Representation of Diversity on Entry-Level Dental Hygiene Program Websites

Thesis

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By

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Abstract

Purpose: The purpose of this paper is to investigate current entry-level dental hygiene program websites across the United States and evaluate how ethnic and racial diversity is portrayed. The aim of this paper is to examine the images and videos used on websites of current entry-level dental hygiene programs and describe the frequency that minorities are represented and the role in which they are characterized.

Methods: A content analysis was used to evaluate a random sample of entry-level dental hygiene program webpages from the American Dental Hygienists’ Association (ADHA) list. The 37 entry-level dental hygiene webpages were assessed for diversity. The representation of diversity was evaluated by examining images and videos found on the webpages and then categorizing the findings by demographics and the roles in which the individuals appearing in pictures or videos were portrayed.

Results: Thirty-seven of the 50 randomly selected entry-level programs met the inclusion criteria. Of these, 32 were associate degree programs and 5 were baccalaureate degree programs. A total of 690 images on the websites of these 37 programs were analyzed. The overall findings reflected Whites being predominately represented in 78.8% of the images followed by Asian (5.2%), Black or African American (4.3%), while American
Indian Alaska Native and Native Hawaiian/Other Pacific Islander were least represented at 0.3% and 0.1% respectively. Race was undetermined in 8.4% of the sample. The Chi-square test of independence showed that there was a statistically significant difference (p=0.004) between associate and baccalaureate degree programs. Associate programs had less representation of underrepresented minorities images on entry-level dental hygiene webpages.

Conclusion: The study evaluated the representation of racial and ethnic diversity on entry-level dental hygiene program webpages. The findings revealed that the entry-level dental hygiene program websites predominately reflected White female as the majority in the images and videos on the webpages. This data is reflective of the profession and the student population; White females out number underrepresented minorities. The lack of underrepresented minorities in the field coincides with the images reflected on the entry-level dental hygiene websites. The study demonstrated the need for the dental hygiene field to improve the representation on their websites to better align with a need to diversify the dental hygiene profession.
Dedication

This document is dedicated to God the one who gave me strength to get through this portion of my journey, and to my friends and family who supported me through this process.
Acknowledgments

I would like to thank my advisor and committee for their patience, support and guidance through this process.
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Fields of Study

Major Field: Dental Hygiene
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Demographics in the United States

The population of the United States is rapidly growing. During the 1990s, the population grew at a rate of 1 percent per year resulting in an increase of 2.7 million people annually.¹ In 1995, the U.S. population was 262.8 million.² As of November 2016, the U.S. has a population of over 320 million.² By the year 2050, the U.S. population is projected to be 395 million.² While the population as a whole is rapidly growing, the racial and ethnic minority populations in the U.S. are increasing in size at an even faster rate.

The U.S. Census Bureau (USCB) is the official agency responsible for collecting data concerning the American population, including information on race and ethnicity. As defined by the USCB, the following race categories are recognized: White, Black or African American, Native American and Alaska Native, Asian American, Native Hawaiian and Other Pacific Islander, other, and, people of two or more races.³ The USCB also classifies individuals as one of two ethnicities: “Hispanic or Latino” and “Not Hispanic or Latino”.² The “Hispanic or Latino” group is defined by the USCB as an ethnicity rather than a race.³ Race and ethnicity are distinct identities. A person whose ethnicity is Hispanic or Latino may be of any race. Data from the 2015 USCB indicates that Whites (including White Hispanic and Latinos) are the racial majority and
comprise 77% of the population.\textsuperscript{2} Black or African Americans are the largest racial minority and comprise 13.2%.\textsuperscript{2} Hispanic and Latino Americans represent the largest ethnic minority and make up 17% of the U.S. population.\textsuperscript{2}

As the population grows, the demographic picture of the U.S. is changing and becoming more diverse.\textsuperscript{3} The ethnic and racial minority populations are projected to continue to increase based on immigration and high birth rates.\textsuperscript{3} A total of 115 million Americans are projected to be of minority backgrounds by 2020.\textsuperscript{3} The Asian American population is estimated to increase to 19 million, representing 6% of the total U.S. population.\textsuperscript{3} In contrast, the Hispanic and Latino American population is estimated to increase in number by more than 25 million resulting in a total of over 52 million Hispanic and Latino Americans by 2020.\textsuperscript{3} The African American population is projected to grow at a slower rate than other racial and ethnic minorities but is expected to reach 42 million by 2020.\textsuperscript{3} With these trends, a significant and dramatic shift is expected to be seen as Hispanic Americans are expected to outnumber Black or African Americans within the next 15 years.\textsuperscript{3}

As these ethnic and racial minority populations continue to grow, they are estimated to be equivalent to the Non-Hispanic White population by 2050. As minority populations grow in number, minorities will become a majority. This transition from minority to majority will be most notable among the demographic of children under the age of 18.\textsuperscript{3} Within the next 5 years, Non-Hispanic White children are projected to be the minority for the first time in U.S. history.\textsuperscript{3} While the general population of the U.S. is
quickly becoming more racially and ethnically diverse, the population among healthcare providers is not.\textsuperscript{4}

\textbf{Healthcare in the United States}

Despite the fact that the U.S. is experiencing a rapid increase in racial and ethnic minority populations, minorities are not pursuing healthcare professions in the same proportions as Non-Hispanic Whites.\textsuperscript{4} Given the current demographics of the U.S. population and the projected trends, healthcare professions must consider how best to increase the diversity of its providers. Such efforts would serve to improve the access of healthcare, and, increase the quality of care provided in minority communities.

Although quality of healthcare in the U.S has improved over the years, all Americans have not benefited equally.\textsuperscript{5} Minority populations are still behind the non-minority populations in areas of quality healthcare, access to healthcare, timeliness of care and outcomes.\textsuperscript{5} Other healthcare problems that disproportionately affect minorities include; provider-patient ratio, provider-patient communication, and health literacy issues.\textsuperscript{5} In addition, there is a continued need for increasing awareness of health and disease prevention services for minorities.\textsuperscript{5}

Minorities often receive a lower quality of care and experience more problems accessing care due to the lack of healthcare insurance and the lack of health knowledge.\textsuperscript{6} Problems contributing to healthcare that minorities receive may also be attributed to lower incomes, lack of education, and language barriers.\textsuperscript{6}
There are many documented healthcare issues that disproportionately affect racial and ethnic minorities. For example, Blacks are more likely to be overweight or obese; a total of 69% Black or African Americans fall within this category compared to 54% of Whites. Smoking and tobacco use is another issue. Native Americans and Alaskan Natives are more likely than Whites to smoke; nearly 29% of the Native American and Alaskan Native population are current smokers, compared to 22% of Whites. Other healthcare problems affecting racial and ethnic minorities include the increased incidence of diabetes, cardiovascular disease, heart conditions, hypertension, cancer and stroke.

As the U.S. minority population increases, diversifying the healthcare workforce is essential to increase the access to care and to meet the healthcare needs of the minority population. Serving the healthcare needs of a diverse population requires a diverse representation of healthcare providers.

**Definition of Diversity**

Although many definitions of diversity are similar, there is no one uniform definition. In the current literature, the term diversity is defined in many ways. For example, the National Educational Association (NEA) defines diversity as “the sum of the ways that people are both alike and different”. The NEA further defines diversity to include the dimensions of race, ethnicity, gender, sexual orientation, language culture, religion, mental and physical ability, class, and immigration status. The Merriam-Webster Dictionary definition of diversity is “the condition of having or being composed
of differing elements; variety, especially: the inclusion of different types of people (as people of different races or cultures) in a group or organization”.

The American Dental Hygienists’ Association (ADHA) definition of diversity is “an inclusion of varied characteristics, ideas and worldviews in a community”. Unlike the NEA and Merriam-Webster definition, the ADHA definition includes the ideas and views within a community versus demographic characteristics. The American Dental Association (ADA) includes the following in the description of diversity: race, gender, ethnicity, religion, demographics, geography, dental education or character of dental practice. Because of the nature of this study and the methods of data collection diversity will be defined as follows: a group of people with different racial/ethnic backgrounds within a group or organization. The author recognizes that this is not a holistic definition of diversity, but one that serves the purpose for analyzing representation on websites.

Background of Dental Hygiene

The profession of dental hygiene has existed for over 100 years and is dedicated to serving the oral healthcare needs of the public. The profession focuses on the prevention and treatment of oral disease in an effort to maintain both the oral health and overall health of the patient. A Registered Dental Hygienist (RDH) is a licensed dental professional in oral healthcare. The American Dental Hygienists’ Association defines the dental hygienist as the “primary care oral health professional who administers a range of
oral health services including prophylaxis, sealants, fluoride treatments, oral cancer screenings, and oral health education “. "1,11

As the U.S. population increases and lives longer, the demand for oral healthcare services, including dental hygiene, is anticipated to increase.11 As this demand for dental hygiene providers increases, so will the demand for minority dental hygiene providers. Historically, there have been concerns regarding the lack of minorities in oral healthcare.12 The National Dental Hygienists’ Association (NDHA) was founded in 1932 by African American dental hygienists in the profession to address the limited amount of minority dental hygiene practitioners in the United States.13 Since minorities were not well represented, the NDHA was formed to enhance the visibility of minority providers, and to improve the oral health of the public through education and services.13

To date, the number of minority dental hygiene providers has not mirrored the minority and ethnic groups within the population of the United States. Today, the members of the dental hygiene profession are not representative of the diversity within the U. S.14 The dental hygiene profession is comprised of predominately White females. This lack of minority representation within the dental hygiene profession is considered to be a contributing factor to the disproportionate amount of oral diseases seen within minority groups.15 Not only does the minority population have the burden of untreated dental disease, this population also seeks treatment from providers of their own race.15 With the current lack of diversity, an environment of “likeness” does not exist that is necessary in a community of underrepresented minorities (URM) needing care. The low percentage of African Americans and other minorities in the dental hygiene field make it
difficult to access professionals within their own minority group. In the past 10 years, the statistics have not appreciably changed. In 2004, African Americans represented 12% of US population, while only 4% of dental hygienists were African American. In 2014, African Americans represented 13.2% of the population, while the number of African American dental hygienists only increased by 2% in 8 years. There is a great need for diversity within all healthcare professions, including dental hygiene. As the U. S. minority population increases, there is a definitive need for a more diverse group of students and professionals in the field of dental hygiene. Diversifying the field of dental hygiene will serve to improve the treatment of minority patients within their own communities.

The diversity challenges include finding healthcare providers who are willing to serve in minority communities, and creating more educational and career opportunities for URM while generating interest in healthcare professions like dental hygiene. Understanding the reasons for the lack of diversity in the profession can be beneficial when considering how recruitment efforts can be adjusted to effectively reach out to URM. The study indicated that recruitment and admissions officers should be aware of the motivation for URM entering into the healthcare professions. A greater representation of minority groups within the dental hygiene profession will increase the number of role models, which in turn will foster interest among minorities to enter the dental hygiene field. Bowen hypothesizes that if the number of minorities in the healthcare profession increases, then the access of healthcare to minority populations will also increase.
Dental Hygiene Recruitment

Recruitment is a tool that can be used to generate awareness and interest in an educational focus, the choice of an institution, or, the choice of a career. The goal of recruitment is to increase numbers by creating awareness or choosing individuals for various programs. Planning and strategizing are important and necessary during the recruitment process.17 The responsibilities of a recruiter may include seeking out individuals for the program, as well as planning, preparing and overseeing of websites, social media, brochures, events, outreach programs, visits, and tours. These responsibilities are designed to spark the interest of potential new students for the program.17

Examinations of various recruitment strategies for the profession of dental hygiene have been reviewed in the literature. The areas explored include the effects of media, high school counseling, and professional recruitment.17 The importance of how the media and advertisement impacts recruitment has been well documented in the literature. Baldwin et al. revealed that the media was most effective when used in conjunction with other forms of recruitment for high school students.17 Early influence has been shown to be useful and highly beneficial in the recruitment process.17 This study also indicated that high school counselors are an effective source for informing students of allied health programs and for initial recruitment.17

When choosing a healthcare area, the demands of serving a diverse population may be a consideration.4 Based on the current need for dental hygienists to serve
minority populations, the dental hygiene profession should be appealing and influence URM students to choose this profession. A student’s decision to enroll in an allied healthcare profession has been shown to be influenced in one of two ways: when a counselor provides information to increase the student’s knowledge of the career opportunities, or, when an allied healthcare professional interacts with a student during career day. Baldwin et al. data suggest that a student’s knowledge of a discipline is often introduced early and their first choice of interest has been made by the age of 19. Sixty-three percent of students choose the profession of dental hygiene by the age of 19.

Many recruitment efforts in dental hygiene are not designed to reach the URM in order to increase diversity. As an example, the low number of URM enrolled in dental hygiene programs is a concern because very few programs have plans in place to recruit URM and create diversity. Due to lack of funding or resources, many institutions do not have a designated person who is hired to solely focus on recruitment. Therefore, institutions often utilize faculty for the recruitment process. Many faculty have teaching, research and service demands that do not allow the time and dedication necessary for successful recruitment efforts. A survey of dental hygiene program directors revealed that only 19% consider recruiting students from diverse backgrounds, and, only 17% consider recruiting from URM groups.

One explanation could be 94% of full-time baccalaureate dental hygiene faculty members are White according to the ADHA and Carr et al. This lack of diversity among dental hygiene faculty may contribute to a perception among URM could be that their applications may not view favorability, they may fear being subjected to scrutiny or
they may fear not fitting in etc., Consequently, the in a lack of minorities entering the dental hygiene profession maybe limited.

**Benefits & Challenges of Diversity**

It is important for the profession of dental hygiene to recognize and embrace the need for diversity. To keep up with changing demographics of the U.S. population, the profession of dental hygiene must be inclusive of the many diverse groups that currently exist and actively recruit such individuals. According to the American Dental Hygienists’ Association, a diverse healthcare staff not only helps in providing services to a variety of patient populations, but also creates role models and opportunity for minorities to consider pursuing a profession like dental hygiene. A shortage of diversity in dental hygiene exists and will continue to exist if minority groups do not have exposure to role models in the profession.

Creating a more diverse dental hygiene profession begins with the recruitment and admission of URM in dental hygiene programs. Diversity in the classroom benefits students, faculty, and, staff and allows for the development of cultural competence. Cultural competence, as defined by Segen’s Medical Dictionary, is “the ability to understand, appreciate and interact with persons from cultures and/ or belief systems other than one’s own, based on various factors.” There is value in increasing the number of diverse and culturally competent dental hygiene care providers.

A provider who is trained in cultural competency and works in a diverse setting with patients from a variety of backgrounds will be more culturally aware. Someone who
is culturally aware is prepared to show empathy and compassion and will better understand the needs of the patient. Cultural competence plays a role in access to care for minorities. These culturally competent professionals can then provide services for the very patients who have difficulty accessing dental care. A diverse educational community of students, faculty, and staff that includes increased numbers of URM students will benefit dental hygiene programs.18

Dhir et al. conducted a national survey and concluded that education in a diverse setting increases a student’s cultural competence, which results in more culturally sensitive patient care. They also emphasized that while minority groups are growing faster than any population in the U.S., minorities are not pursuing a career in healthcare at the same rate. In their study, 233 entry-level dental hygiene program directors were mailed a 19-item survey. Data were collected on ethnic/racial demographics along with efforts to recruit URM students and faculty. With a 60.1% response rate, results revealed that only 10.5% of dental hygiene students and 6.7% of faculty were URM.4 The lack of minority representation in the healthcare profession is believed to contribute, in part, to disparities in access to healthcare and the overall health of minorities.4

Despite the rising numbers of minorities in the U.S., their medical and dental health is considered to be poorer than that of Non-Hispanic Whites. Dhir et al. noted that minorities were less likely to receive certain recommendations for medical treatment than Whites even when clinical symptoms were similar. This highlighted the position that increased presence of minorities in healthcare professions would result in an increased use of preventative healthcare services by minorities. The underlying assumption was
that ethnic and racial minorities would service their own communities. They also asserted that increasing URM representation in the classroom would benefit non-minorities and potentially make them more sensitive to the perspectives of and issues facing minorities.\textsuperscript{4}

Incorporating diversity into the profession of dental hygiene is not without challenges. One significant challenge is making the dental hygiene profession appealing to minority students, especially since minority students do not see others “like them” in the profession; there is no “like to attract like”.\textsuperscript{19} An example of an institution that has made a concerted effort to attract URM students is the University of Michigan. This institution prominently displays a diverse population of students, faculty, and staff on its website. On this website, The University of Michigan proudly displays the motto “Diversity Matters” while offering a wide variety of opportunities to learn, teach, and work in a diverse educational community.\textsuperscript{21}

\textbf{Media}

Over time, our world has become extremely technology driven. information is disseminated over the Internet, and is used by millions of people daily.\textsuperscript{22} It is no longer necessary to leave the comfort of your home to find a job, career information, or what an educational institution offers. Instead electronic devices are used to search the Internet and explore the vast resources available on this type of information.

The Internet is an integral part of the media landscape. Media is defined as the “\textit{means of communication, as, radio and television, newspapers, magazines and the Internet that reach or influence people widely}.”\textsuperscript{23} In today’s digital age, media is both a
complex and influential tool. It can be used to shape a person’s view or perspective, or, to create a platform for recruitment. Media can influence a person’s interest in a profession, a career path, or the choice of an educational institution. Media allows a person to explore career options and professions they may otherwise not have considered.

As of 2016, more than one billion web sites exist on the Internet. As defined by Merriam Webster, a web site is a “group of World Wide Web pages usually containing hyperlinks to each other and made available online by an individual, company, educational institution, government, or organization”. A website has multiple functions and serves as a valuable resource that is used to communicate what a company, career, or institution represents. The goal when using a website to enhance recruitment is to increase awareness and interest by using both visual and written influences. Given the use and popularity of the Internet, it is paramount that businesses, educational institutions and professions have engaging, informative and attractive websites that are designed to recruit and attract a wide variety of potential candidates.

Baum and Kabst’s research demonstrated when substituting the employer face-to-face interaction with a digital strategy such as websites, it is imperative that it captures the essence of what would have been imparted by the employer. The website should reflect knowledge and enthusiasm for the mission and core vision of that company. Research by Choi et al. suggested that websites are an important part of that overall marketing strategy. Websites, which are predominantly visual, are useful in the recruitment of possible candidates and may influence an applicant. This study showed
that using websites designed to stimulate recruitment activity directly affects the applicant’s attraction to, or the interest in the job or school being considered.27

A website used as a recruitment tool should not only be tailored to what a company or educational institution offers, but should also be appealing to the targeted audience. The visual images should be indicative of how the applicant can relate to the information presented. The applicant in turn will envision a connection and invoke a possible desire to become a part of what is being presented. When recruiting URM in the healthcare field, it is important to create visual presence of a diverse group of providers or students. A study conducted by Hunter et al. evaluated the recruitment of minorities in the dental hygiene profession. Results indicated that 91% of applicants responded to websites more than any other recruitment strategy, including in-person visits, career fairs and printed flyers.12 In order to encourage diversity in colleges, the imagery on websites must expand the applicant’s awareness of the institution or field and be relatable to the URM applicants as well.

Developing and applying effective recruitment strategies, including the use of websites, is necessary for increasing the enrollment of URM students and creating diversity within the dental hygiene profession. Understanding the needs of URM students is essential and is the direction in which recruitment efforts must be established and implemented. Serving the needs of minority communities is important and it will take the efforts of many to provide access to care for this population. Just as serving the healthcare needs of a diverse population requires a diverse representation of healthcare providers, the same is true for oral healthcare and oral healthcare providers.
**Study Purpose**

The purpose of this paper is to investigate current entry-level dental hygiene program websites across the United States and evaluate how ethnic and racial diversity is portrayed. The aim of this paper is to examine the images and videos of websites of a variety of current entry-level dental hygiene programs and describe the frequency that minorities are represented and the role in which they are characterized.

**Research Question**

How is ethnic and racial diversity represented in images and videos of the entry-level dental hygiene program websites across United States?
Chapter 2: Materials and Methods

This study was a content analysis of the data obtained from the entry-level dental hygiene program webpages.

Study Sample

The study sample was collected from the American Dental Hygienists’ Association (ADHA) list of U.S. entry-level dental hygiene programs. In cases where the website address of an entry-level dental hygiene program was not available on the ADHA list or was inaccurate, the investigator searched the Internet to obtain the correct website address of the entry-level dental hygiene program. Fifty entry-level programs were randomly selected for the study.

Representation of diversity on the websites was evaluated by examining images and videos found on the webpages. The images and videos were evaluated and then categorized by demographics and roles in which the individuals appearing in pictures or videos were portrayed. The pages and images that were included in the sample are outlined below:

Inclusion criteria:

- entry-level dental hygiene programs included on the ADHA website in 2017
- entry-level dental hygiene program website homepage or overview page of images and/or videos that include people

Exclusion criteria:
• information on any degree completion or graduate level education programs
• information on frequently asked questions (FAQ’s) or faculty biography pages
• images and/ or videos not pertaining to entry-level dental hygiene programs on the homepage and/ or overview page
• images and/ or videos not containing people

**Measurement/ Instrumentation**

A screenshot of pictures and videos were taken of all images. Each video was screenshot frame by frame. Images and/ or videos of the entry-level dental hygiene program websites were evaluated and categorized for diversity in the entry-level dental hygiene programs. The image analysis included any picture and/ or video that included people from the entry-level dental hygiene program homepage and/ or overview page. The images that included people were saved in a .jpeg format and analyzed. If a person appeared in multiple images, that person was counted once for the purposes of classifying the demographic data. The data collected from the image(s) and/or video of the website were evaluated and classified as follows:

- **race** (American Indian or Alaska Native, Asian, Black or African American, Hispanic or Latino, Native Hawaiian Other Pacific Islander, and White)
- **ethnicity** (Hispanic or Non-Hispanic)
- **age** (child 6-12 years old, teen 13 -17 years old, young adult 18 - 25 years old, adult 26 -64 years old, senior 65 + up, unknown)
- **gender** (male, female, transgender, unable to determine)
- **role** (instructor, student, patient, staff, unable to determine)
- **number** of people present in the image and/or video
- **image type** (picture and/or video)

**Data Analysis**

The data analysis included descriptive statistics and an inferential analysis of the collected variables. The image data collected was analyzed using SPSS software. Chi-square test was performed to determine the relationships between/among variables and the statistical significance, if present.
Chapter 3: Results

Fifty randomly selected entry-level dental hygiene program websites were evaluated and 37 had images and videos that met the inclusion criteria. Further screening of the 37 websites yielded a total of 85 images and 10 videos. In each image, or as in the case of videos, each frame was scanned for people present in the frame. A total of 690 people were analyzed (Table 1). Each person was categorized by the following demographics; age, ethnicity, gender, and race. In addition, the role of each person was categorized.

Demographics

Of the 37 websites with images or videos, 32 (86.5%) were associate degree programs and 5 (13.5%) were baccalaureate degree programs (Table 2). The percentage of degree programs represented in this study sample is proportionate to the percentages of associate degree (80%) and baccalaureate degree (20%) programs were determined by evaluating the ADHA entry-level dental hygiene 2017 list.9 Young adults ages 18-25 years (60%) followed by adults ages 26-64 years (25.7%) appeared most frequently. Non-Hispanics represented 84.2% of images, 2.5% were Hispanic, and, ethnicity could not be determined in 13.3% of the study sample. Females were represented most in the images at 77.5%, while 14.3% were male and 8.1% were unable to determine. In the category of
Race, Whites were predominately represented in 78.8% of the images, followed by Asian (5.2%), Black or African American (4.3%), American Indian/Alaska Native, while Native Hawaiian/other Pacific Islander were least represented at 0.3% and 0.1% respectively. Race was undetermined in 8.4% of the sample (Table 3).

**Race and Degree Type:**

When comparing race and degree type of the entry-level dental hygiene webpages, images of Whites appeared most frequently in both the associate degree programs (75.3%) and baccalaureate programs (10.8%). Underrepresented minorities in associate programs were identified in 10.6% of the images and in 3.3% of images for baccalaureate programs. A Chi-square test of independence was performed to examine the relationship between race and degree type. The representation of Whites in both associate and baccalaureate degree programs compared to URM reported a statistical significant difference (p=0.004) in the representation of race between associate and baccalaureate degree programs. Associate degree programs had less URM than baccalaureate programs.

**Gender and Degree Type**

When examining the differences between gender and degree type of the entry-level dental hygiene webpages the Chi-square test revealed these variables were not statistically significant p=0.459. Females were presented most frequently in associate degree programs (70.8%) as well as in baccalaureate degree programs (13.6%). Males
were represented less frequently in both degree types, associate programs (13.5%) and baccalaureate programs (2.1%) (Table 5).

**Race and Region**

Table 6 represents race and entry-level dental hygiene programs by region. The number of images of Whites were more prevalent than URM in each of the regions. Images of Whites were highest in the Northeast region at 88.1%, while the highest numbers of URM images were identified in the West region at 15%. A Chi-square test revealed there was not a statistically significant difference between race and region $p = 0.536$.

**Race and Role**

The Chi-square test of independence was performed to examine differences between race and role. The relationship between these variables did not show a significant statistical difference $p = 0.334$. In Table 7, role types were categorized as instructor, student, patient, or staff. Images of Whites represented the highest percentage in each of the role categories: instructor (85.9%), student (85.8%), patient (90.2%) and staff (75%). The highest number of URM images was that of staff (25%) followed by the categories of student (14.2%), instructor (14.1%) and patient (9.8%).
Chapter 4: Discussion

According to the National Dental Hygienists’ Association NDHA, minorities are not well represented in the dental hygiene field, which was the basis for forming the NDHA organization in 1932. The goal of the organization was to enhance the visibility of minority providers and to ultimately improve the oral health of the public and minorities in particular.\textsuperscript{13} Unfortunately, little progress has been made as members of the dental hygiene profession are currently not representative of the diversity that exists in the general population in the U.S.\textsuperscript{14} The low percentage of minorities in the dental hygiene field make it difficult to fulfill the desire people have to be treated by professionals within their own minority group or within their community. The absence of healthcare provider of one’s own race can impede access to care.\textsuperscript{15} To answer the research question of how diversity is represented in images and videos of entry-level dental hygiene program websites in the U.S.; a content analysis study was conducted.

The disparate representation of URM in this study mirrors the underrepresentation of minorities in the dental hygiene profession as reported in the literature. Out of 690 images examined for race in this study, Whites were predominately represented (78.8%). This percentage is consistent with a finding that reported Whites comprised 85% of dental hygienists in the U.S. in 2004 compared to URM at 15%.\textsuperscript{15} Undoubtedly, the lack of URM in the dental hygiene workforce is a direct result of the disproportionate number of URM in dental hygiene programs compared to non-underrepresented minorities.

Based on employment projection data from the U.S. Review Board and graduation rates of blacks from dental hygiene programs from 1996-2003, Black or
African Americans will continue to be disproportionally or underrepresented in the dental hygiene field.\textsuperscript{15} Graduation rates of Blacks or African Americans in dental hygiene programs increased only 2\% in 8 years which makes it difficult to keep pace with the general population of blacks.\textsuperscript{15} URM only represented 13.7\% of students enrolled in dental hygiene programs in 2010-2011 compared to 75.5\% of White students.\textsuperscript{28}

Understanding the challenges and barriers inhibiting minorities from entering the dental hygiene profession as well as the factors that support or encourage minorities to enter the profession will be beneficial in increasing URM representation in the field. Sandino et al., conducted in-person interviews in a study aimed at determining perceived or experienced barriers and facilitators that most influenced student’s decision to pursue dental hygiene as a profession.\textsuperscript{28} Study participants were URM students enrolled in entry-level dental hygiene programs across California.\textsuperscript{28} Fifty-seven percent of 84 students who participated in the study reported barriers related to the application and enrollment process. Equally, 57\% percent of the students reported cost of the program, cost of living during the program and debt as barriers. Not surprisingly, a lack of role models in the program in their race/ethnicity was cited as a barrier. Among the facilitating factors, 86\% of the students reported a desire to help people as their reason for becoming a dental hygienist. Nearly all of the participants reported that a person influenced them to become a hygienist. The persons with the most influence were a dentist, hygienist, or family member. Seventy-four percent of the students indicated media/advertisement influenced their decision and it is interesting to note that of the media influences, the Internet had the highest percentages of respondents.\textsuperscript{28}
While the focus of this paper is not on minority student recruitment into dental hygiene programs, the importance of increasing the enrollment of URM into such programs must not be overlooked as a strategy to close the gap of minorities entering the dental hygiene field. To enhance the appeal of dental hygiene to minority students, planning and preparing websites, social media, brochures, and other events that raise awareness and attract the attention of URM to dental hygiene could increase the number of minorities considering going into the field. When recruiting URM into healthcare and/or dental hygiene, creating a visual presence of a diverse group of providers or students can be very effective.

The University of Michigan is an example of an institution making a strong effort to attract URM. Along with multiple images of diverse students, faculty, and staff representation on their website, the phrase, “Diversity Matters,” is prominently displayed. In addition to finding appealing ways to attract more minorities to dental hygiene programs, another strategy may be to increase the cultural competence of non-minorities who are willing to serve in minority communities.

Butters and Winters studied the differences between Black or African American and White dental student’s motivation and career plans. They found that race was a strong predictor of student’s preference to work in a public or private setting. Black or African American students were more motivated to become dentists so they could serve the public and work in an urban setting whereas White students were more motivated to become dentists as a result of family influence and were more inclined to work in a private setting. Implications and recommendations given as a result of their study are
noteworthy and can be applied to the dental hygiene field to enhance recruitment of diverse students.16 Their recommendations were as follows; design outreach and marketing programs to stimulate the interest of minority youth in the dental profession, expand scholarship opportunities, and design mentoring programs for retention. They also underscored the need to increase loan forgiveness programs to alleviate concerns of debt post-graduation that might deter students from going into the dental field.16

The number of entry-level dental hygiene programs selected from each region was determined by establishing the percentage of programs in relationship to the total programs in the U.S. Race when compared to region was not statistically significant (p=0.536). As with other comparisons in this study, images of Whites were represented more than any other race for all regions. Images of Whites were highest in the Northeast region (88.1%) while the highest numbers of URM images were identified in the West region (15%).

It is interesting to note that a component of Onik’s study also evaluated race demographics by geographic location. Onik found that in states with the highest density of dental hygienists had the lowest percentage or proportion of Black or African Americans residing in those states. In contrast, states with the highest proportion of African Americans had the lowest density of dental hygienists.15

The fact remains there is an imbalance in the representation of minorities on the entry-level dental hygiene webpage when compared to DH program location. The race and region association reflects a low percentage of URM on the DH program webpages. Minorities are least likely represented just as the disparity is indicated in Onik’s study.
Increasing URM in the dental hygiene profession needs to be a priority to eliminate disparities in oral care for URM groups. Organizations such as the ADHA are ideal to lead the way in this endeavor. The ADHA represents 185,000 registered hygienists across the U.S. ADHA’s vision statement according to their website is to “improve the public’s oral and overall health”. Under the auspices of advocacy, they also discussed improving oral care for the underserved. It has been highlighted in the literature that increasing diversity in the dental hygiene field will improve the oral care and overall care of minorities and the underserved. As such, initiatives to improve diversity in dental hygiene would be congruent with stated goals of the ADHA.9

**Limitations**

A limitation of this study was having only two researchers collecting data. The potential for researcher bias is likely when classifying images and videos by role, race, ethnicity, gender and age as these demographics are subject to interpretation. The sample size of 50 (14.7%) entry-level dental hygiene programs out of the 338 programs in the U.S. may be a limiting factor. Also, if the sample was broadened and there were additional webpages evaluated, there is a chance that representation of URM could differ from the outcome of this study. An additional limitation is the lack of previous research evaluating dental hygiene websites for ethnic and racial diversity. Another limitation to this study was only looking at the images. Gathering the content and evaluating the language would show how diversity is being discussed on dental hygiene webpages. Lastly, expanding the research to survey students and faculty, this will gain more
perspective of the how diversity is perceived in entry-level dental hygiene programs by those with in the program.

**Implications**

Future studies should consider broadening the sample size to gain additional perspective on the pervasiveness of underrepresentation of URM on dental hygiene program websites. Future research should also evaluate the effectiveness of including representation of URM on websites and the impact it has on increasing the number of URM entering the dental hygiene, increasing the number of practicing URM and ultimately, the impact it has on improving the oral health of minorities.

**Conclusions**

As ethnic and racial minority populations continue to grow in the U.S., the representation of URM in healthcare and dental hygiene must increase to ensure patients receive culturally sensitive care to improve the oral health of minorities. Diversifying the dental hygiene field will improve the treatment of URM in their own communities. The purpose of this study was to examine the images and videos of entry-level dental hygiene programs in the U.S. The underrepresentation of minorities in the images of this study coincides with the lack of representation of URM dental hygienist when compared to the general population of minorities in the U.S.

To attract minorities into the field, dental hygiene programs should consider following the recommendations presented by Butters and Winter: design outreach and
marketing programs to stimulate the interest of minority youth in the dental profession, expand scholarship opportunities, and design mentoring programs for retention.

Based on the literature review and study findings, this author believes that introducing the dental hygiene field to minorities at an early age and increasing minority representation on entry-level dental hygiene programs websites will generate more interest from minorities to the profession. This study demonstrated the need for ethnic and racial diversity representation on entry-level dental hygiene webpages, which can help foster more diversity in the field. The goal is to use the information found in this study and begin creating more awareness to the dental hygiene profession in the URM communities. Broadening minority representation on entry-level dental hygiene websites will promote diversity in the dental hygiene profession, which in turn will improve access of care to minorities communities.
## Table 1
Role of Persons Identified on Program Websites & Media Type

<table>
<thead>
<tr>
<th>Role</th>
<th>n</th>
<th>%</th>
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<tbody>
<tr>
<td>Instructor</td>
<td>80</td>
<td>11.6</td>
</tr>
<tr>
<td>Patient</td>
<td>96</td>
<td>13.9</td>
</tr>
<tr>
<td>Staff</td>
<td>21</td>
<td>3.0</td>
</tr>
<tr>
<td>Student</td>
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<td>55.1</td>
</tr>
<tr>
<td>Unable to Determine</td>
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<td>16.4</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>690</td>
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</table>

### Media Type

<table>
<thead>
<tr>
<th>Media Type</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Image</td>
<td>85</td>
<td>89.5</td>
</tr>
<tr>
<td>Video</td>
<td>10</td>
<td>10.5</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>95</td>
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## Table 2
Dental Hygiene Program Degree Type and Region

<table>
<thead>
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<th>Degree Type</th>
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</thead>
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<tr>
<td>Associate</td>
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<tr>
<td>Baccalaureate</td>
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<td>13.5</td>
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<td>100</td>
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</table>

<table>
<thead>
<tr>
<th>Region</th>
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<td>Midwest</td>
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<td>Southeast</td>
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<td>24.3</td>
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<td>Southwest</td>
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</tr>
<tr>
<td>West</td>
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</tr>
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<td><strong>TOTAL</strong></td>
<td>37</td>
<td>100</td>
</tr>
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<td>Table 3 Demographics of Persons Identified on Program Websites (age, ethnicity, gender and race)</td>
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<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>Age</strong></td>
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<td>%</td>
</tr>
<tr>
<td>Child 6-12 yrs. Old</td>
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<tr>
<td>Teen 13 -17 yrs. Old</td>
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<tr>
<td>Young Adult 18 -25 yrs. Old</td>
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</tr>
<tr>
<td>Adult 26-64 yrs. Old</td>
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<td>25.7</td>
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<tr>
<td>Senior 65 + up</td>
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<td>9.2</td>
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<td><strong>TOTAL</strong></td>
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</tr>
<tr>
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<tr>
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<tr>
<td><strong>Gender</strong></td>
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<td></td>
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<tr>
<td>Female</td>
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<td>100</td>
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<tr>
<td><strong>Race</strong></td>
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<td></td>
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<tr>
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<td>5.2</td>
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<tr>
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</tr>
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</tr>
<tr>
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<td>0.1</td>
</tr>
<tr>
<td>White</td>
<td>544</td>
<td>78.8</td>
</tr>
<tr>
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<td>8.4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
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Table 4  
Race and Degree Type

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<tr>
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</thead>
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<td></td>
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<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
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<td>21</td>
<td>03.3</td>
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<tr>
<td>TOTAL</td>
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<td>85.9</td>
<td>89</td>
<td>14.1</td>
</tr>
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</table>

Table 5  
Gender and Degree Type

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<th></th>
<th>Baccalaureate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Male</td>
<td>86</td>
<td>13.5</td>
<td>13</td>
<td>2.1</td>
</tr>
<tr>
<td>Female</td>
<td>449</td>
<td>70.8</td>
<td>86</td>
<td>13.6</td>
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<td>84.3</td>
<td>99</td>
<td>15.7</td>
</tr>
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<td>Race and Region</td>
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<td>-----------</td>
<td>-----------</td>
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<tr>
<td></td>
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<td>%</td>
<td>n</td>
<td>%</td>
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<tr>
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<td>88.1</td>
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<td>12.8</td>
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<table>
<thead>
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<th>instructor</th>
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<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
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<td>78</td>
<td>100</td>
<td>366</td>
<td>100</td>
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