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**Assessment of Public Health and School Based Health Rotations
in Academic Dental Hygiene Programs**

By

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B.S Dental Hygiene, University of New Mexico, 2017

THESIS

Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Science Dental Hygiene

The University of New Mexico Albuquerque, New Mexico

May 2020

Dedication

I dedicate this work to my late aunt Dr. Adeleamar “Dely” Alcantara. If it wasn’t for her love, support and push my educational journey and my life would not have been the same. We did it!

I also would like to dedicate this work to all indigenous students around the world. If I can do this, so can you.

Assessment of Public Health and School Based Health Rotations in Academic Dental Hygiene Programs

Ashley Marie Zuni

B.S Dental Hygiene, University of New Mexico, 2017

M.S Dental Hygiene, University of New Mexico, 2020

Abstract

The purpose of this study was to assess the education that dental hygiene students receive in practicing within schools and public health settings. The settings assessed were outside the classroom, student clinic and student rotation sites. Data were gathered by a survey/questionnaire created by Red Cap, through the University of New Mexico. The survey/questionnaire was available to participants for ten days and contained a total of 13 questions. The survey was sent to dental hygiene program directors within Commission on Dental Accreditation (CODA) accredited dental hygiene programs throughout the United States. Ninety-four responses were collected. Most educators hold a master's degree (75%), with a non-dental concentration as their highest degree and more than 21 years of experience in dental hygiene education at (46.8%). Most educators reported working within a community college at (54.8%), with 70-90 hours in their entire curriculum (56.7%) and 4-6 hours dedicated to dental public health (48.9 %). Results showed that students spend more than 21 hours in rotations through one or more of these areas (39.4%)- (FQHC, Public health clinics, Indian Health Service Clinics, Head Start/Early Head Start/WIC, Military Base Clinics, School-Based Clinics, VA Dental Clinics). Students showed the

most interest in working within public health clinics (35.6%). Upon graduation the most common degree awarded is the Associate of Applied Science in Dental Hygiene (51.6%). Educators report their public health curriculum is highly effective (60.5%)

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Chapter 1: Introduction

Title: Assessment of Public Health and School Based Health Rotations in Academic Dental Hygiene Programs

Introduction:

School based programs are shown to prevent early childhood caries and dental disease by way of preventive modalities such as fluoride applications, patient education, sealant placement and dental prophylaxes. Although dental hygienists initially practiced in schools, the majority of dental hygienists now work in private dental practices. The purpose of this study is to assess the education of dental hygiene students experience in public health settings, including school-based programs.

Statement of the Problem:

How do dental hygiene programs prepare their graduates to provide care in public health settings? What public health settings are dental hygiene students exposed to during their education?

Significance of the study:

This research will be of value to the profession of dental hygiene as it will create a stronger understanding regarding the education and experiences dental hygiene students receive involving preventive programs. The preventive programs assessed would be outside the classroom and student clinic, taking place within in primary schools, public health settings and reservations. This research will assess the public health educational preparation of dental hygienists and identify preventive programs currently available for student rotations.

This research will attest to Dr. Alfred Fones original research regarding early intervention and mass pediatric prevention, which was educating children at a very young age about oral health in the school setting¹. Preventive programs in schools are an economic and practical option for children to not only access dental care, but to familiarize themselves with dental care and procedures. Early oral health intervention has many benefits. For example, a decrease in caries development in primary and permanent teeth, better total body health, and a reduction in bacterial load and chronic inflammation. Reducing the host's bacterial load allows the body's immune system to work more efficiently to fight off other infections, disease and pathogens².

Additionally, factual oral health education and addressing misconception about oral health is another critical benefit of early exposure to dental care. The negative perceptions of dentistry can be dismissed and discussed while instilling the value of good oral health. Preventive programs may correct common the misconceptions regarding oral health that have life-long or larger whole body influences, for example; that older age is correlated with tooth loss and that dentures are just an inevitable reality, that there is no value in primary teeth as they are eventually lost, or that oral disease and chronic inflammation are not correlated with cardiac and endocrine issues. Prevention starting with community youth is key to attaining a lifelong healthy smile.

Operational Definitions:

1. Topical Fluoride- Products that are self-applied by patients in a nonprescription form, self-applied by patients in a prescription form, or professionally applied prescription products that are delivered for variable amounts of time to exposed crown and root surfaces and then expectorated.

2. Topical Fluoride Varnish- A highly concentrated form of fluoride that is applied to the teeth with a brush and contact with teeth is prolonged due to its adherent nature.
3. Dental Sealants- A form of preventive treatment, placement of a resin to seal over grooves and pits and typically light cured for adhesion.
4. Early Childhood Caries, ECC- The presence of one or more decayed, missing teeth resulting from caries or filled tooth surfaces in any primary tooth in a child six years or younger.
5. Child Prophylaxis- A dental prophylaxis performed on primary or transitional dentition only, which includes scaling and polishing procedures to remove plaque, calculus and stains.
6. Dental Hygienist- A licensed dental professional specializing in oral health prevention. This licensed professional is trained to provide dental services and oral health education.
7. Oral Health- Oral health is a functional, structural, aesthetic, physiologic and psychosocial state of well-being and is essential to an individual's general health and quality of life.
8. Community Water Fluoridation- The controlled addition of fluoride to a public water supply to reduce tooth decay. Optimal fluoridated water contains fluoride at a level that is effective and safe for preventing cavities.
9. Untreated Dental Caries- Demineralized tooth structure.

Chapter 2: Review of Literature

Introduction:

Dental caries is one of the most common preventable childhood diseases and is the number one cause of oral pain and tooth loss². Early childhood caries, ECC is defined as the presence of one or more decayed, missing teeth resulting from caries or filled tooth surfaces in any primary tooth in a child six years or younger³. School based preventive programs and other public health programs are effective strategies to aid in the prevention of dental caries among children by treatment provided in a school setting versus a dental office⁴.

United States School-Based Programs:

Even in most developed areas in the United States, dental caries is still the number one common preventable childhood disease. According to the Center for Disease Control and Prevention CDC, when used appropriately, fluoride is a safe and effective agent that can be used to prevent and control dental caries⁵. Fluoride has profoundly improved dental health of persons in the United States and other countries. To ensure additional gains in oral health, water fluoridation should be extended to additional communities. In a report issued by the CDC, adoption of these, and other recommendations, could lead to considerable savings in public and private resources. The American Dental Association ADA put out a statement regarding early childhood caries, stating dental caries is a significant public health concern⁶. The American Academy of Pediatrics stance on early childhood caries reveals early childhood caries as a major health issue, especially for Indigenous children of Canada (First Nations, Inuit and Metis) and the United States (American Indian, Alaska Natives.)⁷

Despite major advancements in oral health, efforts to reach those most in need in rural areas have been unsuccessful. Those of disadvantaged racial and ethnic groups continue to suffer the growing burden of oral disease, specifically ages 2 to 11 years of ages. Divaris conducted research to examine the effects of a school-based weekly fluoride mouth-rinse program in North Carolina. The method of this study utilized, clinical and parental-reported data for children in grades 1 through 5. Children were examined in 2003-2004 via the NC Oral Health Survey. Even though the overall caries-preventive effectiveness of a weekly fluoride mouth rinse program was found to be weak and statistically non-significant, long-term effects were evident in high-risk groups⁸. The use of a fluoride mouth rinse or varnish school-based program in conjunction with education is a low-cost option to provide services to children. School based caries prevention programs have the potential to reach numerous populations and potentially leave a positive dental public health impacts. When communities and health care professionals collaborate and use evidence-based treatments and model successful preventive programs, the success rate of obtaining oral health is greater⁸.

International School Based Programs:

Populations in rural areas, including families who are of low socioeconomic status and families who do not have access to dental are most affected by poor oral health. A study conducted in Japan by Matsuyama and colleagues, researched the impact of dental caries inequalities on individual and society's health. The study looked at the impact of school-based fluoride mouth rinse programs (S-FMR) to analyze their effectiveness. The study took into consideration socioeconomic status and the use of over the counter fluoride toothpaste at home. The study looked at 12-year old students that were born

between 1994 and 2000. The study included 47 Japanese districts. The method of the study used was a two-level regression analysis, (the two-level regression being the birth year and district child was born) and analyzed the association of school-based fluoride mouth rinse in each of the separate districts and took each child's DMFT (decayed, missing or filled teeth) score⁹.

The results of this study concluded the use of school-based fluoride mouth-rinse programs decreased dental caries inequalities. The use of school-based fluoride mouth rinse showed a lower DMFT score to children in all socioeconomic statuses⁹.

Community water fluoridation is not established in Japan except on United States Army bases and the use of fluoride containing toothpaste at home is dependent on the individual household and may be affected by social determinants and socioeconomic status.

Therefore, the school-based mouth rinse programs help to decrease dental caries and improve children's oral health.

Another successful fluoride program titled The Happy Teeth Program, established in East London and utilizes fluoride varnish, dental screenings and oral health promotion sessions for parents¹⁰. The study followed children for three years to establish results of the fluoride varnish program. After three years, the results demonstrated that a school-based FV application program is feasible and acceptable to schools, parents and children in this community¹⁰. The Happy Teeth program could be used as a model for other school-based FV programs, and this can be tested in different communities¹⁰."

Another pilot study conducted out of the UK focused on children who experience dental neglect. The program demonstrated how the use of a community based mobile dental unit would help with the issue of access to dental care¹¹. The general dental

practitioners and community dental services of Barts Health NHS Trust in City and Hackney and Tower Hamlets PTC's in east London, run a school-based oral health prevention program providing dental screenings and fluoride varnish treatments twice a school year for children ages three to six years old. The program is unique in that it engages with the children's parents to encourage follow up with a dentist if their child is identified as needing further dental treatment. The mobile dental unit provided reminder phone calls, coordination of appointments and the offering of dental treatment to other children in the household as a way to encourage parents to bring their children. The objective of the pilot study was to evaluate the use of a mobile dental unit, to evaluate the mobile dental units' acceptance by children and their parents, to evaluate dental treatment provided, evaluate cost and to evaluate whether or not patients would attend appointments. The mobile dental unit rotated within three different locations close to schools that participate in the school-based oral health prevention programs. A total of 13 sessions were provided. The results were, a total of 63 children were seen, with five extractions completed and numerous fillings placed. Ninety-three percent of children were at high risk for dental disease and 97% of children had fluoride varnish placed¹¹. The results concluded the use of a mobile dental unit is a potential cost effect method to reach vulnerable children with access to dental care issues.

In Australia's Aboriginal communities located in the northern territory, a secondary analysis of a two-year cluster randomized trial that examined an oral program of 30 communities from 2006-2008¹². Fifteen of the previous communities were revisited at 6 -month intervals. These community children ages 3-5 years received fluoride varnish treatments, oral hygiene education and participated in other activities to promote oral

health, every 6 months for two years. The results were a reduction of caries risk by 25%¹².

Indian Health Service Early Childhood Caries Initiative:

In March of 2010, the *Early Childhood Caries Initiative (ECC)* was created to promote, prevent and detect early childhood caries¹³. The initiative included an interdisciplinary approach. The included collaborations with the community, dental teams, tribal leaders, Head Start programs, WIC programs, and medical doctors. These individuals used patient education, fluoride placement, sealant placement and glass ionomer interim therapeutic restorations in an attempt to prevent ECC¹³. The overall goal of the initiative was to reduce early childhood caries among children age 0-5 by 25%. In addition, the initiative had the following objectives:

1. Increase access to care by 50%.¹³
2. Increase the number of children who receive fluoride varnish by 25%.¹³
3. Increase the number of sealants placed by 25%.¹³
4. Increase the number of ITR's by 25%.¹³

Since 2010, and the start of the ECC has steadily declined nationally¹³. However, despite the ECC initiative early childhood caries is still a serious health burden on American Indian and Alaskan Native pre-school children.

Indian Health Service Dental Facility Funding:

IHS, is an agency within the Department of Health and Human Services. IHS provides federally funded health services and monies to American Indians and Alaskan Native Pueblos/Tribes. There is a total of 567 federally recognized tribes in 36 states throughout the United States. Federal funding for IHS facilities is prepared on an annual

basis. Precise requirements must be met to obtain care from an IHS facility. According to Elaine Sanchez, RDH, MA the Director of the Albuquerque Area Dental Support Center, there are two types of funding Pueblos in New Mexico can receive from IHS. First, by being a fully funded IHS dental clinic. As a requirement of being a fully funded IHS dental clinic, the clinic must abide by certain IHS accepted policies. The second option is for Pueblos to take their shares via a public law 93-638 self-determination status agreement. A self-determination agreement is authorized by government agencies to enter into contracts and make grants directly to federally recognized Indian Tribes, giving Tribes authority for how they administer funds.¹⁴ The way tribes administer funds may affect funding of preventive programs, tribes may give less money to preventive programs and some tribes are not required to provide documentation of how they used their money. All IHS dental clinics in New Mexico are required to have some sort of health promotion-disease prevention dental program established.

New Mexico Indian Health Services School Based Preventive Programs:

IHS created an excel spreadsheet that lists current existing preventive programs in “Indian Country” throughout the United States at the ECC Initiative in 2010¹⁵. There are five preventive programs listed for the state of New Mexico. The four programs are located in Crownpoint, Zuni Pueblo, Acoma Pueblo, Laguna Pueblo and Albuquerque¹⁵. The preventive program in Crownpoint includes fluoride varnish for children age 0-5 via both medical and dental clinics, dental screenings and preventive information (both verbal and written), via well-child clinic and school/head-start. The next is Zuni Pueblo, titled *Zuni Dental Clinic Prenatal Plus 5 and Under Program*¹⁵. This program provides dental screenings, education on preventive strategies and fluoride varnish application to

children zero to five years of age. In addition to providing these services within the dental clinic, this program also provides these preventive services in the well-child clinic, by public health nurses (PHN), and in school/head-start programs. The Acoma and Laguna programs only provides services within the school/head-start components¹⁵. Services provided are dental screenings, patient education on preventive strategies and fluoride varnish application to children zero to five years of age. Albuquerque Indian Service provides dental screenings, patient education on preventive strategies and fluoride varnish application to children zero to five years of age only by way of their dental clinic. Because not all Pueblos/Tribes are required to report their programs some are not on the excel spreadsheet. The excel spreadsheet is a great resource for patients to find a list of current programs, location of programs and services provided. if a program is not listed, a potential patient may miss out on the opportunity to participate unless the program advertises services. The Pueblo of Isleta is one example of a tribe that is not listed on the excel spreadsheet but that does operate a preventive program.

Pueblo of Isleta Head-Start Quarterly Fluoride Program:

The Pueblo of Isleta, one of the 19 Pueblos within the state of New Mexico, which falls under the “sovereign” category for IHS funding. The Pueblo operates a preventive program through their Head Start¹⁶. The Head Start program provides early education to children ages 3 to 5 years old, childcare for infants and children to age 3 and support to pregnant women including a WIC program¹². In addition to the mentioned programs, according to Christine Murphy RDH, BS, Dental Director for the Pueblo, the dental clinic operates a quarterly fluoride varnish application program¹⁶.

Types of Fluoride:

One easy dental caries preventive modality used in school-based programs is fluoride. The ADA published an article after reviewing evidence based clinical recommendations on professionally applied topical fluorides. The conclusion of the study indicated children who are at moderate or high risk for early childhood caries will benefit from professionally applied topical fluoride treatments¹⁷. There are several different options when deciding which type of fluoride is most beneficial for children but either fluoride option is of benefit. Fluoride is available in various forms, such as foam, gel, varnish and mouthrinses¹⁸.

Silver Diamine Fluoride:

Silver Diamine Fluoride (SDF) is a colorless liquid with a fluoride content of 24.4% to 28.8 %. This unique compound is applied to teeth in order to halt or arrest existing decay. SDF has not been approved by the Food and Drug Administration, however, it is widely used off-label for caries management internationally. SDF must be professionally applied and is the only fluoride that aids in caries reduction to adjacent surfaces of an already decayed tooth¹⁸.

Nelson, conducted a study to investigate the practice and teaching of the use of Silver Diamine Fluoride along with other agents taught in Pediatric dentistry residency programs in the United States. The method of this study was a survey containing 14 questions¹⁹. The survey was sent via email to program directors. The survey yielded 74 responses, an 87% response rate. “More than a quarter (25.7 percent) reported use of silver diamine fluoride, with 68.9 percent expecting to increase use²³.” The survey revealed the most commonly used fluoride was varnish, followed by acidulated

phosphate fluoride foam (APF), silver nitrate and povidone iodine. The conclusion of the study is, the use of silver diamine fluoride is fastly being adopted into graduate pediatric dentistry training, with the intent to incorporate into curricula and students clinic¹⁹.

Another clinical trial out of the Philippines, examined the application of silver diamine fluoride (SDF) and ART glass-ionomer sealants in school children who participated in a daily school-based tooth-brushing program²⁰. The study focused on occlusal surfaces of teeth (chewing surfaces) because the occlusal surfaces of teeth may contain deep pits and fissures and deep grooves. These areas of the teeth are more susceptible to caries development than any other area of the tooth. The study took place over an 18-month period and included 704 six to eight-year-old school children. Students were randomly placed into the Silver Diamine Fluoride (SDF) group or the ART groups. Students in the SDF group received an application of Silver Diamine Fluoride and students in the ART group received sealant treatment on the occlusal surface of selected permanent first molars using glass-ionomer material. There was non-compliance of three of the eight schools with regard to the daily tooth-brushing program. This was actually of benefit to this study because the examiners were able to analyze the effects of SDF and ART treatment. “Non-compliance to the daily tooth brushing program in three schools offered the opportunity to analyze the caries preventive effect of SDF and sealants separately in fluoride toothpaste brushing and in non-tooth brushing children²⁰.” The caries increment was lower in the tooth brushing children than in non-tooth brushing children. This study concluded that the one-time application of SDF did not show as an effective method to prevent caries development. ART sealant placement did show to reduce the onset of caries development.

Fluoride Rinses:

Fluoride mouth rinse programs is another inexpensive modality. Danish communities often provide school-based fluoride programs to children with a high caries risk in addition to oral hygiene education²¹. A study was conducted to compare two different fluoride programs. The study utilized children ages six to twelve. The study was two years in length and was held in the Public Dental Clinic in a multicultural low-socioeconomic community. Over 1,000 children total from nine different schools participated. Students were randomly placed in one of the two fluoride programs²¹. One group received semi-annual fluoride varnish applications and the other group rinsed once a week with fluoride. The results were, there was no statistically significant difference in caries development among children who received fluoride varnish treatments and children who participated in the fluoride mouth rinse program²¹. This study shows the benefit of both fluoride varnish and fluoride mouth rinse in reducing caries. Each school based preventive program has many options they can chose from to best fit their population, needs and caries risk.

Fluoride Varnish:

Kolb conducted a study to measure preschool children's acceptance to highly concentrated fluoride compounds²². Fluoride applications were videotaped to see the children's nonverbal responses and behavior. Children were evaluated using a three-point smile rating scale. The results determined a fluoride containing some sort of flavor should be used in order to gain acceptance and compliance. "To achieve a high acceptance of the application of fluoride preparations among preschool children, flavorful preparations should be used²²." This article may be of value when programs are selecting a fluoride to

use, if children associate fluoride with a bad taste they may refuse the application, putting them at risk for caries development. Fluoride varnish comes in a 2.26% fluoride 5% sodium fluoride with 22,000 ppm. Fluoride varnish is the only fluoride recommended by the American Council of Scientific Affairs for children 0-6 years of age for caries prevention²³.

Fluoride Gel and Foam:

Both foam fluoride and gel fluoride come in acidulated phosphate (APF), at 1.23% fluoride with 2.7% APF. and neutral sodium (NaF), 0.9% fluoride with 2.0% NaF concentrations. Both foam and gel are applied using a fluoride tray. Unfortunately, the use of foam fluoride is slowly dissipating due limited research regarding effectiveness. Both APF and NaF foam and gel fluorides are not recommended for children younger than six years old due to risk of ingestion. Both forms of APF foam and APF gel are not recommended on restorations and or sealants because pitting and or etching may occur. NaF gel/foam is the only fluoride safe for restorations²³.

Public Health Curriculum in Dental Hygiene School:

Accreditation standards describe the areas which dental hygienists must be educated, which include a comprehensive understanding of public health principles²⁴. Accreditation standards are developed by the Commission on Dental Accreditation, CODA. CODA ensures all dental hygiene programs and students are receiving a quality, up to date education. The dental hygiene practitioners who will be practicing in this century need information on how to effectively practice in the dental public health setting²⁵. Many schools are now including, community-based dental education (CBDE).

CBDE provides students with an opportunity to provide care to underserved communities and exposes students to broaden their education. This addition to school curricula, helps address the high caries rates among US children. One study through the University of Minnesota had dental, dental hygiene and dental therapy students participate in rotations through underserved community clinics. Upon completion of the rotations, students gained additional experience in caring for a diverse population by being placed in underserved community clinic to provide care. The extramural rotations helped broaden the education of these students by providing the students an opportunity to perform wide variety of procedures, giving students great hands on experiences over several weeks²⁶. Results showed, if students are exposed to these populations by extramural rotations, they are more likely to serve in these areas after graduation²⁶.

With CODA recommending the incorporation of CBDE into dental school curricula, the hope is that upon graduation students whose schools incorporated CBDE rotations will have gained the skills and motivation to treat vulnerable populations. A study conducted in Iowa assessed private practice dentists and if their involvement in charitable care had any correlation between CBDE. The conclusion showed, dentists who participated in CBDE while in school were more likely to provide community care than students who did not participate in CBDE while in school²⁷.

Summary:

The provision of dental hygiene care in schools, and public health settings such the Indian Health Service clinics is an effective method to provide preventive services to children. Including curriculum that provides a knowledge base and experience could be valuable to all dental hygiene programs.

Chapter 3: Methods and Materials

The purpose of this study was to assess the education of dental hygienists practicing in schools and public health settings. This education includes the provision of preventive programs which include dental prophylaxis, topical fluoride varnish applications, fluoride mouth rinse, foam fluoride applications, sealant programs, and patient education programs. Data was gathered by a survey/questionnaire. This descriptive survey solicited information from dental hygiene program directors within CODA accredited dental hygiene programs.

Sample Description:

This descriptive survey solicited information from participants who are employed as program directors of dental hygiene CODA accredited programs within the United States. This sample is categorized as judgmental and or purposive sample because the targeted population is dental hygiene program directors.

Research Design:

This electronic survey was deployed by Red Cap, through the University of New Mexico, and includes questions regarding dental services and preventive services that student rotate in dental hygiene school and the knowledge they learn in dental hygiene school. Participants will remain anonymous. There will be a section at the end of the survey/questionnaire offering participants an opportunity to provide feedback.

Data Collection:

The survey was sent out via an email to all program directors. The email was sent out by the co-principal investigator. Approximately 336 people are on the list. The survey/questionnaire was available to participants for ten days. An initial recruitment email including a link to the survey was sent via the email list serve. After the lapse of five days, an additional email was sent to remind participants to participate in the survey. The survey was available for five additional days after the reminder email. The survey contained a total of 13 questions and took approximately 5 minutes to complete. All participation was voluntary, and participants were free to end the survey at any time they wish. No personal identifying information was collected. The survey/questionnaire was approved and granted exempt status by the University of New Mexico's Human Research Protections office.

Data Analysis:

Survey:

Question	Response
1) Please identify your highest educational credential.	A) Bachelor's degree B) Master's degree C) Doctorate Degree (Please identify type of degree: DDS, DMD, EdD. D) Other (Please specify)
2. Please identify the major concentration of your highest degree.	A) Dental Hygiene major/ concentration B) Non-Dental Hygiene major/ concentration
3. How many years of experience do you have in dental hygiene education?	A) 0-5 years B) 6-10 years

	<p>C) 11-15 years D) 16-20 years E) More than 21 years</p>
<p>4. What type of institutional setting do you work?</p>	<p>A) Community College B) Proprietary School (career college/ technical institute) C) University, dental school D) University, non-dental school E) Other-please specify</p>
<p>5. How many credit hours are in your entire curriculum, including non-dental hygiene requirements?</p>	<p>A) 70-90 B) 91-110 C) 111-130</p>
<p>6. In your curriculum, how many credit hours are specifically dedicated to dental public health?</p>	<p>A) 2-3 hours B) 4-6 hours C) More than 6 hours</p>
<p>7. What degree is awarded upon completion of your entry-level dental hygiene program?</p>	<p>A) Associate of Applied Science in Dental Hygiene B) Associate of Science in Dental Hygiene C) Bachelor of Applied Science in Dental Hygiene D) Bachelor of Science in Dental Hygiene E) Other-please specify</p>
<p>8. How many hours of rotations do students have in any of the following areas: A) FQHC B) Public health clinics C) Indian Health Service Clinics D) Head Start/Early Head Start/WIC E) Military Base Clinics F) School Based F) VA Dental Clinics</p>	<p>A) 0 B) 1-5 hours C) 6-10 hours D) 11-15 hours E) 16-20 hours F) More than 21 hours</p>
<p>9. Do students rotate through any of the following setting?</p>	<p>A) FQHC B) Public health clinics</p>

<p>Select all that apply.</p>	<p>C) Indian Health Service Clinics D) Head Start/Early Head Start/WIC E) Military Base Clinics F) School Based G) VA Dental Clinics</p>
<p>10. When you assess rotation experiences, which do students prefer?</p>	<p>A) FQHC B) Public health clinics C) Indian Health Service Clinics D) Head Start/Early Head Start/WIC E) Military Base Clinics F) School Based G) VA Dental Clinics H) Don't know</p>
<p>11. Do students rotate through any OTHER facilities not listed? If so, please describe.</p> <p>A) FQHC B) Public health clinics C) Indian Health Service Clinics D) Head Start/Early Head Start/WIC E) Military Base Clinics F) School Based G) VA Dental Clinics</p>	<p>Fill in the blank</p>
<p>12. How effective do you think your public health curriculum prepares your students to provide care in a public health setting?</p>	<p>A) Highly effective B) Somewhat effective C) Not effective</p>
<p>13. How can your public health curriculum improve?</p>	<p>Fill in the blank</p>

Chapter 4: Results, Discussion and Conclusion

Results:

The survey was sent out on Monday January 13, 2020 and remained open for two weeks. A reminder email was sent on Monday January 20, 2020 and the survey closed on Monday January 27, 2020. A total of 94 surveys were collected. The results are as follows.

Question 1: Please identify your highest educational credential. The highest educational credential reported the most was a master's degree. 75.5%

- Two report Bachelor's Degree
- Seventy-one participants report Master's Degree
- Two report Ph.D.
- Five report DDS/DMD (1 reported being a DMD and four reported being a DDS)
- Ten report Ed.D.

Please identify your highest educational credential (<i>N</i> = 94)	N	%
Bachelor's degree	2	2.1
Master's degree	71	75.5
Doctorate Degree (Please Specify- DDS, DMD, Ed.D)	17	18.1
Other	4	4.3

Table 1: Highest Credential

Question 2: Please identify the major concentration of your highest degree. One participant failed to answer this question; therefore, the response rate drops from 94 to 93 responses.

- 66 of participants report their concentrations of their highest degree is a non-dental hygiene degree at 71%

- 27 participants report their concentration of their highest degree is in dental hygiene at 29%

Please identify the major concentration of your highest degree. (<i>N</i> = 93)	N	%
Dental Hygiene Major/Concentration	27	28.7
Non-Dental Hygiene Major/Concentration	66	71

Table 2: Concentration

Question 3: How many years of experience do you have in dental hygiene education?

Most reported having more than 21 years of experience in dental hygiene education at 46.8%

- Four reported having 0-5 years of dental hygiene education experience (4.3%)
- Twelve report having 6-10 years of dental hygiene education experience (12.8%)
- Seventeen report having 11-15 years of dental hygiene education experience (18.1)
- Seventeen report having 16-20 years of dental hygiene education experience (18.1)
- Twenty-one report having 20 plus years of dental hygiene education experience (46.8)

How many years of experience do you have in dental hygiene education (<i>N</i> = 94)	N	%
0-5 years	4	4.3
6-10 years	12	12.8
11-15 years	17	18.1
16-20 years	17	18.1
More than 21 years	44	46.8

Table 3: Number of years in Dental Hygiene Education

Question 4: What type of institutional setting do you work? One participant failed to answer this question; therefore, the response rate drops from 94 to 93 responses. Most reported working within a community college at 54.8%, second reported working at a University –(Non-dental) 22.6%.

- Fifty-one participants work with in a Community College- (54.8%)
- Nine participants work with in a Proprietary School (career college/ technical institute) – (9.7%)
- Twelve participants work in a University-dental school- (12.9%)
- Twenty-one participants work in a University, non-dental school-(22.6%)

What type of institutional setting do you work? (N = 93)	N	%
Community College	51	54.8
Proprietary School (Career college/technical institute)	9	9.7
University, Dental School	12	12.9
University, Non-Dental School	21	22.6

Table 4: Institutional Setting

Question 5: How many credit hours are in your entire curriculum, including non-dental hygiene requirements? Five participants failed to answer this question; therefore, the response rate drops from 94 to 89 responses. Participants report the most as having 70-90 hours in their entire curriculum at 56.7%, followed by 111-130 hours at 31.1 %.

- Fifty-one report having 70-90 hours in their entire curriculum- (56.7%)
- Eleven report having 91-110 hours in their entire curriculum-(12.2%)
- Twenty-eight report having 111-130 hours in their entire curriculum-(31.1%)

How many credit hours are in your entire curriculum, including non-dental hygiene requirements (N = 89)	N	%
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70-90 hours	51	56.7
91-110 hours	11	12.2
111-130 hours	28	31.1

Table 5: Total Credit Hours

Question 6: In your curriculum, how many credit hours are specifically dedicated to dental public health? The highest response report having 4-6 hours of dental public health in their curriculum at 48.9 %, followed by 2-3 hours at 35.1%.

- Thirty-three report having 2-3 hours in their curriculum for dental public health- (35.1%)
- Forty-six report having 4-6 hours in their curriculum for dental public health- (48.9%)
- Fifteen report having more than 6 hours in their curriculum for dental public health- (16.0%)

In your curriculum, how many credit hours are specifically dedicated to dental public health? (N = 94)	N	%
2-3 hours	33	35.1
4-6 hours	46	48.9
More than 6 hours	15	16.0

Table 6: Credit Hours Dedicated to Public Health

Question 7: What degree is awarded upon completion of your entry-level dental hygiene program? 1 participant failed to answer this question; therefore, the response rate drops from 94 to 93. The majority of programs that are offered upon graduation are Associate of Applied Science in Dental Hygiene 51.6%, followed by a Bachelor of Science in Dental Hygiene at 25.8%. A Bachelor of Technology in Dental Hygiene and a Master of Science in Dental Hygiene were also reported under “other”.

- Forty-eight report -Associate of Applied Science in Dental Hygiene- 51.6%
- Sixteen report-Associate of Science in Dental Hygiene- 17.2%
- Three report- Bachelor of Applied Science in Dental Hygiene- 3.2%
- Twenty-four report-Bachelor of Science in Dental Hygiene-25.8%
- Two report “other” -(Bachelor of Technology in Dental Hygiene and Master of Science in Dental Hygiene)-2.2%

What degree is awarded upon completion of your entry-level dental hygiene program? (<i>N</i> = 93)	N	%
Associate of Applied Science in Dental Hygiene	48	51.1
Associate of Science in Dental Hygiene	16	48.9
Bachelor of Applied Science in Dental Hygiene	3	3.2
Bachelor of Science in Dental Hygiene	24	25.5
Other	2	2.1

Table 7: Degree Awarded

Question 8: How many hours of rotations do students have in any of the following areas? (FQHC, Public health clinics, Indian Health Service Clinics, Head Start/Early Head Start/WIC, Military Base Clinics, School-Based Clinics, VA Dental Clinics). Overall, 39.4 % of students spend more than 21 hours in rotations through one or more of the above listed areas.

- Sixteen report 0 hours of rotations- 17%
- Nine report 1-5 hours of rotations-9.6%
- Twelve report 6-10 hours of rotations-12.8%
- Nine report 11-15 hours of rotations- 9.6%
- Eleven report 16-20 hours of rotations-11.7%

- Thirty-seven report more than 21 hours of rotations- 39.4%

How many hours of rotations do students have in any of the following areas? (<i>N</i> = 93)	N	%
0 hours	16	17.0
1-5 hours	9	9.6
6-10 hours	12	12.8
11-15 hours	9	9.6
16-20 hours	11	11.7
More than 21 hours	37	39.4

Table 8: Rotation Hours

Question 9: Do students rotate through any of the following settings? Select all that apply. The options were- FQHC, Public health clinics, Indian Health Service Clinics, Head Start/Early Head Start/WIC, Military Base Clinics, School-Based Clinics and VA Dental Clinics. 16 participants failed to answer this question; therefore, the response rate drops from 94 to 78.

- Thirty-four report students rotate through FQHC-43.6%
- Sixty report students rotate through Public health clinic- 76.9%
- Ten report students rotate through Indian Health Service Clinics- 12.8%
- Thirty report students rotate through Head Start/Early Head Start/WIC-38.5%
- Eight report students rotate through Military Base Clinics-10.3%
- Forty-nine report students report through School-Based Clinics- 62.8%
- Seventeen report students rotate through VA Dental Clinics- 21.8%

Do students rotate through any of the following settings? (<i>N</i> = 78)	N	%
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FQHC	34	43.6
Public Health Clinic	60	76.9
Indian Health Service Clinic	10	12.8
Head Start / Early Head Start / WIC	30	38.5
Military Base Clinic	8	10.3
School-Based Clinic	49	62.8
VA Dental Clinic	17	21.8

Table 9: Rotation Settings

Question 10: When you assess rotation experiences, which do students prefer? 21

participants failed to answer this question; therefore, the response rate drops from 93 to

72. Students showed the most interest in public health clinics 35.6%.

- Eleven report students prefer FQHC- 15.1 %
- Twenty-six report students prefer Public health clinics- 35.6%
- Three report students prefer Indian Health Service Clinics- 4.1%
- Three report students prefer Head Start/Early Head Start/WIC-4.1%
- Five report students prefer Military Base Clinics- 6.8%
- Twenty report students prefer School-Based Clinics-27.4%
- Five report students prefer VA Dental Clinics- 6.8%

When you assess rotation experiences, which do students prefer? (N = 72)	N	%
FQHC	11	15.1
Public Health Clinic	26	35.6
Indian Health Service Clinic	3	4.1
Head Start / Early Head Start / WIC	3	4.1
Military Base Clinic	5	6.8
School-Based Clinic	20	27.4
VA Dental Clinic	5	6.8

Table 10: Student Preference

Question 11: Do students rotate through any OTHER facilities not listed? If so, please describe. (FQHC, Public health clinics, Indian Health Service Clinics, Head Start/Early Head Start/WIC, Military Base Clinics, School Based and VA Dental Clinics) Five participants failed to answer.

- 57.3% reported students do not rotate through other facilities.

-42.7% reported student rotate through other facilities

Do students rotate through any OTHER facilities not listed (<i>N =89</i>)	N	%
No	51	57.3
Yes	38	42.7

Table 11: Other Facilities

- OTHER: The following answers were unique. See below for all answers. University specialty clinics, adult rehabs, nursing homes, assisted living facilities, federal prisons/correctional facilities, state women’s correctional facility, specialty dental clinics (periodontics, endodontics, prosthodontics, radiology, oral surgery and orthodontics), Special Olympics, hospital based dental clinics, special needs, homeless, senior centers, school-based, retirement centers, private dental offices, children’s hospitals, and Global service learning- (10 days in Jamaica.)

Question 11: Please list OTHER facilities not listed that students rotate through.

- Special needs
- Penitentiaries, Nursing homes, Community Senior Centers
- Perio grad student clinic at a dental school
- School based
- Long term care facility (nursing home)
- State supported living center
- Pediatric unit at the hospital
- Expanded practice (vineyards, parishes, migrant camps) using mobile van
- We have an FQHC located in our educational clinic. While the students do not rotate through this for hours specifically, they do experience the setting.

Prison system, dental specialty practices
 Senior centers, senior housing, special needs facilities
 Dental school clinic where school children receive treatment.
 Teaching Hospital/Dental Clinic
 Perio offices, children's hospital
 private community health clinics, ROP training programs, Federal Corrections Complex
 Private Dental Offices
 Retirement Centers, Special need homecare
 Pediatric dental clinic in a children's hospital
 SA State Supported Living Center - treats adults with special needs in state supported group homes.
 University specialty clinic, adult rehab clinic
 Special Olympics, Special Smiles, Hospital Based Dental clinics, GNYDM / Colgate
 Bright Smiles, Correction facilities, other agencies
 Dental School
 Nursing home
 Nursing home/ assisted living
 Child- care facilities, Military cadets come to the school clinic for care
 Adult day care center, nursing home, homeless shelter, pre-schools, day care centers
 Special needs clinic and clinic for the homeless
 Faith Based Clinic
 Give presentation to elementary students at schools
 Hospital Dental Clinic
 -Homeless Empowerment Project Dental Clinic, which is VA, based but not entirely supported by VA funding. - Global Service learning for selected students that is 10 days in Jamaica providing DH services in dental clinics and Preventive Education in the Jamaica community - Liaison with Special Olympics
 A state Women's Prison Facility
 Special needs clinic on campus, GPR clinic
 Specialty dental clinics such as pediatric dentistry, periodontics, prosthodontics, endodontics, radiology, oral surgery, and orthodontics.
 Assisted living centers and rotations with the district health hygienist.
 Marquette Dental School, Milwaukee Center for Independence
 Oral health advocacy group
 Correctional facility

Table 11.A

Question 12: How effective do you think your public health curriculum prepares your students to provide care in a public health setting?

56 participants failed to answer this question, therefore dropping the response rate from 93 to 38.

- 60.5% reported their public health curriculum is highly effective, whereas 39.5% reported their curriculum is somewhat effective.

How effective do you think your public health curriculum prepares your students to provide care in a public health setting? (N=38)	N	%
Highly effective	23	60.5
Somewhat effective	15	39.5

Table 12: Effective

Question 13: How can your public health curriculum improve? This question was fill in the blank.

40 participants did not answer the following question, dropping the response rate from 94 to 53. (N=53)

- More hours dedicated to public health
- Additional rotation locations; children’s health clinic that is within public health, hospital/medical based rotations, military/VA clinics.
- Reduction in barriers: logistics of setting up agreements, background checks, legal review making it harder to obtain rotations, and lastly time
- Organization

Question 13: How can your public health curriculum improve?

Off-site rotations

Continue to improve/expand current rotations

Add more hours to the curriculum but right now the state caps an AAS at 68 credit hours. The patients that students see in our school clinic are low income and usually do not have a dental home. So I consider our clinic a public health clinic but I don’t think your questions where asking about the school clinic so I answered that way. For the amount of time the students have in their community dental health class I think it is sufficient given this is only a 2-year program. In two years, the focus has to be on the standards for CODA.

Additional rotations, however, not available in our area.

At one of our FQHC facilities School of Dentistry dentists supervise the dental hygiene care provided. It simulates private practice in a great manner but feedback from students is that they would like more hands-on assistance with scaling.

We would like to have more public dental health days at the college. The students choose their venue for rotations (questions 8 and 9).

We are rural and have no access to public health clinics.

A children's health clinic that is a public health clinic.

If there were more time in the curriculum rotating through other public health facilities.

We feel our Public Health course is very good. Many of our students continue to serve in outreach settings after graduation.

Public Health is a strength of our program

If CODA would reduce the needs for reporting secondary sites, we could place students for hands on rotations. Otherwise we have students in IPE with health promotion students, that is phenomenal for their learning.

Always

Increased knowledge of positions for DENH in public health

It would allow us more time in the public health agencies if we could use the patients, we see there for Accreditation purposes.

I feel we need a better hospital-based rotation. It would also be helpful to rotate through another medical-based rotation.

No comment-Please note that students spend 14 hours per week in community settings

The biggest barrier to providing students with more PH experiences is the logistics of setting up agreements and partnerships with other organizations. Background checks, agreements requiring legal review, etc., all hinder the ability to provide multiple sites for student experiences. It seems to get harder all the time.

More rotations

re-institute access to local VA and Military Base dental clinics--currently access is difficult due to excess compliance/regulations

Our public health curriculum is excellent, and more hygienist are employed in the PH setting than ever before.

More hours available in the curriculum.

We can improve by offering diversified access to a multitude of PH programs and helping students understand and apply IPE and public health in practice.

Like any other topic, not just public health, time is a factor.

Implement rotations.

We would like to incorporate more time in public health. However, students are more interested in completing clinic requirements. Rotating out of the clinic does not allow them to complete clinical requirements.

Have more opportunities for students to engage in public health programs.

Have some lab hours attached to the lecture

add more time to this curriculum

We would love more sites for rotation but getting sites to approve students has been challenging. We have tried the VA, and prisons with no luck.

We need to find other rotation sites.

Additional rotations

We are in a good place with our public health opportunities. In addition to required rotations, students also obtain additional volunteer opportunities through our local ADHA component.

This is a masters level program. The public health focus is on state and federal programs, grant funding for public health/community initiatives, and public health advocacy.

More hands-on experience instead of primarily presenting OHI/education

We continue to seek opportunities within the community to provide these experiences to our students. I feel we have made great strides in the last couple of years providing more experiences.

Have more time to teach and participate in community activities. Question 5 stated a minimum of 70 credits, but in Texas 68 is the maximum number of credits. Question 8 stated how many hours - is this annually, just in this course? Not clear. Students spend 16 hours on an outside rotation their final year.

Increase the type of facilitates the students work in.

Would be nice to get more variety but honestly, feel they are very prepared.

We are currently revising our public health curriculum to enhance student experiences. Students will have three primary rotations, Head Start, FQHC, and Sealant program (school based). The other lab portion will be for students to focus on three projects. One will be to implement and assess a community health program. Student will have more opportunity to search for a variety of agencies in the area and have more time to evaluate the success of their implemented project.

We are working to expand our inter-professional activities.

receive more, outside of the college support, funding to assist with disposable supplies and dental equipment needed to provide services.

Allow students to get formal credit for rotations rather than only experiences and look for other opportunities.

Adding a FQHC facility

having students better understand the structure and job opportunities in public health

Changes in the Dental Practice Act would allow more opportunities for dental hygienists and dental hygiene students.

Organization.

More facilities available for students to attend.

Offer increased clinical and credit hours by adding Bachelor completion degree option with community health concentration

Integrating public health beginning in the spring of their 1st year in program would help. unsure

We have public health project, not true rotations. We are accelerated with no room in the curriculum for outside rotations.

More opportunities to provide care in a variety of public health rotations

Table 13

Discussion:

The creation of a strong, well balanced dental hygiene curriculum is essential to the preparation of a well-rounded dental hygienist upon graduation. The education and experiences dental hygiene students receive in school involving preventive

programs, school-based health programs and different public health settings are valuable to the student, future patients and the overall dental field. Dental hygiene, the prevention specialty, first started in schools by Dr. Alfred Fones. Many dental programs, and caries prevention initiatives, in the United States and internationally have been established with the intent of preventing dental caries and educating patients. The Happy Teeth Program in east London, The Early Childhood Caries Initiative (ECC), created by Indian Health Service, and the Pueblo of Isleta Fluoride program are some examples of preventive programs discussed in the above literature review. Topical fluoride, (foam, gel, rinses and SDF), sealant placement programs, school-based health programs, oral health education presentations and dental prophylaxis (dental cleanings) are the most common preventive programs. Dental hygiene students are exposed to some of, if not all of the above programs and some programs are easier to facilitate than others. Some faculty report “our public health course is very good; many students continue to serve in outreach settings after graduation.” Whereas others report, just not having enough time to dedicate to public health. One participant stated they are located in a “rural area and there is no access.” Some students are exposed to a wide variety of public health settings/rotations that include IHS clinics, nursing homes, special needs clinics, preventive sealant placement programs, and even mission trips. Results showed that most dental hygiene programs with an associate degree awarded upon completion, report needing/wanting more time to dedicate to public health. This adds to evidence of the need to change the entry level degree from an associate degree to a bachelor degree, which will allow more time to public health education and will also help advance the field of dental hygiene. One participant mentioned students are more worried about finishing clinical

requirements and are not interested in additional rotations. Clinical requirements are important, but more important are the tools needed to work in a variety of different settings, and not forgetting the role of hygienist's take-prevention specialists. Changing the entry level degree from associates to bachelors' will provide students with the tools necessary to facilitate and even create their own public health/preventive program after graduation. And maybe even get students interested in working in public health, facilitating or working with elementary schools to provide education to children or even creating a fluoride program with a local school, and not just working in the normal private practice office setting. One job of educators is to motivate and encourage future hygienists to do more, be more, and be the voice for their patients. By being exposed to different work settings, especially in public health is very valuable to students and their future patients. In the end, faculty work hard to provide students with a well-balanced education in public health and preventive programs with the allotted time, resources and funding that is available.

Limitations:

There were quite a few questions that were left blank or unanswered, specifically toward the end of the survey. The survey questions could have been set up differently, maybe no branching questions. Or even less questions. The survey had a total of 13 questions, with some branching depending on the way a question was answered. Maybe fewer, less worded questions would have been easier for the participant. The time the survey was sent out could have also been a factor, since it was during winter break. Sending the survey out at the beginning of the semester, when faculty are fresh and rested from break may have yielded complete surveys. The survey also only asked for dental

hygiene program director's input. Results may have been different if all faculty were surveyed, especially faculty who teach public health. There was a number of incomplete surveys which affected the data and created a smaller sample size. In total there were 94 surveys filled out, with 26 completely filled out.

Conclusion:

There is a need for more curriculum hours dedicated to public health education of dental hygienists. There are a variety of public health facilities and preventive programs students are exposed to, some are easier to access than others and some schools have an easier time making rotations available than others. Factors such as time, funding, liability. Overall, upon completion of public health rotations, faculty for the most part feel students are well prepared. Some faculty wish it was not so hard to obtain certain public health rotation sites for students. Some faculty share more time can be used but feel students are exposed enough with the time allotted which was dependent upon whether they were an associate or bachelor degree program. Further research can survey students who have graduated, and their views on their public health education while in dental hygiene school and what can be improved. Another research survey can compare associate degree vs bachelor degree students and their options about their education regarding public health and preventive programs.

Chapter 5: Article for Submission-Journal of Dental Hygiene

Title Page

Assessment of Public Health and School Based Health Rotations
in Academic Dental Hygiene Programs

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Keywords: Dental hygiene, Public Health, Education

ABSTRACT

Purpose: The purpose of this study was to assess the education that dental hygiene students receive in practicing within schools and public health settings.

Methods: Data were gathered by a survey/questionnaire created by Red Cap, through the University of New Mexico. The survey/questionnaire was available to participants for ten days and contained a total of 13 questions.

Results: Ninety-four responses were collected. Most educators hold a Master's degree (75%), with a non-dental concentration in their highest degree and more than 21 years of experience in dental hygiene education at (46.8%). Most educators reported working within a community college at (54.8%), with 70-90 hours in their entire curriculum (56.7%) and 4-6 hours dedicated to dental public health (48.9 %). Results showed that students spend more than 21 hours in rotations through one or more of these areas

(39.4%)- (FQHC, Public health clinics, Indian Health Service Clinics, Head Start/Early Head Start/WIC, Military Base Clinics, School-Based Clinics, VA Dental Clinics).

Students showed the most interest in working within public health clinics (35.6%). Upon graduation the most common degree awarded is the Associate of Applied Science in Dental Hygiene (51.6%). Educators report their public health curriculum is highly effective (60.5%).

Conclusion: There is a need for more curriculum hours dedicated to public health education in order for students to be exposed to the many settings public health has to offer. There are a variety of public health facilities students are exposed to, some are easier to access than others and some schools have an easier time making rotations available than others. Overall, upon completion of public health rotations, faculty for the most part feel students are well prepared. Some faculty expressed they wish it wasn't so hard to obtain certain public health rotation sites for students to rotate through. Some faculty share more time can be dedicated to public health but feel students are exposed enough with the time allotted (associate vs bachelor degree programs). Faculty from associate degree programs express they would like more time to dedicate to public health. Further research can survey students who have graduated, and their views of their public health education while in dental hygiene school and what can be improved.

INTRODUCTION

The provision of dental hygiene care in schools, and public health settings such as the Indian Health Service clinics is an effective method to provide preventive services to children. Including a curriculum that provides a knowledge base and experience could be of value to all dental hygiene programs. For example, school-based programs are shown to prevent early childhood caries and dental disease by way of preventive modalities such as fluoride applications, patient education, sealant placement and dental prophylaxes.

Although dental hygienists initially practiced in schools, the majority of dental hygienists now work in private dental practices. The purpose of this study was to assess the education of dental hygiene students experience in public health settings. This research will be of value to the profession of dental hygiene as it will create a stronger understanding regarding the education and experiences dental hygiene students receive involving preventive programs. The preventive programs assessed would be outside the classroom and student clinic, taking place within in primary schools, and public health settings and reservations. This research will assess the public health educational preparation of dental hygienists and identify preventive programs currently available for student rotations.

This research will attest to Dr. Alfred Fones original research regarding early intervention and mass pediatric prevention, which was educating children at a very young age about oral health in the school setting¹. Preventive programs in schools are an economic and practical option for children to not only access dental care, but to familiarize themselves with dental care and procedures. Early oral health intervention has

many benefits. For example, a decrease in caries development in primary and permanent teeth, better total body health, and a reduction in bacterial load and chronic inflammation. Reducing the host's bacterial load allows the body's immune system to work more efficiently to fight off other infections, disease and pathogens².

Additionally, factual oral health education and addressing misconception about oral health is another critical benefit of early exposure to dental care. The negative perceptions of dentistry can be dismissed and discussed while instilling the value of good oral health. Preventive programs may correct common the misconceptions regarding oral health that have life-long or larger whole body influences, for example; that older age is correlated with tooth loss and that dentures are just an inevitable reality, that there is no value in primary teeth as they are eventually lost, or that oral disease and chronic inflammation are not correlated with cardiac and endocrine issues. Prevention starting with community youth is key to attaining a lifelong healthy smile.

METHODS AND MATERIALS

Data were gathered by a survey/questionnaire. This descriptive survey solicited information from dental hygiene program directors within Commission on Dental Accreditation (CODA) accredited dental hygiene programs within the United States. This sample is categorized as judgmental and or purposive sample because the targeted population is dental hygiene program directors. This electronic survey was deployed by Red Cap, through the University of New Mexico, and included questions regarding dental services and preventive services that student rotate in dental hygiene school and the knowledge they learn in dental hygiene school. Participants remained anonymous. There was a section at the end of the survey/questionnaire offering participants an opportunity

to provide feedback. The survey was sent out via an email to all program directors. The email was sent out by the co-principal investigator. Approximately 336 people are on the list. The survey/questionnaire was available to participants for ten days. An initial recruitment email including a link to the survey was sent via the email list serve. After the lapse of five days, an additional email was sent to remind participants to participate in the survey. The survey was available for five additional days after the reminder email. The survey contained a total of 13 questions and took approximately 5 minutes to complete. All participation was voluntary, and participants were free to end the survey at any time they wish. No personal identifying information was collected. The survey/questionnaire was approved and granted exempt status by the University of New Mexico's Human Research Protections office. (Study ID 19-494).

RESULTS

Most educators that educate dental hygiene students hold a master's degree. (75.5%), with more than 21 years of experience in dental hygiene education (46.8%). Most participants report working within a community college (54.8%), with a total of 70-90 hours in their entire curriculum (56.7 %). And 4-6 hours of dental public health in their curriculum (48.9 %). The majority of programs upon graduation award an Associate of Applied Science in Dental Hygiene (51.6%).

Students spend more than 21 hours (39.4%) in rotations through one or more of the following. Federally Qualified Health Centers (FQHC), public health clinics, Indian Health Service Clinics, Head Start/Early Head Start/WIC, Military Base Clinics, School-Based Clinics and VA Dental Clinics. Students showed the most interest in rotating

through public health clinics (35.6%). Other sites reported that students rotate through are university specialty clinics, adult rehabs, nursing homes, assisted living facilities, federal prisons/correctional facilities, state women's correctional facility, specialty dental clinics (periodontics, endodontics, prosthodontics, radiology, oral surgery and orthodontics), Special Olympics, hospital based dental clinics, special needs clinics, homeless shelters, senior centers, school-based clinics, retirement centers, private dental offices, children's hospitals, and one participant reports "Global Service Learning" that included providing dental care for 10 days in Jamaica, select students participated.

Sixty five percent report their public health curriculum is highly effective.

Participants were asked how their programs can be improved. The following answers were given: 1) more hours dedicated to public health and 2) additional rotation locations, for example, a children's health clinic that is within public health, hospital/medical based rotations and military/VA clinics. Participants were asked how they can improve their curriculum. The following answers were given: 1) reduction of barriers, specifically, the logistics of setting up rotation agreements, 2) background checks that students must submit for some rotation sites, time for legal review of contracts, which makes it harder to obtain rotations, 3) time. Faculty stated they did not have time to dedicate to all of the above. Lastly, one participant expressed the need for organization.

DISCUSSION

The creation of a strong, well balanced curriculum is essential to the preparation of a well-rounded dental hygienist upon graduation. The education and experiences dental hygiene students receive in school involving preventive programs, and different

public health settings are valuable to the student. Some faculty report feeling “our public health course is very good; many students continue to serve in outreach settings after graduation.” Whereas others report, just not having enough time to dedicate to public health. Results showed that most dental hygiene programs with an associate degree awarded upon completion, report needing/wanting more time to dedicate to public health. This adds to evidence of the need to change the entry level degree from an associate degree to a bachelor degree, which will allow more time to public health education and will also help advance the field of dental hygiene. Some students are exposed to a wide variety of public health settings/rotations that include IHS clinics, nursing homes, special needs clinics, preventive sealant placement programs, and even mission trips and some are not. One participant stated they are located in a “rural area and there is no access.” Overall, faculty work had to provide students with a well-balanced experience regarding public health and preventive programs with the allotted time, resources and funding that is available.

CONCLUSION

There is a need for more curriculum hours dedicated to Public Health Education. There are a variety of public health facilities and preventive programs students are exposed to, some are easier to access than others and some schools have an easier time making rotations available than others. (Factors; time, funding, legalities). Overall, upon completion of public health rotations, faculty for the most part feel students are well prepared. Some faculty wish it wasn't so hard to obtain certain public health rotation sites for students to rotate through, again factors being time, funding and legalities. Some faculty express more time can be used but feel students are exposed enough with the time

allotted associate vs bachelor degree programs. Maybe if the entry level degree went from an associate degree to a bachelor degree, more time to public health education will be available to students and will also help advance the field of dental hygiene.

Appendix A: HRPP Approval Letter



Human Research Protections Program

December 5, 2019

Christine Nathe
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Dear Christine Nathe:

On 12/4/2019, the HRRC reviewed the following submission:

Type of Review: Initial Study
Title of Study: Assessment of Public Health and School Based Health Rotations
in Academic Dental Hygiene Programs
Investigator: Christine Nathe
Study ID: 19-494
Submission ID: 19-494
IND, IDE, or HDE: None

Submission Summary: Initial Study

Documents Approved:

- PDF of survey
- Recruitment email
- Consent
- HRP-583

Review Category: EXEMPTION: Categories (2)(i) Tests, surveys, interviews, or
observation (non-identifiable)

Determinations/Waivers: Provisions for Consent are adequate.
HIPAA Authorization Addendum Not Applicable.

Submission Approval Date: 12/4/2019
Approval End Date: None
Effective Date: **12/4/2019**

The HRRC approved the study from 12/4/2019 to inclusive. If modifications were required to secure approval, the effective date will be later than the approval date. The "Effective Date" 12/4/2019 is the date the HRRC approved your modifications and, in all cases, represents the date study activities may begin.

Because it has been granted exemption, this research is not subject to continuing review.

Please use the consent documents that were approved by the HRRC. The approved consents are available for your retrieval in the "Documents" tab of the parent study.

If the study meets the definition of an NIH Clinical Trial, the study must be registered in the ClinicalTrials.gov database. Additionally, the approved consent document(s) must be uploaded to the ClinicalTrials.gov database.

This determination applies only to the activities described in this submission and does not apply should you make any changes to these documents. If changes are being considered these must be submitted for review in a study modification to the HRRC for a determination prior to implementation. If there are questions about whether HRRC review is needed, contact the HRPO before implementing changes without approval. A change in the research may disqualify this research from the current review category. You can create a modification by clicking Create Modification / CR within the study.

If your submission indicates you will translate materials post-approval of English materials, you may not recruit or enroll participants in another language, until all translated materials are reviewed and approved.

In conducting this study, you are required to follow the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library.

Sincerely,

A handwritten signature in black ink, appearing to read "Thomas F. Byrd". The signature is written in a cursive style with a large initial 'T'.

Thomas F. Byrd, MD
HRRC Executive Chair

Appendix B: Informed Consent

The University of New Mexico Health Sciences Center Consent and Authorization to Participate in a Research Study

Assessment of Public Health and School Based Health Rotations in Academic Dental Hygiene Programs

Dear Prospective Participant,

Researchers at the University of New Mexico are inviting you to take part in a survey. The purpose of the study is to assess the public health, community outreach, and school-based health rotations students participate in during their dental hygiene education. You are being asked to participate in this study because you are a director or faculty of a dental hygiene educational program.

Although you may not get personal benefit from taking part in this research study, your responses may help us understand more about dental hygiene education. If published, results will be presented in summary form only.

The survey/questionnaire will take about 5 minutes to finish. Your involvement in the study is voluntary, and you may choose not to participate. The survey will contain various questions pertaining to public health and community rotations. There are no names or identifying information associated with this survey. You can refuse to answer any of the questions at any time.

There are no known risks to participating in this study.

Your response to the survey is anonymous which means no names will appear or be used on research documents, or be used in presentations or publications. The research team will not know that any information you provided came from you, nor even whether you participated in the study

Your response to the survey will be kept confidential to the extent allowed by law. When we write about the study and its results you will not be identified.

We hope to receive completed questionnaires from every dental hygiene program, so your answers are important to us. Of course, you have a choice about whether or not to complete the survey/questionnaire, but if you do participate, you are free to skip any questions or discontinue at any time.

The data will be stored in the online software system, RedCap. RedCap has safeguards in place for data protection such as password protection and encryption. Please be aware, while we make every effort to safeguard your data once received on our servers via REDCap, given the nature of online surveys, as with anything involving the Internet, we can never guarantee the confidentiality of the data while being transmitted to us.

If you have questions about the study, please feel free to ask; my contact information is given below. If you have questions regarding your legal rights as a research subject, you may call the UNM Human Research Protections Office at (505) 272-1129.

Thank you in advance for your assistance with this important project. To ensure your responses/opinions will be included, please submit your completed survey within two weeks' time. By clicking on the link below, you will be agreeing to participate in the above described research study

Survey Link Here: <https://ctsctrials.health.unm.edu/redcap/surveys/?s=7MMAPTDRCH>

Sincerely,

Christine Nathe RDH, MS

Principal Investigator

Division of Dental Hygiene, University of New Mexico Health Sciences

CNathe@salud.unm.edu

HRRC# 19-494

Appendix C: Recruitment Email

To the Dental Hygiene Program Director,

Ashley Marie Zuni RDH, BS is a graduate student and Master's of Dental Hygiene candidate from the University of New Mexico School of Medicine, Department of Dental Medicine, Division of Dental Hygiene. Ms. Zuni's research is to assess the public health education dental hygiene students are practicing while in school.

Ms. Zuni is asking for participation in a short thirteen question survey. The online survey should take no more than 5 minutes to complete. Participation is voluntary, no response is required if you decline to participate.

Thank you for your consideration,

Ashley Marie Zuni RDH, BS, MS Candidate

505-489-6898

AZuni@salud.unm.edu

Primary Investigator:

Christine Nathe RDH, MS, Professor and Program Director

505-272-8147

CNathe@salud.unm.edu

Appendix D: Survey

Question	Response
1) Please identify your highest educational credential.	A) Bachelor's degree B) Master's degree C) Doctorate Degree (Please identify type of degree: DDS, DMD, EdD. D) Other (Please specify)
2. Please identify the major concentration of your highest degree.	A) Dental Hygiene major/ concentration B) Non-Dental Hygiene major/ concentration
3. How many years of experience do you have in dental hygiene education?	A) 0-5 years B) 6-10 years C) 11-15 years D) 16-20 years E) More than 21 years
4. What type of institutional setting do you work?	A) Community College B) Proprietary School (career college/ technical institute) C) University, dental school D) University, non-dental school E) Other-please specify
5. How many credit hours are in your entire curriculum, including non-dental hygiene requirements?	A) 70-90 B) 91-110 C) 111-130
6. In your curriculum, how many credit hours are specifically dedicated to dental public health?	A) 2-3 hours B) 4-6 hours C) More than 6 hours
7. What degree is awarded upon completion of your entry-level dental hygiene program?	A) Associate of Applied Science in Dental Hygiene B) Associate of Science in Dental Hygiene C) Bachelor of Applied Science in Dental Hygiene D) Bachelor of Science in Dental Hygiene

	E) Other-please specify
<p>8. How many hours of rotations do students have in any of the following areas:</p> <p>A) FQHC B) Public health clinics C) Indian Health Service Clinics D) Head Start/Early Head Start/WIC E) Military Base Clinics F) School Based F) VA Dental Clinics</p>	<p>A) 0 B) 1-5 hours C) 6-10 hours D) 11-15 hours E) 16-20 hours F) More than 21 hours</p>
<p>9. Do students rotate through any of the following setting?</p> <p>Select all that apply.</p>	<p>A) FQHC B) Public health clinics C) Indian Health Service Clinics D) Head Start/Early Head Start/WIC E) Military Base Clinics F) School Based G) VA Dental Clinics</p>
<p>10. When you assess rotation experiences, which do students prefer?</p>	<p>A) FQHC B) Public health clinics C) Indian Health Service Clinics D) Head Start/Early Head Start/WIC E) Military Base Clinics F) School Based G) VA Dental Clinics H) Don't know</p>
<p>11. Do students rotate through any OTHER facilities not listed? If so, please describe.</p> <p>A) FQHC B) Public health clinics C) Indian Health Service Clinics D) Head Start/Early Head Start/WIC E) Military Base Clinics F) School Based G) VA Dental Clinics</p>	<p>Fill in the blank</p>
<p>12. How effective do you think your public health curriculum prepares your students to provide care in a public health setting?</p>	<p>A) Highly effective B) Somewhat effective C) Not effective</p>

13. How can your public health curriculum improve?	Fill in the blank
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