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**Eichhorst, Robin P. *Changes in the Dental Hygiene Profession and the Dental Hygienists Perspectives of These Changes***

**Abstract**

Dental hygienists have traditionally worked under supervising dentists; however, that practice is changing. States have increased settings in which associate -level dental hygienists are permitted to work without direct supervision. Many states are using mid-level dental hygiene providers to expand oral health care to serve more patients populations. The mid-level provider has a restorative scope along with a preventive oral health care scope. Wisconsin's Governor has proposed using mid-level practitioners to reach underserved populations in Wisconsin.

Dental hygienists in the Fox Valley region of Wisconsin were surveyed to determine their level of awareness of changes in the profession. The study found that a low level of knowledge exists between their knowledge of their increased settings they are permitted to practice as well as a low level of understanding that dental hygienists in Wisconsin are allowed to practice in some settings without direct supervision from a dentist. The study also found a low level of knowledge about mid-level providers in dental hygiene. Finally, the study revealed that Fox Valley dental hygienists are interested in learning about resources for practicing in alternative settings. These findings are valuable because dental hygiene instructors and dental community leaders seek to improve education of dental hygiene graduates and dental hygienists in the community.

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## **Chapter I: Introduction**

In the past, licensed dental hygienists provided services to the public under the direct supervision of licensed dentists, but the dental hygiene profession is changing (Delinger, Gadbury-Amyot, Mitchell, & Williams, 2014). Many states are increasing the types of settings where dental hygienists are permitted to provide services to the public without direct supervision from dentists (Delinger et al., 2014). For example, in June 2017, Wisconsin Governor Scott Walker signed legislation allowing dental hygienists to practice in some settings without direct supervision from dentists (“Wisconsin’s Governor Walker Signs Legislation,” 2017). Another change included in many states was the creation of a new provider category: the dental hygiene mid-level provider (Bowen, 2011). The provider has expanded functions, such as small restorations, to be included to the list of approved services within the approved scope of practice for dental hygienists (Bowen, 2011). Mid-level providers are practicing in Minnesota; however, mid-level providers in Minnesota must receive direct supervision from a dentist (Bowen, 2011). The American Dental Hygiene Association (ADHA) designed a mid-level provider, model including a master’s level called the American Dental Hygiene Practitioner (Bowen, 2011). This mid-level model is designed to increase oral healthcare access for underserved populations by allowing dental hygienists to practice without direct supervision from dentist (Bowen, 2011).

### **Statement of the Problem**

The scope of dental hygiene is changing (Delinger et al., 2014). Many states, including Wisconsin, are increasing the number and types of settings in which dental hygienists can provide services without direct supervision from dentists (Bowen, 2011). For example, Minnesota has created a mid-level provider status for dental hygiene called Dental Therapist (DT) and an additional provider category called Advanced Dental Therapist (ADT) (Bowen,

2011). It is not known whether or not significant numbers of dental hygienists in the Fox Valley area of Wisconsin have an understanding that these changes in dental hygiene are occurring in Wisconsin or across the country. Dental hygiene educators and community leaders can benefit from having knowledge of these changes. Consequently, there is a need to determine the level of knowledge about the changing scope of the dental hygiene profession among dental hygienists in the Fox Valley.

### **Purpose of the Study**

The purpose of this study was to be to determine Wisconsin Fox Valley dental hygienists' awareness and understanding of recent changes in the scope of practice regulations for the dental hygiene profession. The following questions were used to guide this research:

1. What knowledge do dental hygienists in the Fox Valley have about the changing scope of the profession? Specifically:
  - a. What knowledge do dental hygienists have about practicing dental hygiene without direct supervision from dentists?
  - b. What do dental hygienists in the Fox Valley area know about the settings where they are allowed to practice independently in the state of Wisconsin?
2. What is the level of understanding of the American Dental Hygiene Association's model of the dental hygiene mid-level provider?
3. What is the level of understanding of the mid-level provider model in practice in Minnesota the DT and/or the ADT?
4. What resources would assist dental hygienists with practicing dental hygiene in alternate settings?



## **Assumptions of the Study**

An assumption of this research is that the Fox Valley dental hygienists answered the survey truthfully. Because the survey was anonymous and the questions in the survey could not incriminate any participant's professional status, assumption of this research is that the Fox Valley dental hygienists answered the survey truthfully,

## **Definition of Terms**

It is important to understand various terms in the dental field. The following terms are terms that were used in this study.

**Advanced Dental Hygiene Practitioner (ADHP).** The model the ADHA created as a mid-level dental hygienist with a master's degree (Bowen, 2011). This practitioner would provide all services a Registered Dental Hygienist (RDH) provides, plus some procedures (Bowen, 2011). This practitioner must have a strong understanding of referral requirement and is not required to work under direct supervision of a dentist (Bowen, 2011).

**Advanced Dental Therapist (ADT).** A mid-level provider in Minnesota that can provide some restorative treatments with direct or indirect dentist supervision, depending on the procedure (Bowen, 2011).

**American Dental Education Association (ADEA).** National organization representing academic dentistry, including students, faculty, staff and administrators from all from US and Canadian schools (Beemsterboer, 2017).

**American Dental Hygiene Association (ADHA).** The largest national organization representing the professional interests of dental hygiene professionals (Beemsterboer, 2017).

**Commission on Dental Accreditation (CODA).** The authorized agency that accredits all dental hygiene (and dental related) programs in the US. CODA publishes standards and

competencies that all dental hygiene programs must meet or exceed in their educational programs (Beemsterboer, 2017).

**Dental Education in the Care of Persons with Disabilities Program (DECOD).**

A special program that prepares dental professionals to meet the challenges of caring for people with significant disabilities (Bowen, 2011).

**Dental Therapist (DT).** A mid-level provider in Minnesota that can provide a scope of restorative treatment with direct or indirect supervision depending on the procedure (Bowen, 2011).

**Dentist (DDS).** A licensed practitioner with a doctoral degree who is skilled in the prevention, diagnosis, and treatment of diseases, injuries, and malformations of the teeth, jaws, and mouth and who makes and inserts false teeth (Mosby's Medical Dictionary, 2009).

**Extended Care Permit (ECP).** A warrant that allows a dental hygienist in Kansas that can provide services to patients in nursing homes and schools in unserved or underserved areas (Delinger et al., 2014).

**Independent Practice Dental Hygienist (IPDH).** A dental hygienist level practitioner in Maine that can provide services to patients in nursing homes and schools in unserved or underserved areas (Vannah, McComas, Taverna, Hicks, & Wright, 2014).

**Inter-professional Education (IPE).** A training model that facilitates collaborative learning among members of two or more professions (Nojoumi, Essex, & Rowe, 2016).

**Nurse Practitioner (NP).** A mid-level provider in the nursing health field that has earned at minimum, a master's degree ("Nurse Practitioner," 2018).

**Physician's Assistant (PA).** A mid-level provider in the medical field that has earned, at minimum, a three-year Master of Science in Physician Assistant Studies ("Nurse Practitioner," 2018).

**Registered Dental Hygienist (RDH).** State licensed dental hygienists that are skilled health specialists whose primary concerns are nonsurgical periodontal therapy, maintenance of dental health, and prevention of oral diseases. Patient education is a major responsibility of the dental hygienist. In most states, a dental hygienist must work under the general supervision of a licensed dentist (Mosby's Medical Dictionary, 2009).

**Special Care Advocates in Dentistry Association (SCADA).** An organization dedicated to promoting well-being and oral health for people with special needs (Bowen, 2011).

### **Scope and Application**

The population of this study was limited to dental hygienists in the Fox Valley area in Wisconsin, which limits generalizing of the results. Other areas and states would need to conduct similar surveys to draw conclusions about their local dental hygienists' level of understanding of their changing roles in the profession. This information will, however, benefit dental hygiene educators in the Fox Valley and, to a degree, all dental hygiene programs in the state of Wisconsin.

### **Methodology**

A research-developed survey was used to collect the data for this study. The population included dental hygienists in the Fox Valley area of Wisconsin who completed brief surveys to identify their understanding of the changing scope of the dental hygiene profession. Open-ended questions were employed to elicit responses regarding their understanding of the increased

settings in which Wisconsin dental hygienists can practice without direct supervision from dentists.

## **Chapter II: Literature Review**

The dental hygiene profession is changing. Legislators in many states are looking to the dental hygiene profession to fill a national access to oral health care deficit highlighted by the surgeon general (Delinger et al., 2014). Dental hygienists historically provided services under the direct supervision of licensed dentists, but that practice is changing (Delinger et al., 2014). This literature review details the dental hygiene profession and the changes that are occurring. It also provides examples from different states of these changes to the dental hygiene profession.

### **Dental Professions**

The two dental professions addressed in this thesis include dental hygienists and dentists. These two professions represent professionals in dentistry that address oral health for the public. Both dental hygienists and dentists are required to graduate from accredited programs, pass licensing boards exams, and meet continuing education requirements to receive the bi-annual license renewals.

The public interest is a priority of the CODA (2018). The curricula of registered and licensed hygienists registered dentists, is regulated by the CODA. Dental hygiene and dental programs in every US college must have site visits and each instructor/professor needs to prove the curriculum is congruent with the competencies and learning objectives required by CODA. Since 1952, the U.S. Department of Education (DOE) has given CODA accreditation authority for dental and dental-related education. The (DOE) reviews CODA every five years. CODA maintains the standards for the dental professions and the safety of the US American public. Research is ongoing and, according to CODA, meeting current patient care standard relevant to optimal patient care is an important standard to uphold.

Dentists are the professional experts who study the art and science of tooth restorations. They are also experts in treating missing teeth and are trained in fabrication of prosthetic devices, both fixed and removable. With additional education, dentists can expand their scopes of their profession to include, for example, periodontics and orthodontics.

Dental hygienists are the practitioners who are skilled in providing preventive services. Dental hygienists must understand the relationships between gum disease and tooth decay, in addition to understanding the patients/clients with whom they work with. Dental hygienists must attach value to proper homecare techniques and tailor that practice for each patient.

The dental hygienist profession has an interesting history. It became a recognized profession in 1907 with the discovery of bacteria as the culprit for dental decay and gum disease, both of which lead to tooth loss (Lehman, 2011). The first dental hygienists provided oral health services to local students and patients in Connecticut (Lehman, 2011). This highly specialized health care profession was growing, and dentists at the time grew concerned that dental hygienists' duties could expand (Milling, 2010). In 1915, dental practice acts in some states began to create regulations limiting the scope of dental hygiene practice by requiring that hygienists be supervised by dentists (Milling, 2010). Dentists have remained the hiring entities and supervisors for dental hygienists since this time. Most services provided by dental hygienists may only be provided under dentist supervision; however, evidence in this thesis suggest the practice is changing.

Changes have occurred since the early 1900s across all health fields and dentistry has been no exception. Evidence-based research, specialized products, meaningful protocols and technology have sparked these changes, with patient benefit being the catalyst.

## **Dental Hygiene Profession**

The scope of a dental hygienist varies by state (Beemsterboer, 2017). The dental hygiene practice includes therapeutic services such as assessments, preventive care and other clinical services. Particular functions depend specifically on the hygienist licensing state, but basic functions typically performed by dental hygienists include removal of deposits and accretions from both above and below the gum tissue (Beemsterboer, 2017). Removal of deposits and accretions also involves scaling, root planing, and polishing the teeth (Beemsterboer, 2017). Application of fluoride treatments, along with pit and fissure sealants, are included in the basic dental hygiene scope of practice (Beemsterboer, 2017). Dental hygiene exams and charting of oral conditions, along with exposing and referencing radiographs, are also included in the scope of basic dental hygiene (Beemsterboer, 2017). The dental hygiene scope of practice has been changing over the past years. This literature review will address some reasons for these changes.

An important definition of the dental hygiene profession was written for the ADHA referencing the landmark white paper, “Transforming Dental Hygiene Education and Profession for the 21<sup>st</sup> Century” (2015). The white paper offers insights into the changes that are taking place in the dental hygiene profession and the dental hygiene education delivery system (Fehrenbach, 2018). The white paper established the fact that a dental hygiene diagnosis is a comprehensive component of a dental diagnosis (Fehrenbach, 2018).

In order to meet the individual needs of every patient, there are six components of the dental hygiene process of care (Fehrenbach, 2018). The dental hygienist professional must understand the science and practice of recognition, treatment, and prevention of oral diseases for the public (Fehrenbach, 2018). The first component is assessment, which involves assessing the oral and general health status, including patient needs (Fehrenbach, 2018). Each person must be

assessed for oral risk diseases or complications (Fehrenbach, 2018). Methods used in assessment include reviewing the patient's health history, taking and reviewing radiographs, reviewing dental history and using assessment instruments (Fehrenbach, 2018). The dental hygiene diagnosis includes identifying existing or potential oral health problem that a licensed dental hygienist can treat (Fehrenbach, 2018). The dental hygiene diagnosis requires analysis of all assessment data (Fehrenbach, 2018). The dental hygienist must use critical thinking skills to reach proper conclusions (Fehrenbach, 2018).

The next component of the dental hygiene process is planning (Fehrenbach, 2018). Planning involves establishing goals and outcomes with consideration of each patient needs, values, and expectations, all related to assessment findings and dental hygiene diagnosis (Fehrenbach, 2018). The dental hygiene treatment plan is integrated into the overall treatment plan for the patient (Fehrenbach, 2018). Implementation is the next component of the dental hygiene process (Fehrenbach, 2018). This component involves delivery of dental hygiene services based on the hygiene care plan, with the idea of minimizing risk and optimizing health (Fehrenbach, 2018).

The fifth component of the dental hygiene process is evaluation (Fehrenbach, 2018). Reviewing and documenting the outcomes of dental hygiene care is an important part of the process of care (Fehrenbach, 2018). The documentation is also an essential part of total patient care (Fehrenbach, 2018). The documentation must be accurate, including information about the treatment plan and goals (Fehrenbach, 2018). Recommendations must also be provided regarding continuing patient care (Fehrenbach, 2018). The dental hygienist must circle through these steps multiple times depending upon how the patient presents for every hygiene visit. That is why the dental hygiene process is sometimes described as a revolving door in nature (Fehrenbach, 2018).



The private dental practice model demonstrates how supervised dental hygiene care is delivered. The patients are scheduled for hygiene visits and, at some point during the visit the dentist comes into operatory to provide an examination of the patient's oral cavity. The hygienist works chair side and debriefs the dentist based on the assessments. The dentist reviews clinical or radiographic findings and makes decisions regarding whether or not the patient needs restorations or referrals. In a proactive dental setting, hygienist and dentist support one another's findings and recommendations. The ideal scenario for public interest is that dental hygienists work collaboratively with dentists to provide optimal comprehensive patient care (Fehrenbach, 2018).

### **Dental and Dental Hygiene Programs in Wisconsin**

In the state of Wisconsin, Marquette University in Milwaukee (MU), is one dental program that graduates dentists. Marquette University graduated its last dental hygiene program class in spring of 2004 (Kwidzinska, 2004). MU's dental hygiene program began in 1923 as a one-year curriculum. By 1975, MU's dental hygiene program was a four-year Bachelor of Science in Dental Hygiene (BSDH) degree (Kwidzinska, 2004). The administration at MU found that most dental hygiene programs were offered as two-year associates degrees at technical colleges (Kwidzinska, 2004). The university did not want to change the four-year curriculum; consequently, it decided to close the program (Kwidzinska, 2004). The dental hygiene program was suspended while new curriculum was being established in the dental program and the new dental school was being built at Marquette University (Kwidzinska, 2004). Wisconsin currently has seven dental hygiene programs; they are offered at technical colleges at an associate degree level.

## **Dental Hygiene, a Changing Scope**

Currently there are 335 entry-level dental hygiene programs across the US (DH Fact Sheet). Two hundred eighty-eight of these programs are offered as an associate -degrees, and 56 being offered as BSDH degrees (DH Fact Sheet). There are also a few certificate programs (DH Fact Sheet). According (ADEA), there are 50 bachelor's degree completion and 16 master's degree programs with dental hygiene as a major (Carpenter, Lazar, Essex, Davis, & Rowe, 2018). There are 45 BS degree completion programs that have articulation agreements with community and technical colleges (DH Fact Sheet). The American Dental Hygiene Association (ADHA) reported a 2% decrease in the number of students enrolled in degree completion programs and a 16% decrease in master's degree enrollment from 2009-2013 (Smith, Boyd, Rogers, & Le Jeune, 2016). These trends are not consistent with the future needs of the changing healthcare workforce.

Entry-level graduates at the associate level were considered sufficient in the 1950s but providing optimal comprehensive patient care today is more complex (Portillo, Rogo, Calley, & Cellucci, 2013). Two-year associate degrees average approximately 84 credits (DH Fact Sheet). Existing associate degree curriculum is overcrowded and dental hygiene educators are hard pressed to incorporate new content and techniques necessary to meet growing demands in oral health care (Portillo et al., 2013).

In recent years, the Wisconsin's technical colleges have added robust course objectives to the curriculum for the dental hygiene programs. According to Valarie Voegtline, the Process 4 lead instructor for the (FVTC) Dental Hygiene program, coursework regarding local anesthetic was added to the curriculum in 2002 and Nitrous Oxide and LASER pocket decontamination were added to the curriculum in 2016 (V. Voegtline, personal communication, July 12, 2019).

An example of a former FVTC dental hygiene graduate needing clarification of services she was providing in a dental office demonstrates an example dental hygiene associate level has challenges with its robust content in curriculum. A recent graduate of the FVTC dental hygiene program was questioned from her new colleagues in private practice concerning the existence of her certificate for providing LASER pocket decontamination (V. Voegtline, personal communication, July 23, 2018). The graduate was unable to recall and explain to the office staff that new hygienists graduating in Wisconsin achieve this skillset in the regular curriculum and no longer need to present a certificate (V. Voegtline, personal communication, July 23, 2018).

The same graduate's dental office also told her she needed to provide LASER pocket decontamination with an initiated tip (V. Voegtline, personal communication, July 23, 2018). She remembered always using uninitiated tips in her training, so she questioned FVTC Process 4 team leader about this important concept as well (V. Voegtline, personal communication, July 23, 2018). The graduate was able to confirm that the use of uninitiated tips in bacterial reduction is now the accepted procedure to reduce bacteria. The graduate was reminded that initiated tip will cause actual cutting of the tissue, which is not within the scope of dental hygiene (V. Voegtline, personal communication, July 23, 2018).

Another question from the recent graduate that related to hand instrumentation for implants. Current textbooks and resources state that using plastic instruments for sub-gingival plaque/calcified deposit removal is appropriate for implants (V. Voegtline, personal communication, July 23, 2018). However, very recent evidence indicates that the use of titanium instruments is the standard of care (V. Voegtline, personal communication, July 23, 2018). The graduate was questioned by her colleagues about her thoughts on this concept and reported that she again felt a level of uncertainty (V. Voegtline, personal communication, July 23, 2018).

Understanding that these concepts are technical, vital, and rich in context suggests that perhaps, the associate degree level for dental hygiene may be insufficient in meeting all course objectives to the required standard. Evidence suggests that more knowledge and an increased skillset is needed to meet the demands of an increasingly aging and diverse population (Portillo et al., 2013). Preparing students for higher understanding, critical thinking, and knowledge of our aging population and populations with special or alternative needs may be challenging within the confines of the associate degree program. Baccalaureate programs offer more clinical clock hours related to patient care (DH Fact Sheet). Also, baccalaureate programs include more instruction in written communication, oral health education/preventive counseling, and patient management (DH Fact sheet).

Another factor that may influence requirements for dental hygienists is the increasing need for dental hygiene faculty (Gwozdek, Springfield, Peet, & Kerschbaum, 2011). Some programs require a minimum of a baccalaureate degree in order to teach dental hygiene (Gwozdek et al., 2011). According to research conducted by Sensabaugh, Mitchell, Overman, Van Ness, & Gadbury-Amyot, 47% of DH program respondents reported a requiring of a master's degrees for full-time faculty appointments. The increased need for dental hygiene faculty in dental hygiene is due to the increase in dental hygiene programs across the US along with the fact that many current dental hygiene faculty members are approaching the retirement age (Sensabaugh et al., 2016).

The clinical role of today's dental hygienist has expanded (Portillo et al., 2013). The role includes being an advocate for oral health and having the ability to be an administrator and manager (Portillo et al., 2013). There is also a need for researchers in a variety of settings

(Portillo et al., 2013). This is a critical time for dental research because many changes are occurring, and states legislators are trying to find solutions to increase access to oral health care.

Internationally, there has been a decrease in associate degree entry-level dental hygiene programs (Smith et al., 2016). The trend is moving toward requiring a bachelor's degree for entry-level dental hygiene positions (Smith et al., 2016). In 2013, the University of Namseoul in South Korea launched its first PhD program in dental hygiene (Smith et al., 2016). This level of education establishes dental hygiene as a fully qualified profession (Smith et al., 2016).

Idaho State University (ISU) has a PhD in dental hygiene program and is ready to be launched and promises to be 100% online according to JoAnn Gurenlian (J. Gurenlian, personal communication, July 18, 2019). Dr. JoAnn Gurenlian is a professor and Graduate Program Director at (ISU) in the Department of Dental Hygiene, (ISU) recognizes need to develop a mid-level dental hygiene program at this time (J. Gurenlian, personal communication, July 18, 2019).

### **National Problem, Legislative Solutions**

In May 2000, the US Surgeon General wrote a ground-breaking report regarding oral health in the US ("Oral Health," 2013). The main message of the report was that oral health means more than healthy teeth ("Oral Health," 2013). Oral health is important for the general health and well-being of all US Americans ("Oral Health," 2013). The report also stated that oral health must be included in health care for the general public and in community service health care programs ("Oral Health," 2013). Other points in the Surgeon General's report include the importance of maintaining oral health and the prevention of oral diseases ("Oral Health," 2013). The report contained a framework for action, which included accelerating the building of the science and evidence base to improve oral health ("Oral Health," 2013). Building an oral health

infrastructure to meet the oral health needs of all US Americans was a strong theme of the report (“Oral Health,” 2013).

Legislative bodies across the country have developed different solutions to the national problem addressed by the Surgeon General’ report (“Oral Health,” 2013). Data show that the number of dentists is decreasing across the country and the ratio of dentists to patients is declining (Delinger et al., 2014). The result is that states have populations of people who are unserved or underserved for oral care (Delinger et al., 2014). Legislators have been turning to the dental hygiene profession to improve access to the preventive and therapeutic services that hygienists can provide.

In 2017, Wisconsin’s then Governor Scott Walker signed legislation allowing dental hygienists to practice in more settings with fewer restrictions in (“Wisconsin’s Governor,” 2017). The new law allows dental hygienists to work in several settings without supervision or authorizations from dentists (“Wisconsin’s Governor,” 2017). These settings include, but are not limited to, hospitals, medical clinics, group homes, correctional facilities, shelters, nursing homes, and day care centers (“Wisconsin’s Governor,” 2017). This less-restrictive dental health provider legislation was supported by several professional affiliations, including: Wisconsin Dental Hygiene Association (WDHA), Wisconsin Dental Association (WDA), Wisconsin Public Health Association (WPHA), and Wisconsin Oral Health Coalition (WOHC) (“Wisconsin’s Governor,” 2017).

Improving access to the preventive and therapeutic dental services hygienists provide was the primary objective of Wisconsin’s 2017 legislation (“Wisconsin’s Governor,” 2017). Dental diseases are almost 100% preventable (“Wisconsin’s Governor,” 2017). The dental hygiene profession’s main focus is prevention of oral diseases (“Wisconsin’s Governor,” 2017). The

President of the Wisconsin Dental Hygienists' Association, Jennifer Martinson stated, "Removing unnecessary barriers to preventive oral care just makes sense. Licensed dental hygienists in Wisconsin look forward to providing their services without restrictive supervision and we thank all those who recognize that value and supported this legislation. Our goal is to improve health and the quality of life especially for people who may have difficulty accessing dental care in other ways." ("Wisconsin's Governor," 2017).

Kansas addressed limited access to oral health care by creating the (ECP) DH (Delinger et al., 2014). An ECP DH can provide preventive services to nursing homes and schools independently (Delinger et al., 2014). The locations must be approved as facilities for unserved or underserved populations (Delinger et al., 2014). ECP DH must also have an agreement with a sponsoring dentist (safety net dentist) (Delinger et al., 2014). Patients must qualify for these services and appropriate paperwork must be filed (Delinger et al., 2014). One barrier to this model are services are not paid directly to the dental hygienists (Delinger et al., 2014). Services are paid to sponsoring dentists through Medicaid funds or by the facility (Delinger et al., 2014). Kansas ECP DHs have formed partnerships with facilities, but can only provide preventive care (Delinger et al., 2014). Children or clients with urgent need for restorative care are not being served and this has been a source of great frustration (Delinger et al., 2014). Some states have chosen to allow funds to be dispersed directly to the dental hygienists through Medicaid rather than through the sponsoring dentist or the facility (Delinger et al., 2014).

State budgets affect the funding of dental care, which can be another barrier if few funds are allocated for oral health care (Delinger et al., 2014). Grant funds are generally used to purchase the start-up equipment needed to provide dental hygiene services (Delinger et al., 2014). Another barrier is a lack of understanding regarding ECP by dentists (Delinger et al.,

2014). This lack of understanding has been a barrier in finding sponsoring dentists and finding dentists willing to provide restorative care (Delinger et al., 2014). Some ECP DHs have developed partnerships and acquired grants for ongoing fluoride and sealant programs for schools (Delinger et al., 2014).

In 2014, Maine passed a bill allowing the (IPDH), which is Maines version of a model in which dental hygienists provide care for unserved or underserved that IPDHs can receive reimbursement directly from Maine Care (Medicare) (Vannah et al., 2014). To acquire IPDH licensure there is no required course beyond the registered DH licensure education requirement (Vannah et al., 2014). The responsibility to obtain the training necessary for a dental hygienist to succeed outside the private practice setting is the dental hygienist responsibility (Vannah et al., 2014). According to a survey in Maine, dental hygienists who are IPDH report that their educations were inadequate to prepare them for a skillset outside of private practice (Vannah et al., 2014). They report that their education fell short in providing exposure to alternate practice settings (Vannah et al., 2014).

Other results of the survey include that IPDHs did not receive enough training related to public interest (Vannah et al., 2014). IPDHs stated that extramural internships would have been beneficial (Vannah et al., 2014). They stated that additional exposure collaborating and integrating with dental students and treatment planning activities would assist them in planning treatment referrals (Vannah et al., 2014). According to the survey, business courses would also be beneficial (Vannah et al., 2014). IPDHs collect fees for services from Maine Care and essentially own their own businesses (Vannah et al., 2014). Besides exposure to diverse underserved population groups, the skill of cultivating strong communication skills was also highlighted (Vannah et al., 2014).



Currently, 39 states have policies that allow dental hygienists to work in community-based settings to reach the unserved and underserved (“Facts about the Dental Hygiene Workforce,” 2016). These hygienists are allowed to provide preventive services without direct supervision of a dentist (“Facts about the Dental Hygiene Workforce,” 2016). States that have made changes to allow Medicaid to directly reimburse dental hygienists are Arizona, California, Colorado, Connecticut, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Mexico, Oregon, Rhode Island, Vermont, Washington, and Wisconsin (“Facts about the Dental Hygiene Workforce,” 2016). Providing much-needed preventive services to the unserved and underserved is beneficial; however, restorative services are an issue.

(ADHA) has developed a mid-level DH model (ADHP) (Bowen, 2011). This model requires a master’s degree from an accredited institution (Bowen, 2011). The ADHP would be state licensed and regulated (Bowen, 2011). The settings this level of dental hygiene would serve are community, public health, and possibly, private practice (Bowen, 2011). The proposed supervision of this role would be a collaborative arrangement with dentists (Bowen, 2011). ADHP role would also need strong communication skills and referral networks (Bowen, 2011). The presence of a supervising dentist is not necessary in this model (Bowen, 2011). The use of tele-dentistry is one proposal (Bowen, 2011).

The current scope of a dental hygienist is preventative, but an ADHP would increase the scope of his or her work to include restorative practices (Bowen, 2011). The restorative scope would include preparation and restoration of primary and permanent teeth, placing temporary and preformed crowns, and temporary re-cementation of restorations (Bowen, 2011). The ADHP scope would also include pulp capping in primary and permanent teeth, along with pulpotomies on primary teeth (Bowen, 2011). Uncomplicated extractions, along with placing and removing

sutures, would also be included in an ADHP's scope, as well as providing simple repairs and adjustments to removable prosthetic devices (Bowen, 2011). An additional competency within an ADHP's scope includes a limited prescription authority for prevention, infection, and pain control (Bowen, 2011). Case management and triage competencies would be required (Bowen, 2011). Health care policy, advocacy, and promotion are also considered under the scope (Bowen, 2011). Finally, ADHPs would be responsible for patient referrals (Bowen, 2011).

Minnesota was the first state to develop mid-level programs for dental hygiene, the DT and ADT (Bowen, 2011). The programs began in fall 2009, with initial graduates entering the workforce in mid-2011 (Bowen, 2011). Minnesota's mid-level dental hygiene program includes some of the restorative treatment suggested in the ADHP model but requires more general or indirect supervision of a dentist, depending on the procedure (Bowen, 2011).

The Minnesota model is an encouraging advancement for the dental hygiene profession; however, having a supervising dentist for expanded scope of practice removes autonomy for DTs and ADTs. Also, requiring a DT or ADT to rely on supervision from a dentist may be a barrier for reaching the unserved and underserved populations needing this care.

An examination of the models for mid-level providers in the health field can provide possible models for the dental profession. While state laws vary, nursing practitioners generally are not required to maintain collaboration with physicians ("Nurse Practitioner," 2018). In some states, physician assistants are required to work under some form of collaborative agreement with a physician; however, research suggests that this standard is changing, and physician assistants will be granted more autonomy ("Nurse Practitioner," 2018).

## **Summary**

The purpose of this study is to examine changes in the dental hygiene profession related to the scope of practice. Understanding the changes in the scope of practice of the dental hygiene profession and studying how it varies across states and other countries offers some insight into the expected future trends of the profession. It is useful to know whether or not local dental hygienists are aware of the changes to the scope of practice of the dental hygiene profession. Dental hygiene educators and community leaders will benefit from this knowledge so increased access to oral healthcare for the general public can be implemented. Local dental hygienists can benefit from this information so they can increase opportunities for their career.

### Chapter III: Methodology

The literature review highlighted the common themes of changes in the dental hygiene profession and raised a question regarding whether or not licensed dental hygienists are aware of these changes. The purpose of this study was to describe the understanding of Fox Valley dental hygienists related to the changing scope of the dental hygiene profession. The specific research questions this survey aimed to address were:

1. What knowledge do dental hygienists in the Fox Valley have about the changing scope of the profession? Specifically:
  - a. What knowledge do dental hygienists have about practicing dental hygiene without supervision from dentists?
  - b. What do dental hygienists in the Fox Valley area know about the settings in which they are allowed to practice independently in the state of Wisconsin?
2. What is the understanding of the American Dental Hygiene Associations model of the dental hygiene mid-level provider?
3. What is the understanding of the mid-level providers that already exist in Minnesota, the Dental Technician and/or the Advanced Dental Technician?
4. Is there an interest in resources that are available to dental hygienists that could assist with practicing dental hygiene in alternate settings?

In this chapter, the subject selection is identified and explained. The instrument is defined, and the data collection procedure is detailed. The six-step data analysis process is explained. Finally, limitations are addressed.

## **Subject Selection and Description**

The population surveyed in this study is made up of current licensed dental hygienists in Wisconsin's Fox Valley area. Limiting the survey to dental hygienists in the Fox Valley is beneficial for local technical colleges to achieve a greater understanding of the level of understanding of local practicing dental hygienists regarding changes in the profession. A convenience sampling was used. A convenience sampling is also known as availability sampling (Dudovisky, 2019). This type of sample is used in business to elicit information such as perception of image or brand (Dudovisky, 2019). Access to the population was provided by a dental study club in the Fox Valley area. An email list was provided that could only be used for academic purposes.

## **Instrumentation**

A simple survey with nine questions and a final comments or concerns area was employed for this study. The survey was composed of open-ended questions in an unstructured response format with three of the questions being single-option variable questions. The open-ended questions had space for respondents to add comments. Qualtrics is an online survey tool that was used to collect the data.

A pilot study was conducted using two participants who were not included in the final study. The two participants in the pilot study were each emailed a copy of the instrument. The pilot study also asked how long the survey took to complete, so that information was available to share with the study group. Recommendations from the pilot were implemented into the final draft of the survey. A copy of the survey can be found in Appendix A.

## **Data Collection Procedures**

The survey was formatted using Qualtrics. An email was sent to dental hygienists along with an introduction of the study. A copy of the email can be found in Appendix B. Once the hygienists clicked on the link to the survey, an implied consent page appeared. A copy of the implied consent form can be found in Appendix C. Surveys were emailed to 286 dental hygienists in the Fox Valley area. The survey was open for two weeks and the closing date was posted in the emails. Participants were given an approximated amount of time required to complete the survey. A reminder email was also sent after the initial email with the link to the survey. A copy of the email reminder can be found in Appendix D. Finally, a thank you email was sent to participants. A copy of the thank you email can be found in Appendix E.

## **Data Analysis**

A six-step process was used to conduct the analysis of the data. The first step was to become familiar with the data by reading the data, and taking some notes, and recording early impressions (Maguire & Delahunt, 2017). The second step was to generate initial codes to the data that captured relevant or interesting data (Maguire & Delahunt, 2017). After the preliminary coding was done, themes were examined (Maguire & Delahunt, 2017). The third data analysis step was to search for themes (Maguire & Delahunt, 2017). The fourth step was to review the themes (Maguire & Delahunt, 2017). The data were also grouped relevant to each theme in the fourth step (Maguire & Delahunt, 2017). The fifth step was defining the themes and identifying the essence of each theme (Maguire & Delahunt, 2017). A thematic map was created for this step (Maguire & Delahunt, 2017). The final step was to write the results (Maguire & Delahunt, 2017).

**Limitations**

There were several limitations to this study, including the fact that some dental hygienists may have been too busy to fill out the survey. Another limitation may be that the two-week time frame may have been too short to give respondents time and opportunity to complete the survey. Some hygienists may not have checked their email accounts and may have therefore missed the email with the survey attachment. Another limitation may have been having incorrect emails for some hygienists.

**Summary**

In summary, the survey instrument was put into Qualtrics along with the informed consent form. An email with the Qualtrics link was sent to dental hygienists in the Fox Valley area. A reminder email was sent followed by a thank you email. A six-step process was used to analyze this data.

## **Chapter IV: Results**

A survey was conducted to gain information from Fox Valley dental hygienists to determine their perceptions about the changing scope of the dental hygiene profession. The online survey began with two direct questions followed by eight open-ended questions with a prompt to provide an explanation. A final category provided a place for participants to add comments. This chapter will discuss the results of the survey, organized by the research questions used to guide the survey development.

### **Demographics**

Two hundred and eighty-six emails were sent out to dental practices and dental hygienists in the Fox Valley area. Forty-four dental hygienists consented to participate in the survey, of the 44 consenting hygienists, 25 hygienists completed the survey. This is a 9% percent response rate.

The survey began with a demographic question related to how much experience each respondent has as a registered dental hygienist. The range of years of experience for the 25 dental hygienists was 7-48 years. More specifically, six respondents have been dental hygienists for less than 10 years. Six respondents have been dental hygienists for 10-20 years. Of the 25 respondents, five have been dental hygienists for 21-30 years, four respondents have been dental hygienists for 31-40 years, and four respondents have been dental hygienists for 41-48 years.

The survey also included a demographic question related to level of education. Slightly more than half (14/25) of the respondents have associate degrees in dental hygiene. Two of the respondents have associate degrees and are currently working toward a bachelor's degrees. Seven of the 25 respondents reported having a bachelor's degrees. Finally, two respondents have master's degree.



The final survey demographic question was about membership in professional ADHA. Six out of 25 respondents stated that they are members of ADHA. Of the six individuals, five had education levels of bachelor's degree or higher. Only one respondent had an associate degree and is an active member of ADHA.

### **Knowledge Fox Valley Dental Hygienists Have About Changing Scope**

A survey question asked participants to list the settings in which, according to Wisconsin's regulations, dental hygienists are allowed to practice without direct supervision from dentists. Almost half of the respondents, 12 out of 25, listed nursing homes, schools, daycare centers, correctional facilities, and general economically disadvantaged population centers. Seven out of 25 respondents stated schools for screening purposes. Four out of 25 respondents stated that there are no settings in which a Wisconsin dental hygienist can practice without a supervising dentist, or without a dentist prescription, or if the patient has been seen by the dentist in the past twelve months. Finally, two of the respondents selected unsure.

For the survey question, "*What concerns do you have about practicing in alternative settings? Please explain,*" about half of the respondents, 12 out of 25 respondents, reported having no concerns about practicing in alternative settings. One respondent stated that dental hygiene education has prepared him or her for the clinical tasks, but he or she stated that more is needed to address the business side for dental hygienists working in alternative settings. Three out of 25 respondents expressed concern about liability. Five out of 25 respondents expressed concerns with quality of care. One respondent stated, "If something unexpected comes up and the fix requires dentist to address, this may be quite inconvenient for the patient." Another respondent stated, "My only concerns would be that the dental hygienists practicing have sound skills and appropriate education and experience to manage patients without the supervision of a

dentist. Many are high risk medically compromised patients within these settings and we as dental hygienists would need to know how to safely manage them, especially in the event of an emergency.” Another respondent expressed concern for patients needing radiographs and for patients needing full exams from dentists. Another respondent expressed concern about restricting dental hygienists from practicing to the full scope of training and licensure.

In response to the research question, *“What strengths do you have to practice in alternative settings? Please explain.”* 20 out of 25 respondents cited experience, education, and knowledge as being strengths they encompass to practice dental hygiene in alternative settings. Other respondents cited specific qualities such as CPR training and certification to provide local anesthetic to patients. One respondent stated, “We are first line educators and problem solvers. I think hygienists are very adaptable to different settings and our work can be extremely mobile.” Another respondent stated, “I can recognize ‘obvious decay’ and stress the need for additional dental care. I place hundreds of sealants annually. Oral health education is stressed to every patient.” According to another respondent, “We may practice in an alternative setting but need to have a strong connection to the dental community to provide the patient with comprehensive dental care.”

### **Understanding the American Dental Hygiene Associations Model of DH Mid-level Provider**

According to the survey results, most of the respondents that participated in this study are not members of the American Dental Hygiene Association. Only six of 25 respondents are active members of ADHA. It is not known why the respondents are not members of ADHA as this study did not elicit that information.

In response to the survey question, *“Describe your understanding of the mid-level provider model developed by the ADHA”* 11 out of 25 respondents selected “not a clue” to “very

minimal”. Fourteen respondents had an idea that this role requires more education and includes ability to perform simple restorations and other specific minor invasive dental procedures. These respondents also expressed that this mid-level provider is similar to a nurse practitioner who can diagnose as well as refer treatment that is not within the mid-level provider scope.

### **Understanding of Mid-level Provider That Already Exists in Minnesota**

In response to the survey question, “*Describe your understanding of the mid-level provider in Minnesota,*” about half, 13 out of 25 respondents reported that they did not know anything about this type of provider. The other half, 12 out of 25 respondents did have some understanding that this role exists. The 12 respondents stated that they knew more education and training was needed for this role. They also report knowing that this role is an expanded function of the traditional dental hygienist and this provider can diagnose as well as perform simple extractions and simple fillings.

### **Resources Available to Assist with Practicing Dental Hygiene**

In response to the survey question, “*List or explain resources you use to access current information about dental hygiene profession.*” continuing education including events, seminars and conventions appeared nine times on respondents’ lists. Professional affiliation including ADHA and Wisconsin Dental Hygiene Association also appeared nine times on respondents’ lists. Online education resources including websites appeared eight times on respondents lists. The respondents listed magazines and articles seven times on their lists of resources they use. Four respondents listed colleagues or word of mouth as resources they use. Three respondents listed the state licensing board as a way they access information about the dental hygiene profession. Social media and hygiene chat groups were listed two times as a way to access information. Two respondents reported using sales representatives for accessing information

about the dental hygiene profession. Finally, two respondents reported that they use no resources to access information about the dental hygiene profession.

### **Resources of Interest to Assist in Practicing Dental Hygiene in Alternative Settings**

In response to the survey question, *“What type of education and or resources would interest you that could assist you in practicing dental hygiene in alternate settings,”* five of 25 respondents are not interested in practicing in alternative settings. One respondent reported being near retirement. Another respondent reported being happy with how things are. Two respondents simply stated they have no interest in practicing in alternate settings. Another stated, “I heard we would need our master’s degree. With only having my associate degree and having kids about ready to head to college, this seems daunting.” Twenty respondents, however, expressed varying interest in continuing education events to understand this practice further. Fourteen of the 25, which is over half of the respondents, expressed a desire for continuing education to understand more about practicing in alternative settings. Events pertaining to the business side of practicing in alternative settings was mentioned. Three of these respondents mentioned having a higher sense of the business side of things would be helpful. Another mentioned understanding how grants work would be beneficial. A respondent mentioned that reimbursement for service is the problem and eliminating separate medical and dental insurance would solve some or part of this problem. One respondent mentioned working in the prison system as a dental hygienist and said he or she would embrace the opportunity of assisting with access to care in alternative settings. Finally, one respondent mentioned an interest in studying public health administration.

### **Other Comments**

The last question on the survey was just a spot to add any comments. Five of the 25 respondents provided comments. One respondent stated “Fifty years ago this model was what

was being trained in hygiene school. Organized dentistry put the kibosh on it then and continues to try to sideswipe it now. I am too old to put the time into doing it now but feel it is the wave of the future—Nurse Practitioners, Dental Practitioner would be my preferred title for this profession”. Another comment was “Everything takes so long to pass in legislature.” This respondent also stated concern for dental hygienists having access to gain the additional education. Another comment from a respondent was, “I have tried numerous times to work in different settings and found the availability to be quite small. I am hoping with expansion of settings more avenues and more jobs will open up for us to work outside of private practice settings.” Another respondent stated, “Dental Hygienists in Wisconsin need to support their profession by being a member of WDHA if we ever want a mid-level provider here in Wisconsin. There’s power in numbers and we don’t have the numbers.” Finally, a respondent expressed wishing he or she finished bachelor’s degree years ago and stated, “Knowing then what I know now I would be in such a different position to further my career.”

### **Summary**

This chapter provided a breakdown of the survey responses for this study. The main themes from the survey were related to Fox Valley Dental Hygienists’ knowledge about the changing scope of the dental hygiene practice. Another theme from the survey was related to the level of awareness and understanding of the ADHA model of the mid-level provider and the mid-level provider that already exists in Minnesota. Resources that dental hygienists utilize and are interested to utilize in the Fox Valley use was another important theme.

## **Chapter V: Discussion, Conclusion, and Recommendation**

The dental hygiene profession is changing. The purpose of this study was to examine the changes of this profession and to examine if dental hygienists in the Fox Valley area are aware of these changes. The primary research questions that this study addressed were:

1. What knowledge do dental hygienists in the Fox Valley have about the changing scope of the profession? Specifically:
  - a. What knowledge do dental hygienists have about practicing dental hygiene without supervision from dentists?
  - b. What do dental hygienists in the Fox Valley area know about the settings they are allowed to practice independently in the state of Wisconsin?
2. What is the understanding of the American Dental Hygiene Associations model of dental hygiene mid-level provider?
3. What is the understanding of the mid -level providers that already exist in Minnesota, the Dental Technician and/or the Advanced Dental Technician?
4. Is there an interest in resources that are available to dental hygienists that could assist with practicing dental hygiene in alternate settings?

A survey was conducted to gain information about the Fox valley dental hygienists understanding of the changing dental hygiene profession. The results of the survey were addressed in the previous chapter. Two-hundred and eighty-six emails were sent out to dental practices and dental hygienists in the Fox Valley area. Twenty-five hygienists completed this survey. This chapter will provide a discussion or the results, conclusions, and recommendations relative to the research questions.

## Discussion

Many states, including Wisconsin, are increasing the type of settings where dental hygienists can practice without direct supervision from a dentist. Some states are recognizing mid-level dental providers as a health care professional able to deliver oral health care delivery to the public at large. The following discussion highlights information from the survey used to assist in understanding Fox Valley dental hygienists' in the Fox Valleys perceptions of the changes in dental hygiene profession.

**Research question 1.** Research question 1 addressed the settings where dental hygienists can practice without direct supervision from dentists. One of the survey questions asked for lists of settings dental hygienists can practice without dentist supervision. About half of the respondents could list nursing homes, schools, and disadvantaged populations. Some respondents listed schools for screening purposes. Four of the 25 respondents stated none, with a dentist prescription, or if the person had been seen by the dentist in the past 12 months. These latter respondents are thinking with a private practice perspective. Finally, two respondents were unsure about locations that dental hygienists can practice without direct supervision from a dentist, which is also a private practice perspective. There appears to be a gap in knowledge of the settings dental hygienists are allowed to practice without the supervision of a dentist per this survey. The gap was demonstrated by six out of 25 dental hygienists lack of knowledge of any additional settings a dental hygiene professional is allowed to practice in the state of Wisconsin.

Another survey question was related to any concerns dental hygienists may have about practicing in alternative settings. About half of the respondents expressed no concerns. Three respondents stated concerns about liability. The liability concern makes sense because if dental hygienists were to work independently, they would need to obtain insurance and additional

information. Five respondents expressed concern about quality of care, but it is unknown about what these respondents meant by quality of care. Possibly, these hygienists feel they need a dentist nearby in order for the quality of care to be appropriate, it could mean concern for using less than ideal equipment, or it could also mean there is a concern for the quality of the actual setting. Finally, concern was expressed for a lack of knowledge related to working independently; yet the nature of concern is unknown because of the format of the survey question. Other concerns expressed by the respondents were related to medical emergencies and dealing with medically compromised individuals, which could be related to a lack of a skillset in regard to working with diverse populations; however, this concern would need further study to understand the actual meaning from the respondent.

One survey question was related to strengths needed by dental hygienists have to practice in alternate settings. Twenty out of 25 respondents expressed experience, education and knowledge. One person stated they can recognize obvious decay. Another pointed out that we would need to have a strong connection with dental community would be needed to provide comprehensive dental care. Overall respondents expressed their beliefs that they have the experience and knowledge to practice in alternative settings.

**Research question 2.** Research question 2 was designed to find out if there is an understanding of the ADHA model of dental hygiene mid-level provider. Eleven of the 25 respondents stated no they had no knowledge of a mid-level provider role. Fourteen respondents stated had an idea that this role requires more education and includes the ability to perform simple restorations and other specific minor invasive dental procedures. These latter respondents also stated that this mid-level provider is similar to a nurse practitioner.



Although Wisconsin does not currently have dental mid-level provider, neighboring states are supporting this role. The fact that a large number of respondents have never heard of this dental mid-level provider profession shows a gap in understanding about this changing trend of the dental hygiene profession. Considering that the survey demonstrated that a high number of respondents are not members of ADHA, this could likely be one reason for the lack of knowledge.

**Research question 3.** Research question 3 was designed to determine Fox Valley dental hygienists' understanding of the mid-level provider role that already exists in Minnesota. Thirteen out of 25 respondents reported that they did not know anything about a mid-level provider role. Twelve respondents did know this role needed more schooling and could provide small restorations. The data demonstrates that respondents have similarly lack of knowledge of the mid-level provider in Minnesota and the mid-level model from the ADHA.

**Research question 4.** The final question in this study was designed to determine the resources used by the respondents to gain information about the dental hygiene profession, as well as ascertain resources respondents would like to have available. One survey question asked respondents to list or explain resources that they are currently using. Continuing education, including events and seminar, appear the most frequently with nine responses on the survey. The second most commonly accessed resource was online education which appeared eight times. Respondents listed magazines and articles seven times. Four respondents listed colleagues or word of mouth, three listed the state licensing board, and two respondents stated using sales representatives as sources of information. Finally, two respondents stated they do not use any resources to gain information about the dental hygiene profession.

The data from the study shows that most respondents are using resources to access information, which is good. Evidence-based dental hygiene research is ongoing, and research drives change. It is unknown as to why no resources are not being used to understand the latest research and/or changes in the dental hygiene profession by two respondents.

There were a variety of answers in response to the question regarding resources the respondents would like to see made that asked what could be made available to assist with practicing dental hygiene in alternative settings. Five out of 25 respondents were not interested in practicing in alternative settings. Reasons given for this lack of interest in practicing in alternative settings included: being too close to close to retirement, having kids about ready to go to college themselves, being happy with how things are, and two expressed they were simply not interested. Twenty respondents had varying degrees of interest in understanding practicing in alternative settings further. Fourteen, which is over half of respondents, expressed a desire for continuing education to understand more about practicing in alternate settings. Three respondents noted a desire for more information about the business side of things practicing in alternative settings and other expressed wanting to know how grants work.

One respondent mentioned reimbursement as a problem, which suggests that if an event was created to understand the business and reimbursement side of practicing in alternative settings, this could be of interest and value. Another respondent having mentioned he or she has experience working in prison settings, and having similar settings is an opportunity he or she would embrace. Finally, one respondent mentioned an interest in studying public health administration. It appears that there is interest for more information on practicing in alternative settings by many respondents on varying levels. Perhaps offering some events on the topic to assist with this understanding would be beneficial.

## Conclusions

According to the survey conducted for this study, there appears to be a gap in the understanding that dental hygienists can practice in alternative settings. Although Wisconsin's Governor signed legislation allowing dental hygienists to practice in more settings with fewer restrictions in June 2017 ("Wisconsin's Governor," 2017), six out of 25 survey respondents did not know about this.

Legislative bodies across the country have come up with some different solutions to address the national problem of access to dental care described by the Surgeon General in May 2000 ("Oral Health," 2013). The main theme of this report argues that it is not possible to have good health without good oral health ("Oral Health," 2013). Examples of the solutions identified by the different states try to address this issue include: Kansas an Extended Care Permit (ECP) Dental Hygienists (Delinger et al., 2014), Maine passing a bill allowing the Independent Practice Hygienist (IPDH), as a way to meet the underserved (Vannah et al., 2014), and Minnesota developing a mid-level program for dental hygiene, the Dental Therapist (DT) and the Advanced Dental Therapist (ADT) (Bowen, 2011).

The fact that a little over a fourth of respondents have never heard of any alternative settings where they could practice shows a lack of awareness. Many states have policies in place to allow dental hygienists to work in alternative settings without direct supervision from dentist ("Facts about the Dental Hygiene Workforce," 2016). It is important for the public interest that dental hygienists work collaboratively with dentists to provide optimal comprehensive patient care (Fehrenbach, 2018). Hygienists do work collaboratively with dentist in private practice, but settings have been increased to allow hygienists to deliver oral health care without dentist supervision.

The survey asked dental hygienists about concerns they may have about practicing in alternate settings. Half the respondents expressed no concern, while the other half shared a variety of concerns. Liability concerns, concerns related to the quality of care, concerns regarding skillsets and appropriate education, and dealing with high risk medically compromised patients were just a few issues and concerns mentioned by the respondents. To address the public health concern for compromised oral health, new ideas must address the challenge of too few dentists available to cover all of the potential alternative dental care sites.

Some of the respondents may identify weaknesses in their educational background. Entry level graduates at the associate degree level were fine in the past, but today providing optimal comprehensive patient care is more complex today (Portillo et al., 2013). Also, more knowledge and an increased skillset is needed to meet the demand of today's aging and diverse populations (Portillo et al., 2013). The fact that there is concern for quality of care, concern for skill set, and concern for appropriate education implies a lack of awareness or confidence by the respondents in their educational background. Baccalaureate programs offer more clinical clock hours for patient care and include more instruction in written communication, oral health education and patient management (DH Fact Sheet). The study revealed that over half of the respondents have associate degree level education. Diverse training opportunities may be a way to deliver information needed to provide oral health care to different populations.

The survey asked respondents to identify important skills for practicing in alternative settings. Twenty out of 25 respondents expressed experience, education and knowledge. One respondent did mention that a strong connection to the dental community is necessary to provide the patient with comprehensive care. Collaboration opportunities between dental hygienists and

dentists was a common theme mentioned from the literature review. Creating ways to provide collaboration opportunities for this to occur is another recommendation.

Mid-level dental hygiene providers have been a key topic in the industry for several years. The survey in this study asked respondents to describe their understanding of the mid-level provider model for the ADHA. The ADHA created a mid-level model that would be state regulated but include a master's level degree (Bowen, 2011). This practitioner would serve in community, public health and possibly private practice settings (Bowen, 2011). Mid-level dental hygienists would have a limited restorative scope, but strong referral networks (Bowen, 2011). This proposed professional would have strong communication skills and a collaborative working arrangement (Bowen, 2011). Fourteen of the respondents knew that this mid-level dental hygienist role required more education, is similar to a nurse practitioner. Wisconsin does not acknowledge mid-level hygienists; however, neighboring states do recognize this as a profession. Recent proposal by Wisconsin's Governor Tony Evers to acknowledge mid-level provider role is in recent news. A gap in knowledge regarding the changing trends in dental hygiene provider levels is apparent in the Fox Valley.

It is important to note that a survey question asked respondents if they are active members in a professional affiliation, ADHA. Most respondents, 17 out of 25, reported no, they are not members. Perhaps if there were a higher number of active members, there may have been a higher number of respondents with some familiarity with the mid-level provider.

The survey respondents were also asked in the survey about their understanding of the mid-level provider model that already exists in Minnesota. The response was similar to the same understanding of the thoughts about the ADHA mid-level provider model. Thirteen out of 25 respondents did not know that a mid-provider model exists. About half of the respondents did

identify that a mid-level provider role has an expansion of additional responsibilities, and that more education is required with role. This further confirmed that a gap exists in Fox Valley dental hygienists understanding of the mid-level provider profession.

Minnesota was the first state to develop dental hygiene mid-level providers, the Dental Therapist (DT) and Advanced Dental Therapist (ADT) (Bowen, 2011). Minnesota's model is encouraging for the advancement of the profession, but Minnesota's mid-level provider role has to have direct supervision from a dentist. This may still be a barrier to reaching unserved or underserved populations due to the need to have a dentist present. Interestingly, Physician Assistants were originally required to work under some sort of collaborative agreement with an MD, however, research suggests that this standard is changing and Physician Assistants are being granted more autonomy in some states ("Nurse Practitioner," 2018).

One survey question asked respondents to list or explain resources they use to access current information about dental hygiene profession. Today's dental hygiene role has increased as a clinician in order to meet the challenges of patients today (Portillo et al., 2013). The increased dental hygiene role also includes being an advocate for oral health and having the ability to be an administrator and manager (Portillo et al., 2013). It is of value that all dental hygienists utilize some resources to understand their changing profession. In the survey, 23 out of 25 dental hygienists access some sort of resources related to the profession. Continuing education from seminars, events, online education, articles, ADHA/WDHA sites, colleagues, licensing boards, and sales representatives are all examples of the professional resources accessed. It is important to understand what resources dental hygienists use in order to determine the best means to deliver additional education and information. There is a need for continued

research in the dental hygiene field, especially as legislators try to find solutions to increase access to oral health care (Portillo et al., 2013).

When respondents were asked about what resources that would be of interest to them related to alternative settings, five out of 25 respondents were not interested in working in alternative settings. Despite that finding, 20 out of 25 respondents expressed varying level of interests to study the topic further. It may be beneficial to look at information from other states that have had experience working in alternate settings. In Maine, IPDH dental hygienists were surveyed and they expressed that their education was inadequate in preparing them for a skillset outside of private practice (Vannah et al., 2014).

Fourteen of 25 Fox Valley respondents expressed interest in attending events to understand working in alternative settings further. Understanding the business side of alternative setting practice was mentioned, along with reimbursements. Other results of the survey of Maine's IPDHs included insufficient training with public interest, a desire for extramural internships that could have been beneficial preparation for the work (Vannah et al., 2014). Finally, Maine's IPDHs expressed how also being exposed to diverse population groups would have been valuable as well as collaborating and integrating with dental students for treatment planning activities would have been beneficial (Vannah et al., 2014).

### **Recommendations**

The scope of the dental hygiene profession is changing. The purpose of this study was to understand Fox Valley dental hygienists' perception of some changes in the dental hygiene profession. After surveying dental hygienists in the Fox Valley area, some gaps in understanding were identified. Based on the information gathered through this research, the following recommendations are proposed:

One gap identified through survey was a need for dental hygienists to learn about dental care settings that exist outside of private practice where they can provide services without direct supervision from a dentist. Furthermore, some dental hygienists in the Fox Valley area lack awareness of the existence of a mid-level dental hygiene provider. It is important to help dental hygienists and dental hygiene students to understand that the scope of the profession is changing, and the importance of keeping abreast of how state legislation changes may offer some career change and growth opportunities.

Membership in ADHA, the professional affiliation for dental hygiene, is essential in order to remain informed about changes in the dental hygiene profession. Dental hygiene educators and the dental hygiene community should emphasize the importance of becoming members of ADHA and maintaining membership to dental hygienists and hygiene students.

A high number of respondents in the study had varying degree of interest in understanding the provision of hygiene services in alternative settings. Some respondents wanted more information about the business aspect of providing hygiene services in alternative settings. It would be helpful for dental hygienists, interested in providing services in alternative settings, to understand how more about grants and reimbursements for services in these types of settings. Informational events need to be created to deliver information about these business aspects.

Other training needed by dental hygienists includes, information about public health, dental care to referral processes, and ideas for collaboration with dentists when working in alternative settings. This researcher agrees with several findings by Vannah, McComas, Taverna, Hicks, and Wright (2014) including that dental hygiene educators and the dental hygiene community should become familiar with the information gathered from the survey delivered to independent public health hygienists in Maine, particularly that it is not enough to simply groom



students for private practice anymore. Also, in agreement with Vannah et al. (2014) this researcher believes increasing public health opportunities and possible externships could assist with adequate exposure to alternative practice settings in dental hygiene education. The need for this type of public health exposure was highlighted the finding of Vannah et al. (2014) that public health exposure in their dental hygiene programs of hygienists working in public settings was not enough to make an impact (Vannah et al., 2014).

Also in agreement with Vannah et al. (2014), this researcher found that business courses would be of value as independent hygienists would need to learn how to do things such as bill Medicaid, pay for overhead, and refer patients for treatment needed that is not in the hygiene scope of practice (Vannah et al., 2014).

Dental and dental hygiene educators can benefit from understanding the idea that collaboration between dental hygienist and dentist is important. A positive supportive partnership between the dental hygienist and dentist in the delivery of patient care will likely yield optimal comprehensive patient care. This researcher agrees with ideas, presented by Nojoumi, Essex, and Rowe (2016), for fostering a relationship with dental students and dental hygiene students such as adding more courses or seminars for dental hygienists and dental students to attend together. This type of interaction would be valuable because settings have increased where dental hygienists are able to work independently, without supervision from dentist, but dental hygienists will need to be able to communicate and refer patients to dentists.

As Nojoumi et al. (2016) stated, creating an environment where dental hygiene students and dental students can share patient care ideas and collaboration on more case presentations would provide more educational assimilation. Senior dental students from schools with dental

hygiene programs strongly agreed that being educated with dental hygienists will lead to patients receiving more optimal comprehensive patient care (Nojoumi et al., 2016).

Inter-professional education (IPE) is defined as education in which two or more professions learn with and from each other (Nojoumi et al., 2016). Similar to Nojoumi et al. (2016), this researcher believes involving students in inter-professional training units which include working on real patients collaboratively (Nojoumi et al., 2016). As Nojoumi et al. (2016) found, other health care professions use this model and the outcomes involve more positive attitudes toward other health care professions. Various health care professions including medicine, nursing, and pharmacy all agree that working and learning together creates improved attitudes about teamwork and increases knowledge of what different professions can offer (Nojoumi et al., 2016). Inter-professional training would benefit the dental hygiene profession as the settings have increased where dental hygienists can work independently and exposure to this type of learning could enhance collaboration efforts and confidence in referrals.

This study also identified a need for more training for dental hygienists on working with includes dental hygienists dealing with medically compromised patients including persons with developmental disabilities and medically compromised elderly persons (Bowen, 2011). This researcher agrees with Bowen (2011) that dental care providers are inadequately trained to treat persons with intellectual and developmental disabilities according to the literature (Bowen, 2011). A clinical associate professor at the University of Washington, Mae Chin, RDH Med works with practitioners and students to meet the needs of oral health care with the intellectually challenged as well as medically compromised adults (Bowen, 2011). She provides direct training programs in varieties of settings in the Dental Education in Care of Persons with Disabilities Program (DECOD) (Bowen, 2011). The DECOD is a special program that prepares dental

professionals to meet the challenges with severe disabilities (Bowen, 2011). There is a Distance Learning Unit available online with learning modules as well as a DVD series (Bowen, 2011).

In this researcher's opinion, the dental hygiene community and educators would benefit from a series such as Chin's to provide guidance to dental hygienists and hygiene learners. These are resources that could be added to informational events to assist dental hygienists that are interested in working in alternate settings. Perhaps a series like Chin's could be incorporated in associate degree dental hygiene programs, either in one of the dental hygiene courses or at least by providing students with access to this series.

Another agreement this researcher has with the literature is the recommendation to participate organizations related to the dental profession. One such international organization, called Special Care in Dentistry Association, is dedicated to promoting well-being and oral health to people with special needs (Bowen, 2011). Another organization is the Special Care Advocates in Dentistry Association which features a website with free online training modules addressing a variety online unique populations with suggestions for dental hygiene care (Bowen, 2011). These modules may be another means to assist dental hygienists and hygiene learners to develop and enhance a skill set and form a working knowledge of providing care to varied populations of people.

This study did show that more than half of the respondents have an associate degree. The trends of the dental hygiene profession are changing, however, and more education may be both beneficial and necessary to prepare hygienists to meet these changes. More educational events post-degree attainment are also necessary. While the private practice model will continue to exist, recognizing that alternative settings exist as well, and that more mid-level providers are needed, are trends leading to a need for more education. Furthermore, dental hygiene educators

and post -secondary educators need to have an understanding of existing articulation agreements with degree completion programs. Promotion of these programs to associate level dental hygiene students can be beneficial to the dental hygiene profession (Portillo et al., 2013). The benefit of promoting awareness of the changes in the dental hygiene profession will allow students to have knowledge that this exists.

Portillo et al. (2013) also recommended that educators that do teach in the degree completion programs create more didactic and experimental learning experiences in areas such as research, public and community health, and this researcher agrees. It is also important for BS degree completion educators to provide access to different settings, or ideas of different settings where oral health promotion may be of value to the public (Portillo et al., 2013).

### **Recommendations for Further Study**

One subject that this study did not address were the reasons or barriers of becoming members of ADHA. Further analysis is recommended on this topic. There must be a means, even if it is not joining ADHA, for dental hygienists to remain current on the dental hygiene profession and how it is changing.

More study needs to be conducted to explore definitive concerns of dental hygienists regarding practicing in alternative settings. Information from such a study could assist in business and industry planning continuing education events for dental hygienists in the Fox Valley. Finally, further study is needed about Wisconsin's current governor Evers proposal to spend \$43 million over the next two years to expand access to dental care in rural areas. The governor's proposal also includes creating a "dental therapist licensure" which would allow for mid-level providers in Wisconsin to assist with a provider shortage issue (Tony Evers, 2019).

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### Appendix A: Survey Questions

1. How long have you been a registered dental hygienist?
2. What is your level of education?
3. Please list or explain what resources you use to access current information about the dental hygiene profession in Wisconsin.
4. Are you a member of American Dental Hygiene Association?
5. List the settings dental hygienists are allowed to practice in without direct supervision from a dentist in Wisconsin.
6. What concerns do you have about practicing in alternative settings? Please explain
7. What strengths do you have to practice in alternative settings? Please explain
8. Describe your understanding of the mid -level provider model developed by the American Dental Hygiene Association (ADHA).
9. Describe your understanding of the mid-level dental provider (Advanced Dental Therapist) in Minnesota?
10. What type of education and or resources would interest you that could assist you in practicing dental hygiene in alternative settings?
11. Please add any other comments:



## Appendix B: Invitation Email

Hello,

My name is Robin Eichhorst and I am a graduate student attending the University of Wisconsin-Stout's Master of Career and Technical Education program. I am currently completing my thesis and am researching Fox Valley Dental Hygienists perception of changes in the Dental Hygiene profession.

I would like to invite you to participate through a survey about this research of changes in the dental hygiene profession as well as what resources you use to access information about the dental hygiene profession. The survey will take between 15-20 minutes of your time.

If you'd like to participate, please click on the link below. I ask you to complete the survey by 00/00/0000.

If you have any questions, please contact me at [eichhorstr9500@my.uwstout.edu](mailto:eichhorstr9500@my.uwstout.edu)

Here is the link to the survey:

Thank you for your participation!

## Appendix C: Informed Consent

### INFORMED CONSENT FORM

UNIVERSITY OF WISCONSIN-STOUT

*Perception of Fox Valley Dental Hygienists Thesis Project*

Investigator:

Robin Eichhorst, student in the Master of Career and Technical Education and the University of Wisconsin-Stout

Email: eichhorstr9500@my.uwstout.edu

Please read this consent document carefully before you decide to participate in this study.

#### Purpose of the research study:

1. What knowledge do Dental Hygienists in the Fox Valley have about the changing scope of the profession? Specifically:
  - a. What knowledge do dental hygienists have about practicing dental hygiene without supervision from dentists?
  - b. What do dental hygienists in the Fox Valley area know about the settings they are allowed to practice independently in the state of Wisconsin?
2. What is the understanding of the American Dental Hygiene Associations model of dental hygiene mid-level provider?
3. What is the understanding of the mid -level providers that already exist in Minnesota, the Dental Technician and/or the Advanced Dental Technician?
4. Is there an interest in resources that are available to dental hygienists that could assist with practicing dental hygiene in alternate settings?

#### What you will be asked to do in the study:

You will be asked to fill out an online survey. The survey contains ten open ended questions and has a box to type answers. There is an eleventh question that provides a place to add comments. The goal is to draw conclusions as to what Fox Valley Dental Hygienists understand about the changes in the profession, and what education or resources Dental Hygienists would be interested in having access to.

#### Time required:

The survey will take about 15-20 minutes.

#### Risks and Benefits:

The risks of the study are minimal. The benefits are that the data collected will add to the body of literature surrounding the changes in Dental Hygiene profession.

Confidentiality:

Your identity will be kept anonymous. There will be no identifiers linking you to your data. No names or personal identifiers will be included in the final report.

Right to withdraw from the study:

Your participation in this study is completely voluntary. You have the right to withdraw from the survey at any time without consequences. However, once your survey is submitted there is no way to segregate your survey as there are no identifiers.

IRB Approval:

This study has been reviewed and approved by The University of Wisconsin-Stout's Institutional Review Board (IRB). The IRB has determined that this study meets the ethical obligations required by federal law and University policies. If you have questions or concerns regarding this study, please contact the Investigator or Advisor. If you have any questions, concerns, or reports regarding your rights as a research subject, please contact the IRB Administrator.

Whom to contact if you have questions about the study:

Robin Eichhorst, student in the Master's Program in Career and Technical College at the University of Wisconsin-Stout  
Email: eichhorstr9500@my.uwstout.edu

Dr. Debbie Stanislawski, Program Director, Marketing and Business Education  
Email: stanislawskid@uwstout.edu

Dr. Elizabeth Buchanan, Research Services at the University of Wisconsin-Stout  
Email: buchhanane@uwstout.edu

Agreement:

If you wish to participate in this study and are over the age of 18, please continue on to the next screen.

## Appendix D: Reminder Email

Hello,

This is a follow up email to my previous invitation. I am currently completing my thesis and am researching Fox Valley Dental Hygienists perception of changes in the Dental Hygiene profession.

Thank you to all of those who have participated in the survey up to this point!  
I greatly appreciate your help with my data collection.

For those who have not yet participated, but would like to, please complete the survey by midnight 00/00/0000.

Survey link:

Thank you for your participation,  
Robin Eichhorst

### **Appendix E: Thank You Email**

Hello,

Thank you to all of those who have participated in the survey, Fox Valley Dental Hygienists Perception of Changes in the Dental Hygiene Profession. I greatly appreciate your help with my data collection.

Please feel free to follow up with me if you want to learn about the results from the survey.

Sincerely,  
Robin Eichhorst  
eichhorr@fvtc.edu  
eichhorstr9500@my.uwstout.edu