

2013

## Characteristics essential to a career in dental hygiene

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*Eastern Washington University*

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Characteristics Essential to a Career in Dental Hygiene

A Thesis

Presented in Partial Fulfillment of the Requirements for the

Degree of Masters of Science

in

Dental Hygiene

in the

College of Graduate Studies

Eastern Washington University

by

Andrea J. Bennett

Spring 2013

Major Professor: Lisa Bilich

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## MASTER'S THESIS

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Date\_\_\_\_\_

## Human Subjects Approvals



Eastern Washington University  
at Cheney and Spokane

### MEMORANDUM

To: Andrea Bennett, Department of Dental Hygiene, 160 HSB  
From: Sarah Skeller, Chair, Institutional Review Board for Human Subjects Research  
Date: October 22, 2012  
Subject: Review of HS-4073 *Characteristics Essential to a Career in Dental Hygiene*

Thank you for your response to my memo of October 10, you have addressed our concerns. Human subjects protocol HS-4073 *Characteristics Essential to a Career in Dental Hygiene* has been determined to be exempt from further review according to federal regulations for the Protection of Human Subjects under CFR Title 45, Part 46.101(b)(1-6). Research qualifying for an exemption is valid for a period of one year to October 22, 2013. A signed, approved copy of your application is enclosed.

If subsequent to initial approval the research protocol require minor changes, the Office of Grant and Research Development should be notified of those changes. Any major departures from the original protocol must be approved by the appropriate IRB review process before the protocol may be altered. A Change of Protocol application must be submitted to the IRB for any substantial change in protocol. The Director, Grant and Research Development, or the Chair of the IRB will determine whether or not the research must then be resubmitted for approval.

If you have additional questions please contact me at 359-7039; fax 509-359-2474; email skeller@ewu.edu. It would be helpful if you would refer to HS-4073 if there were further correspondence as we file everything under this number. Thank you.

cc: L. Bilich  
R. Galm  
R. Stolberg  
Graduate Office

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## **Abstract**

With the increase in the number of dental hygiene schools, and decline in graduating dentists, the potential for an excess supply of dental hygienists could result in increased difficulty for dental hygienists to gain employment. Using a quantitative research design in the form of a cross sectional, Likert style survey, this study targeted desirable employability characteristics of dental hygienists by dental employers. The sample was randomly selected from five regions in the US. Each participant was sent three emails containing an introductory letter, consent form, and survey link with a response rate of 5.70% ( $N=53$ ). Data was analyzed using frequency statistics.

Demographically the majority of respondents were Caucasian, male dentists, with an average age of 56.75. Geographically, all five regions responded to the survey, with the majority (81.13%) from a population greater than 50,000. The average number of dental hygienists employed in a practice was 2.11. Over one third, 33.96%, of respondents state they would prefer a dental hygienist with a baccalaureate degree, 52.83% would consider paying a higher salary for this level of education, and 66.04% would hire a new graduate with limited clinical experience. Interpersonal skills showed the highest frequency for the most important or important ranking. The majority also identified the remaining characteristics of level of education, leadership skills, appearance, critical thinking skills, salary, and clinical experience to be very important to somewhat important. Results are in direct correlation with the American Dental Hygienists' Association 2011-2015 Strategic Plan, Commission on Dental Accreditation standards for accreditation for dental hygiene programs, and assumptions of the primary investigator.

### **Acknowledgements**

This project was a difficult and rewarding journey. I would like to acknowledge my husband, family, and thesis committee. Without their time, handwork, encouragement, and love, this project could not have been possible. From the bottom of my heart, I thank you.

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## **List of Abbreviations**

### **Abbreviations**

ADHA- American Dental Hygienists' Association

ADEA- American Dental Education Association

CODA- Commission on Dental Accreditation

CPS- Current Population Survey

RDH- Registered Dental Hygienist

RDHAP- Registered Dental Hygienist in Alternative Practice

## **Introduction**

### **Introduction to the Research Question**

Dental hygiene is an expanding field of health care. There are various educational degrees for entry level to the profession, as well as characteristics of employability present in this field. Over the past 25 years, the growth rate of dental programs displays a negative trend of 9.0% compared to a positive 68.4% growth rate in dental hygiene programs (American Dental Hygienists' Association, 2011b). Registered dental hygienists (RDH), in all states, are in some way limited by dentists due to various restrictions to their clinical duties that must be performed under the supervision of a dentist (Academy of General Dentistry, 2012). With the increase in the number of dental hygiene schools, and decline in graduating dentists, the potential for an excess supply of dental hygienists could result in increased difficulty to gain employment.

### **Background of Study**

In the United States, there are currently 334 entry-level dental hygiene educational programs, which include Certificate, Associate and Baccalaureate degree programs. For dental hygienists with Associate or Certificate degrees seeking advanced education, there are 58 Baccalaureate degree completion programs and 16 Masters of Science in Dental Hygiene programs available. In addition, there are four Master's Degree programs in related disciplines available for dental hygienists (American Dental Hygienists' Association, 2012b).

In 2005, the predicted number of new dental hygienists graduating each year projected a growth rate of 43%, although the growth rate of new dentists was only 4% (Majeski, 2005). The Bureau of Labor Statistics states that dental hygiene is among the fastest growing occupations with a projected growth rate of 36% by 2018. Strong competition for jobs is expected in areas with an abundance of dental hygiene programs (U. S. Bureau of Labor Statistics, 2011).

When applying for employment opportunities, employers evaluate and hire dental hygienists based on meeting the employer's specific requirements or characteristics. Identifying common trends of these requirements or characteristics may be important for employment of dental hygienists and assist them in gaining employment.

### **Statement of the Problem**

With an increasing number of graduating dental hygienists outnumbering the graduating dentists, empirical evidence may be helpful to those seeking employment as a dental hygienist. Are characteristics such as education, salary, interpersonal skills, appearance, leadership skills, critical thinking skills, and clinical experience considered when choosing a dental hygienist for a prospective position? Does level of education improve the employability of the dental hygienist? Do desirable characteristics differ depending on the demographics or geographical region of the employment? These questions may be considered by a dental hygienist when looking for a position.

### **Significance of the Study**

This study will attempt to identify common employability characteristics found most desired by employers when hiring a dental hygienist. As the work force grows and available positions decrease, dental hygienists may choose to develop the characteristics

identified by this study. Study results could aid dental hygienists in completing successful interviews and gaining employment in states where it has become increasingly difficult. Additionally, educators could use the outcomes of this study to guide students as they prepare for graduation and employment. Information gathered in this study could also assist current and future dental hygienists in obtaining the necessary education and desired characteristics to increase the probability of employment.

### **Overview of the Methodology**

Using a quantitative research design in the form of a cross sectional Likert-style survey, this study aimed to determine what characteristics dental employers desire in dental hygienists. A survey link was distributed to dental practices in each of five regions in the US: Northeast, Southeast, Midwest, Southwest, and the West. Each employer chosen in the region received an initial email containing an introductory letter, consent form, and the survey link. Two weeks following the initial email, the employer received a reminder email with was sent. A final email reminder was sent five weeks from the initial email.

Frequency statistics were used to analyze for common trends in characteristics important to employers hiring dental hygienists. The sample was randomly selected to include rural and urban areas from a list purchased from Dentist List Pro with a total of 200 participants selected from each region. Data was collected and tracked by the online survey site, Survey Monkey®. Following the survey data collection, a thank you letter was displayed to all who participated in the survey. In addition, participants were invited to receive study results when completed.



**Definition of Key Terms and Operational Definitions**

*Employability:* the capability of a dental hygienist to obtain initial employment, the ability to retain employment, and ease of obtaining subsequent employment if necessary (McGrath, 2009).

*Characteristics:* traits of a dental hygienist desirable to an employer. These traits may include but are not limited to education, salary, interpersonal skills, critical thinking skills, appearance, clinical experience, and leadership skills.

*Education:* degree/certificate held by the participant.

*Salary:* compensation participant receives for employment by an employer.

*Interpersonal skills:* the ability to relate to, or involving relations between persons, how a person interacts with other people in a professional setting (Merriam webster.com.2012). For example: a person's ability to maintain friendly, productive relationships with coworkers and patients.

*Appearance:* an external show or outward presentation of oneself, the physical look of a person such as his/her clothing and hairstyle choices (Merriam webster.com.2012). For example: a person's choice of attire, well-kept hair and personal hygiene.

*Leadership skills:* the ability to inspire individuals, community, and/or organizational excellence, the ability of a person to lead a group of people toward a common goal and successful performance (American Dental Hygienists' Association, 2011). For example: a person's ability to aid the practice in reaching goals.

*Critical thinking skills:* to be purposeful, self-regulatory judgment that results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential,

conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based (Facione, 2011) A person's ability to use all available information to complete task, solve issues, or create successful practices.

*Clinical experience:* practical experience in medical and health-related services that occurs as part of an educational program or in a public health setting.

(education.com, 2012). For example: previous clinical employment as a dental hygienist or other related field.

*Urban:* an area with a population of 50,000 people or more (US Census Bureau, 2010b).

*Rural:* areas with a population up to 49,999 people (US Census Bureau, 2010b).

## **Summary**

This study uncovered the common trends in important characteristics when applying for a dental hygiene position in a dental practice. Over the past 25 years, dental hygienists are graduating at an increasingly higher rate compared to dentists, therefore causing the job market to be saturated, reducing job availability, and other opportunities for dental hygienists. This study has the potential to set a precedent by determining the characteristics dentists look for when hiring a dental hygienist, as RDHs in all states are limited to some practices by supervision of a dentist (Academy of General Dentistry, 2012). Results may assist dental hygienists seeking employment by allowing them to make suitable choices about their education and hone desired skills necessary to find employment in a dental practice.

## **Literature Review**

### **Overview of Research**

As the percentage of unemployed dental hygienists rises and the increase in projected numbers of new graduates grows, it has become progressively difficult to secure a job as a dental hygienist. Research on the employment and education of dental hygienists and other health care professionals has been completed (American Dental Hygienists' Association, 2009; American Dental Hygienists' Association, 2012b; Cohen, Singer, & LaBelle, 1987; Lazar, 1997; Ring, 2002; U. S. Bureau of Labor Statistics, 2011). This study focuses on discovering characteristics of dental hygienists that are most desirable for employment in a dental practice and what, if any, effect does the level of education have on potential employability in the dental practice.

### **Related or Theoretical Frameworks and Supporting Research**

There is a lack of research containing suggestions on how dental hygienists can strengthen their ability to gain employment. However, several research studies explain the possible causes of the lack of employment opportunities (American Dental Hygienists' Association, 2001; American Dental Hygienists' Association, 2009; Lazar, 1997; Majeski, 2005; Patterson D.G., Skillman S.M., Hart G.L., 2004; U. S. Bureau of Labor Statistics, 2011; WWAMI Center for Health Workforce Studies, University of Washington, 2000). In the profession of dental hygiene, there are a variety of employment options and levels of education one can have as a dental hygienist.

**Education of Dental Hygienists.** There are three levels of dental hygiene education; Certificate, Associate of Science and Baccalaureate (Bachelor of Science). Of the 334 programs offered in the US, eight offer certificate, 290 an associate degree and 54 a baccalaureate degree (American Dental Hygienists' Association, 2012b). There are several differences between the levels of education. To obtain an Associate Degree, students are required to complete an average of 2,860 total clock hours of instruction compared to a total of 3,073 for baccalaureate programs, with an average of 72 more clinical hours in a baccalaureate program than in an associate program (American Dental Hygienists' Association, 2012b). Admission into a Certificate program differs from Baccalaureate programs in required semester hours. For example, the University of Texas Health Sciences at Houston School of Dentistry requires a minimum of 34 semester hours for the certificate program and 62 semester hours for the Baccalaureate program (UTHealth, 2011). As another example, the University of Pittsburgh, School of Dentistry Medicine also offers a certificate program with admission requirements of a General Education Development Test (GED®) or High School diploma, SAT score of 1100 or 24 semester credits, and three college level classes that include one semester of English, Chemistry and Biology (University of Pittsburgh, School of Dental Medicine, 2012). Students who complete the Certificate program receive their Baccalaureate by completing an additional 39 credits (University of Pittsburgh, School of Dental Medicine, 2012). All entry-level degrees are acceptable to obtain a license to practice dental hygiene in the United States (American Dental Hygienists' Association, 2011).

Table 1.

### *Educational Differences*

	Certificate (9)	Associates (290)	Baccalaureate (54)
ADHA, Dental Hygiene Education: Curricula, Program, Enrollment and Graduate Information		2860 total instructional clock hours	3073 total instructional clock hours
University of Texas Health Sciences at Houston	GED, High School Diploma or 24 semester hours for admission.		Additional 39 semester units for graduation upon completion of certificate program
University of Pittsburgh, School of Dental Medicine	34 semester hours for admission		69 semester hours for admission
	Eligible for state licensure upon successful completion of the program.	Eligible for state licensure upon successful completion of the program.	Eligible for state licensure upon successful completion of the program.
(American Dental Hygienists' Association, 2012b; University of Pittsburgh, School of Dental Medicine, 2012; UTHHealth, 2011)			

The Commission on Dental Accreditation (CODA) is the governing board for the accreditation of all dental hygiene educational programs. Each institution to gain accreditation must meet the standards set by CODA (American Dental Hygienists' Association, 2012b; Commission on Dental Accreditation, 2013). The CODA standard 2-1 states a minimum of two academic years of instruction or the equivalent at postsecondary college level are required completed before graduation. The intent of this standard is to allow adequate time for students to develop psychomotor skills necessary for the dental hygiene profession; however, the structure of the curriculum can allow students to meet the standards in less than two years (Commission on Dental

Accreditation, 2013). Depending on the dental hygiene program setting, several degrees are awarded. A certificate, associate degree, or bachelor degree are at any four-year college and an associate degree at a two-year college (American Dental Hygienists' Association, 2012b; Commission on Dental Accreditation, 2013). The CODA standard 2-3 states that the student admission must be based on specified written criteria, policies, and procedure; however, the content on specific criteria is not described (Commission on Dental Accreditation, 2013).

When applying for a position in the dental field, education may play a role in the type of employment sought by a dental hygienist. In 2008, Rowe, Massoumi, Hyde, and Weintraub mailed a closed ended questionnaire containing 30 questions to a random sample of dental hygienists educated and licensed between 1990-2000 in California ( $N=1352$ ) with a response rate of 76%. The questionnaire found the majority (30.3%,  $p<0.05$ ) of baccalaureate graduates in dental hygiene were involved in non-private practice employment positions including education and research. In contrast, private practice showed more associate graduates. Similarly, a survey in 2004 at the University of California, San Francisco in 2004 consisting of alumni from 1960 to 2000 ( $N=468$ ), concluded that students graduating from a baccalaureate program were more likely to become scholars and educators as well as leaders in the dental hygiene field (Rowe, Weintraub, Shain, Yamamoto, & Walsh, 2004). Of the responders, 21% graduated from a graduate or professional program, 20% held a position on the faculty of a dental hygiene program, 60% are regular participants in DH professional organizational, and 61% are active in community organizations (Rowe et al., 2004).

Notably, associate and baccalaureate degree graduates show similar involvement in professional organizations such as the American Dental Hygienists' Association (ADHA) (Rowe, Massoumi, Hyde, & Weintraub, 2008). This is supported by Luke via a survey sent to licensed dental hygienists ( $N=164$ ) (Luke, 2010). Luke found similar percentages of graduates with associate and baccalaureate degrees were members of the ADHA, 48.8% and 51.8%, respectively. However, percentages for members who obtained a master's degree or certificate were much higher, 66.7% and 84.6% respectively (Luke, 2010).

A Master in Dental Hygiene and Master of Science in Dental Hygiene are available, but not as readily as associate or baccalaureate degrees. In 2011, 16 schools offered a graduate degree in dental hygiene (American Dental Hygienists' Association, 2012b). Few studies on post-graduate employment or success of these graduates are available. In 2000, all 252 individuals who graduated between 1980 and 1995 from eight dental hygiene master's degree programs (MSDH) were mailed a pilot-tested questionnaire on career satisfaction with a response rate of 69% ( $N=174$ ) (Jevack, Wilder, Mann, & Hunt, 2000). The aim of the survey was to discover degree and career satisfaction as well as job characteristics of MSDH graduates. The study found that 54% of the dental hygienists were working five days a week, with 61% making an annual salary of over \$40,000. However, 30% stated they would not pursue the same degree again (Jevack et al., 2000).

Nathe (2005), Coplan (2010) and the ADHA (2012) express the importance of master level dental hygienists to educate dental hygiene students and conduct research to reduce or prevent oral disease. The shortage of qualified dental hygiene educators is

predicted to have a negative impact on the dental hygiene profession and education (American Dental Hygienists' Association, 2012b; Coplen, 2010; Nathe, 2005). Nathe also expresses the need for graduate level dental hygienists concluding every goal in the oral health section of Healthy People of 2010 can be accomplished by the skills of a dental hygienist (Nathe, 2005).

Recently, CODA revised their standards to require a formal needs assessment for proposed dental hygiene programs to determine the feasibility of the program (American Dental Hygienists' Association, 2012a; Commission on Dental Accreditation, 2013). The needs assessment must include verification and evaluation of the most current local/regional statistics, showing sufficient qualified faculty and administration, patient population, and employment opportunities for graduates (Commission on Dental Accreditation, 2013). The ADHA believes the needs assessment will aid in alleviating the saturation of the dental hygiene market in places with insufficient opportunities to support the existing work force (American Dental Hygienists' Association, 2012a)

The future of dental hygiene is being discussed by stakeholders in the profession including, the ADHA, American Dental Education Association (ADEA) Council of Allied Dental Program Directors, and the ADEA Graduate Dental Hygiene Program Directors Special Interest Group (American Dental Education Association, 2012; American Dental Hygienists' Association, 2013). ADHA developed a strategic plan for 2011-2012 outlining specific goals including, increasing professional membership, improving infrastructure, strategic alliances with other professionals, and supporting growth of the profession (American Dental Hygienists' Association, 2013). In November



of 2008, an online survey was created and sent by ADEA to program directors of dental hygiene programs in the United States accredited by CODA ( $N=300$ ) (Okwuje, Anderson, & Hanlon, 2010b). Over 75% of the respondents stated increasing the entry-level education for the profession of dental hygiene to a baccalaureate degree is important or somewhat important (Okwuje, Anderson, & Hanlon, 2010b). As stakeholders take interest in the future of the profession, education is at the forefront. With this information, professionals and students can plan their educational goals to secure a future in this evolving profession.

**Characteristics of Dental Hygienists.** There is one existing study on characteristics and employability of dental hygienists. In 2008, a survey of Case Western Reserve University School of Dental Medicine dentist alumni ( $N=700$ ) was conducted to evaluate perceptions of preferences in hiring dental hygienists (Lalumandier, Demko, & Burke, 2008). Hiring preference questions considered the value of work experience, salary, and knowledge of science and dentistry. The study found 56% of the respondents ( $n=225$ ) had no preference for the level of education of the dental hygienists, with the majority not willing to pay a higher salary for a dental hygienist with a baccalaureate degree. Furthermore, the respondents perceived graduates with a four- year baccalaureate degree to have greater science knowledge, but clinical skills equal to graduates with a two- year associate degree. The study concluded of the dentists who employ dental hygienists with a baccalaureate degree ( $n=71$ ), 62% believed there is no difference between dental hygienists with a baccalaureate and associate degree with two years of work experience ( $p>.01$ ). Limitation of this study was the focused demographical location of Ohio and alumni of Case Western Reserve University.

**Other Allied Healthcare Professions Employment Characteristics.** Research in nursing revealed characteristics important for candidates who seek employment include clinical experience, educational preparation, case management, and certification in case management (Cesta, 2011). Dann, Miller, Hobbs, Gentzsch and Pierson (1995) found a common trend in characteristics for patient centered personnel included adaptability, creativity, interpersonal skills, and compatibility of values (Dann et al., 1995). Other characteristics including clinical competence, management, and leadership skills were important in the hiring process to ensure the selection of the best candidate for the team and patient care (Dann, Miller, Hobbs, Gentzsch, & Pierson, 1995).

In the nursing profession, the perspective of the patient was utilized to study pregnant African American women who revealed four major characteristics preferred in their prenatal providers ( $N=22$ ) (Lori, Yi, & Martyn, 2011). Desired characteristics from the patient view included quality provider-patient communication, compassionate care, respectful treatment, and providing continuity of care (Lori et al., 2011). The study concludes that interpersonal relationships between provider and patient are very important from the patients' view (Lori et al., 2011).

In 2002, a three stage survey was used to create and condense the top characteristics desired in leaders of the nursing profession detailed by two distinct age groups, the emerging work force 18-35 ( $n=108$ ) and the entrenched workforce of 36 or older ( $n=126$ ) (Wieck, Prydun, & Walsh, 2002). The study found the top common characteristics from both groups to include honest, positive, good people skills, approachable, good communicator, receptive to people, and supportive. The most

undesirable characteristics were to be a risk taker, strong willed, cheerful, calm, and high energy (Wieck et al., 2002).

In physical therapy, a Likert-type survey mailed to head athletic trainers of NCAA Division III identified desired characteristics (Henry, Schneider, & Stier Jr., 2009). Of the 410 surveys mailed out, 185 were returned for a response rate of 45.1 percent (Henry et al., 2009). Important characteristics were found to be honesty (73.5%), dependability (66.4%), trustworthiness (76.2%), leadership (93.7%), communicator (61.6%) and high ethical standards (66.4%) (Henry et al., 2009). The least important characteristics were being a risk taker, a visionary or high energy (Henry et al., 2009).

For an employer to gain an understanding and uncover these desired characteristics of a potential employee, allied health providers may be asked to complete several hiring processes before gaining employment. In an Allied Health Recruitment survey, done by Rad Sciences Group, behavioral-based interview (44%), working interview (22%), behavioral-based assessments (12%), personality tests (8%), skills tests (7%), other (4%), peer review (3%), were identified as the most common ways for employers to learn about their applicant (RadSciencesGroup, n.d.).

**Employment of Dental Hygienists.** As a historical perspective, in a 1997 annual survey of a random selection of five percent of dentists in practice throughout the United States, Lazar reported a decline in dental hygiene employment opportunities (Lazar, 1997). This study reviewed salaries of dental hygienists from 1990 to 1994, showing a steady increase from 1990-1993. From 1993-1994, there was a two percent decline in salaries for dental hygienists. Lazar determined this decrease in salary was due to the declining demand for dental hygienists. This study concluded that the increase of dental

hygienists was due to a 2.5% percent increase of graduates from dental hygiene schools between 1993 and 1994 (Lazar, 1997).

In 2005, the projected growth rate of new dental hygienists graduating each year was 43%, although the growth rate of new dentists was only 4% (Majeski, 2005). More recently, in 2009, the ADHA used an online survey of 3,130 responding dental hygienists to conclude 56% have searched for full or part time work (American Dental Hygienists' Association, 2009). With the limitation of available dental hygiene positions, 68% feel securing employment is somewhat or very difficult. Of these 68% of respondents, 80% feel the reason is there are too many dental hygienists in the area, and 56% feel there are too many educational programs in their geographical area (American Dental Hygienists' Association, 2009). Therefore, this study concluded the inadequacy of positions available is the main reason 47% of dental hygienists looking for jobs are having difficulty. Of the total respondents, 26% are changing their plans due to this shortage of positions (American Dental Hygienists' Association, 2009). An example of this shortage was found in the state of Washington where the lack of dentists in the work force will make it difficult to fulfill the need of graduating dental hygienists due to the increasing amount of dentists who plan to retire in 2013 (WWAMI Center for Health Workforce Studies, University of Washington, 2000).

The Bureau of Labor Statistics states dental hygiene is among the fastest growing occupations with a projected growth rate of 36% by 2018. Across the United States, the average employment saturation by state varies from 90.1 dental hygienists per 100,000 in Vermont to 23.8 in Tennessee, not including Washington D.C. (American Dental Hygienists' Association, 2008). However, in states like Vermont, with an abundance of

dental hygiene programs, strong competition for jobs is expected (U. S. Bureau of Labor Statistics, 2011). Other concerns affecting future employment opportunities for dental hygienists include a continuing economic downturn, the proliferation of dental hygiene education programs and graduates, the slow graduation rates for dentists, and the already saturated job market in most areas of the country (Patterson D.G., Skillman S.M., Hart G.L., 2004; U. S. Bureau of Labor Statistics, 2011).

The ADHA explains employment from state to state is difficult due to the difference in regulations for dental hygiene licensure (American Dental Hygienists' Association, 2001). In many states, dental hygienists can practice under general supervision by a dentist. This means the dentist may not be physically present in the practice setting; however, the dental hygienist has permission of the supervising dentist to perform all allowable services within the dental hygiene scope of practice. In Georgia and Illinois, dental hygienists must practice under direct supervision, meaning the dentist must be physically present in the practice setting when the dental hygienist is providing therapy. Alternatively, in 14 other states, dental hygienists can practice with fewer restrictions or unsupervised. For example, the Registered Dental Hygienist in Alternative Practice (RDHAPs) license in California allows for less supervision. In addition, in Maine, Washington, and New Hampshire, a public health supervision that is less restrictive exists. Furthermore, New Mexico has an agreement between dentists and dental hygienists for collaborative practice in outside settings (American Dental Hygienists' Association, 2001).

**Population.** The profession of dental hygiene needs to evolve and conform to the new advances in science and technology by adding new roles and responsibilities to

secure the future of the dental hygiene profession (Howden & Meyer, 2011; US Census Bureau, 2010a). Currently, the US Census of 2010 shows an increase in the aging population (Howden & Meyer, 2011; Patterson D.G., Skillman S.M., Hart G.L., 2004). The census reports 39.4% of the population is 45 years or older. The less than 18 age group showed a 2.6% increase, while the age group of 45-64 grew 31.5% in the past 10 years. Furthermore, the population age group from 18 to 44 only increased by 0.6%. The explanation of this growth rate is the aging of the Baby Boom population (Howden & Meyer, 2011). The demographics of the population are projected to change dramatically by the year 2030 with 76% of the population over the age of 65, reaching retirement age. Consequently, creating a practitioner that is educated and skilled to meet the increasing needs of the public is important to the advancement of the dental hygiene profession (American Dental Hygienists' Association, 2012b; Majeski, 2005).

**Other Allied Health Care Professions Education and Employment.** Similar to the vocation of dental hygiene, a nursing career offers varying levels of education as an entry into the profession, including diploma program, associate degree, and baccalaureate degree programs. A systematic review of the literature found nursing programs offer degree completion programs for each level of education to aid practicing nurses to continue their education and advance to the graduate level (Raines & Taglaireni, 2008).

However, opposite from the profession of dental hygiene, employment of nurses has continued to increase over the past decade. Using the Current Population Survey (CPS) which is distributed nationally every month to over 100,000 individuals from the Bureau of the Census, Buerhaus & Auerbach (2011) found an increase of over 400,000 registered nurses employed in the hospital setting (Buerhaus & Auerbach, 2011). This

growth is during the current recession when the national unemployment percentage was increasing. Unfortunately, like the field of dentistry, the majority of this work force is in their fifties causing a challenging long-term effect to refill these positions as they retire (Buerhaus & Auerbach, 2011; Patterson D.G., Skillman S.M., Hart G.L., 2004; Rhea & Bettles, 2011).

### **Problem as Developed from Theories and Research**

The research shows there is increasing difficulty in the dental hygiene profession for dental hygienists to find employment (American Dental Hygienists' Association, 2009). Reasons discussed include the increase and abundance of entry-level dental hygiene educational programs and therefore graduates (American Dental Hygienists' Association, 2009; Patterson D.G., Skillman S.M., Hart G.L., 2004; Rhea & Bettles, 2011; U. S. Bureau of Labor Statistics, 2011). Although the rate of dental graduates is increasing, the rate of increase is disproportionate to the dental hygiene graduates (Majeski, 2005; Patterson D.G., Skillman S.M., Hart G.L., 2004). The level of education of dental hygienists is a controversy being discussed, leading to a possible change of the accepted entry-level degree becoming a baccalaureate (American Dental Hygienists' Association, 2013; Okwuje, Anderson, & Hanlon, 2010b).

While there is research into the trends of employment and overpopulation of the profession, there is a lack of research to determine how dental hygienists can overcome these issues. Therefore, the need for discovery in what actually matters to the employer when filling an open position for a dental hygienist and what dental hygienists can do to increase their chances of overcoming limited employment opportunities is present.

**Summary**

The literature review found evidence of the increasingly disproportionate ratio of graduating dentists to graduating dental hygienists, causing declining employment opportunities. Becoming a dental hygienist has become more available with the various entry-level degrees and upsurge in educational and technical institutions offering dental hygiene programs. Utilization of dental hygienists has the potential to increase access to care for the aging and lower socioeconomic population and improve oral health in the United States. Therefore, discovering the desirable characteristics used in the hiring process may assist professionals pursuing employment as well as students and others in selecting the most beneficial career and educational pathway to become a dental hygienist.



### **Methodology**

The purpose of this study was to determine the most relevant characteristics used by dental practices to evaluate prospective dental hygienists for employment. With limited research available in this field, characteristics were determined using desirable characteristics in related health care fields (Dann et al., 1995; Henry et al., 2009; Lori et al., 2011; RadSciencesGroup, n.d.; Wieck et al., 2002). This study sought to determine if these characteristics are valued for employment as a dental hygienist in a clinical dental practice.

### **Design**

**Problem or research question.** This study aimed to discover the answers to the following questions:

1. When a dental hygienist is applying for an employment opportunity, do characteristics such as education, salary, interpersonal skills, appearance, leadership skills, critical thinking skills, or clinical experience matter?
2. Does level of education increase the employability of the dental hygienist?
3. Do characteristics vary depending on employer's demographics or geographical region?

**Variables.** For this study, variables identified comprise of personal and geographical demographics, including age, gender, race, role in practice, and geographical region of the participant. Confounding variables include previous dental

roles, employment status of the survey participant, and possible bias about the profession of dental hygiene and dental hygienists. Random sampling was used to control variables.

**Research method or design.** A quantitative research design in the form of a survey was used, which included descriptive, close ended, unordered, and Likert-type items. The online survey program, Survey Monkey® posted and distributed the survey to the Northeast, Southeast, Midwest, Southwest, and West regions of the United States. Formatted in sections, the survey comprised of Demographics, Characteristics, and an Other Questions sections. The demographic questions were for descriptive purposes and comparisons. The questions, formatted in close-ended and descriptive styles, including age range, gender, ethnicity, level of education, practice role, location based on state and population. Characteristic questions address hiring characteristics favored by each participant and formatted in a Likert type item. The Likert section of the survey was for the participant to rank each characteristic by level of importance to employment. There was a blank line for the participant to fill in a characteristic he/she feels may be important but not listed in the choices. The final section had a single comment area, intended to provide the participant the ability to leave any comments he/she feels necessary.

Each practice chosen in the region received an initial email containing an introductory letter, consent statement, and the survey link. Two weeks from the initial email participants received a reminder email. Due to lack of respondents, IRB was contacted to allow one additional reminder letter to be sent. Upon approval, the participants received a final reminder email five weeks from the initial email. Therefore,

participants received the link and cover letter three times, over a five-week period. Once the survey was completed, a thank you letter appeared to each participant.

### **Description of Setting**

Survey Monkey®, the survey site, conducted the study online via email. The use of the internet allowed the study delivery throughout rural and urban areas in the United States in an efficient and timely manner. Participation was voluntary and participants could withdraw at any point during the survey. Submission of the survey showed consent. The survey allowed for multiple logins for completion. The privacy of the participant is vital; therefore, the anonymous survey protected the identity of each participant and encouraged participation. The email data was only accessible by the principle investigator. The email addresses and created passwords for the computer were kept in a locked filing cabinet in the principal investigator's home office and password protected laptop. Email addresses were not and will not be sold for any other use. The survey asked for demographic data for analysis purposes only.

### **Sample**

**Human Subjects' Protection.** The participants received a letter of introduction, explanation of the study and consent form before the start of the survey. Participation and completion of the survey was used as consent. To insure the protection of personal information and opinions of each participant a computer that is password protected was used to store data. The survey data was stored on a secure web site that is only accessible by a username and password created by the principal investigator. Approval by the Eastern Washington University Institutional Review Board (EWU IRB) was obtained

before this study was conducted. Upon change in protocol, EWU IRB was contacted and approval was obtained to send an additional reminder letter.

**Sample Source.** Subjects were recruited using a list from Dentist List Pro ®. Dentist List Pro obtains their data from publicly available information, updating the data weekly with the United States Postal Service's National Change of Address (NCOA) (Dentist List Pro, 2012) . The United States was divided into regions based on geographical location to include the West, South West, Midwest, North East, and South East. Each region had a random sample of 200 participants.

**Criteria for Sample Selection.** The selection of regions was by common geographical location including Northeast, Southeast, Midwest, Southwest, and the West. The northeast region includes the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. States included in the Southeast region are Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. Iowa, Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin make up the Midwest region. The Southwest regions states include Arizona, New Mexico, Oklahoma, and Texas. The remaining states, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming, make up the region of the West. The mailing population size was used to assign rural or urban geographical reference.

**Sampling plan.** A systematic random sample was used to recruit participants. The list, purchased from Dentist List Pro, was sub-grouped by region. Every eighth email, in each region, was chosen until 200 for each region were selected. If the bottom

of the list was reached before the 200 were collected, every fifth email was used beginning from the top of the list.

**Sample size.** To determine the sample size needed for the study an online sample size calculator was used from Creative Research Systems (CRS) (Creative Research Systems, 2010). Founded in 1982, CRS provides software for researchers. The software is now in Version 10.0, which incorporates the extensive experience of the past 27 years (Creative Research Systems, 2010). The calculator was set for a 95% confidence level with a confidence interval of four. The population size was set to 120,000 dental practices in the United States (US Census Bureau, 2010b). The calculator suggested a total 600 surveys, due to possibility of low response rates, 1000 surveys were sent. To divide the surveys among the regions, 200 subjects were chosen from each region, Northeast, Southeast, Midwest, Southwest, and the West.

### **Data Collection**

**Methods.** The survey link was sent via email using the Microsoft Outlook Live server with a password protected email account set up by Eastern Washington University. Data was collected and tracked by the online survey site, Survey Monkey®. The survey was sent three times to each randomly selected subject. Due to a non-acceptable response rate, a change of protocol was filed and approved by IRB to send one final email reminder. The link remained open for seven weeks, after which, the link was inactivated. Following the completion of the survey, a thank you letter appeared to all who participated in the survey. In addition, participants were invited to receive study results when completed. The online survey method was chosen for the advantages of using a survey design that includes the ability to reach a large number of people, measure

several variables, aid in data analysis, and reduce cost (Fricker Jr. & Schonlau, 2002).

Disadvantages to surveys can include response rate, sample size, and bias of participants (Chambers & Licari, 2009).

**Instruments.** The study utilized a survey design with descriptive, close ended non-ordered, and Likert style questions. Close ended and descriptive questions allowed the participant to select one answer from a list of two or more choices. The close-ended, non-ordered question let the participant choose more than one answer. The Likert question-type items were created with sub questions or characteristics along the y-axis of a table. The question allowed respondents to rank the characteristic from a seven point Very Important to Not Important scale. Common desired characteristics for employment of health care professionals were compiled from reviewing research and common knowledge (Cesta, 2011; Dann et al., 1995; Lalumandier et al., 2008; Lori et al., 2011; Wieck et al., 2002).

Survey Monkey® via the internet is the software used to conduct and collect the data of the questionnaire. This site is username and password protected for security. The survey collected demographic data to aid in controlling variables. These questions include age, gender, education level, role in practice, geographical location, race, and practice setting. See Appendix A.

**Reliability and Validity.** A pilot test was performed to ensure all software was working correctly. The recipients of the pilot test were a small group of 15, non-study related participants. Each recipient was asked to complete the survey in its entirety. Participants were required answer each question, rate the characteristics, and make comments in the explanation section. This ensured the survey worked properly and

allowed pilot participants to make recommendations for changes if needed.

Modifications to survey function were made on the request of the pilot testers to ensure ease and clarity of the survey. After modifications, the sample set received the survey.

**Procedure.** Upon approval of the EWU IRB, each subject received an initial email containing an explanation of the research, consent, and request for their participation in the study by selecting the included link to the survey on Survey Monkey®. The email requested the participant to complete the survey within four weeks and consent was assumed by completion of the survey. Two weeks after the initial email, a reminder email containing the link to the survey was sent to all participants with the description of the research. With the limited response, a change in protocol to send an additional email was submitted to IRB. Upon approval, the respondents received one final reminder email five weeks from the initial email. As participants completed the survey, a thank you letter appeared and participants were asked if they would like to see the results after the survey was completed. Having emails sent via Survey Monkey®, the participants remained anonymous to the researcher.

### **Statistical Analysis**

This study used a pivot table to analyze data for common trends in characteristics and determine frequency of the participant's responses. Sub groups included geographical and demographical data. Geographical sub-groups were defined by location based on state and population. Demographical sub groups were defined by age range, gender, ethnicity, and practice role.

**Summary**

The method of data collection was a cross sectional style survey distributed, nationally, to dental practices discovering the desirable employability characteristics of dental hygienists from the participants. Systematic random sampling collected participant contacts from a purchased list from Dentist List Pro. Data was collected and analyzed to determine desirable employability characteristics, as well as, correlations among demographics and geographical location.



## **Results**

### **Introduction**

There is an increasing number of graduating dental hygienists outnumbering the graduating dentists and empirical evidence may be helpful to those seeking employment as a dental hygienist. This chapter reports the results regarding the importance of desirable hiring characteristics, level of education improving employability, and the difference in preferences depending on geographical region.

### **Description of Sample**

A systematic random sample recruited participants from a list purchased from Dentist List Pro® and was sub-grouped by region. Regions were selected by common geographical location including Northeast, Southeast, Midwest, Southwest, and the West. Participants were selected from the list by every eighth email, in each region, until a total of 200 for each region were selected; therefore, a total of 1000 survey emails were originally sent out. Of these emails, 71 emails were returned as delivery failed therefore resulting in a total of 929. Over a period of seven weeks the survey link received 53 responses or a 5.70% response rate ( $N=53$ ).

**Demographics.** Of the respondents, 30.19% ( $n=16$ ) reported female and 69.81% ( $n=37$ ) male as shown in Table 2.

Table 2.

<i>Frequency distribution of Gender</i>		
Gender	<i>n</i>	%
Female	<i>n</i> =16	30.19
Male	<i>n</i> =37	69.81
Total	<i>N</i> =53	100%

The reported age of the respondents ranged from 30-71 with 9.43% (*n*=5) declining to state their age as reported in Table 3. Age groups divided into ten year increments were as follows, 30-39 at 16.98% (*n*=9) , 40-49 at 13.21% (*n*=7) , 50-59 at 30.19% (*n*=16) , 60-69 at 26.41% (*n*=14) and 70-79 at 3.78% (*n*=2) . The average age of the respondents was 56.75 years of age.

Table 3.

<i>Frequency Distribution of Age</i>		
Age Group	<i>n</i>	%
30-39	<i>n</i> =9	16.98
40-49	<i>n</i> =7	13.21
50-59	<i>n</i> =16	30.19
60-69	<i>n</i> =14	26.41
70-79	<i>n</i> =2	3.78
Total	<i>N</i> =48	90.57%

*Note.* Five respondents (9.43%) declined to state their age.

Table 4 demonstrates respondents reporting on ethnicity as 90.57% (*n*=48) were Caucasian, 1.89% (*n*=1) African American, 3.77% (*n*=2) Asian, 1.89% (*n*=1)) Hispanic and 1.89% (*n*=1) Hungarian.

Table 4.

*Frequency Distribution of Ethnicity*

Ethnicity	<i>n</i>	%
Asian	<i>n</i> =2	3.77
African American	<i>n</i> =1	1.89
Caucasian	<i>n</i> =48	90.57
Hispanic	<i>n</i> =1	1.89
Other	<i>n</i> =1	1.89
Total	<i>N</i> =53	100%

Table 5 describes the roles respondents had in each of their practices, with the majority of 83.02% (*n*=44) dentists, 3.77% (*n*=2) associate dentists 7.55% (*n*=4), office managers, 3.77% (*n*=2) dental hygienists, and 1.89% (*n*=1) selecting the other option.

Table 5.

*Frequency Distribution of Role in the Practice*

Practice Role	<i>n</i>	%
Associate Dentist	<i>n</i> =2	3.77
Dentist	<i>n</i> =44	83.02
Dental Hygienist	<i>n</i> =2	3.77
Office Manager	<i>n</i> =4	7.44
Other	<i>n</i> =1	1.89
Total	<i>N</i> =53	100%

**Geographic.** Each of the regions were represented in the responses as illustrated in Table 6 with the majority from the Northeast: 24.53% (*n*=13) from the North East, 15.09% (*n*=8) from the South East, 28.30% (*n*=15) from the Midwest, 11.32% (*n*=6) from the South West, the West with 18.97% (*n*=10) and 1.89% (*n*=1) declined to list the state.

Table 6.

*Frequency Distribution by Population*

Population	<i>n</i>	%
≤ 49,999	<i>n</i> =10	18.87
≥ 50,000	<i>n</i> =43	81.13

Total	N=53	100%
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There were 18.87% ( $n=10$ ) respondents from a population size of less than 49,999 with 81.13% ( $n=43$ ) respondents from an area where the population was greater than 50,000 people, as shown in Table 7.

Table 7.

*Frequency Distributions by Region*

Regions	<i>n</i>	%
Northeast	$n=13$	24.53
Southeast	$n=8$	15.09
Midwest	$n=15$	28.30
Southwest	$n=6$	11.32
West	$n=10$	18.87
Total	$N=52$	98.11%

*Note.* One respondent (1.89%), did not indicate a state.

### Statistical Analysis

Following the layout of the survey instrument, the statistical analysis results were subdivided in to three sections: demographic, geographic, and other. Frequency distributions for each question were reported. To discover the importance of the chosen characteristics, a pivot table was used to analyze the frequency for which a specific answer was chosen. Data from each question of the survey instrument was coded into a numerical value to be used in the pivot table to determine frequency.

**Other.** For this section, several multiple-choice questions were asked regarding the preferences and employment of dental hygienists in the practice. The number of hygienists currently employed in the practices of the respondents ranged from zero at 16.98% ( $n=9$ ) to six 1.89% ( $n=6$ ), as reported in Table 8, with an average of 2.11 hygienists employed.

Table 8.

<i>Number of Hygienists Employed by the Practice</i>		
Number of Hygienists	<i>n</i>	%
0	<i>n</i> =9	16.98
1	<i>n</i> =10	18.87
2	<i>n</i> =16	30.19
3	<i>n</i> =7	13.21
4	<i>n</i> =7	13.21
5	<i>n</i> =3	5.66
6	<i>n</i> =1	1.89
Total	<i>N</i> =53	100%

According to the responses, the preferred level of education for the dental hygienists, as shown in Table 9, was 33.96% (*n*=18) indicating a Baccalaureate degree 22.64% (*n*=12) an Associates degree, and 3.77% (*n*= 2) a Certificate. Thirty two point eight percent (*n*=17) stated they had no preference and 7.55% (*n*=4) declined to answer.

Table 9.

<i>Preference on Level of Education</i>		
Level of Education	<i>n</i>	%
No Preference	<i>n</i> =17	32.08
Associate Degree	<i>n</i> =12	22.64
Baccalaureate Degree	<i>n</i> =18	33.96
Certificate	<i>n</i> =2	3.77
Total	<i>N</i> =49	92.45%

*Note.* Total does not equal 100% as 7.55% declined to answer.

As illustrated in Table 10, when asked if the respondent would pay a higher salary to a dental hygienist based on level of education, 52.83% (*n*=28) answered yes with 41.51% (*n*=22) saying no, and 5.66% (*n*=3) did not answer.

Table 10.

<i>Potential for Higher Salary for Level of Education</i>		
Measure	<i>n</i>	%
Yes	<i>n</i> =28	52.83
No	<i>n</i> =22	41.51
Total	<i>N</i> =50	94.34%

*Note.* Total does not equal 100% as 5.66% declined to answer.

In comparison, of those respondents who chose a preference of education level, Table 11 shows 40.82% ( $n=20$ ) reported they would pay a higher salary for educational level.

Table 11.

*Comparison of Education vs Salary as a Percentage*

Measure	No Preference ( $n=17$ )	Baccalaureate ( $n=12$ )	Associate ( $n=18$ )	Certificate ( $n=1$ )
Yes	14.29	16.33	24.49	0.00
No	20.41	8.16	12.24	4.08

*Note.* Four respondents declined to state one or both of these questions.

Comparing responses within each region, Table 12 reports, the Northeast ( $n=7$ ) and Southwest ( $n=4$ ) majority stated they would not pay a higher salary for education level. The Southeast ( $n=4$ ), Midwest ( $n=10$ ) and West ( $n=6$ ) regions' majority stated they would pay a higher salary for educational level.

Table 12.

*Potential of Paying a Higher Salary for Education Level by Region*

Region	Yes	No	Did Not Answer
Northeast ( $n=13$ )	38.46	53.85	7.69
Southeast ( $n=8$ )	50.00	37.50	12.50
Midwest ( $n=15$ )	66.67	33.34	0.00
Southwest ( $n=6$ )	33.37	66.67	0.00
West ( $n=10$ )	60.00	30.00	10.00

*Note.* One participant did not state which region.

Furthermore, Table 13 shows 66.04% ( $n=35$ ) of respondents would consider hiring a new graduate with limited clinical experience and 28.30% ( $n=15$ ) stated they would not with 5.66% ( $n=3$ ) declining to answer.

Table 13.

<i>Hiring a New Graduate</i>		
Measure	<i>n</i>	%
Yes	<i>n</i> =35	66.04
No	<i>n</i> =15	28.30
Total	<i>N</i> =50	94.34%

*Note.* Total does not equal 100% as 5.66% decline to answer.

Continuing in this section, a close-ended, unordered question requested the participant to choose all the different methods for which they choose or hire a hygienist in their practice. The choices included verbal interview, working interview, skills test, behavioral questionnaire, personality test, peer review, and an “other” space for the participant to offer an option not supplied. Data for this question is reported, in Table 14, by the common combinations of the given options. The most common combination reported was a verbal interview along with a working interview with 33.96% (*n*=18). A verbal interview, working interview and peer review was the second most common at 16.98% (*n*=9). Four respondents (7.55%) declined to answer this question. Three respondents chose to include an answer in the “other” area. These answers included, “a three month trial employment, always cleans the dentist’s teeth, and never have hired a dental hygienist”.

Table 14.

*Combinations of Methods Used in Hiring a Dental Hygienist.*

Chosen Combinations	<i>n</i>	%
Verbal Interview Only	<i>n</i> =4	7.55
Verbal Interview, Working Interview	<i>n</i> =18	33.96
Verbal Interview, Peer Review	<i>n</i> =1	1.89
Verbal Interview, Behavioral Questionnaire, Peer Review	<i>n</i> =1	1.89
Verbal Interview, Working Interview, Skills Test	<i>n</i> =6	11.32
Verbal Interview, Working Interview, Peer Review	<i>n</i> =9	16.98
Verbal Interview, Working Interview, Personality Test	<i>n</i> =1	1.89
Verbal Interview, Working Interview, Behavioral Questionnaire	<i>n</i> =1	1.89
Verbal Interview, Working Interview, Skills Test, Peer Review	<i>n</i> =4	7.55
Verbal Interview, Working Interview, Skills Test, Behavioral Questionnaire	<i>n</i> =2	3.77
Verbal Interview, Working Interview, Skills Test, Personality Test, Peer Review	<i>n</i> =1	1.89
Verbal Interview, Working Interview, Skills Test, Behavioral Questionnaire, Personality Test, Peer Review	<i>n</i> =1	1.89
Total	<i>N</i> =53	100%

The final question of the survey and this section was in the form of a Likert style scale. Respondents were asked to rank a list of characteristics on a 7-point scale from very important to very unimportant. Characteristics included interpersonal skills, clinical experience, level of education, critical thinking skills, leadership, appearance, and salary. Table 15 displays the frequency of each marked answer. Respondents who chose not to rank a specific characteristic range from 3.77% (*n*=2) to 9.43% (*n*=5). Interpersonal skills showed the highest frequency for the ranking of very important with 92.45% (*n*=49), with the lowest frequency of those who chose not to answer at 3.77% (*n*=2). Appearance 43.40% (*n*=23) and Critical thinking skills 54.72% (*n*=29) also showed the highest frequency in the very important ranking. The characteristics, clinical experience 37.34% (*n*=20), level of education 42.51% (*n*=22), leadership skills 47.17% (*n*=25), and



salary 37.74% ( $n=20$ ) showed the most frequency in the important rank. The salary characteristic was the most frequently unanswered question with 9.43% ( $n=5$ ).

Table 15.

<i>Ranking Frequency by Characteristic as a Percentage</i>								
Characteristic	Very Important	Important	Somewhat Important	Neutral	Somewhat Unimportant	Not Important	Very Unimportant	Did Not Answer
Interpersonal Skills ( $n=53$ )	92.45	3.77	0.00	0.00	0.00	0.00	0.00	3.77
Clinical Experience ( $n=53$ )	20.75	37.34	24.53	9.43	1.89	0	0	5.66
Level of Education ( $n=53$ )	9.43	42.51	30.19	9.43	0	1.89	1.89	5.66
Critical Thinking Skills ( $n=53$ )	54.72	33.96	3.77	1.89	0	0	0	5.66
Leadership skills ( $n=53$ )	20.75	47.17	16.98	9.43	0	0	0	5.66
Appearance ( $n=53$ )	43.40	39.62	5.66	5.66	0	0	0	5.66
Salary ( $n=53$ )	11.32	37.74	26.42	11.32	1.89	1.89	0	9.43

**Comparison.** When comparing responses geographically, each characteristic was analyzed for the ranking by each region. The following tables show the percentage frequency comparison of the 7-point Likert scale from very important to very unimportant, by each region, for each characteristic. One participant declined to answer which state they practiced in; therefore, their responses were omitted from these comparisons. Rankings that received no responses within each table were also omitted. Table 16 illustrates the most desired characteristic of interpersonal skills with all respondents choosing very important to important, with the exception of the two respondents who did not answer.

Table 16.

<i>Interpersonal Skills Ranking by Region</i>			
Region	Very Important	Important	No Answer
Northeast	22.64% <i>n</i> =12	0	1.89% <i>n</i> =1
Southeast	13.21% <i>n</i> =7	0	1.89% <i>n</i> =1
Midwest	24.53% <i>n</i> =13	3.77% <i>n</i> =2	0
Southwest	11.32% <i>n</i> =6	0	0
West	18.87% <i>n</i> =10	0	0

Table 17 outlines clinical experience with the respondents choosing a very important to neutral ranking and three not answering.

Table 17.

<i>Clinical Experience Ranking by Region</i>						
Region	Very Important	Important	Somewhat Important	Neutral	Somewhat Unimportant	Did Not Answer
Northeast	3.77% <i>n</i> =2	11.32% <i>n</i> =11	3.77% <i>n</i> =2	3.77% <i>n</i> =2	0	1.89% <i>n</i> =1
Southeast	5.66% <i>n</i> =3	0	7.55% <i>n</i> =4	0	0	1.89% <i>n</i> =1
Midwest	7.55% <i>n</i> =4	13.21% <i>n</i> =7	3.77% <i>n</i> =2	3.77% <i>n</i> =2	0	0
Southwest	1.89% <i>n</i> =1	5.66% <i>n</i> =3	3.77% <i>n</i> =2	0	0	0
West	1.89% <i>n</i> =1	7.55% <i>n</i> =4	5.66% <i>n</i> =3	0	1.89% <i>n</i> =1	1.89% <i>n</i> =1

Respondents chose a full-scale ranking for level of education from very important to very unimportant with three declining to answer as reported in Table 18.

Table 18.

*Level of Education Ranking by Region*

Region	Very Important	Important	Somewhat Important	Neutral	Somewhat Unimportant	Not Important	Very Unimportant	Did Not Answer
Northeast	1.89% <i>n</i> =1	11.32% <i>n</i> =6	7.55% <i>n</i> =4	1.89% <i>n</i> =1	0	0	0	1.89% <i>n</i> =1
Southeast	1.89% <i>n</i> =1	1.89% <i>n</i> =1	7.55% <i>n</i> =4	1.89% <i>n</i> =1	0	0	0	1.89% <i>n</i> =1
Midwest	5.66% <i>n</i> =3	13.21% <i>n</i> =7	3.77% <i>n</i> =2	3.77% <i>n</i> =2	0	0	1.89% <i>n</i> =1	0
Southwest	0	7.55% <i>n</i> =4	1.89% <i>n</i> =1	1.89% <i>n</i> =1	0	0	0	0
West	0	7.55% <i>n</i> =4	7.55% <i>n</i> =4	0	0	1.89% <i>n</i> =1	0	1.89% <i>n</i> =1

Continuing with the employability characteristics, Table 19 shows all respondents ranked critical thinking skills to be very important to neutral, with three declining to state.

Table 19.

*Critical Thinking Skills Ranking by Region*

Region	Very Important	Important	Somewhat Important	Neutral	Did Not Answer
Northeast	11.32% <i>n</i> =6	9.43% <i>n</i> =5	1.89% <i>n</i> =1	0	1.89% <i>n</i> =1
Southeast	7.55% <i>n</i> =4	5.66% <i>n</i> =3	0	0	1.89% <i>n</i> =1
Midwest	15.09% <i>n</i> =8	9.43% <i>n</i> =5	1.89% <i>n</i> =1	1.89% <i>n</i> =1	0
Southwest	7.55% <i>n</i> =4	3.77% <i>n</i> =2	0	0	0
West	11.32% <i>n</i> =6	5.66% <i>n</i> =3	0	0	1.89% <i>n</i> =1

Tables 20 and 21 also display similar results for leadership skills and appearance from very important to neutral and three not answering.

Table 20.

*Leadership Skills Ranking by Region*

Region	Very Important	Important	Somewhat Important	Neutral	Did Not Answer
Northeast	3.77% <i>n</i> =2	13.21% <i>n</i> =7	1.89% <i>n</i> =1	3.77% <i>n</i> =2	1.89% <i>n</i> =1
Southeast	3.77% <i>n</i> =2	5.66% <i>n</i> =3	3.77% <i>n</i> =2	0	1.89% <i>n</i> =1
Midwest	5.66% <i>n</i> =3	16.98% <i>n</i> =9	1.89% <i>n</i> =1	3.77% <i>n</i> =2	0
Southwest	1.89% <i>n</i> =1	5.66% <i>n</i> =3	3.77% <i>n</i> =2	0	0
West	5.66% <i>n</i> =3	5.66% <i>n</i> =3	3.77% <i>n</i> =2	1.89% <i>n</i> =1	1.89% <i>n</i> =1

Table 21.

*Appearance Ranking by Region*

Region	Very Important	Important	Somewhat Important	Neutral	Did Not Answer
Northeast	7.55% <i>n</i> =4	13.21% <i>n</i> =7	1.89% <i>n</i> =1	0	1.89% <i>n</i> =1
Southeast	7.55% <i>n</i> =4	3.77% <i>n</i> =2	1.89% <i>n</i> =1	0	1.89% <i>n</i> =1
Midwest	11.32% <i>n</i> =6	11.32% <i>n</i> =6	1.89% <i>n</i> =1	3.77% <i>n</i> =2	0
Southwest	9.43% <i>n</i> =5	1.89% <i>n</i> =1	0	0	0
West	7.55% <i>n</i> =4	9.43% <i>n</i> =5	0	0	1.89% <i>n</i> =1

Lastly, Table 22 reports salary with a range from very important to not important and five declining to answer.

Table 22.

*Salary Ranking by Region*

Region	Very Important	Important	Somewhat Important	Neutral	Somewhat Unimportant	Not Important	Did Not Answer
Northeast	1.89% <i>n</i> =1	11.32% <i>n</i> =6	7.55% <i>n</i> =4	1.89% <i>n</i> =1	0	0	1.89% <i>n</i> =1
Southeast	3.77% <i>n</i> =2	3.77% <i>n</i> =2	3.77% <i>n</i> =2	1.89% <i>n</i> =1	0	0	1.89% <i>n</i> =1
Midwest	1.89% <i>n</i> =1	11.32% <i>n</i> =6	5.66% <i>n</i> =3	5.66% <i>n</i> =3	0	0	3.77% <i>n</i> =2
Southwest	1.89% <i>n</i> =1	5.66% <i>n</i> =3	3.77% <i>n</i> =2	0	0	0	0
West	1.89% <i>n</i> =1	5.66% <i>n</i> =3	3.77% <i>n</i> =2	1.89% <i>n</i> =1	1.89% <i>n</i> =1	1.89% <i>n</i> =1	1.89% <i>n</i> =1

All characteristics, except education, salary, and clinical experience, showed a majority ranking, in all regions, from very important to somewhat important. Education, salary and clinical experience characteristics had at least one response in the somewhat unimportant to very unimportant rankings chosen by respondents from just the Midwest and West regions.

### Summary

Demographically, the majority of the respondents were Caucasian, male dentists with an average age of 56.75. Geographically, survey responses were received from all five regions, mostly (81.13%) from an area with a population of greater than 50,000. The average number of dental hygienists employed in a practice was 2.11. Over one third (33.96%) of the respondents stated they would prefer a dental hygienist with a baccalaureate degree, would consider paying a higher salary for this level of education, and would hire a new graduate with limited clinical experience. The characteristic interpersonal skills showed the highest frequency for the most important or important

ranking. The remaining characteristics were found by the majority to be very important to somewhat important.

## **Discussion**

### **Summary of Major Findings**

Dental hygiene is a rapidly expanding field of health care. There are various educational degrees for entry into the profession. In addition, employers consider numerous characteristics of employability when hiring a dental hygienist. This study attempted to discover the significance of certain employability characteristics for dental hygienists, as well as level of education of dental hygienists regarding employability across different geographic regions. A quantitative research design was used in the form of a survey that included descriptive, close-ended, unordered, and Likert style questions. Randomly selected, from each of the five geographic regions in the US, 200 participants were selected from a list purchased from Dentist List Pro®. The survey link remained open for a period of seven weeks, then deactivated. The survey received a response rate of 5.7%.

Demographically, the majority of respondents in this study were Caucasian, male dentists with an average age of 56.75 years. Geographically, respondents reported being from all five regions, mostly from an area with a population greater than 50,000. The average number of dental hygienists employed in a respondent's practice was 2.11. The majority of the respondents, across all regions, stated they would prefer a hygienist with a baccalaureate degree, consider paying a higher salary for this level of education, and hire a new graduate with limited clinical experience. The results may encourage new dental

hygienists to apply for an available position, as most dental practices represented by survey responses would consider hiring a new graduate with little clinical experience.

Geographically, study data suggest the majority of the respondents from the regions of the Northeast and Southeast would not pay a higher salary for higher level of education, whereas the regions of the Southeast, Midwest, and West would pay a higher salary for education. Therefore, a higher level of education may increase the employability of dental hygienists applying for an available position; however, the possibility of a higher salary may not be available in all regions.

Characteristics such as education, salary, interpersonal skills, appearance, leadership skills, critical thinking skills, and clinical experience are considered when choosing a dental hygienist for a prospective position. Of the characteristics, all respondents felt interpersonal skills were either most important or important. The majority, in all regions, found the remaining characteristics: level of education, salary, appearance, leadership skills, critical thinking skills, and clinical experience to be very important to somewhat important. Education, salary, and clinical experience characteristics had at least one response in the somewhat unimportant to very unimportant rankings chosen by respondents from the Midwest and West regions. Therefore, the differences in importance of specific characteristics are generally the same across all geographical regions with interpersonal skills being most important.

## **Discussion**

**Significance.** Based on this study alone, it is hard to determine if using the information will considerably improve a dental hygienist's ability to acquire one of the increasingly limited employment opportunities over another applying dental hygienist.



However, using this information as a guide, a dental hygienist may augment their potential by choosing their level of education and strengthening their employability characteristics.

In the current study, all provided characteristics: level of education, appearance, clinical experience, interpersonal skills, salary, leadership skills, and critical thinking skills, were found to be rated neutral or more important with the exception of a small number who chose salary and level of education below the neutral ranking. Research for allied health care providers on employability characteristics over the past 20 years seems to parallel the results of this study (Dann et al., 1995; Henry et al., 2009; Lalumandier et al., 2008; Lori et al., 2011)

Furthermore, the employability of dental hygienists is addressed in the CODA standard 2-3 that states the institution must inform the students of employment opportunities upon admission. CODA accredits dental hygiene education programs and dental hygienists must graduate from an accredited program in order to gain licensure to practice (Commission on Dental Accreditation, 2013). Proof of this standard is satisfied by employment percentages of graduates (Commission on Dental Accreditation, 2013). Therefore, graduating students that are more employable may aid in the accreditation process of the educational programs.

**Relationship to Previous Research.** In 1995, Dann et al, discovered interpersonal skills and leadership skills to be valuable when hiring an allied health care provider (Dann et al., 1995). Wieck et al (2002) found good people skills to be among the most important skills desired in the nursing profession (Wieck et al., 2002). In 2009, Henry et al, uncovered 93.7% of respondents felt leadership skills were an important

employability characteristic (Henry et al., 2009). Finally, Cesta's (2011) research in nursing found clinical experience and educational preference to be important in an employee (Cesta, 2011).

The results of this study suggest the most important characteristic viewed by an employer when hiring a dental hygienist is their interpersonal skills. Dann et al (1995), Lori et al (2011) and Wieck et al (2002) found similar results on the characteristic of interpersonal skills in their respective studies on employability characteristics of other allied health care employees (Dann et al., 1995; Lori et al., 2011; Wieck et al., 2002). CODA standard 2-19 for dental hygiene specifically states, "Graduates must be competent in interpersonal and communication skills to effectively interact with diverse population groups and other members of the health care team" (Commission on Dental Accreditation, 2013). The current study's findings sustain this standard with the most important characteristic being interpersonal skills.

These study results indicate potential employers show critical thinking as being very important to important for the majority for the respondents. However, in comparison by region, the Northeast and Midwest had responses of lower importance. This difference may possibly be due to the lack of understanding of the characteristic or interpretation of the definition. For this study, the definition for critical thinking was used from Facione (2011) to be a purposeful, self-regulatory judgment that results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based (Facione, 2011). For example, a person's ability to use all available information to complete task, solve issues, or create successful practices. Throughout the

CODA standards and specifically in standards 2-24 through 2-26 critical thinking is highlighted (Commission on Dental Accreditation, 2013). These standards outline critical thinking as the basis of self-assessment for lifelong learning, a skill for evaluation of literature for evidence-based practice, and important for the ability to provide comprehensive patient care (Commission on Dental Accreditation, 2013). Therefore, critical thinking skills may be linked to the clinical judgment of the dental hygienist when developing, implementing, and evaluating individual patient care. Developing an advanced level curriculum to foster the critical thinking abilities of the students and further their clinical judgment ability may increase the quality and employability of the graduates. In relation to education level, baccalaureate students have more clock time experience with patients to develop these skills.

Study results suggest most employers would prefer a baccalaureate degree; however, an almost equal number of employers state they do not prefer a specific level of education. In comparison, Lalumandier et al (2008) reported results with no preference for education level and unwillingness to pay a higher salary for a higher level of education. As outlined in the literature review, the educational clock hours and clinical clock hours differ extremely between levels of education. Even though all registered dental hygienists must pass a state board exam to practice hygiene, difference in time spent in education and hands on experience may make a difference in overall quality of the hygienist.

In addition, higher education may play a role in the advancement of the profession. Rowe, Massoumi, Hyde, and Weintraub (2008) found baccalaureate graduates to be more involved in non-private practice related employment including

education and research with associate graduates more likely to seek employment in private practice settings (Rowe et al., 2008). Rowe, Weintraub, Shain, Yamamoto, & Walsh (2004) also found baccalaureate graduates to be more likely to become scholars, educators, and leaders in the dental hygiene field (Rowe et al., 2004). Participation in professional organizations, including the ADHA, were similar for associate and baccalaureate graduates, conversely, master level graduates had a much higher percentage of participation (Luke, 2010). Therefore, planning to acquire a higher level of education, via primary education or degree completions programs, may increase a dental hygienist's employability; aid in the progression of the profession; and support professional organizations; however, obtaining a higher salary for this education seems unlikely.

The present study results supports several prior studies where education was at the forefront; a majority felt education important or somewhat important for increasing the entry level for the profession (American Dental Hygienists' Association, 2013; Okwuje, Anderson, & Hanlon, 2010a; Okwuje, Anderson, & Hanlon, 2010b). Using these findings, dental hygiene educators may design an evidence-based curriculum that fosters the learning of these desirable characteristics to satisfy accreditation requirements and aid their graduates to be more employable.

Furthermore, this study results suggest the evaluation a potential dental hygienist receives from a potential employer most likely includes a verbal interview, working interview, and peer review. The Allied Health Recruitment survey done by Rad Sciences Group (n.d.) found parallel results of common methods used when hiring a potential health care employee. The majority of respondents in the Rad Sciences Group used a

verbal interview and working interview to evaluate a potential employee, while others used a combination of verbal interview, working interview, personality tests, peer review, skills test, and a behavioral questionnaire (RadSciencesGroup, n.d.). Using these findings, a potential employee should be prepared to answer questions in a verbal interview, perform during a working interview, and choose their references prudently. A discussion on compensation for the working interview may ensure the applying hygienist and potential employee maintains a professional standard. These methods seem to give the employer fair insight into the applying dental hygienist while allowing the applicant a fair opportunity to represent their best professional self and abilities.

**Assumptions.** Prior to the study results, characteristics were assumed to be heavily weighted toward salary and work experience. Characteristics including interpersonal skills and clinical skills may be great additions to a potential employee; however, they could be developed within the practice. Pre study opinions included no preference for level of education of the potential employer. No correlations in educational level and salary were expected. In addition, assuming no differences across geographical regions existed therefore; dental hygienists in all states would be viewed equally and earn a relatively similar salary.

The results of this study disproved several assumptions. Interpersonal skills proved to be at the forefront of the employability characteristics. The study also revealed differences across the geographical regions. The findings display a slight variation in the importance of salary, level of education, and clinical experience across the regions. Furthermore, the study confirmed assumptions on level of education and rate of salary to be unimportant when applying for a potential dental hygiene opportunity.

**Implications.** While a single study cannot provide a definitive practice for the employability of dental hygienists, this study and other similar studies found interpersonal skills to be of great importance when applying for a position in the allied health care field. The definition of interpersonal skills from Merriam Webster states, the ability to relate to, or involving relations between persons, how a person interacts with other people in a professional setting (Merriam webster.com.2012). As the findings of this study indicate, interpersonal skills are both important to the accreditation of an educational program and the potential employer of the graduates. Building on this knowledge, implementing a curriculum focusing on the development of interpersonal skills may be beneficial for the educators and students. Dyce (2007) states due to interpersonal skills often being nonverbal and not under conscious control, they cannot be taught didactically alone (Dyche, 2007). Learning interpersonal skills can be enhanced through a curriculum focused on the elements of communication and nurturing the students' humanism. In addition, students can learn to understand their own personal style of interpersonal skills and how to flexibly apply these skills to particular situations (Dyche, 2007). Furthermore, an RDH looking for employment may seek continuing education courses, focusing on the development and strengthening of interpersonal skills to increase their employability. Table 23 summarizes potential ways a student or an RDH may attain skills for increasing employability.

Table 23.

*Ways to Gain Skills for Increasing Employability*

Dental Hygiene Student	Registered Dental Hygienist
Baccalaureate Programs/Degree Completion Programs	Baccalaureate Degree Completion Programs
Coursework embedded with communication skills content	Continuing Education courses in communication skills
Communication Skills Workshops including role-playing and simulation	Dental Seminars
Self-Assessment	Study Clubs
Patient Interaction with Peer Feedback	Self-Assessment
	Communication Skills Workshops

In discussion with seasoned, highly educated dental hygienists, the characteristic of appearance surfaced as an interesting finding. For the purposes of this study the definition of appearance states, an external show or outward presentation of oneself, the physical look of a person such as his/her clothing and hairstyle choices (Merriam webster.com.2012). It is common knowledge the definition in today's society of professional appearance is changing. Tattoos, piercings, and hairstyles can be considered body art by some and offensive by others. It may be possible the public's opinion of what a typical dental hygienist appearance is and the reality of the typical dental hygienist's appearance are very different. The majority of respondents being Caucasian male dentists may have had an effect on the definition of what the appropriate appearance of a dental hygienist might be. Therefore, if this characteristic is important to the employability of a dental hygienist, an absolute standard for the profession may need to be defined and implemented in the educational programs to increase the employability of the graduates.

Consistent with previous studies, the current study shows the majority are willing to hire potential employees with little to no clinical experience outside the education setting. This may be linked to the unwillingness to pay a higher salary or the possibility of shaping the new graduate to their philosophies of practice. A graduating dental hygienist has proved competency in the profession but often lacks the proficiency of an experience dental hygienist. It may be beneficial to use the lack of experience to the advantage of the employer by developing proficiency to the standards of the hiring office. However, these findings may encourage all new graduates to apply for any employment opportunity knowing their lack of clinical experience is not highly weighted against them.

The findings display a slight variation in the importance of salary, level of education, and clinical experience across the regions. Level of education seemed most important to the majority in the Midwest region reflecting less access to dental hygiene programs. In comparison, regions including the Southeast and West with possibly greater access indicate a majority feel education is only somewhat important to lower importance. Salary across the regions seemed consistent except for in the West with the majority feeling it was only somewhat to not important. This may be due to the saturation of the job market in the region allowing the potential employer to offer a lower salary due to the demand of the position. Furthermore, the West and Southeast continue to stand out in the area of clinical experience with the lowest ranking of importance among the majority for clinical experience. Differences in importance of characteristics may be linked to the population of the regions as well.



Using this evidence, educators in all regions may integrate the development of employability characteristics into the dental hygiene curriculum to graduate dental hygienists that are more employable. Depending on geographical location, dental hygienists currently licensed and seeking employment may use these findings to select continuing education courses that may increase their employability. Although, studies show the importance placed on the level of education is important on the professional level, the effect it has on employability and salary still needs further definition.

### **Limitations**

Disadvantages to surveys can include response rate, sample size, and bias of participants (Chambers & Licari, 2009). The most prevalent disadvantage to the current study was the response rate of 5.7%, from a sample size of 1,000 subjects. Dr. Vincent Pascal, a marketing expert and professor of marketing at Eastern Washington University, states, “Mass surveys habitually receive a 2-4% response rate” (Pascal, November 19, 2012). To improve this rate, Pascal recommends a compelling cover letter and reminders sent to follow-up. Adding an incentive, such a simple payout of one dollar can significantly improve the response rate with no correlation to the incentive size (Pascal, November 19, 2012).

Additional limitations include the equality of representation across the regions and ethnicity populations. A large majority of Caucasian participants with over half in the Northeast or Midwest regions skewed the study. Designing the study to equalize the ethnic groups or regions by limiting the total responses allowed from each subgroup may aid in increasing the ability to generalize the results across the nation and populations.

Limitations may also include the list of characteristics, the definitions used for each characteristic, and the respondents' understanding of these characteristics.

### **Recommendations**

The ADHA's strategic plan for 2011-2015 includes the goal of leading progressive change and growth of the dental hygiene profession (American Dental Hygienists' Association, 2013). In combination with the CODA standards for education, the ADHA's strategic plan to advance the profession and the results of this study, educational leaders could encourage students to earn a Baccalaureate degree (American Dental Hygienists' Association, 2013; Commission on Dental Accreditation, 2013). In addition, it may aid in showing the importance of developing professional interpersonal skills among the students and their clients in accordance with employers' preference and CODA standard 2-19 (Commission on Dental Accreditation, 2013). Characteristics such as appearance, critical thinking, and leadership skills may also be emphasized within the curriculum of the program in accordance with previous research, CODA, and the current study's findings (Commission on Dental Accreditation, 2013; Dann et al., 1995; Henry et al., 2009; Lori et al., 2011).

A graduating or employment seeking dental hygienist may use these results to understand the importance of higher education and interpersonal skills, along with the willingness to be flexible with salary requested when applying for employment. Dental hygienists may also use this data to strengthen their abilities with continuing education in critical thinking, leadership, and interpersonal skills. New graduates may use the information on the importance of clinical experience and willingness to hire new

graduates as encouragement to seek all employment opportunities immediately after graduation.

### **Suggestions for Additional Research**

Additional research may be completed to increase the ability to generalize results of this study with a larger response rate. Using a professional membership's list, presenting a hard copy of the survey at a dental convention or seminar, or simply adding an incentive to participate may increase the response rate and therefore increase the ability to generalize the results. Exploring the characteristics further may be beneficial by asking the participant to rank them in order of importance rather than asking how important each characteristic is. Another suggestion that could benefit the outcome would be for the participant to be allowed to list a set of characteristics they feel are important, and rank them by level of importance. Also, allowing the participant to define their characteristics in order to eliminate the possible misinterpretation of a characteristic. In addition, further investigation on how level of education and clinical experience affects the employability of a dental hygienist when being compared to others applying for the same position may prove useful.

### **Conclusions**

The results of this study link to the Strategic Plan of 2011-2015 for the ADHA, CODA standards for accreditation, and assumptions of the primary investigator. The findings strengthen previous research in areas of employability characteristics and methods used to hire an allied health care worker. Findings discovered a slight variation in options across geographical regions for employment characteristics, however there was constancy in preference for a level of education and willingness to hire a dental hygienist

with limited clinical experience. Unanimously, the characteristic of interpersonal skills was shown to be very important or important. In contrast, to the principle investigators assumptions, the majority of the respondents did have a preference in level of education, a Baccalaureate degree. However, as predicted, employers are not willing to pay a higher salary for an advanced level of education. Furthermore, preferences of level of education and compensation for this education continue to be a topic for further research.

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## **Appendix A-Survey Instrument**

### **Informed consent statement:**

This survey is part of a thesis. The aim of this research is to determine desirable characteristics when hiring a dental hygienist. This survey should be filled out by the person responsible for reviewing and hiring dental hygienists for the practice. This project has been reviewed and approved by Eastern Washington University's Institutional Review Board.

Andrea Dickey, RDH, BS will be collecting data on employability characteristics of dental hygienists. The purpose of the study is to identify desirable employability characteristics of dental hygienists to help guide dental hygienists and educators. The expected benefits from your participation are to understand characteristics important to employers. This data can help dental hygienists when applying for employment and help educational facilities foster these characteristics. By submitting the online survey, you give permission for Andrea Dickey, RDH, BS to use this information for research purposes. Your email address will not be associated with the research findings in any way, only the researcher will know your address and will be kept confidential. After the study, the records will be destroyed. Permission is strictly voluntary. If you have any concerns about your rights as a participant in this research or any complaints you wish to make, you may contact Ruth Galm, Human Protections Administrator at Eastern Washington University (509-359-7971/6567) <rgalm@ewu.edu>.

### **Demographics:**

1. What is your gender?  
Male  
Female
2. Please indicate your age \_\_\_\_\_.
3. Please indicate your ethnicity.  
Caucasian  
Black or African-American  
American Indian or Alaskan Native  
Asian  
Native Hawaiian or other Pacific Islander  
Hispanic  
Other (please specify) \_\_\_\_\_

4. What is your role in the practice?  
Dentist  
Associate Dentist  
Dental Hygienist  
Dental Assistant  
Human Resource Personnel  
Office Manager  
Other (please specify) \_\_\_\_\_

**Geographical:**

5. In which state is the dental practice? \_\_\_\_\_
6. What is the population of the area you practice in?  
50,000 or more  
49,999 or less

**Other:**

1. How many dental hygienists are currently employed with your practice? \_\_\_\_\_
2. Please indicate preference, if any, of educational level of the applying dental hygienist:  
Baccalaureate  
Associate  
Certificate  
No preference
3. Would you consider paying a higher salary to a dental hygienist based on level of education?  
Yes  
No
4. Would you consider hiring a new graduate, with experience limited to the educational setting?  
Yes  
No
5. When hiring a dental hygienist, please describe your process by checking ALL appropriate boxes:  
  
☐ Verbal Interview  
☐ Working interview  
☐ Skills test  
☐ Behavioral Questionnaire  
☐ Personality Test

- ☐ Peer Review
- ☐ Other \_\_\_\_\_
- 

6. Using these definitions, please rate the following characteristics when hiring a dental hygienist for your practice on the seven-point scale from very important to very unimportant.

*Employability:* the capability of a dental hygienist to obtain initial employment, the ability to retain employment, and ease of obtaining subsequent employment if necessary.

*Characteristics:* traits of a dental hygienist desirable to an employer. These traits may include but are not limited to education, salary, interpersonal skills, critical thinking skills, appearance, clinical experience, and leadership skills.

*Education:* degree/certificate held by the dental hygienist.

*Salary:* compensation the dental hygienist receives for employment by an employer.

*Interpersonal skills:* the ability to relate and interact with other people.

*Appearance:* outward presentation of oneself, the physical look of a person such as their clothing, hair style choices, body art or piercings.

*Leadership skills:* the ability of a person to lead a group of people toward a common goal.

*Critical thinking skills:* the ability to apply knowledge to the clinical practice of dental hygiene.

*Clinical experience:* amount of experience in clinical dental hygiene

Characteristic	Very Important	Important	Somewhat Important	Neutral	Somewhat Unimportant	Not Important	Very Unimportant
Interpersonal Skills							
Clinical Experience							
Level of Education							
Critical Thinking Skills							
Leadership skills							
Appearance							
Salary							

Other (any other characteristics not listed above) \_\_\_\_\_

Comments:

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## **Appendix B- Emails**

Initial Email:

Characteristics Essential to a Career in Dental Hygiene

Hello,

My name is Andrea Bennett. I am a graduate student at Eastern Washington University in Cheney, Washington. As part of my requirements for the Masters in Science in Dental Hygiene, I am conducting research for my thesis on the hiring preferences of dental practices across the United States. The design of this research is quantitative in the form of a survey and aims to determine desirable employability characteristics of dental hygienists when being considered for employment. Results may assist dental hygienists seeking employment by allowing them to make suitable choices about their education and cultivate desired skills necessary to find employment in a dental practice. Upon completion of the study, the results will be published in my thesis document and available to participants for review.

Participation in the study is voluntary and anonymous. You may withdraw from the survey at any time. You may skip any question you do not feel comfortable answering. Please do not put any identifying information on the survey. Below you will find a secure link to the survey given by the survey site, Survey Monkey ®. The survey is to be filled out by the member of your dental practice who is responsible for the hiring of the dental hygienists. Multiple attempts to complete the survey are allowed. Simply, click on the link below and complete the survey. The link will remain active for the next four weeks. Consent for the survey will be assumed by completion. Once you have submitted the survey, please indicate if you would like to receive the results by email by marking to appropriate box when asked by the survey site.

If you have any questions or concerns about this survey please contact myself at 209-608-5616 <dickeya@eagles.ewu.edu> or my thesis advisor Lisa Bilich at 509-828-1295 <bilichl@ewu.edu>. If you have any concerns about your rights as a participant in this research or any complaints you wish to make, you may contact Ruth Galm, Human Protections Administrator at Eastern Washington University (509-359-7971/6567) <rgalm@ewu.edu>.

Thank you very much for your consideration and time in completing this survey for my research.

Andrea Bennett, RDH  
SURVEY LINK WILL BE INSERTED HERE.

Second Email:

Characteristics Essential to a Career in Dental Hygiene

Hello,

My name is Andrea Bennett. Recently I sent you an email to complete a survey for regarding a simple research survey for my thesis. This email is to simply to ask if you would please take a few minutes to assist me in my research by clicking the link below and completing the survey. The survey link will only be active for three more weeks.

I am a graduate student at Eastern Washington University in Cheney, Washington. As part of my requirements for the Masters in Science in Dental Hygiene I am conducting research for my thesis on the hiring preferences of dental practices across the United States. The design of this research is quantitative in the form of a survey and aims to determine desirable employability characteristics of dental hygienists when being considered for employment. Results may assist dental hygienists seeking employment by allowing them to make suitable choices about their education and cultivate desired skills necessary to find employment in a dental practice. Upon completion of the study the results will be published in my thesis document and available to participants for review.

Participation in the study is voluntary and anonymous. You may withdraw from the survey at any time. You may skip any question you do not feel comfortable answering. Please do not put any identifying information on the survey. Below you will find a secure link to the survey given by the survey site, Survey Monkey®. The survey is to be filled out by the member of your dental practice who is responsible for the hiring of the dental hygienists. Multiple attempts to complete the survey are allowed. Simply, click on the link below and complete the survey. The link will remain active for the next four weeks. Consent for the survey will be assumed by completion. Once you have submitted the survey, please indicate if you would like to receive the results by email by marking to appropriate box when asked by the survey site.

If you have any questions or concerns about this survey please contact myself at 209-608-5616 <dickeya@eagles.ewu.edu> or my thesis advisor Lisa Bilich at 509-828-1295 <bilichl@ewu.edu>. If you have any concerns about your rights as a participant in this research or any complaints you wish to make, you may contact Ruth Galm, Human Protections Administrator at Eastern Washington University (509-359-7971/6567) <rgalm@ewu.edu>.

Thank you very much for your consideration and time in completing this survey for my research.

Andrea Bennett, RDH

SURVEY LINK WILL BE INSERTED HERE.

Final Email:

Characteristics Essential to a Career in Dental Hygiene-  
a Thesis Research Survey

Hello,

For those of you that have already completed the survey, I thank you for your time and information. I have extended the survey collection time and ask, if you have not already, to please take just a few minutes to assist me in my research by clicking the link below and completing the survey. The survey link will remain active for another two weeks.

I am a graduate student at Eastern Washington University in Cheney, Washington. As part of my requirements for the Masters in Science in Dental Hygiene I am conducting research for my thesis on the hiring preferences of dental practices across the United States. The design of this research is quantitative in the form of a survey and aims to determine desirable employability characteristics of dental hygienists when being considered for employment. Results may assist dental hygienists seeking employment by allowing them to make suitable choices about their education and cultivate desired skills necessary to find employment in a dental practice. Upon completion of the study the results will be published in my thesis document and available to participants for review.

Participation in the study is voluntary and anonymous. You may withdraw from the survey at any time. You may skip any question you do not feel comfortable answering. Please do not put any identifying information on the survey. Below you will find a secure link to the survey given by the survey site, Survey Monkey®. The survey is to be filled out by the member of your dental practice who is responsible for the hiring of the dental hygienists. Multiple attempts to complete the survey are allowed. Simply, click on the link below and complete the survey. The link will remain active for the next four weeks. Consent for the survey will be assumed by completion. Once you have submitted the survey, please indicate if you would like to receive the results by email by marking to appropriate box when asked by the survey site.

If you have any questions or concerns about this survey please contact myself at 209-608-5616 <dickeya@eagles.ewu.edu> or my thesis advisor Lisa Bilich at 509-828-1295 <bilichl@ewu.edu>. If you have any concerns about your rights as a participant in this research or any complaints you wish to make, you may contact Ruth Galm, Human Protections Administrator at Eastern Washington University (509-359-7971/6567) <rgalm@ewu.edu>.

Thank you very much for your consideration and time in completing this survey for my research.

Andrea Bennett, RDH

SURVEY LINK WILL BE INSERTED HERE.

### **Appendix C- Thank You Letter**

#### Characteristics Essential to a Career in Dental Hygiene

Hello,

I would like to take this opportunity to thank you for your participation in my research survey. My aim for this study was to provide unemployed dental hygienists with knowledge that may help them gain long-term employment at a dental practice. I am greatly appreciative of the information you provided to this study. If you chose the option to have the results emailed to you at the end of the survey, they will be sent upon completion of the study. You may also view the results in my thesis when it is completed. Thank you again for your participation in my study and helping me to gain a Masters in Dental Hygiene Degree.

Thank you,

Andrea Bennett, RDH

## Appendix D Additional IRB Forms



Eastern Washington University  
at Cheney and Spokane

### MEMORANDUM

To: Andrea Bennett, Department of Dental Hygiene, 160 HSB  
From: Sarah Keller, Chair, Institutional Review Board for Human Subjects Research  
Date: October 10, 2012  
Subject: Review of HS-4073 *Characteristics Essential to a Career in Dental Hygiene*

Your application for an exemption from further review for your research project *Characteristics Essential to a Career in Dental Hygiene* (HS-4073) has been reviewed by the IRB Chair. Before the application can be approved there are some clarifications and further information that we will need to have.

1. This study is anonymous rather than confidential because you will not be able to associate responses with a specific subject if you have them respond through SurveyMonkey. Your sample size is sufficiently large that the demographic information shouldn't identify a specific dental practice. The fact that you will know who the survey has been sent to doesn't contradict this as you, the Principal Investigator, will not know who has actually participated since SurveyMonkey will remove this information when they forward you the data. There is no reason why you should know, or need to know, who has responded. Also, if the two follow-up reminders and the thank you emails are generated by SurveyMonkey you also won't know from them who has participated.
2. If you want to provide study results to subjects then you can have SurveyMonkey either make you a mailing list of who says they want the results or they can send out an additional, separate email to everyone who participated asking them to respond if they want a copy of the results.
3. The survey document with its instructions and information at the top is presumed to be the first emailing that you are planning to send out. It needs to provide a more formal introduction, the purpose of which is to recruit the subject, then you can provide the details of what they are required to do. Title the page with the name of your study and begin by introducing yourself, that you are a Dental Hygiene graduate student at Eastern Washington University in Cheney, Washington, and that you are doing this study as your MS thesis. Then describe the study, its purpose and benefits, who you will share the results with (beyond the subjects). Tell them that participation is voluntary and anonymous, that they may omit any question they prefer not to answer, that return of the survey to SurveyMonkey is constitutes consent to participate. (You don't need to tell them they can quit at any time as they can obviously do that by just closing the survey site.) Then tell them who should fill out the survey and that they may request a copy of your results [by whatever means you decide to use]. You might want to add a statement in the instructions that they should not put their name or other identifiers on the survey. Tell them if they have questions about they study they can contact you and/or your faculty mentor (give them both phone numbers and email

Department of Geography and Anthropology  
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addresses) and if they have questions about their rights or complaints to contact Ruth Galm [use the required sentence as you have it in the survey you submitted to us].  
 4. We will need to approve each of the subsequent emails you send out to remind them, the thank you note and the form for them to request a copy of the results, i.e., any communications you send them.

Would you please send us copies of the revised and any additional documents; do not resubmit the entire application. When this has been reviewed and approved we will send you your signed application. *You may not begin your research until you have been approved.*

If you have additional questions please contact me at 359-7039; fax 509-359-2474; email skeller@ewu.edu. It would be helpful if you would refer to HS-4073 if there were further correspondence as we file everything under this number. Thank you,

cc: L.Bilich  
 R.Galm  
 R.Stolberg  
 Graduate Office

Eastern Washington University

at Cheney and Spokane

## MEMORANDUM

To: Andrea Bennett, Department of Dental Hygiene, 160 HSB

From: Sarah Koller, Chair, Institutional Review Board for Human Subjects Research

Date: December 3, 2012

Subject: Change of Protocol to *Characteristics Essential to a Career in Dental Hygiene* HS-4073

The Institutional Review Board for Human Subjects Research has reviewed your proposal to change the protocol of HS-4073 by sending an additional reminder to potential subjects and extending the survey period. The committee has approved this change. A signed, approved copy of your application is enclosed.

If you wish to continue gathering data for the study after October 22, 2013, the anniversary of your original approval, *you must file a Renewal of Approval application prior to its expiration*, otherwise the project will be closed and you would need to submit a new application for IRB review if you wish to continue the research.

If you have additional questions please contact me at 359-7039; fax 359-2474; email: skeller@ewu.edu. It would be helpful if you would refer to HS-4073 if there were further correspondence as we file everything under this number. Thank you.

cc: L.Bilich  
R.Galm  
R.Stolberg  
Graduate Office

## Department of Geography and Anthropology

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Eastern Washington University is an equal opportunity, affirmative action institution.

## Curriculum Vitae

Andrea Jean Bennett, RDH, BSDH, MSDH(c)

Home Address:  
3001 Lester Road  
Denair, CA 95316  
209-608-5616  
scale4smiles@gmail.com

Office Address:  
Stadium Dental Group  
2288 Daniels Street  
Manteca, California 95337  
adickey@pacden.com

### Graduate Education:

Present	M.S.D.H.	Masters of Science in Dental Hygiene Emphasis in Education Eastern Washington University Cheney, Washington
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### Undergraduate Education:

2007	B.S.D.H.	Bachelor of Science in Dental Hygiene Loma Linda University Loma Linda, California
2005	A.S.	Associate of Science in Biology Sacramento City Collage Sacramento, California

### Teaching Experiences:

Jan-March 2012		Teaching Practicum Pre-Clinical Dental Hygiene University of the Pacific Stockton, California
Jan-June 2011		Assistant Professor in Periodontics Department University of the Pacific Stockton, California



Jan-June 2011

Teacher  
Stanislaus County  
Substitute Teacher  
Stanislaus County  
Public Schools  
Stanislaus County, CA

**Professional Experiences:**

2011-Present

Dental Hygienist  
Stadium Dental Group  
Manteca, California

2009-2011

Dental Hygienist  
El Portal Dental Group  
Merced, California

2007-2009

Dental Hygienist  
Dr. Ramsin K. Davoud  
Turlock, California

**Licensure:**

2007-present

California Dental Hygiene  
#23376

**Certifications:**

2007-Present

California Registered Dental Hygienist  
with expanded functions including local anesthesia,  
Nitrous oxide/oxygen sedation, pit & fissure sealants

**Professional Organizations:**

2007-present

American Dental Hygienists' Association

2007-present

California State Dental Hygienists' Association

2008-present

Sacramento Valley Dental Hygienists' Association

2010-present

American Dental Education Association

2005-2007

American Dental Hygienists' Association  
Student Chapter at Loma Linda University

**Honors:**

2007

Education Excellence Award, Loma Linda University

2007

Listerine Preventative Dentistry Award for Excellence in  
Research

**Community Service:**

2005-2007

Volunteered at numerous clinics serving low-income  
neighborhoods

2005-2007

Performed dental hygiene services to our Military at the on  
base clinic

2005-2007	Administered oral health care education to the public at several health fairs
2006-2007	Mission work in Fiji and Mexico performing dental hygiene services.
2011	Give Kids a Smile Day: University of the Pacific

**Presentations:**

February 2012

Instrument Design  
University of the Pacific  
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