

# Dental Student, Resident, and Faculty Attitudes Toward Treating Medicaid Patients

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**Abstract:** Failure to receive proper oral health care including both prevention and maintenance is influenced by myriad and complex social, economic, and dental factors, including access to care. Reducing oral health disparities requires changes in the preparation of future dentists as well as measuring and influencing the attitudes and knowledge of practicing dentists. The aim of this study was to determine the likelihood that future dentists (students and residents) and faculty members at one U.S. dental school would treat Medicaid participants. Attitudes were measured using the Deamonte Driver scenario survey, which assesses factors affecting dentists' participation in Medicaid. In October 2012, all 113 full-time faculty members were invited to participate, and 60 completed the survey, for a response rate of 53.1%. In January and February 2013, all 18 residents in the dental clinics and university hospital were invited to participate, and 16 completed the survey, for a response rate of 88.9%. From 2013 to 2015, all 267 students in three classes were invited to participate: first-year students in the Classes of 2017 and 2018 and fourth-year students in the Class of 2015. A total of 255 students completed the survey, for an overall student response rate of 95.5%. The results showed that the students were more likely to participate in caring for Medicaid patients than the faculty and residents. The white and male students had stronger negative stereotypes about Medicaid patients than the females and underrepresented minority students, while residents had stronger negative stereotypes about Medicaid patients than the students and faculty. Overall, the cultural competency skills, beliefs, and attitudes of these faculty members and residents were less developed than those of their students, signaling a need for broad educational and faculty development programs to fully prepare the future dental workforce to care for these patients.

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Identification and treatment of early childhood caries are critical to the oral and systemic health of children and adolescents. Failure to receive proper oral health care, including both prevention and maintenance, is influenced by myriad and complex social, economic, and dental factors, including access to care. Access to care is often dictated by patients' or their family's ability to pay for the care or to afford dental insurance and is limited by the low participation of dentists in Medicaid, a federal-state insurance program for low-income individuals.<sup>1</sup> These barriers may lead to low utilization of dental services as well as limited knowledge about the relationship between oral and systemic health. Even for patients who receive Medicaid, benefits may vary. In Florida, for example, Medicaid does not provide the same dental services for adults and children: for children, coverage includes everything that is routine and has been preapproved; for adults, coverage includes only extraction of all teeth and one denture in a lifetime.<sup>2</sup>

Prior to the well-known case of dental neglect that afflicted 12-year-old Deamonte Driver, who died from an untreated abscess secondary to carious lesions, it was unclear how many young children died each year from untreated oral health disease or dental neglect. However, a recent report suggested that one in five children have failing oral health.<sup>3</sup> A review of a book about the Driver case noted that it revealed the serious challenges in the U.S. health care system.<sup>4</sup> According to the author, "the tooth divide" between those who receive care and those who do not exists because of socioeconomic class differences and gender. Although public programs like Medicaid are designed to provide oral health care access to low-income people, this group nevertheless lacks sufficient access to dental care. Since Driver's death, considerable attention has been given to mortality among youth from untreated oral disease and the need for policy changes.<sup>3-5</sup>

Wall et al. reported an increase in utilization of dental care among the poorest children from 14.5 million in 2007 to 17.4 million in 2010.<sup>6</sup> In 2011, the Centers for Medicare & Medicaid Services reported improved access of children to dental care through Medicaid and the Children's Health Insurance Program (CHIP) although the numbers varied among states.<sup>7</sup> Despite this increased utilization of dental care by indigent children, the relationship between dental practitioners' attitudes towards these patients and the actual treatment of them is not well understood.

Changing the trajectory of events to avoid what happened to Driver and address other forms of dental neglect necessitates ensuring that all oral health practitioners, including students in school as well as dentists in practice, examine their attitudes and practice beliefs concerning their willingness to serve the needs of under- and unserved populations. Promoting oral health preventive practices, improving patients' quality of life, and eliminating oral health disparities are essential to ensure the oral health of children while they are young and into the future, as demonstrated in Simmer-Beck et al.'s school-based collaboration for underserved children.<sup>5</sup> Addressing these issues also requires that the academic dental community "anticipate and prepare for curriculum changes that these new workforce models will demand."<sup>8</sup> Reducing oral health disparities requires changes in the preparation of future dentists as well as measuring and influencing the attitudes and knowledge of practicing dentists.<sup>9</sup> At our institution, program revisions have been undertaken to address these workforce issues, with the aim of ensuring that students receive training in cultural competence and related issues. Prior to the implementation of training, student, faculty, and resident attitudes were assessed to provide a baseline indication of prevalent beliefs. The aim of this study was to determine the likelihood that future dentists (students and residents) and faculty members at one U.S. dental school would treat Medicaid participants.

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## Methods

This study was approved by the University of Florida Institutional Review Board (#2010-U-1071). Participants were a convenience sample of five groups at the University of Florida College of Dentistry: faculty, residents, first-year dental students in the Classes of 2017 and 2018, and fourth-year dental

students in the Class of 2015. At separate times between October 2012 and May 2015, all 113 full-time faculty members (October 2012), all 18 residents in the dental clinics and university hospital (January and February 2013), and all students in the three classes (N=267; fall 2013 and 2014 and spring 2015) were invited to complete the survey.

The study used the Deamonte Driver scenario survey, which measures factors affecting dentists' participation in Medicaid.<sup>1,10</sup> The instrument, developed by Logan et al., did not report a factor structure in their study.<sup>1</sup> Therefore, for our study, the three-factor solution reported by Behar-Horenstein and Garvan was used.<sup>10</sup> Participants were asked to rate their level of agreement with the survey's 17 items on a seven-point Likert scale from 1=strongly disagree to 7=strongly agree. Higher scores indicated higher levels of negative stereotyping of Medicaid patients and lower levels of willingness to provide dental care to Medicaid patients. Items 1, 5, 8, 10, and 15 were reverse-scored. The three factors were as follows: Factor 1, Medicaid Stereotypes (items 2, 3, 4, and 14), a measure of dentists' stereotypes or judgment of Medicaid patients on their behavior and interactions with other patients in the waiting room and their knowledge about children's oral health needs; Factor 2, Access to Care (items 1, 6, 7, 10, 12, and 15-17), a measure of dentists' willingness to provide care to patients regardless of their financial ability or socioeconomic status, as well as measuring dentists' ethical and professional perspectives on delivering care to all patients; and Factor 3, Attitudes Toward Underserved (items 5, 8, 9, 11, and 13), a measure of dentists' cultural sensitivity and attitudes about serving Medicaid patients, as well as their professional obligations regarding underserved populations.

The survey was computer-based and self-administered. Participants were invited to complete the survey via the professional and encrypted version of SurveyMonkey. The invitation including the survey link was sent to the groups' email addresses from SurveyMonkey. Participants' data were de-identified before analysis; their responses were anonymous.

The analysis sought to answer the following questions: 1) Were there statistically significant differences among the five cohorts (faculty, resident, and three classes of students) on their total scores on the survey and the three factors? 2) For the three student cohorts, was there a statistically significant difference between males and females on total scores and the three factors? 3) For the student cohorts, was there a statistically significant difference between

white students and underrepresented minority (URM) students on total scores and the three factors? To answer the research questions, we used SPSS 24.0 software to run the analyses. First, the Kolmogorov-Smirnov test was conducted to determine whether the distribution of data met the normal distribution assumption. Next, the independent samples t-test and one-way ANOVA with follow-up procedures were conducted for normally distributed data, and the Kruskal-Wallis test with follow-up procedures and the Mann-Whitney U-test were conducted for data that were non-normally distributed. For all of the analyses, the level of significance was set at  $\alpha=0.05$ .

## Results

Of the 113 faculty members invited to participate, 60 completed the survey, for a response rate of 53.1%. Of the 18 residents invited to participate, 16 completed the survey, for a response rate of 88.9%. Of the 80 students in the Class of 2015 invited to participate, 77 completed the survey, for a response rate of 96.3%. Of the 94 students in the Class of 2017 invited to participate, 86 completed the survey, for a response rate of 91.5%. Of the 93 students in the Class of 2018 invited to participate, 92 completed the survey, for a response rate of 98.9%. In total, 255 of 267 students completed the survey, for an overall student response rate of 95.5%. Of the total 398 individuals in the three groups invited to participate, 331 responded, for an overall response rate of 83.2%. The achieved sample size provided a confidence level of 95%, with the margin of error less than 3%.

Student ethnicity was self-reported as one of the following: white or URM (American Indian, black, Hispanic, Native Hawaiian, Pacific Islander, any Asian other than Chinese, Filipino, Japanese, Korean, Indian, or Thai, or none of above). For the 255 dental student respondents, there were 108 males and 147 females; 118 reported their race as white and 134 as URM, while three did not report race (Table 1). Demographic information was not collected for the faculty and resident groups.

The results of the Kolmogorov-Smirnov test showed that, for the participants' total score and Factor 2 scores (Access to Care), the data distribution was normal ( $p>0.05$ ). One-way ANOVA and independent samples t-test were used to conduct these analyses. For Factor 1 (Medicaid Stereotypes) and Factor 3 (Attitudes Toward Underserved) scores, the data were not normally distributed ( $p<0.05$ ). Thus, non-parametric tests—the Kruskal-Wallis test for group comparison by dental cohorts and the Mann-Whitney U-test for gender and race comparison—were run for these analyses.

On the total score, the one-way ANOVA results showed a statistically significant mean difference among the cohorts ( $p<0.001$ ; Table 2). The follow-up procedure indicated significant differences between the faculty and Class of 2017 students ( $p=0.02$ ); between faculty and Class of 2018 students ( $p=0.02$ ); and between residents and students in the Class of 2015 ( $p=0.04$ ), Class of 2017 ( $p<0.001$ ), and Class of 2018 ( $p<0.001$ ). The faculty total score (mean=71.10, SD=8.35) was significantly higher than the total score of students in the Class of 2017 (mean=67.85,

**Table 1. Characteristics of study participants**

Cohort	N (% of Total Sample)	Class N (% of Students)	Gender N (% of Students)	Race/Ethnicity N (% of Students)			
Student	255 (77.0%)	Class of 2015	77 (30.2%)	Male	36 (46.8%)	White	36 (46.8%)
				Female	41 (53.2%)	URM	41 (53.2%)
		Class of 2017	86 (33.7%)	Male	38 (44.2%)	White	38 (44.2%)
				Female	48 (55.8%)	URM	48 (55.8%)
		Class of 2018	92 (36.1%)	Male	34 (37.0%)	White	44 (47.8%)
				Female	58 (63.0%)	URM	45 (48.9%)
		Total		Male total	108 (42.4%)	White total	118 (46.3%)
		Female total	147 (57.6%)	URM total	134 (52.5%)		
Faculty	60 (18.1%)						
Resident	16 (4.8%)						

Note: Three students in the Class of 2018 did not report their race/ethnicity.

**Table 2. ANOVA results by cohort for total score and factor 2**

Dependent Variable	p-value	Cohort	N	Mean	SD	Post Hoc Groups	p-value for Post Hoc
Total score	<0.001	Faculty	60	71.10	8.35	vs. Resident	0.10
						vs. Student 2015	0.52
						vs. Student 2017	0.02
		Resident	16	75.00	8.21	vs. Student 2018	0.02
						vs. Student 2015	0.04
						vs. Student 2017	<0.001
						vs. Student 2018	<0.001
		Student 2015	77	70.16	8.55	vs. Student 2017	0.08
						vs. Student 2018	0.08
						vs. Student 2018	0.99
Factor 2: access to care	0.01	Faculty	60	34.93	4.94	vs. Resident	0.36
						vs. Student 2015	0.67
						vs. Student 2017	<0.001
		Resident	16	33.81	4.56	vs. Student 2018	0.76
						vs. Student 2015	0.50
						vs. Student 2017	0.35
						vs. Student 2018	0.44
		Student 2015	77	34.61	4.00	vs. Student 2017	0.01
						vs. Student 2018	0.87
						vs. Student 2018	<0.001
Student 2017	86	32.70	4.47	vs. Student 2018	<0.001		
				Student 2018	92	34.72	4.02

SD=8.14) and Class of 2018 (mean=67.86, SD=8.85), suggesting that students in those two classes were more likely to participate in caring for Medicaid patients than were the faculty. The residents' total score (mean=75.00, SD=8.21) was significantly higher than the total score of students in the Class of 2015 (mean=70.16, SD=8.55), Class of 2017, and Class of 2018, suggesting that students in all three classes were more likely to participate in caring for Medicaid patients than the residents. There were no significant differences among the three classes of students for total score; all three pairs had p-values larger than 0.05. There was no significant difference between faculty and students in the Class of 2015 (p=0.52) and between faculty and residents (p=0.10).

For Factor 2 (Access to Care), there was a statistically significant mean difference among the cohorts (p=0.01) (Table 2). The follow-up procedure found a significant difference between faculty and the Class of 2017 students (p<0.001). The faculty had a significantly higher score (mean=34.93, SD=4.94) on Factor 2 than the Class of 2017 students (mean=32.70, SD=4.47), indicating that students in that class had a stronger willingness to provide dental

care to all patients regardless of their financial ability or socioeconomic status than the faculty. Also, there were statistically significant differences on Factor 2 between students in the Class of 2017 and Class of 2015 (p=0.01) and between students in the Class of 2017 and Class of 2018 (p<0.001). Students in the Class of 2017 had a significantly lower score than students in the Class of 2015 (mean=34.61, SD=4.00) and Class of 2018 (mean=34.72, SD=4.02), suggesting that students in the Class of 2017 had stronger willingness to provide dental care to all patients than the other two classes. There were no statistically significant differences between faculty and residents on Factor 2 (p=0.36) and between faculty and students in the Classes of 2015 (p=0.67) and 2018 (p=0.76). There were no significant differences between residents and the three classes of students; all pairs had p-values larger than 0.05. There was no significant difference between students in the Class of 2015 and Class of 2018 (p=0.87).

The Kruskal-Wallis test results showed a statistically significant difference among the cohorts (p<0.001) for Factor 1 (Medicaid Stereotypes) (Table 3). The follow-up procedure showed significant dif-

ferences between the residents and faculty ( $p < 0.001$ ) and between the residents and students in all three classes: 2015 ( $p = 0.01$ ), 2017 ( $p < 0.001$ ), and 2018 ( $p < 0.001$ ). Descriptive statistics showed that the residents had a higher score (mean=21.25, SD=4.01) on Factor 1 than the faculty (mean=16.67, SD=4.72) and the students in all three classes: 2015 (mean=17.29, SD=5.05), 2017 (mean=14.84, SD=4.01), and 2018 (mean=14.12, SD=4.73). These results suggested that the residents had stronger negative stereotypes of Medicaid patients than all the students and faculty. There were statistically significant differences between the faculty and students in the Class of 2017 ( $p = 0.03$ ) and Class of 2018 ( $p = 0.01$ ). The faculty had a higher score on Factor 1 than students in the Classes of 2017 and 2018, indicating that faculty members had stronger negative stereotypes of Medicaid patients than students in those classes. The results suggested that students in the Class of 2015 also had stronger negative stereotypes of Medicaid patients than students in the Classes of 2017 ( $p < 0.001$ ) and 2018 ( $p < 0.001$ ). There was no significant difference between faculty and students in the Class of 2015 on Factor 1 ( $p = 0.41$ ) or between students in the Classes of 2017 and 2018 ( $p = 0.53$ ).

For Factor 3 (Attitudes Toward Underserved), the Kruskal-Wallis test results showed a statistically significant difference among the cohorts ( $p < 0.001$ ; Table 3). The follow-up procedure showed significant differences between the faculty and the students in the Classes of 2015 ( $p = 0.04$ ) and 2017 ( $p < 0.001$ ). Students in the Class of 2015 (mean=18.26, SD=3.04) had lower scores on Factor 3 than the faculty (mean=19.50, SD=3.88) and students in the Class of 2017 (mean=20.31, SD=3.15). These findings indicated that the Class of 2015 students had stronger positive attitudes toward the underserved than the faculty and the students in the Class of 2017. Students in the Class of 2018 (mean=19.02, SD=3.29) had significantly stronger positive attitudes toward the underserved than students in the Class of 2017 ( $p < 0.001$ ). There was no significant difference between the faculty and residents on Factor 3 ( $p = 0.82$ ) or between the faculty and the students in the Classes of 2017 ( $p = 0.09$ ) and 2018 ( $p = 0.38$ ). There was no significant difference between the residents and the three classes of students. No significant difference between students in the Classes of 2015 and 2018 were observed.

**Table 3. Kruskal-Wallis test results by dental cohorts for factors 1 and 3**

Dependent Variable	p-value	Cohort	N	Mean	SD	Post Hoc Groups	p-value for Post Hoc
Factor 1: Medicaid stereotypes	<0.001	Faculty	60	16.67	4.72	vs. Resident	<0.001
						vs. Student 2015	0.41
						vs. Student 2017	0.03
		Resident	16	21.25	4.01	vs. Student 2015	0.01
						vs. Student 2017	<0.001
						vs. Student 2018	<0.001
		Student 2015	77	17.29	5.05	vs. Student 2017	<0.001
						vs. Student 2018	<0.001
						vs. Student 2018	0.53
Factor 3: attitudes toward underserved	<0.001	Faculty	60	19.50	3.88	vs. Resident	0.82
						vs. Student 2015	0.04
						vs. Student 2017	0.09
		Resident	16	19.94	4.96	vs. Student 2018	0.38
						vs. Student 2015	0.12
						vs. Student 2017	0.43
		Student 2015	77	18.26	3.04	vs. Student 2018	0.44
						vs. Student 2017	<0.001
						vs. Student 2018	0.16
Student 2017	86	20.31	3.15	vs. Student 2018	<0.001		
	92	19.02	3.29				

Student gender and race (white/URM) were considered independent variables for comparing the mean scores for total and the three factors. The independent samples t-test results showed no statistically significant differences between male and female students for either the total score ( $p=0.46$ ) or Factor 2 (Access to Care) ( $p=0.90$ ) (Table 4). Mann-Whitney U-test results showed that there was a significant difference between male and female students ( $p=0.03$ ) on Factor 1 (Medicaid Stereotypes). The male students' score on Factor 1 (mean=15.99, SD=4.77, mean rank=139.99) was significantly higher than that of the female students (mean=14.82, SD=4.73, mean rank=119.19), suggesting that the male students had stronger negative stereotypes about Medicaid patients than did female students. There was no significant difference between male and female students ( $p=0.74$ ) on Factor 3 (Attitudes Toward Underserved).

When we compared the white and URM students, independent samples t-test results found no significant difference between white and URM students for either total score ( $p=0.06$ ) or Factor 2 (Access to Care) ( $p=0.28$ ) (Table 4). Mann-Whitney U-test results showed that, on Factor 1 (Medicaid

Stereotypes), there was a significant difference between white and URM students ( $p<0.001$ ). Specifically, the white students' score on Factor 1 (mean=16.39, SD=4.20, mean rank=142.46) was significantly higher than the URM students' score (mean=14.37, SD=5.07, mean rank=112.62), showing that white students had stronger negative stereotypes of Medicaid patients than URM students. However, there was no significant difference on Factor 3 (Attitudes Toward Underserved) between the white and URM students ( $p=0.33$ ).

## Discussion

This study sought to assess the willingness of dental students, residents, and faculty members to treat Medicaid patients and to determine if there were group or demographic differences. The findings were the following: 1) students in the Classes of 2017 and 2018 were more likely to participate in caring for Medicaid patients than the faculty; 2) students in all three classes were more likely to participate in caring for Medicaid patients than the residents; 3) the residents had stronger negative stereotypes about

**Table 4. Group comparisons by student gender and race**

Analysis	Independent Variable	Dependent Variable	Group	N	Mean	SD	Mean Rank (for U-test)	t or U-statistic	p-value
t-test	Gender	Total score	Male	108	69.01	8.37	–	0.74	0.46
			Female	147	68.21	8.71	–		
		Factor 2: AC	Male	108	33.96	4.14	–	-0.13	
			Female	147	34.03	4.36	–		
	Race	Total score	White	118	69.58	8.09	–	1.88	0.06
			URM	134	67.56	8.92	–		
Factor 2: AC		White	118	33.66	4.13	–	-1.07		
		URM	134	34.24	4.38	–			
U-test	Gender	Factor 1: MS	Male	108	15.99	4.77	139.99	6643.00	0.03
			Female	147	14.82	4.73	119.19		
		Factor 3: AT	Male	108	19.06	3.09	126.19	7743.00	
			Female	147	19.35	3.39	129.33		
	Race	Factor 1: MS	White	118	16.39	4.20	142.26	6046.00	<0.001
			URM	134	14.37	5.07	112.62		
		Factor 3: AT	White	118	19.53	3.25	131.25	7345.00	
			URM	134	18.95	3.29	122.31		

Note: Analyses were done with independent samples t-test for total score and factor 2 and with Mann-Whitney U-test for factors 1 and 3. AC=access to care; MS=Medicaid stereotypes; AT=attitudes toward underserved; URM=underrepresented minority

Medicaid patients than all three classes of students and the faculty; 4) faculty members had stronger negative stereotypes about Medicaid patients than students in the Classes of 2017 and 2018; 5) students in the Class of 2015 had stronger negative stereotypes about Medicaid patients than students in the Classes of 2017 and 2018; 6) students in the Class of 2017 had a stronger willingness to provide dental care to all patients than students in the Classes of 2015 and 2018 and the faculty; 7) students in the Class of 2015 had stronger positive attitudes toward the underserved than the faculty and students in the Class of 2017; 8) students in the Class of 2018 had significantly stronger positive attitudes toward the underserved than students in the Class of 2017; 9) male students had stronger negative stereotypes of Medicaid patients than female students; and 10) white students had stronger negative stereotypes of Medicaid patients than URM students.

Also, there were no statistically significant differences between the following: between faculty and residents on total score, Factor 2 (Access to Care), and Factor 3 (Attitudes Toward Underserved); between faculty and Class of 2015 students on total score, Factor 1 (Medicaid Stereotypes), and Factor 2 (Access to Care); between faculty and Class of 2017 students on Factor 3 (Attitudes Toward Underserved); between faculty and Class of 2018 students on Factor 2 (Access to Care) and Factor 3 (Attitudes Toward Underserved); between residents and all three classes of students on Factor 2 (Access to Care) and Factor 3 (Attitudes Toward Underserved); among the three classes of students on total score; between students in the Classes of 2017 and 2018 on Factor 1 (Medicaid Stereotypes); between students in the Classes of 2015 and 2018 on Factor 2 (Access to Care) and Factor 3 (Attitudes Toward Underserved); between male and female students on total score, Factor 2 (Access to Care), and Factor 3 (Attitudes Toward Underserved); and between white and URM students on total score, Factor 2 (Access to Care), and Factor 3 (Attitudes Toward Underserved).

These findings are not meant to address in totality the need to ensure oral literacy among oral health care professionals as suggested by Horowitz and Kleinman<sup>9</sup> or the need to develop cultural competence. However, measuring baseline attitudes toward underserved populations among entry-level dental students and faculty members as well as residents is one step towards establishing “baseline data of knowledge and understanding of practice” beliefs

among oral health care professionals as suggested by Rudd.<sup>11</sup> The findings support an imperative to educate faculty members and residents to improve their attitudes about treating Medicaid patients and a need to provide them with cultural competency training. The findings that residents held negative stereotypes of underserved and Medicaid patients and that students were more likely to participate in Medicaid than the faculty and residents are cause for concern. Similarly, the white students had stronger negative stereotypes about Medicaid patients than did the URM students, and male students had stronger negative stereotypes about Medicaid patients than did the female students. A longitudinal study that assessed changes in dental students’ attitudes about treating underserved patients found that fourth-year students were less willing to treat underserved patients than they had been as first-year students.<sup>12</sup> That study also reported that faculty interactions played an important role in students’ attitudes about treating underserved patients. If faculty and residents do not hold positive beliefs about treating Medicaid patients, ensuring their access to care, and treating the underserved, how can they model the type of practice attitudes needed to reduce oral health care disparities among underserved and unserved populations, particularly children?

A previous study found value in integrating service-learning into dental education, developing dental students’ cultural competence, and raising their willingness to treat underserved populations.<sup>13</sup> That study pointed to the urgent need to integrate some form of service-learning into dental faculty development programs. Compared to students who have access to cultural competency training and community-based dental education while in dental school, faculty and residents typically lack the experiences to systematically and continually access cultural competency training and service-learning. However, since faculty and residents play a major role in serving dental patients and providing future dentists, they need high-level cultural competence, and they should model culturally competent treatment of Medicaid patients and underserved populations for students. Thus, we urge dental schools and leaders of faculty development programs to consider ways to couple service-learning with cultural competency training for faculty and residents instead of focusing merely on development of skills.

In addition, our study found that cultural majority students (white and male students) held stronger negative stereotypes about Medicaid patients than did the cultural minority students (URM and female

students). This makes sense given that cultural majority students tend not to recognize bias.<sup>14,15</sup> Previous research has found that the experience of contact with those who are culturally different from themselves was an effective strategy for reducing bias and stereotypes and fostering understanding of otherness.<sup>16,17</sup> Our findings in this study may be used to support that teaching strategy and assert that the need is critical and training must be continuous. The uniqueness of the student sample in our study, in which more than half of the students were cultural minorities (URM and female students) could be one reason why the student group reported a higher level of willingness to provide dental care to all patients and less negative stereotypes of Medicaid patients than the faculty and residents. Previous studies found that experience with cultural diversity helped dental students develop cultural competence, recognize cultural bias, and improve their understanding of cultural minority patients.<sup>16,17</sup>

Our findings also suggest that it is important to ask where stereotypes or attitudes about Medicaid patients come from. Mofidi et al. found that a flawed dental care system may result in negative experiences for both dentists and patients.<sup>18</sup> For example, when Medicaid patients miss their limited transportation options to travel to the dental clinic, they are likely to cancel or not show up for their appointment. This circumstance can contribute to the stereotypical belief that “Medicaid patients frequently cancel appointments.” Perhaps if public transportation were more widely available and reliable, this practice (and the stereotype) would diminish. Similarly, providing adequate reimbursement to dentists has been a long-standing criticism leveled against Medicaid. To address this issue, policymakers need to find a way to address dentists’ need for sufficient reimbursement and ensure funding programs are adequate.

There may be other reasons for the results of this study. Treadwell et al. found that dental practitioners’ lack of exposure to and direct communication with underserved populations, insensitivity to patients’ health care needs, lack of diversity among colleagues, and limited cross-cultural skills contributed to oral health care disparities.<sup>19</sup> In that study, practitioners often blamed low-income populations’ poor oral health care on those individuals’ not placing a priority or high value on oral health or not understanding the importance of seeking dental care. In addition, Logan et al. found that many dentists said they did not provide care for the poor because of a perceived social stigma imposed by other dentists

toward those who participate in Medicaid and potential reactions from non-Medicaid patients toward Medicaid patients in dental offices.<sup>1</sup> Some of these factors may have played a role in the responses of participants in our study. Nevertheless, we urge academic dental institutions to devote more resources to cultural competency programs for students, residents, and faculty members in order to better educate practitioners to provide care for all kinds of underserved populations.<sup>20-22</sup>

Limitations of this study include that it was a single survey administration, use of a convenience sample, the lack of a control group, an inability to determine if social desirability bias impacted participant responses, and possible non-response bias. These limitations and potential biases are inherent to most survey studies. Regarding the convenience sampling method, most applied studies collect data from a convenience sample due to research interest and sample availability.<sup>23</sup> If budgeting and human resources allowed, future studies could use a stratified sampling method to collect more information from a representative sample. In our study, the non-response bias occurred mainly among the faculty cohort. Reasons for faculty non-response may include busy schedules that do not permit time to respond, receiving a considerable amount of email and the possibility that they overlooked an email from SurveyMonkey, and lack of interest in this study’s topic. We acknowledge that the findings may not reflect the beliefs of the entire clinical faculty at this dental school. To achieve a satisfactory sample size (confidence level of 95% and margin of error less than 5%) for the faculty cohort, at least 88 of the 113 faculty members should be recruited for future study.

Another limitation of the study was the potential for social desirability bias, which refers to authenticity of responses. Without a measure of this bias, it is difficult to know whether or not participants answered in ways that reflected their beliefs or if they responded in ways that they believed the researcher was seeking. However, since this study used a computer-based self-administered survey and did not collect any identifiable information in the data collection process, the potential for social desirability bias was minimized.<sup>24</sup> Since this study was conducted at only one dental school, the findings have limited generalizability. Demographic data for participating faculty and residents were not available. Lacking this demographic information limits the conclusions that can be drawn about the contribution of those factors to negative attitudes about serving Medicaid patients.

Similarly, the lack of demographic information may impact the content of needed cultural competency training.

A final limitation is that the methodology used in this study did not include analysis of differences between the first- and fourth-year students or exploration of possible reasons for the differences in attitudes found among all the cohorts. Particularly puzzling were the differences between classes of students—two of whom were in the same year of dental school (first year). The comparison of results by year in dental school in a future study would contribute to the research on differences among students as they progress year by year through their dental education. Furthermore, the addition of qualitative methodologies such as focus groups or interviews to future research could provide ways to identify differences in such factors as life experiences, family background, peer groups, and education (before and during dental school) that may help dental educators both understand the formation of attitudes and develop educational programs to promote positive change.

Future studies should also use a posttest to assess the impact of any curricular revisions made in response to these findings. Since this study used cross-sectional data, it would be interesting to determine how program revisions impacted faculty attitudes. This determination could be accomplished in part by collecting data from the current faculty now and comparing it with that collected in 2012. Data could be collected among residents as well if they are still enrolled in the residency program. With the methods described here, this study could be replicated across all U.S. and Canadian dental schools to determine if the trends observed were limited to the institution in this study or are applicable nationally to students, faculty, and residents across the profession. The findings suggest that the existing dental workforce must develop a commitment and dedication to cultural competence, humility, and respect.<sup>18</sup> Developing culturally competent dental students is highly contingent on the knowledge, skills, and attitudes of all dental school faculty members. As such, intensive and mandated faculty training in cultural competence must be supported by a school's leadership and allocation of resources. Faculty development to develop/improve faculty members' and residents' skills in teaching methods and measuring student change should be included. Assessing change should be monitored; when course revision or incremental change is indicated, faculty and residents should receive appropriate guidance and/or instruction.<sup>20</sup>

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## Conclusion

This study found that the dental students were more willing to treat Medicaid patients than were the faculty and residents. The residents also held more negative stereotypes about Medicaid patients than did the faculty and students. Compared to male and white students, female and URM students held less negative stereotypes about Medicaid patients. Ensuring that faculty members and residents can be positive role models for students in the treatment of Medicaid patients and stewards of cultural competence is critical and cannot be overemphasized. We recommend developing a multimodal delivery system for cultural competency training. This model should assess levels of cultural competence among oral health care professionals while taking cultural norms, social determinants, and consumer voices into consideration. This approach may foster more successful outcomes in programs that aim to adapt to the oral health care needs of the population.

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## REFERENCES

1. Logan HL, Catalanotto F, Guo Y, et al. Barriers to Medicaid participation among Florida dentists. *J Health Care Poor Underserved* 2015;26(1):154.
2. Florida Agency for Health Care Administration. Adopted rules: service-specific policies. 2017. At: [ahca.myflorida.com/medicaid/review/specific\\_policy.shtml](http://ahca.myflorida.com/medicaid/review/specific_policy.shtml). Accessed 17 May 2010.
3. Pew Center on the States. The costs of delay: state dental policies fail one in five children. 2009. At: [www.pewcenteronthestates.org/uploadedFiles/Cost\\_of\\_Delay\\_web.pdf](http://www.pewcenteronthestates.org/uploadedFiles/Cost_of_Delay_web.pdf). Accessed 17 May 2010.
4. Jaffe S. The tooth divide: beauty, class, and the story of dentistry. *New York Times Book Review*, 23 March 2017. At: [www.nytimes.com/2017/03/23/books/review/teeth-oral-health-mary-otto.html?\\_r=1](http://www.nytimes.com/2017/03/23/books/review/teeth-oral-health-mary-otto.html?_r=1). Accessed 3 March 2017.
5. Simmer-Beck M, Gadbury-Amyot CC, Ferris H, et al. Extending oral health care services to underserved children through a school-based collaboration: part 1, a descriptive overview. *J Am Dent Hyg Assoc* 2011;85(3):181-92.

6. Wall TP, Vujicic M, Nasseh K. Recent trends in the utilization of dental care in the United States. *J Dent Educ* 2012;76(8):1020-7.
7. Centers for Medicare & Medicaid Services. Use of dental services in Medicaid and CHIP. Washington, DC: U.S. Department of Health and Human Services, 2011.
8. U.S. Department of Health and Human Services. National call to action to promote oral health. 2003. At: [www.surgeongeneral.gov/topics/oralhealth/nationalcalltoaction.html](http://www.surgeongeneral.gov/topics/oralhealth/nationalcalltoaction.html). Accessed 10 March 2010.
9. Horowitz AM, Kleinman DV. Oral health literacy: a pathway to reducing oral health disparities in Maryland. *Am J Public Health Dent* 2012;72(Suppl 1):S26-30.
10. Behar-Horenstein LS, Garvan CW. Relationships among knowledge, efficacy, and practices instrument, color-blind racial attitudes scale, Deamonte Driver, and defining issues test 2. *J Dent Educ* 2016;80(3):355-64.
11. Rudd RE. Oral health literacy: correcting the mismatch. *J Public Health* 2012;73:S31-3.
12. Major N, McQuistan MR, Qian F. Changes in dental students' attitudes about treating underserved populations: a longitudinal study. *J Dent Educ* 2016;80(5):517-25.
13. Behar-Horenstein LS, Feng X, Roberts KW, et al. Developing dental students' awareness of health care disparities and desire to serve vulnerable populations through service-learning. *J Dent Educ* 2015;79(10):1189-200.
14. Carnes M, Devine P, Isaac C, et al. Promoting institutional change through bias literacy. *J Div Higher Educ* 2012;5:63-77.
15. Uhlmann E. Toward an understanding of motivated discrimination: the roles of constructed criteria and self-perceived objectivity in hiring decisions. Doctoral dissertation. 2006. Retrieved December 6, 2016 from ProQuest Information & Learning (UMI No. 3243716).
16. Behar-Horenstein LS, Feng X. Enhancing cultural competence among dental students through active teaching and experiential learning. *Qual Rep* 2017;22(4):1169-85.
17. Behar-Horenstein LS, Feng X, Lee B, Isaac CA. Dental students' expressions of cultural competence. *J Ethn Qual Res* 2017;11(3):171-7.
18. Mofidi M, Rozier RG, King RS. Problems with access to dental care for Medicaid-insured children: what caregivers think. *Am J Public Health* 2002;92(1):53-8.
19. Treadwell H, Catalanotto F, Warren RC, et al. Dental practitioners' perceptions of underserved and unserved patients' barriers to oral health care. *Dent Health Curr Res* 2017;3.
20. Ward RL, Nichols AD, Freedman RI. Uncovering health care inequalities among adults with intellectual and developmental disabilities. *Health Soc Work* 2010;35(4):280-90.
21. Rust G, Kondwani K, Martinez R, et al. A crash-course in cultural competence. *Ethnic Dis* 2006;16(2 Suppl 3):S329-36.
22. Behar-Horenstein LS, Warren RC, Dodd VJ, Catalanotto FA. Addressing oral disparities via educational foci on cultural competence. *Am J Public Health* 2017;51(Suppl 107):S118-23.
23. Dillman DA, Smyth JD, Christian LM. Internet, phone, mail, and mixed-mode surveys: the tailored design method. 4<sup>th</sup> ed. Hoboken, NJ: John Wiley & Sons, 2014.
24. Bowling A. Mode of questionnaire administration can have serious effects on data quality. *J Public Health* 2005;27(3):281-91.