

## A Racial Comparison of Sociocultural Factors and Oral Health Perceptions

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### Introduction

In the U.S. oral health care disparities exist between minority and other mainstream populations.<sup>1</sup> By 2025, non-white racial groups are expected to approach 40% of the U.S. population, which include African Americans (AA) and Asian Americans (AS).<sup>2</sup> Although the prevalence and incidence of various forms of oral disease have declined in the last few decades, the present rates of oral disease among minority groups are distressingly high.<sup>1,3-5</sup> The percentage of AA who have lost 1 or more natural teeth is more than 3 times as great as Caucasians. One study indicated that AA display the highest prevalence of periodontal disease followed by Hispanics and AS.<sup>6</sup>

These oral health disparities can be explained by various sociocultural factors. Differences in access to care, education level and socioeconomic status may explain racial and ethnic differences in the use of preventive services.<sup>5</sup> A Medical Expenditure Survey revealed that low socioeconomic status, lack of insurance, and lack of a usual source of care represent significant barriers to preventive care.<sup>7</sup>

Another significant factor in sociocultural variance is cultural beliefs and perceptions of oral health care. Perceptions of oral health have been linked to predisposing sociodemographics and dental utilization.<sup>8</sup> Individual patient preferences and behavioral risk factors are often a reflection of their sociodemographic and cultural backgrounds. The oral health beliefs and correlated risk behaviors of patients are intricately related to patients' health-related risk behaviors, openness

to change, and ultimately health outcomes. Variations of theoretical frameworks and conceptual models have been applied to dentistry in order to understand oral health outcomes and to create effective oral health interventions.<sup>9</sup> A prior study determined that age and race were major predictors

### Abstract

**Purpose:** There are limited data regarding race, sociocultural factors and dental outcomes such as oral health perceptions. The purpose of this study is to recognize and determine whether sociocultural factors impact oral health practices, and how these relate to oral health care perceptions among African American (AA) and Asian American (AS) comparison groups.

**Methods:** In this cross-sectional study, participants were selected using a purposive sampling technique among new enrolling patients of AA and AS origin at the New York University College of Dentistry (NYUCD). Sociocultural factors such as low education level, poor access to care, limited financial status and perceptions of oral health such as brushing and flossing were studied.

**Results:** Among 139 participants, 86 (61.87%) were AA and 53 (38.13%) were AS. Compared to AS, AA had poorer access to care (58.14% vs. 43.40%,  $p < 0.01$ ) and cost was a greater financial barrier for dental care (41.86% vs. 26.41%,  $p < 0.01$ ). Race was the strongest predictor of oral health perceptions (OR = 2.27,  $p < 0.05$ ) followed by limited financial status (OR = 1.335  $p < 0.05$ ) and poor access to care (OR = 1.299  $p < 0.01$ ). AA had more adverse oral health perceptions (83.72% vs. 69.81%,  $p < 0.05$ ), higher incidence of dental decay (13.95% vs 7.54%,  $p < 0.05$ ) and mixed disease (dental decay and periodontal disease) (88.37% vs. 60.37%,  $p < 0.05$ ) compared to AS. There was no difference in oral health practices (brushing and flossing) between the two populations.

**Conclusion:** AA had more adverse oral health perceptions and higher incidence of dental disease than AS. Cultural influences have an impact on perceptions and behaviors that may affect oral health. Therefore, cultural awareness and competency among oral health professionals should be emphasized.

**Keywords:** Sociocultural factors, oral health perceptions, cultural competency, cultural awareness, race

This study supports the NDHRA priority area, **Health Promotion/Disease Prevention:** Investigate how environmental factors (culture, socioeconomic status-SES, education) influence oral health behaviors.

of the perceived benefits of preventive practices, with Caucasians "more likely to believe in the benefit of preventive practices."<sup>10</sup> Another study explored cultural influences on AA behavior and determined that a low emphasis is placed on seeking oral health care due to the perception of caries not being a health issue.<sup>2</sup> Cultural factors have also proven to impact AS use of oral health care. For example, a study showed that strong traditional beliefs concerning gingival swelling and bleeding are not deemed as a sign of disease and influenced Chinese immigrants' attitudes toward not seeking dental care.<sup>11</sup> However there are few studies that have associated oral health beliefs with dental outcomes and how they relate to different races.

In 2005 a report of the Institute of Medicine provided evidence of cultural differences in health care between minorities and nonminorities. These differences were also related to disparities in access, health status, and health outcomes; increased risk of edentulism; higher incidence of systemic disease; reduced life expectancy; and lower quality of life. These are consequences that may result from poor access to oral health care. Unfortunately, individuals of various cultural groups may not fully comprehend the importance of preventive oral health care and/or may not trust current practices and oral health care professionals.<sup>2</sup> Oral health care professionals must be aware of these barriers so they can be overcome.<sup>12</sup>

Oral health care professionals must be culturally aware and acquire skills in self-awareness, respect for diversity, and sensitivity in communication.<sup>13</sup> The intent is to educate diverse populations on the importance of conventional medicine as a benefit to their health care beliefs. The goal and responsibility of all oral health care professionals is to promote health, reduce the incidence of oral disease, and perform clinical and educational services while being aware of sociocultural differences in order to understand, effectively communicate with, educate, and treat patients from all cultural backgrounds. Cultural competency provides consistent behaviors, attitudes, and policies among oral health professionals to work effectively in cross-cultural situations.<sup>13</sup>

Patients are more likely to value the patient provider relationship if they believe their cultural needs are acknowledged and respected. Patient perceptions have become progressively accepted as significant and valid measures of health care quality.<sup>3</sup>

Currently, there is a shortage of diversity in the health care workforce and a lack of cultural com-

petence among oral health care professionals to care for diverse populations.<sup>12</sup> There is a great need based on existing demographic changes to take measures to ensure that the health care workforce is prepared to care for a more diverse population. Fourteen percent of presently licensed dentists are non-white, almost 7% are AS/Pacific Islander, 3.4% are Black/AA, 3.3% are Hispanic/Latino and 0.1% is Native American. A past report stated that minority patients in the U.S. have increased levels of satisfaction in health care settings of same race oral health care professionals, and concluded that greater racial and ethnic diversity among health professionals will improve access to and quality of health care for all Americans.<sup>12,14</sup> A report of the American Dental Education Association (ADEA) emphasized the role of dental educational institutions in recruiting minorities and training all students in diversity.<sup>15</sup> Research has shown that successful patient-provider communication is correlated with patient satisfaction, adherence to oral health instructions, and positive health outcomes.<sup>12</sup>

Brach and Fraser described nine categories of cultural competency activity that could lead to reducing health disparities for minorities.<sup>16</sup> They concluded that training is imperative to improve problems stemming subculture and mutual understanding of each other's health beliefs. There are few opportunities for continuing education in cultural competency aimed at oral health professionals, however there is growing realization of this need.<sup>15</sup> From the above, it is evident that there are few studies that have investigated how oral health perceptions affect dental outcomes in different races and how these can be used to improve cultural competency of oral health professionals and improve patient care.

There are limited data regarding race, sociocultural factors and dental outcomes such as oral health perceptions. The purpose of this study was to recognize and determine whether sociocultural factors impede oral health practices, and how these relate to the perception of oral health care among AA and AS populations.

## Methods and Materials

This cross-sectional study used quantitative data collection methods through the use of a researcher developed survey, similarly to prior studies to investigate the sociocultural influences on oral health care perceptions among AA and AS.<sup>16,17</sup> Participation was voluntary, based on a purposive sampling technique among all new enrolling patients at New York University College of Dentistry (NYUCD) to

gather relevant data among both groups. The researcher reviewed the completed surveys and discarded those completed by individuals who indicated they were not of AS and or AA origin.

The Kentucky Oral Health Survey was used in Part 1 of the survey and included questions addressing demographics, dental insurance, general and oral health status, oral health practices, etc.<sup>17</sup> It used a multiple-choice format, dichotomous answers and open-ended questions. Part 2 of the survey probed oral health perceptions, such as the importance of routine dental checkups and proper homecare.<sup>10,18,19</sup>

The researcher conducted the study at NYUCD Admissions Clinic 1A, following Institutional Review Board approval. NYUCD was chosen because of its diverse and urban patient pool. Data were collected from participants from January 30, 2012, to March 7, 2012, by the researcher.

A questionnaire information sheet provided a written summary of the nature of the research study. Subjects were informed that participation would aid in educating oral health care professionals to understand the oral health care perceptions of patients, and to provide a step towards implementing culturally competent care. The researcher reviewed the completed surveys and discarded those completed by individuals who indicated they were not of AA and AS origin. To further ensure the privacy of the participants, a numerical coding system was utilized for the survey responses. The gathered data were stored and locked in a filing cabinet system.

### **Definition of Variables**

The most important sociocultural factors were race, education, poor access to care, oral health awareness, poor financial status and strong cultural beliefs. Education was studied as a 3 level variable as listed: low education was defined as high school/GED or lower, medium as some college – Associates degree and high level of education as Bachelor's - Professional degree. The poor access to care variable was created based on patient's answers of dental or no visit at time of visit at NYUCD ("NYU today") as well as in the last year or last 5 years. The major reasons of no visit in the last year were cost, unawareness of prevention ("no reason to go") and fear. The main reasons disclosed for visit at any time point were pain/extraction and prevention. If any of the answers to the above questions had negative meaning regarding access to care (i.e. "no transportation") that patient was coded as having poor access to care. The

poor financial status variable was created based on patient's answers of cost being the main reason for not seeking dental treatment.

In order to help define the adverse oral health perception variable, the survey question responses were analyzed. The subject's answers were deemed as correct or adverse oral health perception based on professional oral health practices. The patients were asked the following questions that are considered as correct statements in oral health care:

1. Dental problems can cause other health problems
2. I place great value on dental health
3. I can keep my teeth by brushing, flossing, and going to the dentist regularly
4. It is important to keep my natural teeth

Another variable, "adverse periodontal disease perception," was created based on patient's responses regarding answering the question correctly based on accepted dental practice. The patients were asked the following questions that are considered correct in oral health care: flossing prevents gum disease, brushing prevents gum disease. If patients disagreed with the correct perception then that patient was coded as having an adverse perception of periodontal disease. The "periodontal disease" variable was created based on patient's responses on answering the questions that describe periodontal disease. Questions addressed were: bleeding gums, mobile teeth and periodontal disease as reason for dental visit in the past 5 years or time of visit at NYUCD. If any of the answers to the above questions indicated signs and or a history of periodontal disease (i.e. "I have mobile teeth or periodontal disease as reason for dental visit in the past 5 years") that patient was coded as having periodontal disease. Secondly, patients were asked the following questions that are considered as incorrect statements regarding oral health care: it's natural to lose teeth with age, dentures are less of a bother than natural teeth and state of teeth is decided at birth and not related to self-care. If patients agreed with the incorrect perception or disagreed with the correct perception then that patient was coded as having an adverse oral health perception. The "dental decay" variable was created based on patient's responses concerning the questions that describe dental decay based on presence and or history of carious lesions. Such questions addressed: root canal as reason for dental visit in the past 5 years or at time of NYUCD visit. If any of the answers to the above questions were positive that patient was coded as having dental decay. The "periodontal disease and dental decay" variable was created to describe patients

with mixed disease. This variable was based on patient's answers to the questions that describe periodontal disease and dental decay based on usual dental practice. The questions addressed: brushing, flossing, swollen gums, lost teeth due to periodontal disease/decay and different reasons for dental visit time of visit at NYUCD or past 5 years, such as pain/extraction, restorative work, crown/bridge and or dentures. If any of the answers to the above questions had negative meaning regarding periodontal disease and dental decay (i.e. "I do not brush or floss, I have bleeding gums, etc") that patient was coded as having mixed disease.

### Data Analysis and Statistics

A  $p$ -value  $\leq 0.05$  was considered statistically significant. Continuous data are presented as mean and standard deviation, while categorical data are presented as a number (percent of patients). Comparisons between groups were made using a 2-sample  $t$ -test for continuous data. Chi-square test or Fisher's exact test for categorical data was used. After testing the assumptions, a bivariate analysis was performed between both population groups as well as the available covariates including patient characteristics such as age, gender, education, major sociocultural factors such as poor access to care, oral health awareness, poor financial status, adverse oral health perceptions, adverse perceptions of periodontal disease, and dental characteristics such as periodontal disease and dental decay.

Multiple logistic regression analysis was conducted using the available covariates to identify important predictors of outcomes such as adverse oral health perceptions, adverse periodontal disease perceptions, dental disease characteristics such as dental decay, and dental decay and periodontal disease. In the final multivariable model, important biological characteristics were entered as well as important predictors of outcomes in bivariate analysis at a  $p$ -value of 0.25. Outcomes such as adverse oral health perceptions, adverse periodontal disease perceptions, dental disease characteristics such as dental decay and periodontal disease were analysed as categorical variables.

## Results

A total of 139 subjects participated and completed the researcher-developed questionnaire for the study. Among the participants, 86 (61.87%) were of AA origin, and 53 (38.13%) were of AS origin.

Descriptive characteristics of important demographic and sociocultural variables are presented

in Table I. The mean age of all patients was  $45.50 \pm 18.65$  years. AS were older compared with AA ( $49.82 \pm 21.42$  vs.  $41.36 \pm 14.55$ ,  $p=0.007$ ). There was no statistical significant difference of various levels of education between AA and AS, although AS seemed to have higher levels of education (43.39% vs. 22.09%,  $p=0.073$ ). AA demonstrated poorer access to care compared with AS (58.14% vs. 43.40%,  $p=0.005$ ). Cost was a major cause for lack of dental visits between AS and AA (41.86% vs. 26.41%,  $p=0.008$ ). AS reported seeking preventive dental treatment more frequently than AA in the past 5 years (66.03% vs. 46.51%,  $p=0.009$ ). AS also reported that prevention was also the reason for their present dental visit at NYUCD in comparison to AA (47.17% vs. 29.07%,  $p=0.003$ ). There was no difference in oral health awareness and poor financial status between the 2 groups (Table I).

Table II describes important perceptions and differences of oral health among the 2 racial groups. Overall, 109 (78.41%) in the 2 comparison groups had adverse oral health perceptions. The AA sample group had more adverse oral health perceptions compared with AS (83.72% vs. 69.81%,  $p=0.041$ ). There was no difference in perception of adverse periodontal disease between AA and AS (29.07% vs. 28.30%,  $p=0.09$ ). Both races had similar perceptions that flossing and brushing can prevent periodontal disease.

Table III demonstrates important dental disease characteristics of AA and AS. The AA group did not have significantly more periodontal disease compared to the AS group (55.81% vs. 37.73%,  $p=0.18$ ). More AA sought dental treatment in the past 5 years for periodontal disease than AS (16.27% vs. 7.54%,  $p=0.015$ ). Dental decay was more prevalent among AA than AS (13.95% vs. 7.54%,  $p=0.035$ ), along with more incidence of both periodontal disease and dental decay (88.37% vs. 60.37%,  $p=0.038$ ), inflamed gingiva (34.88% vs. 20.75%,  $p=0.024$ ), and higher rates of edentulism (24.48% vs. 15.09%,  $p=0.004$ ). There was no difference between the 2 races regarding prevalence of gingival bleeding, tooth mobility, prevalence of brushing and or flossing, different reasons for dental visits such as root canal, restorative work, crown/bridge, and dentures.

Table IV depicts differences in perceptions between the 2 comparison groups concerning important oral health practices such as brushing and flossing. Despite the AS group reporting agreement with the statement "I can keep my teeth by brushing and flossing," (75.47% vs. 58.14%,  $p=0.002$ ), they did not seem to brush (90.56% vs. 87.21%,

Table I: Patient Characteristics and Important Sociocultural Factors

Demographics	Overall	African Americans (AA)	Asian Americans (AS)	p-value
	139	86 (61.87%)	53 (38.13%)	
Age	45.50±18.65	41.36±14.55	49.82±21.42	p=0.007
Gender (males)	48 (34.53%)	30 (34.88%)	18 (33.96%)	p=0.85
Sociocultural factors:				
Education				
• Low (high school/GED or lower)	50 (35.97%)	35 (40.69%)	15 (28.30%)	p=0.211
• Medium(some college-Associates degree)	47 (33.81%)	30 (34.88%)	17 (32.07%)	p=0.718
• High(Bachelor-Professional degree)	42 (30.22%)	19 (22.09%)	23 (43.39%)	p=0.073
• Poor access to care	73 (52.52%)	50 (58.14%)	23 (43.40%)	p=0.005
Reasons for no dental visit in the past year				
• Cost	50 (35.97%)	36 (41.86%)	14 (26.41%)	p=0.008
• Unawareness of prevention (no reason to go)	19 (13.67%)	14 (16.28%)	5 (9.43%)	p=0.182
• Fear	23 (18.11%)	12 (13.95%)	11 (20.75%)	p=0.098
Reasons for visit in last five years				
• Pain/Extraction	19 (13.67%)	16 (18.60%)	3 (5.66%)	p<0.001
• Prevention	75 (55.56%)	40 (46.51%)	35 (66.03%)	p=0.009
Reasons for visit at NYUCD today				
• Pain/Extraction	18 (12.95%)	10 (11.63%)	8 (15.09%)	p=0.684
• Prevention	50 (35.97%)	25 (29.07%)	25 (47.17%)	p=0.003
• Oral Health awareness	112 (80.57%)	67 (77.90%)	45 (84.90%)	p=0.055
• Poor financial status	76 (54.68%)	46 (53.49%)	30 (56.60%)	p=0.68
• Insurance (yes or no)	63 (45.32%)	40 (46.51%)	23 (43.39%)	p=0.68
Type of insurance				
• None	76 (54.68%)	46 (53.49%)	30 (56.60%)	p=0.688
• Medicaid (average)	43 (30.94%)	29 (33.72%)	14 (26.41%)	p=0.277
• Private (Very good)	20 (14.34%)	12 (13.95%)	8 (15.09%)	p=0.388
• Strong cultural beliefs/traditions	98 (70.50%)	56 (65.11%)	42 (79.24%)	p=0.034

p=0.23) or floss (45.28% vs. 40.69%, p=0.35) significantly more than AA.

Table V demonstrates important demographic and sociocultural factors as predictors of adverse oral health perceptions (multivariable logistic regression analysis). Overall, in the unadjusted analysis, race was an important predictor of adverse oral health perceptions (OR 2.27, p=0.05). In the adjusted final model, race remained an important predictor of adverse oral health perceptions (OR 2.96, p=0.029). Generally, in the adjusted analysis, age was an important predictor of adverse oral health perceptions (OR 1.03, p=0.017). More specifically, age was a more significant predictor of adverse oral health perceptions (OR 1.510, p=0.001) in AA than in AS (OR 0.966, p=0.177). In the adjusted analysis, poor access to care was an important predictor of adverse oral health perceptions (OR 1.275, p=0.021). More specifically, poor access to care was a more vital predictor of adverse oral health perceptions (OR 1.457, p=0.035) in AA

than in AS (OR 1.054, p=0.129). Moreover, in the adjusted analysis, poor financial status was an important predictor of adverse oral health perceptions (OR 1.335, p=0.016). Poor financial status was also an important predictor of adverse oral health perceptions for both AA (OR 1.896, p=0.014) and AS (OR 1.252, p=0.043).

Using a similar model, demographic and sociocultural factors as predictors of periodontal disease perceptions were examined. Overall, race was an important predictor of periodontal disease perceptions both in the unadjusted (OR 1.053, p=0.034) and adjusted analysis (OR 1.040, p=0.046). Overall, in the adjusted analysis, age was an important predictor of periodontal disease perceptions (OR 1.028, p=0.044). More specifically, age was a more important predictor of periodontal disease perceptions (OR 1.029, p=0.046) in AS than in AA (OR 1.012, p=0.062). Education, poor access to care and poor financial status were not important predictors of periodontal disease perceptions.

Table II: Patient Characteristics and Important Perceptions of Oral Health

Perceptions of oral health	Overall	AA	AS	p-value
	139	86 (61.87%)	53 (38.13%)	
Adverse oral health perceptions :	109 (78.41%)	72 (83.72%)	37 (69.81%)	p=0.041
• Dental problems can cause health problems (correct perception)	121 (87.05%)	72 (83.72%)	49 (92.45%)	p=0.006
• Great value on dental health (correct perception)	92 (66.19%)	50 (58.14%)	42 (79.24%)	p<0.001
• It's natural to lose teeth with age (adverse perception)	104 (74.82%)	58 (67.44%)	46 (86.79%)	p<0.001
• I can keep my teeth for life by brushing, flossing, and going to the dentist regularly (correct perception)	90 (64.75%)	50 (58.14%)	40 (75.47%)	p=0.002
• Dentures will be less of a bother than natural teeth (adverse perception)	49 (35.25%)	40 (46.51%)	9 (16.98%)	p=0.018
• State of teeth is decided at birth and not related to self care (adverse perception)	46 (33.09%)	31 (36.04%)	15 (28.30%)	p=0.004
• It is important to keep my natural teeth (correct perception)	120 (86.33%)	73 (84.88%)	47 (88.68%)	p=0.024
Adverse Perception of Periodontal disease	40 (28.78%)	25 (29.07 %)	15 (28.30%)	p=0.09
• Flossing prevents gum disease (correct perception)	111 (79.86%)	71 (82.56%)	40 (75.47%)	p=0.078
• Brushing prevents gum disease (correct perception)	115 (82.73%)	73 (84.88%)	42 (79.24%)	p=0.069

Moreover we studied the above demographic and sociocultural factors as predictors of dental decay and mixed disease. Regarding dental decay overall, race was not a significant predictor of dental decay (OR 1.19, p=0.072). Similar results were noted for the other sociocultural factors. Regarding mixed disease (dental decay and periodontal disease), race was not a significant predictor of mixed disease (OR 1.419, p=0.068). Overall, in the adjusted analysis, age was an important predictor of mixed disease (OR 1.043, p=0.005 and was a more important predictor of mixed disease (OR 1.114, p=0.023) in AA than AS (OR 1.016, p=0.258). Poor access to care was also an important variable of mixed disease in the unadjusted analysis (OR 2.904, p=0.025) but not in the adjusted (OR 2.675, p=0.073). Education and poor financial status were not important predictors of mixed disease.

In summary we noted the following significant differences in sociocultural factors, oral health perceptions and predictors of dental disease between AA and AS: AA had worse access to care 58.14 vs. 43.40 (p=0.005), did not visit the dental office due to cost (41.86% vs 26.41%, p=0.008) , visited the dental office more often due to pain and tooth extraction (18.60% vs 5.66, p<0.001) , had worse

overall adverse oral health perceptions (83.72% vs 69.81%, p<0.05), had more often dental decay (13.95% vs 7.54% , p<0.05) and mixed disease (88.37% vs 60.37% , p<0.05). In AA age was a more important predictor of adverse oral health perceptions (OR 1.510, p=0.001) than AS (OR 0.966, p=0.177). Similar results for poor access to care (OR 1.457, p<0.05 for AA vs OR 1.054, p=0.129 for AS). Prevention was a more important reason for dental visits among AS (p<0.01). Also AS has stronger cultural beliefs (p<0.05) and more correct oral health perceptions (p<0.01) than AA.

Similarities between the 2 groups included level of education, oral health awareness, poor financial status, adverse perception of periodontal disease, prevalence of gingival bleeding and inflammation, prevalence of brushing or flossing, different reasons for dental visit such as root canal, restorative work, crown/bridge, and dentures. Poor financial status was an equally important predictor of adverse oral health perceptions.

## Discussion

From the data obtained in the study, there was no difference in the majority of sociocultural factors between AA and AS such as oral health aware-

Table III: Dental Disease Characteristics of African Americans and Asian Americans

	Overall	AA	Asians	p-value
	139	86 (61.87%)	53 (38.13%)	
Periodontal disease	68 (53.54%)	48 (55.81%)	20 (37.73%)	0.18
<ul style="list-style-type: none"> <li>Bleeding gingiva</li> <li>Teeth mobility</li> <li>Periodontal disease as a reason for dental visit in the past five years</li> <li>Periodontal disease as reason for dental visit time of visit at NYUCD</li> </ul>	46 (33.09%) 16 (11.51%) 18 (12.95%) 12 (8.63%)	34 (39.53%) 10 (11.62%) 14 (16.27%) 8 (9.30%)	12 (22.64%) 6 (11.32%) 4 (7.54%) 4 (7.54%)	0.23 0.42 0.015 0.32
Dental decay	16 (12.60%)	12 (13.95%)	4 (7.54%)	0.035
<ul style="list-style-type: none"> <li>Root canal as reason for dental visit in the past five years</li> <li>Root canal as reason for dental visit time of visit at NYUCD</li> </ul>	12 (8.63%) 8 (5.76%)	8 (9.30%) 5 (5.81%)	4 (7.54%) 3 (5.66%)	0.06 0.74
Periodontal disease and dental decay	103 (81.10%)	76 (88.37%)	32 (60.37%)	0.038
<ul style="list-style-type: none"> <li>Do you brush</li> <li>Do you floss</li> <li>Inflamed gingiva</li> <li>Pain/extraction as reason for dental visit passed five years</li> <li>Pain/extraction as reason for dental visit time of visit NYUCD</li> <li>Restorative work as reason for dental visit past five years</li> <li>Restorative work as reason for dental visit time of visit NYUCD visit</li> <li>Crown/Bridge as reason for dental visit past five years</li> <li>Crown/Bridge as reason for dental visit time of visit NYUCD</li> <li>Dentures as reason for dental visit past five years</li> <li>Dentures as reason for dental visit time of visit NYUCD</li> <li>Lost teeth due to Periodontal disease and or dental decay</li> <li>Lost teeth?</li> <li>Edentulous</li> </ul>	123 (88.49%) 59 (42.45%) 41 (29.50%) 19 (13.67%) 18 (12.95%) 34 (24.46%) 19 (13.67%) 8 (5.76%) 7 (5.03%) 23 (16.55%) 27 (19.42%) 80 (57.55%) 107 (76.98%) 29 (26.13%)	75 (87.21%) 35 (40.69%) 30 (34.88%) 13 (15.11%) 12 (13.95%) 22 (25.58%) 12 (13.95%) 6 (6.98%) 5 (5.81%) 16 (18.60%) 16 (18.60%) 52 (60.46%) 68 (79.07%) 21 (24.48%)	48 (90.56%) 24 (45.28%) 11 (20.75%) 6 (11.32%) 6 (11.32%) 12 (22.64%) 7 (13.20%) 2 (3.77%) 2 (3.77%) 7 (13.20%) 11 (20.75%) 28 (52.83%) 39 (73.58%) 8 (15.09%)	0.23 0.35 0.024 0.032 0.24 0.23 0.34 0.61 0.72 0.29 0.38 0.12 0.14 0.004

Table IV: Differences in Perceptions and Oral Health Practices between African Americans and Asian Americans

Oral Health Practices (brushing, flossing)	Overall	AA	AS	p-value
	139	86 (61.87%)	53 (38.13%)	
Brushing/Flossing				
<ul style="list-style-type: none"> <li>Do you brush</li> <li>Do you floss</li> </ul>	123 (88.49%) 59 (42.45%)	75 (87.21%) 35 (40.69%)	48 (90.56%) 24 (45.28%)	0.23 0.35
Perceptions regarding brushing and flossing				
<ul style="list-style-type: none"> <li>Flossing prevents Periodontal disease</li> <li>Brushing prevents Periodontal disease</li> <li>I can keep my teeth by brushing, flossing and going to the dentist regularly</li> </ul>	111 (79.86%) 115 (82.73%) 90 (64.75%)	71 (82.56%) 73 (84.88%) 50 (58.14%)	40 (75.47%) 42 (79.24%) 40 (75.47%)	p=0.078 p=0.069 p=0.002

Table V: Important Demographic and Sociocultural Factors in Adverse Oral Health Perceptions

Adverse oral health perceptions	Overall (OR, CI)	p-value	AA (OR, CI)	p-value	AS (OR, CI)	p-value
Demographics						
Race	2.27 (0.999 to 5.200)	0.05	-	-	-	-
Race Adjusted	2.96 (1.11 to 7.85)	0.029	-	-	-	-
Age	1.012 (0.990 to 1.035)	0.277	1.164 (1.045 to 1.297)	0.006	0.999 (0.975 to 1.024)	0.965
Age adjusted	1.03 (1.005 to 1.061)	0.017	1.510 (1.175 to 1.940)	0.001	0.966 (0.918 to 1.015)	0.177
Gender (males)	1.691 (0.691 to 4.135)	0.250	2.310 (0.901 to 4.102)	0.09	0.75 (0.255 to 2.202)	0.601
Sociocultural factors:						
Education						
Medium (some college-Associates degree)	1.539 (0.566 to 4.184)	0.39	1.055 (0.228 to 4.867)	0.91	2.00 (0.518 to 7.721)	0.315
High(Bachelor's Professional degree)	0.889 (0.345 to 2.291)	0.80	1.703 (0.337 to 8.600)	0.519	0.4 (0.111 to 1.435)	0.160
Poor Access to care	1.299 (1.123 to 1.729)	0.008	1.350 (1.211 to 2.205)	0.006	1.130 (1.086 to 1.258)	0.051
Adjusted poor access to care	1.275 (1.091 to 1.823)	0.021	1.457 (0.983 to 2.203)	0.035	1.054 (0.998 to 1.138)	0.129
Poor Financial status	1.335 (1.137 to 1.815)	0.016	1.698 (1.184 to 3.639)	0.006	1.178 (1.051 to 1.615)	0.046
Adjusted financial status	1.453 (1.157 to 2.305)	0.03	1.896 (1.376 to 3.816)	0.014	1.252 (1.003 to 1.456)	0.043

Note – Final model adjusted for age, gender, education, poor access to care, poor financial status, and oral health awareness

ness and poor financial status. AA overall had more adverse oral health perceptions than AS, along with higher incidence of dental decay and mixed disease. Yet, similarities were seen among the two groups as well. AS and AA had comparable perceptions that flossing and brushing can help prevent periodontal disease and did not report a difference in frequency of brushing and flossing.

Race was the most significant predictor of adverse oral health perceptions and periodontal disease perceptions but not a significant predictor of dental decay. Age was a chief predictor of adverse oral health perceptions and mixed disease and was a more significant variable among AA than AS. Age was also a chief predictor of periodontal disease perceptions in the adjusted analysis. These results are consistent with prior studies. Nakazono et al determined that age and race were major predictors of the perceived benefits of preventive practices, with Caucasians "more likely to believe in the benefit of preventive practices."<sup>10</sup> Furthermore, the results also revealed that there was no statistical

significant difference regarding different level of education between the two population groups.

Moreover, AA had inferior access to care than AS with cost being a main barrier for the lack of dental visits. In addition, a higher percentage of AA stated that pain and or tooth extractions were a chief reason for their dental visits in the past 5 years. These results are reflective of previous studies such as the evidenced provided by the United States Department of Health and Human Services (USDHHS) report which disclosed that underprivileged individuals experience more oral disease and are more likely to have untreated teeth than those who are more economically stable.<sup>1</sup> The outcomes of the study regarding prevention are also consistent with previous studies. A study exploring cultural influences on AA behavior determined that a low emphasis is placed on seeking oral health care due to the perception of caries not being a health issue.<sup>2</sup>

AA had inferior access to care compared with AS



and cost was a major barrier and reason for lack of dental visits among AA. Prior surveys have also shown that low finances may serve as barriers to care for many racial groups, more so in AA.<sup>3</sup>

AS also showed to have more acceptable oral health perceptions than AA. This is consistent with prior studies that revealed that AA disclosed stronger negative perceptions of disrespect because of their race which has been shown to influence patients' compliance with treatment, which in turn can influence health outcomes.<sup>3</sup> Furthermore, it has been shown that individuals from diverse cultures have different perceptions of oral health and symptoms.<sup>20,21</sup>

More AA believed that dentures will be less of a bother than natural teeth and that state of teeth is decided at birth and is not related to self care. However, more AS had the adverse perception that it is natural to lose teeth with age. AS and AA generally have less confidence in their ability to control their oral health and also report to have less concern about the value of saving their natural teeth.<sup>10,11,16,21</sup>

This study has important implications. It demonstrates that sociocultural factors such as race and poor access to care have an impact on perceptions and behaviors that condition perceptions, judgments, communication, and behaviors that may impinge on overall general and oral health. Oral

health care professionals can be more aware and understanding as to why certain population groups may not seek preventive treatment or consider oral health as equally important as general health, and specifically educate such patients in a manner which they will understand while being culturally sensitive to their beliefs.

Limitations of the study include its cross sectional nature, and small number of participants at a single center detracting from external validity. Finally, the methods used in this study serve only to describe statistical associations, which are not necessarily proof of causation. Future research studies conducted throughout the U.S. aimed at collecting data from all minority groups are warranted in order to improve the cultural competence of oral health professionals.

## Conclusion

In conclusion, AA overall had more adverse oral health perceptions and higher incidence of dental disease than AS. Cultural influences have an impact on perceptions and behaviors that may affect oral health and therefore attaining of cultural competency of oral health professionals should be emphasized.

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