiences of diverse groups in all academic settings, including distance learning [1].

In 2020, the CODA standards for predoctoral dental education revised Standard 2–17: Graduates must be competent in managing a diverse patient population and have the interpersonal and communications skills to function

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successfully in a multicultural work environment (CODA Standard 2–17, 2020) [1]. Dental schools have to clearly describe how students learn about factors and practices associated with disparities in health status among subpopulations, including but not limited to, racial, ethnic, geographic, or socioeconomic groups [1]. Meeting Standard 2–17 should ensure that students will be prepared to practice dentistry in a diverse society supported by diversity and inclusion. Inclusion in this construct is a practice in which different groups or individuals with different backgrounds are culturally and socially accepted and welcomed. The main intent of Standard 2–17 is to provide dental education in the basic principles of culturally competent health care, basic principles of health literacy and effective communication for all patient populations and recognition of health care disparities and the development of solutions [1]. With the implementation of Standard 2–17, cultural competency has been included in predoctoral curricula and clinical experiences focus on delivering quality dental care to culturally diverse patients, but the standards do not clearly require curricula on Critical Race Theory (CRT), racism or the stress related physiologic impacts of racism on oral health in predoctoral dental programs.

Standard 1–3 states that the dental education program must have a stated commitment to a humanistic culture and learning environment that is regularly evaluated [1]. The intent is that the program should ensure collaboration, mutual respect, cooperation, and harmonious relationships between and among administrators, faculty, students, staff, and alumni [1]. The premise of this standard is to promote diversity, professionalism and leadership support as well as assessing the cultural environment of the institution. Traditionally, this has been accomplished with curricular content founded in Behavioral Science.

Traditional curricula in medicine that focus on Biomedical Sciences and Social Determinants of Health have some shortcomings as they relate to the lack of self-reflexivity; encodes social identifiers like race and gender as essential risk factors; neglects to examine root causes of health inequity; and fails to teach learners how to challenge injustice [2]. Proponents of a more inclusive medical education curriculum argue that CRT is a theoretical framework uniquely adept at addressing the concerns. It offers needed interdisciplinary perspectives that teach learners how to abolish biological racism; center the scholarship of the marginalized; and understand the institutional mechanisms and ubiquity of racism [2]. CRT has the potential to teach health professionals how to combat health inequity.

In the CODA standards for the Dental Public Health (DPH) specialty, there is no clear standard related to teaching about diversity or focusing on racial equity in practice; however, there is a mention of expectation from graduates to respect the culture, diversity, beliefs, and values in the community. Graduates must receive instruction in, and be able to apply, the principles of ethical reasoning, ethical decision-making, and professional responsibility as they pertain to the academic environment,

research, patient care, practice management, and programs to promote the oral health of individuals and communities (CODA Standard 4–1, 2020) [3]. The intent is that graduates are expected to know how to draw on a range of resources such as professional codes, regulatory law, and ethical theories to guide judgment and action for issues that are complex, novel, ethically arguable, divisive, or of public concern. Additionally, there is a standard to integrate the Social Determinants of Health into dental public health practice (CODA Standard 4–5, 2020) [3]. Neither of these standards explicitly focuses on racism or calls for anti-racist training and practice in education.

According to the American Dental Education Association (ADEA), the fundamental purpose of diversity, equity and inclusion training programs is not to further divide us along racial or gender lines but rather to create understanding and move us closer to becoming a society that respects and values our differences [4]. On September 25, 2020, ADEA announced their commitment to foster a welcoming, diverse, inclusive, and humanistic environment in every area of dental education including classrooms, clinics, laboratories, meeting/collaboration spaces, research, administrative offices and in our communities [4]. This approach to education can help reduce the disparities that exist in a society that plays a role in the health and well-being of vulnerable populations.

CODA standards do not require curricula on CRT, racism or the physiologic impacts of racism on health in predoctoral dental programs or the DPH specialty. Recently, the American Association of Public Health Dentistry's (AAPHD) white paper titled "Anti-Racism in Dental Public Health: A Call to Action" called to action for inclusion of anti-racism practices in dental education [5]. Previous studies have assessed the medical curriculum in relation to anti-racism education. A group of students and faculty at Boston University School of Medicine (BUSM) initiated a longitudinal curricular analysis through a vertical integration group commissioned by the Medical Education Committee, from May 2019 to June 2020 [6]. Student-led efforts to advance anti-racism education in medical schools and to address the concern for systemic racism in medical education was the premise for student involvement in the BUSM study. Student involvement was initiated by a group of eight first-year BUSM medical students gathering to discuss the multiple instances of racism, microaggressions, noticeable confluences of race with biology, and concerns that racially grounded teaching of medical science was propagating systemic racism [6]. The major elements of the analysis included a comprehensive internal curricular assessment and an external assessment of peer institutions that led to the development of key curricular recommendations and overarching equity and specific racially focused equity competences [6]. According to the authors, the findings from the study can be translated to other medical schools. In addition, the authors believe that the historic and present reality of racism in America and in medicine

has impacted medical education specifically, and more broadly, the practice of medicine, trainee experience, and patient outcomes [6]. Having a more thorough understanding of the curriculum in medical schools can help restructure medical school assessments and competencies to provide more inclusive training for medical students/residents that can ultimately be the foundation to help address the health inequities that exist in the population.

Medical organizations have made available educational resources to facilitate training and education among health professionals and to help alleviate barriers that may arise in health equity relating to an ideology founded in racism. The Association of American Medical Colleges (AAMC) has produced an anti-racism in Medicine Collection to provide educators with practice-based, peer-reviewed resources to teach anti-racist knowledge and clinical skills [7]. In addition, the US-based Association for Prevention Teaching and Research (APTR) has designed an anti-racism toolkit to assist health professions faculty address and reduce systemic racism through their teaching [7].

Many higher education institutions in the United Kingdom, including medical schools, have released statements claiming commitment to tackling structural racism. The University of Bristol Medical School is leading the drive to eliminate what it calls “inherent racism” in the way that doctors are trained in the United Kingdom [8]. Students pushed for reform, saying gaps in their training left them ill-prepared to treat ethnic minority patients-potentially compromising patient safety [8].

In response to the student-led initiative, the United Kingdom Medical Schools Council, in collaboration with the Dental Schools Council, has announced workstreams to improve outcomes for students and to support medical schools in the development of an anti-racist curriculum and an inclusive educational environment [7,8].

To our knowledge, there is no evidence-based literature that provides us with the current status of curricula on an anti-racism approach to racial equity in US Dental Schools. The purpose of this study was to answer the call to action from AAPHD and to assess the current efforts to move dental school curriculum beyond diversity and inclusion toward an anti-racism approach to racial equity. Topics to be assessed included oral health equity, CRT, racism and the physiologic impacts of racism on oral health. The following definitions were used for this study. Oral health equity ensures that programs and policies consider the needs of disparate populations and have an equitable impact on oral health care access, quality, and outcomes [9]. CRT is an academic concept with a core idea that race is a social construct, and that racism is not merely the product of individual bias or prejudice, but also something embedded in legal systems and policies [10]. The concept of CRT was developed by Derrick Bell who defined the term as a body of legal scholarship that explores how racism is embedded in laws and legal institutions [11]. Racism can be defined as a prejudice,

discrimination, or antagonism directed against a person or people on the basis of their membership in a particular racial or ethnic group [12]. The study used the term “racism” as a general concept instead of defining it as either structural or interpersonal in nature. The impact of racism can impact the body in various physiological ways. According to Harrell et al., direct encounters to racism or discriminatory events contribute to negative health outcomes including increased blood pressure [13].

## METHODS

### Study design

This cross-sectional study was reviewed by the Institutional Review Board (IRB) at the University of Nevada, Las Vegas and was deemed “exempt” (Protocol 1802405). An electronic survey (using Qualtrics) assessing the current efforts of dental schools to include curriculum beyond diversity and inclusion, and toward an anti-racism approach and racial equity was developed for this study. The survey consisted of 21 questions on: (1) participant’s professional role, (2) extent and timing of content covered at the dental school or DPH Residency Program related to four main topics: oral health equity, CRT, racism, and physiologic impacts of racism on oral health, (3) barriers to implement these topics, if any, (4) preferred format to include these topics in the curriculum, and (5) participant support for inclusion of these topics in CODA standards for predoctoral dental schools and DPH Residency Programs. There was also an open-ended question asking participants for any additional feedback on these topics. Qualitative analysis of the open-ended question was not conducted for this study due to the limited responses. The survey was pilot tested and refined for clarity with the assistance of Diplomates of the American Board of Dental Public Health (ABDPH). A total of four Diplomates completed the survey in Qualtrics prior to distribution. Feedback was received and the survey was revised accordingly.

### Study population

A list of all US CODA accredited Dental Schools ( $n = 67$ ) and DPH Residency Programs ( $n = 15$ ) with the names and e-mail information for Associate Deans/Deans of Academic Affairs and DPH Residency Program Directors for each United States accredited school was created. The information was accessed through publicly available respective dental school websites. The information for the DPH Residency Program Directors was listed on the American Association of Public Health Dentistry (AAPHD) website. The inclusion criteria for the study included Associate Deans/Deans of Academic Affairs at accredited US Dental Schools in addition to Program Directors at DPH Residency Programs. The

survey could be completed by the individual receiving the Qualtrics email or a designee that is familiar with the curricula related to the survey topics (oral health equity, CRT, racism and the physiologic impacts of racism on oral health).

## Survey distribution

The survey was distributed by the Principal Investigator (PI) via Qualtrics during the month of October 2021 (October 1, 2021 to October 31, 2021) to individuals that met the inclusion criteria for the study. Reminder emails from Qualtrics were sent 3 days, 10 days and approximately 3 weeks (Third and Final Reminder) after the initial survey was distributed. Follow-up emails were sent by the PI 3 days after the Final Reminder to individuals who had not responded to the Qualtrics email to participate in the study and anyone who had difficulty accessing the link through Qualtrics. In addition, a reminder email was sent to all the DPH Residency Directors from the Executive Director of the AAPHD on October 14, 2021. Participation in this study was voluntary and no compensation was provided for survey completion.

## Data analysis

All the survey data was exported from Qualtrics as a comma-separated values (CSV) file. The data were then coded with a numerical, non-duplicated identifier to ensure the confidentiality of the participants. The PI coded the data prior to analysis by the research team members. Descriptive statistics were used to demonstrate frequencies (*N*-values and percentages) of results. SPSS 26.0 (IBM, Inc., SPSS Software, Chicago, IL) was used to analyze the collected data.

## RESULTS

### Study participant demographics

A total of 35 responses were received, but nine had to be excluded from the study because of various factors such as not consenting to the study; consenting to the study, but not completing any of the questions related to the topics being discussed; and one response was a duplicate submission. A total of 26 (31.7%) responses from predoctoral dental schools and DPH Residency Programs met the inclusion criteria and were included in the study; a total of six (40%) responses were received from DPH Residency Programs and 20 (29.9%) from predoctoral dental schools. The majority of respondents held an Academic Faculty ( $n = 12$ , 46.2%) position at their educational program, with a large portion also serving as Administrative Faculty ( $n = 9$ , 34.6%) (Table 1). The

**TABLE 1** Profile of study participants ( $N = 26$ )

Participant characteristic	<i>n</i> (%)
Position held at educational program	Academic Faculty 12 (46.2%)
	Administrative Faculty 9 (34.6%)
	Clinical Faculty 2 (7.7%)
	Other 3 (11.5%)
Role in curriculum process at educational program <sup>a</sup>	Member of the Dental School Curriculum Committee 10
	Member of the DPH Residency Program Curriculum Committee 3
	Course Director 15
	Co-Course Director 5
	Teaching Faculty 10
	Administrative Faculty that Oversees the Curriculum for Either a Dental School or DPH Residency Program 18
Length of time at educational program	Less than 5 years 7 (26.9%)
	5-10 years 7 (26.9%)
	11-20 years 6 (23.1%)
	20-30 years 6 (23.1%)

<sup>a</sup>Multiple responses for this question. Results represent the responses for each role.

respondents who reported “other” for the position held, included the following positions: Program Director, Academic Affairs staff, and Academic/Administrative Faculty.

When asked in what capacity the respondents were familiar with the curriculum at the educational program, there were a variety of responses with the majority serving as an instructor either as a Course Director ( $n = 15$ ), Co-Course Director ( $n = 5$ ), or Teaching Faculty ( $n = 10$ ) (Table 1). Several of the respondents also serve as an Administrative Faculty that oversees the curriculum for either a dental school or DPH Residency Program ( $n = 18$ ) (Table 1). A few respondents also serve in a role that was not listed on the survey including: Director of a Dental Pipeline Program, Director of Academic Affairs, Academic Affairs staff that chairs the Curriculum Committee, Associate Dean of Academic Affairs and a DPH Director. Slightly more respondents have been at the educational program for less than 10 years ( $n = 14$ , 53.8%) than over 10 years ( $n = 12$ , 46.2%) (Table 1).

### Oral health equity instruction

The majority of all respondents to the study stated that the educational program offered instruction in oral health equity ( $n = 25$ , 96.2%) (Tables 2 and 3). Instruction in oral health equity was offered across all 4 years

**TABLE 2** Curriculum content coverage in dental schools ( $n = 20$ ) (percentages based on those that responded to the question)

	Oral health equity instruction $n$ (%)	Critical race theory instruction $n$ (%)	Instruction in racism $n$ (%)	Instruction in physiologic impacts of oral health (related to racism) $n$ (%)
Content coverage in educational program <sup>a</sup>				
Yes	20 (100)	4 (23.5)	16 (84.2)	17 (89.5)
No	0	13 (76.5)	3 (15.8)	2 (10.5)
Credit hours offered				
1	6 (35.3)	1 (33.3)	6 (46.2)	0
2	6 (35.3)	1 (33.3)	3 (23.1)	5 (38.5)
3	1 (5.9)	0	2 (15.4)	1 (7.7)
4	0	0	1 (7.7)	0
More than 4	4 (23.5)	1 (33.3)	1 (7.7)	7 (53.8)
Timing of content coverage <sup>b</sup>				
DS1 year <sup>c</sup>	15 (32.6)	4 (44.4)	13 (37.1)	12 (29.3)
DS2 year	14 (30.4)	2 (22.2)	9 (25.7)	13 (31.7)
DS3 year	10 (21.7)	2 (22.2)	7 (20.0)	10 (24.4)
DS4 year	7 (15.2)	1 (11.1)	6 (17.1)	6 (14.6)

<sup>a</sup>Total may not equal  $N$ . Some respondents were not sure if the topic was offered in the curriculum so did not mark "yes" or "no."

<sup>b</sup>Multiple responses for this question.

<sup>c</sup>DS1 year is the first year of dental education followed by the subsequent years.

**TABLE 3** Curriculum content coverage in DPH residency programs ( $n = 6$ ) (percentages based on those that responded to the question)

	Oral health equity instruction $n$ (%)	Critical race theory instruction $n$ (%)	Instruction in racism $n$ (%)	Instruction in physiologic impacts of oral health (related to racism) $n$ (%)
Content coverage in educational program				
Yes	5 (83.3%)	0	3 (50%)	4 (66.7%)
No	1 (16.7%)	6 (100%)	3 (50%)	2 (33.3%)
Credit hours offered				
1	2 (40%)	0	2 (66.7%)	3 (75%)
2	2 (40%)	0	1 (33.3%)	1 (25%)
3	0	0	0	0
4	0	0	0	0
More than 4	1 (20%)	0	0	0

of the predoctoral dental education (first year,  $n = 15$ ; second year,  $n = 14$ ; third year,  $n = 10$ ; fourth year,  $n = 7$ ) (Table 2). All of the dental school responses stated that oral health equity instruction was offered at their educational program with two responses not stating what year the instruction was offered in the curriculum. A total of 33% ( $n = 6$ ) of the dental school programs with a response offered the curriculum all 4 years, 17% ( $n = 3$ ) offered it only in the first year, 17% ( $n = 3$ ) offered it in the 1st and second year, and 17% ( $n = 3$ ) offered it during the first to third years (Table 2). Five of the DPH Residency Program responses reported that they offered oral health equity instruction as part of the DPH Residency Program with one program reporting that oral health instruction was not offered as part of the DPH curriculum (Table 3). Most programs that responded to this question ( $n = 15$ ,

71.4%) offered a total of one or two credit hours for oral health equity instruction with the next highest value being more than four credit hours ( $n = 5$ , 23.8%) of instruction (Tables 2 and 3). Of the five responses that indicated more than four credit hours of oral health equity instruction, four of the five responses were from dental school faculty (Table 2).

### Critical race theory instruction

A total of 76.5% ( $n = 13$ ) of the responding dental schools reported that they did not teach CRT whereas all of the responding DPH Residency Programs reported they did not teach CRT.

Of the programs that responded to this question, most of the instruction was offered during the first year of the

dental school curriculum ( $n = 4, 44.4\%$ ) (Table 2). The programs that offered instruction in CRT offered it for a total of one or two credit hours or more than four credit hours of instruction. Only one dental school program offered more than four credit hours of instruction in CRT (Table 2).

### Instruction in racism

A total of 84.2% ( $n = 16$ ) of the responding dental schools reported that they offered instruction in racism whereas only 50% ( $n = 3$ ) of responding DPH Residency Programs reported teaching racism (Tables 2 and 3). Instruction in racism was offered across all 4 years of the predoctoral dental education (first year,  $n = 13$ ; second year,  $n = 9$ ; third year,  $n = 7$ ; fourth year,  $n = 6$ ). A total of 16 dental schools stated that instruction in racism was offered at their educational program with one response not stating what year the instruction was offered in the curriculum. A total of 43% ( $n = 6$ ) of the dental school programs with a response offered the curriculum all 4 years, 21% ( $n = 3$ ) offered it only in the first year, 14% ( $n = 2$ ) offered it in the first and second year, and 7% ( $n = 1$ ) offered it either in the first and third year; first to third year or second year (Table 2). The majority of responding dental schools offered either 1 ( $n = 6, 42.2\%$ ) or 2 ( $n = 3, 23.1\%$ ) credit hours of instruction (Table 2). One dental school program offered more than four credit hours of instruction in racism and one dental school program offered four credit hours of instruction (Table 2). The majority of responding DPH Residency Programs offered either 1 ( $n = 2, 66.7\%$ ) or 2 ( $n = 1, 33.3\%$ ) credit hours of instruction (Table 3).

### Instruction in the physiologic impacts of racism on oral health

A total of 89.5% ( $n = 17$ ) of the responding dental schools reported that they offered instruction in the physiologic impacts of racism on oral health whereas only 66.7% ( $n = 4$ ) of DPH Residency Programs reported teaching the topic in their curriculum (Tables 2 and 3). Instruction was offered across all 4 years of the predoctoral dental education (first year,  $n = 12$ ; second year,  $n = 13$ ; third year,  $n = 10$ ; fourth year,  $n = 6$ ) (Table 2). A total of 17 dental schools stated that instruction in the physiologic impacts of racism on oral health was offered at their educational program with three responses not stating what year the instruction was offered in the curriculum. A total of 35.7% ( $n = 5$ ) of the dental school programs with a response offered the instruction across all 4 years, 28.6% ( $n = 4$ ) offered it first through third years, and 14.3% ( $n = 2$ ) offered it in the first and second year (Table 2). Most responding dental schools offered either two credit hours ( $n = 5, 38.5\%$ ) or more than four

credit hours of instruction ( $n = 7, 53.8\%$ ) (Table 2). Responding DPH Residency Programs offered either 1 ( $n = 3, 75\%$ ) or 2 ( $n = 1, 25\%$ ) credit hours of instruction (Table 3).

When asked what potential barriers can be found in implementing course content on the topics of oral health equity, CRT, racism or physiologic impacts of racism on oral health, respondents stated that either there was limited faculty trained in the topics to offer the instruction (Predoctoral Dental = 41.7%,  $n = 5$ ; DPH = 40%,  $n = 2$ ) or there was limited time to offer additional content in the curriculum (Predoctoral Dental = 25%,  $n = 3$ ; DPH = 40%,  $n = 2$ ) (Table 4). “Other” responses related to the content being offered at the educational program, but it was difficult to quantify the credit hours (Table 4).

Participants were also asked about the format of instruction that may be the most effective in providing the instruction on these topics. Dental school respondents stated that case-based instruction ( $n = 14, 28.6\%$ ), classroom instruction ( $n = 11, 22.4\%$ ) or community-based experiences ( $n = 11, 22.4\%$ ) may be the most effective teaching modality (Table 4). These options were followed by online instruction ( $n = 6, 12.2\%$ ) and attending

**TABLE 4** Descriptive results for program type and implementation barriers, format of instruction and incorporation into CODA standards (percentages based on those that responded to the question)

	Dental school ( $n = 20$ )	DPH residency program ( $n = 6$ )
<b>Barriers to implementation<sup>a</sup></b>		
Limited time to offer additional content in the curriculum	3 (25%)	2 (40%)
Limited faculty trained on the topics to offer the instruction	5 (41.7%)	2 (40%)
The topics are not of interest to the educational program	0 (0%)	0
Other	4 (33.3%)	1 (20%)
<b>Format of instruction<sup>b</sup></b>		
Classroom instruction	11 (22.4%)	5 (31.3%)
Online instruction	6 (12.2%)	1 (6.3%)
Case-based instruction	14 (28.6%)	5 (31.3%)
Community-based experiences	11 (22.4%)	4 (25%)
Attending prerecorded webinars or training material	4 (8.2%)	1 (6.3%)
Other	3 (6.1%)	0
<b>Support for incorporation into CODA standards<sup>a</sup></b>		
Yes	12 (80%)	6 (100%)
No	3 (20%)	0

<sup>a</sup>Total may not equal *N*. some respondents did not answer the question.

<sup>b</sup>Multiple responses to this question.

pre-recorded webinars or training material ( $n = 4$ , 8.2%) (Table 4). Some additional comments included having discussion groups or peer-to-peer role playing sessions for instruction. DPH Residency respondents stated that case-based and classroom instruction ( $n = 5$ , 31.3%) were equally effective formats for instruction. These options were followed by community-based experiences ( $n = 4$ , 25%), online instruction ( $n = 1$ , 6.3%) and attending pre-recorded webinars or training material ( $n = 1$ , 6.3%) (Table 4).

The last question related to incorporating the topics of oral health equity, CRT, racism and/or the physiologic impacts of racism on oral health to the CODA standards for predoctoral dental schools and DPH Residency Programs. The majority of respondents that answered this question responded “yes” that they would support the incorporation of these topics to the CODA standards (Predoctoral Dental = 80%,  $n = 12$ ; DPH = 100%,  $n = 6$ ) (Table 4).

## DISCUSSION

While there is not a clear mention of anti-racism standards within the CODA document, the recent racial justice movements over the past year have called to action the need to discuss these issues in the curricula of education programs. There is evidence that dental schools have integrated cultural competency training into their curricula in meaningful ways. However, an essential component of providing culturally competent patient care to racially diverse populations is recognizing racial oral health inequities and acknowledging the role of racism in contributing to them [14]. A lack of awareness of discrimination and racial bias can impact not only the dental education curriculum, but the future practice of dentistry in diverse populations. Patel et al. found that racial bias affects dentists’ clinical decision making and influences the quality of care received by Black patients [15]. In order to provide the highest quality of care for the community, dental school curricula should broaden the instruction and experiences of predoctoral dental students and DPH professionals.

Findings from the study identify gaps in providing instruction in oral health equity, racism, CRT and the physiologic impacts of racism on oral health between dental schools and DPH Residency Programs. Dental school programs reported offering more than 4 h of instruction in the topics of oral health equity, racism and the physiologic impacts of oral health on racism compared to DPH Residency Programs. While the response to the credit hours for instruction in CRT was minimal, one dental school program offered more than 4 h of instruction and one dental school program offered 4 h of instruction compared to not offering any instruction in DPH programs.

The results indicate that even though the sample size was small, the curriculum in dental schools and DPH Residency Programs offer some instruction on these topics even though it may not be significant for some topics and may be limited to didactic courses, it is an attempt to broaden the curriculum beyond diversity and inclusion to one that fosters the development of an environment that is respectful of everyone. When looking at the curriculum in other health professional schools, such as medicine and nursing, student-led efforts have paved the way for changes within the curriculum. Medical schools across the United States have increasingly dedicated resources toward advancing racial and social justice, such as by supporting diversity and inclusion efforts and incorporating social medicine into the traditional medical curricula [16]. Two examples of student-led efforts to advance anti-racist curricula at Harvard Medical School (HMS) and the University of California, San Francisco (UCSF) School of Medicine are promising efforts to highlight how students can help bring about change as an effort to improve their medical education. At UCSF, students identified specific avenues to improve the rigor of social medicine courses and developed new curricula to equip students with skills to confront and work to dismantle racism [16]. At HMS, students developed a workshop to assist students in navigating micro-aggressions and discrimination in the clinical setting [16].

Findings further identify gaps in when the topics are presented within a dental school curriculum. Some of the dental schools offered the instruction over the course of the 4 years of dental school while others only offered it certain years. It is apparent from the results that the topic of instruction and when it is being taught is inconsistent across various dental schools and DPH Residency Programs. There is no standardized format to offer the instruction in an educational program be it didactic, clinical or community-based in nature. Strategies to address the limited educational opportunities would be very similar for predoctoral dental programs and DPH Residency Programs.

Instruction in DPH Residency Programs was not consistent for the topic of CRT and to a lesser degree the topic of racism. As the sponsoring organization of the DPH specialty, AAPHD can play a more active role in revising and offering input on the standards and competencies for the specialty. With the recent publication of the AAPHD white paper titled “Anti-Racism in Dental Public Health: A Call to Action,” it paves the way for further discussion on inclusion of anti-racism practices in dental education. Another contribution from AAPHD could involve updating the DPH curriculum that was developed as part of a Health Resources and Services Administration (HRSA) funded project under a previous Predoctoral Training in General, Pediatric, and Public Health Dentistry and Dental Hygiene award cycle (2010–2015) titled: Development and Implementation of a Model Curriculum for Predoctoral Dental and Dental

## Hygiene Students to Acquire Competencies in Dental Public Health.

Another approach to helping health professions students be culturally competent is the Collaborative Care Model. The model cultivates continuous improvement in the health status of individuals and communities by integrating education, research, and clinical care. The collaborative care must be quality-driven, evidence-based, and above all, patient-, family-, and community-oriented [17]. The success of the Collaborative Care Model in health professions training is that the training should occur at the start of the educational process for students. The earlier the students learn to work as partners on multidisciplinary teams, the more effective the students will be in addressing health disparity in the community.

Stereotyping patients according to their age, race/ethnicity, weight, socioeconomic status, gender or other factors can have negative impacts on their health based on findings from a study published in the *American Journal of Preventive Medicine* in 2016 [18]. Healthcare stereotype threat is the threat of being personally reduced to group stereotypes that commonly operate within the healthcare domain, including stereotypes regarding unhealthy lifestyles and inferior intelligence [18]. Findings from the study report that 17% of respondents reported healthcare stereotype threat with respect to one or more aspects of their identities [18]. The threat was associated with higher physician distrust and dissatisfaction with health care, poorer mental and physical health, including increase in hypertension and depressive symptoms [18]. The study demonstrates how a threat based on various aspects of a person's social identity can greatly impact their overall health creating a risk of negative health impacts which can ultimately contribute to disparities among minority groups. In the dental field, dentists typically use race, gender, and age cues when making pain management decisions [18]. A study by Wandner et al. used virtual human (VH) technology to investigate the effects of VH patients' demographic cues on dentists' pain management decisions [19]. Findings from the study report that dentists do use demographic cues when making pain management decisions, which can negatively impact the health outcomes of patients if the dentist is not practicing in a culturally appropriate manner. According to Fingerhut and Abdou (2017), healthcare stereotype threat and social identity threat are underexplored factors contributing to lesbian, gay, and bisexual (LGB) health disparities [20]. The authors further state that these threats indirectly affect health by negatively impacting encounters in healthcare contexts [20]. Further research needs to be conducted to assess the impact of healthcare stereotyping on other populations based on gender identity.

Two barriers identified to implementing course content on the topics of oral health equity, CRT, racism or physiologic impacts of racism on oral health, included limited faculty trained in the topics to offer the instruction and limited time to offer additional content in the curriculum. Promoting professional development with

online courses or courses related to these topics would help alleviate some of these barriers. It is important to focus on course topics that go beyond the Social Determinants of Health and cultural competency and start to look at inclusion and how to address systemic racism. As for the limited time to offer additional content in the curriculum, if the standards for predoctoral dental programs and DPH Residency Programs were revised to include topics discussed in this study, then the curriculum would have to be revised to meet the standard or competency.

A limitation of this study was that only predoctoral dental schools and DPH Residency Programs were included in the study. Further research can include not only additional residency programs within the dental profession specifically those with a primary care focus (i.e., GPR, AEGD, and Pediatric Dentistry), but also other health professional schools such as medical and nursing programs. It would also be beneficial to assess the level of instruction in clinic and community-based settings as it relates to the topics described in this study. The aim of this study was to look at how DPH principles within dental schools and DPH Residency Programs move beyond the current curriculum toward one that has an anti-racism approach to racial equity.

Another limitation was the low response rate for the overall survey and a low response rate for certain questions. Several attempts were made to recruit participants either through Qualtrics or emails from the PI. Eligible participants may not have submitted the survey because their educational programs did not provide the stated instruction in the curriculum or perhaps, they were not aware if their programs offered the instruction. A low response rate for certain questions may also be a result of not offering the instruction, but rather than marking "no," the participant did not respond to the question. The low response rate for the survey and certain questions would impact the generalizability of the findings from this study, but the findings still offer a snapshot view of the curriculum to facilitate further discussion.

A major strength of the study is that it is the first study to look at the topics of oral health equity, CRT, racism and the physiologic impacts of racism on oral health in the context of the curriculum in dental schools and DPH Residency Programs. Findings provide an overview of the gaps in the curriculum and some strategies to help address the barriers to implementing the topics. In addition, it calls to action a movement to revisit the standards and competencies for dental education programs, in addition to training opportunities for dental faculty. By increasing the DPH knowledge and competency of graduating dental students, DPH residents, and dental professionals in public and clinical settings, the number of providers/professionals that can respond to the unmet need of the population at large in a culturally appropriate manner increases.



## CONCLUSION

Findings from the study demonstrate that some of the topics related to oral health equity, racism and the physiologic impacts of racism on oral health are being discussed as part of the dental education, but there is still a limited amount of education dedicated to instruction in CRT. To ensure predoctoral dental students and postdoctoral DPH students are competent in providing anti-racist and unbiased health care, there should be an incorporation of anti-racism standards in CODA's predoctoral and Dental Public Health Advanced Education Program standards as well as the individual competency assessments students and residents of these programs. In addition, there needs to be more robust training opportunities for faculty to become more competent in providing instruction in anti-racism topics in didactic and clinic settings.

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## CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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## SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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