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Attitudes of Virginia Dental Hygienists Toward Dental Therapists

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ATTITUDES OF VIRGINIA DENTAL HYGIENISTS

TOWARD DENTAL THERAPISTS

by

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ABSTRACT

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Problem: The purpose of this study was to determine the opinions and attitudes of Virginia dental hygienists toward dental therapists (DTs) and to determine if current education level and years of practice affected opinions regarding education requirements for DTs. Methods: After IRB approval, a 22-item questionnaire was distributed online to a convenience sample of 910 Virginia dental hygienists. Questions assessed attitudes of participants toward the DT using a seven-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). Additionally, participants were asked to respond to demographic questions and open-ended questions about potential advantages and/or disadvantages to DTs. Independent sample *t*-tests and chi-square analysis was used to analyze results. Results: An overall response rate of 22% was obtained (n=200). Most respondents agreed a DT was needed in Virginia (M=5.78, $P<0.001$) and supported that dental therapy could be a solution to the problem of access to care issues in Virginia (M=5.97, $P<0.001$). Similarly, most respondents agreed they had an understanding of the services performed by DTs (M=5.90, $P<0.001$) and agreed there was evidence DTs could perform high-quality work (M=5.75, $P<0.001$). While most hygienists agreed it was important for Virginia to adopt legislation for a dental therapy model (M=5.89, $P<0.001$), most disagreed that DTs' practice should be restricted to acknowledged underserved areas in Virginia (M=3.19, $P<0.001$). No significant association was found between years of practice and opinions toward education requirements for DTs; however, a significant association

was found between current education level and opinions toward education requirements for DTs (Fisher's Exact Test=34.17, df=9, *P*=.000, Cramer's V=.28). Thirty-three percent of respondents with associate degrees supported an associate degree as the appropriate degree requirement for DTs, compared to only 3% of all other degree holders. Conclusions: Results revealed Virginia dental hygienists had overwhelmingly positive attitudes toward DTs. Research with a larger sample could provide more insight into opinions of the Virginia dental hygienist population.

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CHAPTER I

INTRODUCTION

Oral health objectives of Healthy People 2030 include increasing access to preventive and restorative dental care for all ages, reducing the number of persons unable to obtain timely dental care, and reducing the number of persons with untreated tooth decay and periodontitis.[1] The U.S. Department of Health & Human Services reports the state of Virginia currently faces a dental health professional shortage affecting 55.61% of Virginians, totaling over 1.3 million individuals.[2] The most underserved Virginia populations include children, the economically disadvantaged, and individuals living in or near rural areas.[3,4] In line with these populations, Virginians most frequently report cost, location, and trouble finding a dentist as barriers to oral health care access.[2] There are 3.2 million Virginians without dental insurance,[5] and government assistance provides minimal help.[6,7] With the exception of pregnant women and individuals aged 20 or younger, neither Medicare nor Medicaid covers routine dental care, including cleanings, restorations, or dentures.[6,7] For low-income or uninsured patients, Virginia has implemented safety net programs; however, 67 state localities still have no dental safety net provider, and in many cases, the communities with providers are only offered services on a part-time basis.[5,8] Virginia has also implemented free and charitable clinics, but these facilities rely on services donated by volunteers, thus limiting availability.[8] In and near rural locations, the Virginia Department of Health reports difficulty recruiting healthcare professionals, with only 7% of dentists working in rural areas of Virginia.[3,9] Furthering the shortage, the National Center for Health Workforce Analysis projects an 8% decline of the national dentist workforce by 2025, with a 4% decline in Virginia.[3]

To address these access to care shortages, new workforce models have been proposed. One such model is the mid-level oral health practitioner, defined by the American Dental Hygienists' Association (ADHA) as:

> A licensed dental hygienist who has graduated from an accredited dental hygiene program and who provides primary oral health care directly to patients to promote and restore oral health through assessment, diagnosis, treatment, evaluation, and referral services. The Mid-level Oral Health Practitioner has met the educational requirements to provide services within an expanded scope of care, and practices under regulations set forth by the appropriate licensing agency.[10]

There are multiple models of mid-level dental providers, such as hygiene-based dental therapists, non-hygiene-based dental therapists, community dental health coordinators, and hygienists with additional training to provide atraumatic restorative treatment.[11] While all models fill roles to bridge the gap between preventive and restorative care, each model has its own unique characteristics. Hygiene-based dental therapists, seen in Minnesota and Maine, are dental hygienists with the ability to perform certain restorative treatments.[11] Non-hygiene-based dental therapists in Alaska and Minnesota perform certain restorative treatments without a background in dental hygiene.[11] Community dental health coordinators in New Mexico offer oral health education to underserved communities and help link residents to dentists.[11] Lastly, hygienists with additional expanded functions, such as in California, may perform very few restorative duties but mostly perform the duties of a dental hygienist.[11]

With the varied roles and scopes of practice for mid-level dental providers, one emerging model appears to be the dental therapist (DT). Currently, 13 states have adopted dental therapy legislation, including Alaska, Minnesota, Oregon, Vermont, Maine, Washington, Arizona,

Michigan, New Mexico, Idaho, Montana, Nevada, and Connecticut.[12] Minnesota, now in its tenth year of mid-level dental care, allows dental therapists (DTs) and advanced dental therapists (ADTs) to perform services statewide.[11,12-15] Minnesota DTs hold bachelor's degrees and must perform some procedures under indirect supervision; ADTs are required to have a master's degree with a bachelor's degree in dental hygiene and can perform all procedures under general supervision.[11,12-15] In Maine and Arizona, DTs are required to work under direct supervision and must be dually licensed as dental hygienists.[12] Vermont and New Mexico, however, allow DTs to work under general supervision, but also require dual licensure.[12] Licensed DTs in Michigan work under general supervision, while newly-adopted dental therapy legislation in Nevada and Connecticut allows licensed DTs to practice under practice or collaborative agreements.[12] Other states—Alaska, Oregon, Washington, Idaho, and Montana—limit dental therapy practice to tribal lands.[12] In Alaska, certificate-holding dental health aide therapists (DHAT) work under general supervision and have been in practice since 2003.[11]

Since the introduction of DTs, the Minnesota Department of Health reports greater access to care for underserved communities, decreased patient wait times and travel times, personnel cost savings, and increased dental team productivity.[15] Similarly, in interviews with 16 health providers and 125 community members exposed to DTs in Alaska, Chi et al. found improved access to care for patients with previously limited or irregular access.[16] Chi et al. also noted interviewed providers observed reduced disease prevalence and severity, while dentists cited the presence of DTs allowed more availability to provide major dental services to patients.[16]

Though a relatively new field, dental therapy has educational program accreditation standards set by the Commission on Dental Accreditation (CODA), the sole nationally-recognized agency accrediting post-secondary dental-related education programs.[17] CODA

requires at least three years of dental therapy education at the post-secondary college level with courses such as oral pathology, radiology, periodontology, pharmacology, dental disease etiology and epidemiology, pediatric and geriatric dentistry, oral surgery, and prosthodontics.[18] Though scope of practice varies by state, CODA requires dental therapy competencies such as exposing radiographic images, subgingival scaling and polishing, administering local anesthetic, simple extraction of erupted primary teeth, emergency palliative treatment of dental pain, preparation and placement of direct restorations in primary and permanent teeth, and dispensing and administering analgesics, anti-inflammatory agents, and antibiotics.[18] CODA recognizes the DT as a member of the oral healthcare team, noting graduates must be competent in communicating and collaborating with other members of the healthcare team.[18] Graduates must also be competent in the use of critical thinking and problem-solving to include knowledge of when to consult a dentist or other members of the healthcare team.[18] In 2020, Alaska became the first state to have a CODA-accredited dental therapy program at Iḷisaġvik College in Utqiaġvik.[19]

Statement of the Problem

The field of dental therapy continues to grow, and this innovative career path may be of interest to current practicing hygienists, particularly since the American Dental Hygienists' Association defines the DT as a dental hygienist.[10] Accordingly, it is essential to determine the opinions and attitudes of hygienists toward DTs, and previous studies have begun this exploration. In a survey of 440 Oregon hygienists, Coplen et al. found 59% of those surveyed supported an existing need for DTs.[20] Similarly, in a survey of 187 pacific northwest hygienists, Ly et al. found 65% of those surveyed supported an existing need for DTs.[21] Regarding potential interest in pursuing dental therapy, Coplen et al. found 43% of 440 surveyed Oregon hygienists

were interested in becoming a DT.[20] Comparatively, in a survey of 268 Maine hygienists, Smallidge et al. found 65% of those surveyed expressed interest in enrolling in a dental therapy program.[22]

While these studies have provided valuable insight, a gap in the literature is present for dental hygienists licensed in the state of Virginia. The National Center for Health Workforce Analysis projects a 13% increase in dental hygienists in Virginia by 2025.[3] Given the Virginia dental health professional shortages, barriers to oral health care access, and potential career enhancement, key policymakers are exploring opportunities for dental therapists in Virginia, although the opinions of hygienists in the state are unknown. Virginia dental hygienists may or may not show support for state adoption of dental therapy legislation. Therefore, the purpose of this study was to determine the opinions and attitudes of Virginia dental hygienists. Data gathered from this study may provide policymakers with information for future initiatives regarding dental therapy legislation in Virginia.

Definitions of Terms

For this study, the following key terms are defined:

1. Dental hygienist: A licensed oral health professional who prevents and treats oral diseases to protect teeth, gums, and patients' total health.[23]
2. Dentist: A doctor specializing in oral health who prevents and treats oral diseases to protect teeth, gums, and patients' total health.[24]
3. Dental therapist: A licensed dental hygienist who provides primary oral health care directly to patients and who has met the educational requirements to provide services within an expanded scope of care.[10]

4. Attitudes toward dental therapists: Responses to a survey questionnaire regarding the need for dental therapists, level of education for dental therapists, scope of practice for dental therapists, and interest in becoming dental therapists.

Research Question and Hypotheses

This study intended to answer the following question:

1. What are the opinions and attitudes of Virginia dental hygienists toward dental therapists?

The following null hypotheses were tested at the .05 level of significance:

1. There is no statistically significant relationship between the current education level of dental hygienists licensed in the state of Virginia and their opinions regarding education requirements for dental therapists.
2. There is no statistically significant relationship between Virginia dental hygienists' years of practice and their opinions regarding education requirements for dental therapists.

CHAPTER II

REVIEW OF THE LITERATURE

With the emergence of new workforce models for dentistry, several studies have focused on opinions of dental stakeholders toward the dental therapist (DT). Perspectives of dentists, dental hygienists, and patients have been evaluated. For example, McBride found 87% of surveyed Massachusetts dental hygienists (*n*=120) supported an existing state need for the DT, with 79% of respondents indicating dental hygiene licensure should be a prerequisite to a dental therapy program.[25] Similarly, in a survey of 54 dental hygienists in Ohio, Leverich found that when asked if legislation should be enacted allowing dental hygienists to become DTs, 81.13% strongly agreed or agreed.[26] Studies of dental hygienist perspectives in Maine, Oregon, Colorado, Kentucky, North Carolina, and the pacific northwest have shown support for the DT.[20-22,27,28]

Research conducted nationally as well as in Alaska, Minnesota, Tennessee, the pacific northwest, and the southeast suggests mixed findings for dentists' support for the DT based on location.[16,21,29-33] For example, in a national survey of 405 dentists, To'olo et al. found 71% of those surveyed disagreed with adding a DT to the dental team; however, of those disagreeing, only 27% indicated they were knowledgeable of the concept of DTs.[29] Lopez et al. found 43.7% of 151 Minnesota dental school faculty members, comprised of 92% dentists and 8% dental hygienists, did not support the DT as a solution to accessing oral healthcare.[34] Blue et al. found 75.3% of 551 Minnesota dentists strongly opposed or somewhat opposed DTs performing extractions of primary teeth, with 81.2% strongly opposing or somewhat opposing DTs performing cavity preparations.[33] In contrast, in Alaska, where the DT has already been recognized, Chi et al. noted that in interviews with 16 health providers exposed to DTs, dentists stated the presence of DTs allowed more availability for dentists to provide major dental services

to patients.[16] In a survey of 44 United States dental school deans, Aksu et al. found 80% of those surveyed supported an expanded scope of practice for existing dental hygienists, with 74% supporting the dental therapy workforce model to improve access to dental care.[35]

Experiences of current DTs appear to vary based on location. In a survey of 119 DTs in Singapore, only 38% of surveyed oral health therapists with an expanded work scope were using their additional skills once a day or more.[36] In a survey of 470 United Kingdom DTs, Godson et al. found 105 of those surveyed indicated mainly performing duties corresponding to those of a hygienist.[37] In an open-ended question, 27 expressed infrequent use of certain dental therapy skills, such as treating patients under conscious sedation, making it difficult to maintain them; twenty-eight reported a lack of job opportunities.[37] Additionally, in a survey of 470 United Kingdom DTs, Csikar found 70% of those surveyed agreed or strongly agreed dentists could be referring more patients to them; 55% agreed or strongly agreed they could perform more extensive work if more patients were referred to them.[38] In contrast, in a survey of four Minnesota dental practices, Blue and Kayor found the majority of services provided by DTs in all four practices were restorative (78.6%, 34.2%, 78.6%, and 79.1%).[39]

Research in Alaska, Michigan, England, and the United Kingdom suggests many patients are comfortable with the DT.[20,40-43] In a survey of 600 adult patients and their waiting room companions at the University of Detroit Mercy School of Dentistry general dental clinic, Phillips et al. found 60% of those surveyed were comfortable with the idea of seeing a DT for restorative care.[40] In interviews with 125 community members exposed to DTs in Alaska, Chi et al. found community members expressed high satisfaction with the quality of care provided by DTs and believed DTs were helping to improve quality of life and access to dental care.[16] In interviews

with economically disadvantaged individuals in Michigan, Nicoll et al. found 18 out of 20 respondents indicated they would be likely to seek care from a mid-level provider.[41]

Beyond the perspectives of oral healthcare practitioners and patients, research suggests positive patient outcomes in areas where dental therapy has been implemented.[15-20,39,44-49] In a collection of practice management data from two Minnesota Federally Qualified Health Centers (FQHCs), Blue and Kaylor found the presence of DTs allowed dentists to perform more complex work; for example, removable prosthodontic procedures increased from 166 to 454 in number and oral surgery procedures increased from 492 to 683 when comparing data from 6 months before and 6 months after employment of DTs.[39] In a secondary data analysis of Alaska Medicaid and electronic health record data for individuals in Alaska's YK Delta (2006-2015), Chi et al. found the implementation of DTs was associated with a five-fold increase in children receiving preventive care, with fewer children receiving extractions.[45]

With these positive outcomes, the question remains as to why dental therapy has not progressed more rapidly in the United States. Barriers to recognizing DTs include the lack of uniformity in scope of practice and level of supervision. In states where DTs have already been recognized, the scope of practice and level of supervision vary by state.[12] For scope of practice, some states allow DTs to perform nonsurgical extractions of primary and/or permanent teeth in addition to preventive services and minor restorative services.[12] In other states, DTs are limited to tribal lands for treatment and cannot perform extractions or invasive procedures.[12] For level of supervision, some states require direct supervision, while others require general supervision.[12] Research suggests many dental hygienists and dentists differ in opinions of supervision levels.[21,29] In a survey of 84 dentists and 187 dental hygienists in the pacific northwest, Ly et al. found 48% of dentists supported direct supervision for DTs and 63% of dentists were willing to

supervise DTs, while 57% of dental hygienists supported indirect or general supervision.[21] In a United States survey of 405 dentists, To'olo et al. found 72% of dentists who agreed with or were neutral to the concept of DTs believed a dentist should provide direct supervision, with all 405 dentists participating in the study strongly believing DTs should not extract permanent teeth.[29]

Educational program requirements for mid-level providers have historically lacked uniformity, as well; while current United States programs offer 24- to 48-month curriculums post-baccalaureate, education requirements for recognized DTs still vary by state.[50] In countries outside of the United States, DTs are expected to train in two-year programs of post-secondary education to provide basic, preventive, restorative, and minor surgical care for children.[51] However, in 2015, United States dental therapy educational program accreditation standards were adopted and implemented by CODA, who requires at least three years of dental therapy education at the post-secondary college level with courses such as oral pathology, radiology, periodontology, pharmacology, dental disease etiology and epidemiology, pediatric and geriatric dentistry, oral surgery, and prosthodontics.[18]

Even with accreditation standards, the proposed amount of education for DTs is still debated among the dental community. In a survey of 84 dentists and 187 hygienists in the pacific northwest, Ly et al. found the majority of surveyed dentists (38%) and dental hygienists (36%) felt a bachelor's degree would be an appropriate level of education.[21] However, a similar number of dentists in the study (35%) believed a master's degree was necessary, with only 24% of dental hygienists agreeing.[21] In a survey of 440 surveyed Oregon hygienists, Coplen et al. found 48% of those surveyed believed a bachelor's degree was sufficient, while 39% believed a master's

degree was needed.[20] In a survey of 77 Malaysian dentists, Nor et al. found 90.9% of those surveyed felt DTs needed at least six months of post-basic study.[52]

In addition to proposed education levels, several studies have explored the levels of interest for dental hygienists interested in becoming DTs. In a survey of 440 Oregon dental hygienists, Coplen et al. found 43% of those surveyed were interested in becoming a mid-level care provider.[20] In a survey of 442 practicing hygienists, Lambert et al. found those surveyed in Colorado (74%), Kentucky (71%), and North Carolina (81%) were also interested in becoming DTs.[28] As previously noted, in a survey of 268 Maine hygienists, Smallidge et al. found 65% of respondents expressed interest in enrolling in a dental therapy program; further, 40% of those interested indicated a willingness to enroll within the coming year.[22]

The American Dental Hygienists' Association (ADHA), the largest national professional organization for dental hygienists, determined mid-level care providers would benefit the public by delivering preventive and specific restorative services.[12,53] Although services currently vary by state, CODA supports dental therapy education competencies such as local anesthesia administration, periodontal dressing changes, simple extraction of primary teeth, fabrication and placement of single-tooth temporary crowns, and the dispense of non-narcotic analgesics, anti-inflammatory agents, and antibiotics.[18] The ADHA is a strong supporter of the advancement of dental hygienists to DTs and states the dental hygiene workforce is ready and available, with over 185,000 licensed dental hygienists in the United States.[12] Supporting this, findings by Coplen et al. showed 91% of 440 surveyed dental hygienists in Oregon agreed or strongly agreed a DT should be a dental hygienist.[20] McBride found 79% of 120 dental hygienists surveyed in Massachusetts supported dental hygiene licensure as a prerequisite to a dental therapy program.[25] In support of the advancement of DTs, ADHA maintains its policies highlight the association's

flexibility in considering various workforce models as well as ADHA's commitment to the development of providers who are appropriately educated and committed to delivering safe, quality oral health care to those in need.[12]

CHAPTER III

METHODS

A descriptive survey design was used to generate information regarding the attitudes of a convenience sample of Virginia dental hygienists toward dental therapists (DTs). Following Institutional Review Board (IRB) approval, the investigator-designed questionnaire entitled "Attitudes of Virginia Dental Hygienists Toward a Mid-Level Dental Provider" was sent via email to 1,015 Virginia dental hygienists from a purchased online email database (E-Database Marketing). Parts of the instrument were adopted with permission from one previously validated survey and included additional researcher-developed questions. An introductory statement was included at the beginning of the survey to inform respondents participation was voluntary and informed consent was understood upon return of the survey. Eleven questions from the survey (Attitudes of Virginia Dental Hygienists Toward a Mid-Level Dental Provider Questionnaire) assessed attitudes of participants toward DTs using a seven-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). Additionally, participants were asked to respond to six demographic questions (age, gender, years of practice, predominant work setting, professional membership, and current level of education), the appropriate level of supervision and education for DTs, and two open-ended questions about the potential advantages and/or disadvantages of DTs. One open-ended question allowed participants the opportunity to provide any additional comments. A panel of dental hygiene faculty reviewed the additional researcher-developed questions for content validity and clarity of instructions and adjustments were made based on their review.

The survey was initially distributed in March 2020; however, due to a low response rate likely related to the COVID-19 pandemic, a reminder survey was not sent again until six weeks

later. Three follow-up emails were sent to non-respondents over the next six weeks at one- and two-week intervals. Of the 1,015 emails initially sent, 105 were returned as undelivered, for a total of 910 emailed survey invitations. All responses were collected anonymously.

Data were collected by Qualtrics® (Provo, Utah). Cronbach's alpha reliability coefficient to evaluate internal consistency among Likert-type scales revealed a value of .91, indicating high internal consistency. An independent samples *t*-test was used to compare mean values in Likert-type questions to a neutral rating of 4.0 with significance set at the .05 level. Open-ended questions were transcribed and qualitatively analyzed by coding responses according to distinct ideas. All coding was reviewed by a colleague prior to frequency analysis to establish content validity and reliability. Chi-square analysis was used to analyze results related to education level, years of practice, and opinions toward education requirements for DTs. The Fisher's Exact Test was used when cells with expected frequencies were less than 5 and the Bonferroni adjusted criterion for statistical significance was established as P=.0125.

CHAPTER IV

RESULTS

Of 910 emailed surveys, 200 were returned, resulting in a response rate of 22%. The majority of participants were female (94.5%, *n*=189), age 40 or above (63%, *n*=126), held a bachelor's degree or higher (85%, *n*=170), and worked predominantly in a group (35%, *n*=70) or solo (31%, *n*=62) practice (Table I). Among participants who selected "Other" for their predominant work setting, written comments included items such as retired, military/federal settings, and full-time temping. Most respondents had been practicing dental hygiene for less than ten years (36%, *n*=72) or between 10-19 years (24%, *n*=48); however, close numbers of respondents had been in practice between 20-29 years (20.5%, *n*=41) and 30 or more years (19.5%, *n*=39) (Table I). Slightly more respondents were ADHA members (53%, *n*=106) than non-members (47%, *n*=94) (Table I).

Eleven questions using a seven-point Likert-type scale ranging from strongly disagree (1) to strongly agree (7) were used to assess attitudes and perceptions of participants toward DTs. Results from descriptive statistics are found in Table II. In addition, a one-sample *t*-test was used to determine statistically significant differences in Likert-type questions compared to a neutral rating of 4.0 (Table III). Results revealed significantly more hygienists agreed than disagreed (M=5.78, SD=1.90) a DT was needed in Virginia (d=1.78, 95% CI [1.51 to 2.04], t(199)=13.25, *P*<0.001) and supported that dental therapy could be a solution to the problem of access to care issues in Virginia (M=5.97, SD=1.80) (d=1.97, 95% CI [1.72 to 2.22], t(199)=15.47, *P*<0.001) (Table III). Similarly, respondents were significantly more likely to agree than disagree (M=5.90, SD=1.42) they had an understanding of the services performed by DTs (d=1.90, 95% CI [1.70 to 2.09], t(199)=18.84, *P*<0.001) and agreed there was evidence DTs could perform high-quality

work (M=5.75, SD=1.75) (d=1.75, 95% CI [1.51 to 1.99], t(199)=14.17, *P*<0.001) (Table III). Further, significantly more respondents were interested than uninterested (M=4.96, SD=2.28) in becoming a DT if it was recognized in Virginia (d=.96, 95% CI [.64 to 1.27], t(199)=5.92, *P*<0.001) (Table III). However, while significantly more hygienists agreed than disagreed (M=5.89, SD=1.87) it was important for Virginia to adopt legislation for a dental therapy model (d=1.89, 95% CI [1.72 to 2.15], t(199)=14.28, *P*<0.001), significantly more disagreed than agreed (M=3.19, SD=2.02) that DTs' practice should be restricted to acknowledged underserved areas in Virginia (d=-.81, 95% CI [-1.09 to -.52], t(199)=-5.64, *P*<0.001) (Table III).

Significant differences were also found when evaluating participants' responses to proposed scopes of practice (Table III). Significantly more hygienists agreed than disagreed that DTs should be able to perform simple extractions of primary teeth (M=5.99, SD=1.76) (d=1.99, 95% CI [1.74 to 2.23], t(199)=15.92, *P*<0.001), perform simple restorations (M=5.98, SD=1.77) (d=1.98, 95% CI [1.73 to 2.23], t(199)=15.79, *P*<0.001), provide emergency palliative care (M=5.70, SD=1.83) (d=1.70, 95% CI [1.44 to 1.95], t(199)=13.08, *P*<0.001), and prescribe non-narcotic analgesics, anti-inflammatory, and antibiotic medications (M=6.02, SD=1.73) (d=2.02, 95% CI [1.78 to 2.26], t(199)=16.56, *P*<0.001) (Table III).

Regarding proposed levels of supervision, most respondents (45%, *n*=89) indicated general supervision would be most appropriate for DTs, with 31% (*n*=61) indicating no supervision was needed. Sixteen percent of respondents (*n*=32) selected indirect supervision, and only 9% of respondents (*n*=18) believed direct supervision would be appropriate for DTs. For proposed levels of education, the majority of respondents (67%, *n*=133) felt a master's degree was most appropriate for DTs, while 26% (*n*=52) selected bachelor's degree (Table IV). Only

7% (*n*=14) felt an associate degree was appropriate, and 0.5% (*n*=1) selected certificate (Table IV).

A chi-square test of association was used to determine if there was an association between responses related to education level, years of practice, and opinions toward education requirements for DTs (Table V). When cells with expected frequencies were less than 5, the Fisher's Exact Test was used, and the Bonferroni adjusted criterion for statistical significance was established as *P*=.0125 (Table V). Results revealed a statistically significant difference in the frequency of responses based on a participant's education level and their opinions toward education requirements for DTs (Fisher's Exact Test=34.17, df=9, *P*=.000, Cramer's V=.28) (Table V). Most participants (*n*=133, 67%), regardless of highest degree held, felt a DT should have a master's degree (Table IV). However, roughly one-third of participants with an associate degree (33%) felt a DT should have an associate degree, compared to only 3% of all other degree holders (Table IV).

Results revealed no significant associations between frequency of responses based on years of practice as a dental hygienist and opinions toward education requirements for DTs (*P*>.0125) (Table V). Regardless of years of practice, respondents overwhelmingly selected master's degree for the appropriate education level for DTs; this included 71% of hygienists practicing for less than 10 years, 60% of hygienists practicing for 10-19 years, 71% of hygienists practicing for 20-29 years, and 62% of hygienists practicing for 30 or more years (Table VI).

For open-ended questions, 182 responses were provided for potential advantages, 106 for potential disadvantages, and 32 for additional comments (Table VII). Responses for potential advantages were categorized by the themes "Increased access to care," "Autonomy/advancement of the dental hygiene profession," "Provide support for dentist," "Enhanced quality of care,"

"More affordable care," "Increase in revenue/production," and "No advantages." "Increased access to care" (56%, *n*=102) was the most frequent advantage cited by participants, followed by "Autonomy/advancement of the dental hygiene profession" (13%, *n*=22) (Table VII). Responses for potential disadvantages were categorized by the themes "Lack of support from dentists," "Lower quality of care," "Public confusion/acceptance," "Cost/pay issues," "Safety/liability concerns," "More responsibility/stress for dental hygienists," and "No disadvantages." The most frequent response was "Lack of support from dentists" (27%, *n*=29), closely followed by "No disadvantages" (26%, *n*=27) (Table VII).

CHAPTER V

DISCUSSION

With the proposed shortage of oral healthcare providers affecting over 1.3 million Virginians, dental therapists (DTs) could provide much-needed assistance to those experiencing access to care barriers.[2] In states where dental therapy legislation has been adopted, such as Alaska, Minnesota, and parts of Oregon, the implementation of DTs has reduced oral disease prevalence and severity, allowed dentists the availability to perform more complex procedures, and increased preventive care for children by five-fold.[20,39,45] As dental therapy remains a potential solution for underserved Virginians, the state of Virginia may consider adopting dental therapy legislation. As such, assessing the opinions of dental hygienists, the workforce expected to fill the role of the proposed DT, was imperative.[10] Results from this study found overall positive attitudes of Virginia dental hygienists toward DTs.

Findings from this study suggest Virginia dental hygienists were aware of a need for DTs and supported implementing the DT to address access to care barriers in the state. Participants added additional comments reflecting on the need for DTs in Virginia. These findings were in alignment with other recent studies exploring the opinions of dental hygienists toward DTs, notably Coplen et al. and Ly et al., in which the majority of surveyed dental hygienists in Oregon and Idaho supported a need for the DT.[20-21,25] As Oregon and Idaho have both adopted dental therapy legislation, it is possible Virginia policymakers may consider dental therapy legislation given the support from Virginia dental hygienists. However, findings from this study were in contrast to a recent survey of 145 Virginia dentists by Howell, in which the vast majority of surveyed dentists strongly disagreed a mid-level provider was needed in Virginia.[54] Other studies

involving the opinions of dentists toward DTs have found similar results, such as To'olo et al. and Blue et al., in which the majority of surveyed dentists did not support a need for the DT.[29,33]

Participants in this study acknowledged differing opinions between Virginia dentists and dental hygienists in the open-ended comments. Participants indicated "Lack of support from dentists" as the top potential disadvantage of DTs (27%), closely followed by "No disadvantages" (26%). One reason for contrasting opinions could be the possibility of the field of dental therapy leading dental hygienists away from the authority of dentists. If dental hygienists were able to work independently from dentists, dentists may view this as competition for patients, thus impacting dentist incomes. In this study, the second most-cited potential advantage to DTs in Virginia was "Autonomy/advancement of dental hygiene profession" (13%), second only to "Increased access to care" (56%). Concerns amid the COVID-19 pandemic appeared to fuel Virginia dental hygienists' support for autonomy; additional comments included:

> I really hope this paves the way for future dental hygienists to practice independently from dentists, especially with all the mistreatment from some dentists to many hygienists across the country. It's been very difficult to hear how hygienists are being treated during this pandemic.
>
> With current events it is evident that dentists do not care for dental hygienists. It is time for us to separate from the dentist umbrella.
>
> If there is anything we have learned from the current pandemic it is that we are bound by the whims of our dentist employers. So many dental hygienists are being forced to return to work while feeling unsafe. It is imperative that we continue to work towards autonomy for dental hygienists, which includes the mid level provider.

Support for autonomy was also evidenced by the majority of surveyed Virginia dental hygienists believing general supervision was appropriate for DTs (45%), with nearly a third (31%) supporting no supervision at all. Additionally, all four Likert-type questions related to scope of practice were answered with the majority of those surveyed agreeing or strongly agreeing. These findings suggest Virginia dental hygienists overwhelmingly supported the autonomy and advancement of the dental hygiene profession, to include a broader scope of practice. In contrast, Howell found 70% of 145 surveyed Virginia dentists believed direct supervision, the highest level of dental supervision, would be appropriate for DTs.[54] This was comparable to findings by Ly et al. in the pacific northwest, in which the highest number of surveyed dentists (48%, n=39) supported direct supervision for DTs, while the majority of surveyed dental hygienists (57%, *n*=42) supported indirect or general supervision.[21] Dentists may have supported direct supervision for DTs due to concerns regarding safety or quality of care. They may have also opposed less supervision given the potential financial implications of competition for patients with independently-practicing DTs.

Regarding education, most participants chose master's degree as the appropriate educational level for DTs and it was the chosen degree requirement for DTs regardless of current degree held. Current dental therapy programs in Alaska and Minnesota, the two states in which dental therapy has been in practice the longest, offer 2- to 4-year curriculums post-baccalaureate.[50] Virginia dental hygienists may have been aware of the successes of dental therapy implementation in these states and acknowledged the need for higher education to practice safely as DTs. However, these findings were in contrast with other studies assessing dental hygienists' opinions of proposed degree requirements for DTs. For example, in a survey of 187 pacific northwest dental hygienists, Ly et al. found only 24% of those surveyed agreed a

master's degree was necessary.[21] Coplen et al. found the highest number of surveyed Oregon dental hygienists selected bachelor's degree (48%, *n*=205) for appropriate DT educational requirements, while 39% (*n*=167) selected master's degree.[20] Interestingly, in this study, those with an associate degree were the only group analyzed to be more likely to choose associate degree for the proposed education requirement for DTs. One-third of participants with an associate degree selected associate degree for the proposed education requirement for DTs. In comparison, only 3% of participants with a bachelor's degree selected associate degree, and no participants with a master's degree or doctorate selected associate degree. This significant association between current education level and opinions toward education requirements for DTs may have multiple explanations. While Virginia dental hygienists with higher levels of education may have placed more value on higher-level education requirements for DTs, it is possible associate degree holders were more likely to misinterpret the depth of DT duties, perhaps not realizing a need for higher-level education requirements to fulfill the expanded DT duties. Also, dental hygienists with associate degrees might have felt apprehension toward completing the additional education required for a master's degree. If dental therapy legislation was adopted in Virginia with a master's degree requirement, dental hygienists with associate degrees would be forced to spend more time and financial resources on their education to become a DT than current holders of bachelor's or master's degrees. Given the overwhelming response of Virginia dental hygienists' support for the autonomy and advancement of the dental hygiene profession, associate degree holders may have felt a master's degree requirement would create a barrier to their own professional development.

When comparing years of practice and opinions regarding education requirements for DTs, the researchers hypothesized dental hygienists with more years of experience would place

more value on experience than formal education, choosing lower-level degree requirements for DTs. However, findings did not support this. Results revealed participants chose master's degree as the appropriate education requirement for DTs regardless of number of years practicing hygiene. This suggests no significant relationship exists between years of practice and opinions toward education requirements for DTs. More experienced dental hygienists may have felt they have had increased exposure and familiarity with the nuances associated with restorative treatment, regardless of how simple or complex, and subsequently understood the need for more formal education to become a DT.

Surprisingly, Virginia dental hygienists and Virginia dentists appeared to agree on the topic of educational requirements for DTs. Howell found the majority of surveyed Virginia dentists (58%, *n*=84) believed a master's degree should be required for a DT.[54] While Howell found the majority of Virginia dentists (38%, *n*=28) cited "Lower quality of care" as the top potential disadvantage for DTs,[54] findings from this study suggest Virginia dental hygienists acknowledged the importance of high-quality care based on their agreement with Virginia dentists of required education levels for DTs being at the master's degree level.

When asked about becoming a DT, the majority of Virginia dental hygienists in this study (53%) agreed or strongly agreed they would be interested in becoming a DT if it was recognized in Virginia. Further, two participants clarified in the additional comments section that they did not choose agree or strongly agree due to retirement, but would have otherwise been interested in becoming a DT. This was similar to findings by Smallidge et al., Coplen et al., and Lambert et al., in which the majority of surveyed dental hygienists expressed interest in becoming a DT.[20,22,28] As the ADHA supports the advancement of dental hygienists to DTs and states the dental hygiene workforce is ready and available,[12] it is importantly noted that Virginia

dental hygienists appeared to agree they are ready and available, regardless of participant membership status within ADHA. Although nearly half of participants (47%, *n*=94) were not ADHA members, overall attitudes toward DTs remained positive. This suggests ADHA membership did not impact opinions toward DTs in this study, serving as an authentic overall representation of participants' attitudes. Should Virginia policymakers decide to adopt dental therapy legislation, findings from this study suggest Virginia dental hygienists were most supportive of DTs in the state.

Limitations

Several limitations may have influenced the results of this study. A convenience sample was used from a purchased online database (E-Database Marketing) and the survey was sent digitally via email. E-Database Marketing did not encompass email addresses for all Virginia dental hygienists, and with the survey administered digitally, all participants needed internet access and a valid email address. Future studies could explore sending mailed surveys to participants from a database that lists all Virginia dental hygienists' mailing addresses. This would be more representative of the Virginia dental hygienist population.

Upon viewing the survey invitation, hygienists who supported dental therapy may have been more likely to respond, which may have impacted findings. Other hygienists may have felt they did not understand the concept of dental therapists (DTs) well enough to respond to the survey. Future studies could include a brief synopsis of dental therapy in the invitation letter with a short explanation of the importance of participation. This could, perhaps, increase the response rate of future studies.

This study involved almost exclusively female participants (95%, *n*=189), serving as a misrepresentation for male dental hygienists. However, this limitation was expected due to the disproportionate number of Virginia female and male dental hygienists; per the 2019 Virginia Healthcare Workforce Data, 98% of Virginia dental hygienists are female.[55]

Lastly, the COVID-19 pandemic came to a forefront in the United States at the time the survey questionnaire invitation was initially distributed. The state of Virginia closed dental offices for routine care in March. This disruption in daily routines may have contributed to the low initial response rate, with participants unable to check work emails. The survey was re-sent in April 2020, resulting in two "initial" emailed invitations prior to the two reminder emails. Future studies could repeat this survey once the COVID-19 pandemic has subsided. The effects of the pandemic were unprecedented, and the survey was distributed while many dental offices were navigating new safety guidelines. As many pandemic-related comments were negative, a delay in repeating the survey could allow dentists and dental hygienists the opportunity to refine office policies and procedures, possibly changing the negative outlook of some hygienists.

CHAPTER VI

CONCLUSIONS

Findings suggest Virginia dental hygiene participants were highly supportive of DTs in the state. Attitudes were overwhelmingly positive, with most participants indicating interest in becoming a DT if it was recognized in Virginia. The vast majority of respondents supported a broader scope of practice for DTs and non-direct supervision. Most respondents, regardless of years of practice, supported a master's degree as the appropriate degree requirement for DTs. As COVID-19 likely impacted results, a repeated survey after the pandemic subsides could be beneficial in further assessing attitudes toward DTs. Findings underscore the need for more research with a larger sample, which could provide more insight into opinions of the Virginia dental hygienist population toward DTs.

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Table I: Demographic Data by Number and Percentage of Total Participants (*n*=200)

	Number	Percentage
Gender		
Female	189	94.5
Male	3	1.5
Do not wish to disclose	8	4
Age (Years)		
Under 29	29	14.5
29-39	45	22.5
40-49	55	27.5
50 and over	71	35.5
Highest Education Level		
Associate Degree	30	15
Bachelor's Degree	118	59
Master's Degree	44	22
Doctorate	8	4
Years Practicing Dental Hygiene		
Less than 10	72	36
10-19	48	24
20-29	41	20.5
30 or more	39	19.5
Predominant Work Setting		
Community/Public Health	20	10
Education	31	15.5
Free/Safety Net Clinic	5	2.5
Group Practice	70	35
Solo Practice	62	31
Other	12	6
American Dental Hygienists' Association Membership		
Yes	106	53
No	94	47

Table II: Percentage Scores of Respondents' Perceptions of DTs (*n*=200)

	1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree	Total
A mid-level dental provider is needed in Virginia.	**7.5%** 15	**3.5%** 7	**3%** 6	**6.5%** 13	**8%** 16	**12%** 24	**59.5%** 119	**200**
A mid-level dental provider, such as a dental therapist, could be part of the solution to the problem of access to care in Virginia.	**6.5%** 13	**2.5%** 5	**3.5%** 7	**4%** 8	**7.5%** 15	**10.5%** 21	**65.5%** 131	**200**
It is important for Virginia to adopt legislation for a dental therapist model.	**7.5%** 15	**3%** 6	**3%** 6	**4.5%** 9	**6.5%** 13	**12.5%** 25	**63%** 126	**200**
I have an understanding of the services dental therapists may perform.	**2.5%** 5	**1%** 2	**4.5%** 9	**6%** 12	**14%** 28	**26.5%** 53	**45.5%** 91	**200**
There is evidence dental therapists can perform high-quality work.	**6%** 12	**2%** 4	**2.5%** 5	**11%** 22	**9.5%** 19	**17%** 34	**52%** 104	**200**
Dental therapists' practice should be restricted to acknowledged underserved areas in Virginia.	**29%** 58	**17%** 34	**13%** 26	**15%** 30	**8.5%** 17	**7.5%** 15	**10%** 20	**200**
I would be interested in becoming a dental therapist if it was recognized in Virginia.	**16.5%** 33	**6%** 12	**3%** 6	**9.5%** 19	**12%** 24	**11%** 22	**42%** 84	**200**
A dental therapist should be able to perform simple extractions of primary teeth.	**6.5%** 13	**3%** 6	**1.5%** 3	**4%** 8	**7%** 14	**15.5%** 31	**62.5%** 125	**200**
A dental therapist should be able to perform simple restorations (Class I occlusal or Class V buccal/lingual).	**7%** 14	**2%** 4	**2%** 4	**3.5%** 7	**10%** 20	**11.5%** 23	**64%** 128	**200**
A dental therapist should be able to provide emergency palliative care; for example, pulpal capping.	**6.5%** 13	**2.5%** 5	**5%** 10	**9%** 18	**7.5%** 15	**17%** 34	**52.5%** 105	**200**
A dental therapist should be able to prescribe non-narcotic analgesics, anti-inflammatory, and antibiotic medications.	**6.5%** 13	**1.5%** 3	**3%** 6	**3.5%** 7	**6%** 12	**17%** 34	**62.5%** 125	**200**

Table III: One-Sample *t*-test Results Comparing Mean Values of Virginia Dental Hygienist Responses to Neutral Rating

	Test Value = 4					
					95% Confidence Interval of the Difference	
	t	*df*	Sig. (2-tailed)	Mean Difference	Lower	Upper
A mid-level dental provider is needed in Virginia.	13.250	199	.000*	1.780	1.52	2.04
A mid-level dental provider, such as a dental therapist, could be part of the solution to the problem of access to care in Virginia.	15.465	199	.000*	1.970	1.72	2.22
It is important for Virginia to adopt legislation for a dental therapist model.	14.276	199	.000*	1.890	1.63	2.15
I have an understanding of the services dental therapists may perform.	18.837	199	.000*	1.895	1.70	2.09
There is evidence dental therapists can perform high quality work.	14.165	199	.000*	1.750	1.51	1.99
Dental therapists' practice should be restricted to acknowledged underserved areas in Virginia.	-5.638	199	.000*	-.805	-1.09	-.52
I would be interested in becoming a dental therapist if it was recognized in Virginia.	5.918	199	.000*	.955	.64	1.27
A dental therapist should be able to perform extractions of primary teeth.	15.917	199	.000*	1.985	1.74	2.23
A dental therapist should be able to perform simple restorations (Class I occlusal or Class V buccal/lingual).	15.789	199	.000*	1.980	1.73	2.23
A dental therapist should be able to provide emergency palliative care; for example, pulpal capping.	13.080	199	.000*	1.695	1.44	1.95
A dental therapist should be able to prescribe non-narcotic analgesics, anti-inflammatory, and antibiotic medications.	16.564	199	.000*	2.020	1.78	2.26

*Denotes significance

Table IV: Frequencies for Opinions Toward Education Requirements for DTs Based on Current Education Level

Current Education Level	What Level of Education Should Be Required for a Mid-Level Dental Provider?				
	Certificate	Associate Degree	Bachelor's Degree	Master's Degree	Total
Associate Degree	**0%** 0	**33.3%** 10	**26.7%** 8	**40%** 12	**100%** 30
Bachelor's Degree	**0%** 0	**3.4%** 4	**29.7%** 35	**66.9%** 79	**100%** 118
Master's Degree	**2.3%** 1	**0%** 0	**15.9%** 7	**81.8%** 36	**100%** 44
Doctorate	**0%** 0	**0%** 0	**25%** 2	**75%** 6	**100%** 8
Total	**0.5%** 1	**7%** 14	**26%** 52	**66.5%** 133	**100%** 200

Table V: Chi-Square Test of Association for Opinions Toward Education Requirements for DTs

Question	Valid *n*	X^2 or *Exact Test*	*df*	*p*	Cramer's *V*
What is your highest level of education?	200	34.17	9	.000*	.28
How many years have you been practicing dental hygiene?	200	9.48	9	.354	.13

*Denotes significance

Table VI: Frequencies for Opinions Toward Education Requirements for DTs Based on Years of Practice

Years of Practice	What Level of Education Should Be Required for a Mid-Level Dental Provider?				
	Certificate	Associate Degree	Bachelor's Degree	Master's Degree	Total
Less Than 10	**0%** 0	**2.8%** 2	**26.4%** 19	**70.8%** 51	**100%** 72
10-19	**0%** 0	**10.4%** 5	**29.2%** 14	**60.4%** 29	**100%** 48
20-29	**2.4%** 1	**9.8%** 4	**17.1%** 7	**70.7%** 29	**100%** 41
30 or More	**0%** 0	**7.7%** 3	**30.8%** 12	**61.5%** 24	**100%** 39
Total	**0.5%** 1	**7%** 14	**26%** 52	**66.5%** 133	**100%** 200

Table VII: Open-Ended Responses to Potential Advantages and Disadvantages of DTs

	Number	Percentage
Potential Advantages (*n*=182)		
Increased access to care	102	56
Autonomy/advancement of dental hygiene profession	22	12.8
Provide support for dentist	18	10.5
Enhanced quality of care	16	9.3
More affordable care	12	6.6
Increase in revenue/production	6	3.5
No advantages	6	3.5
Potential Disadvantages (*n*=106)		
Lack of support from dentists	29	27.4
Lower quality of care	19	17.9
Public confusion/acceptance	18	17
Cost/pay issues	16	15.1
Safety/liability concerns	14	13.2
More responsibility/stress for dental hygienists	12	11.3
No disadvantages	27	25.5

APPENDIX A

IRB DETERMINATION OF EXEMPT STATUS

OFFICE OF THE VICE PRESIDENT FOR RESEARCH

Physical Address
4111 Monarch Way, Suite 203
Norfolk, Virginia 23508

Mailing Address
Office of Research
1 Old Dominion University
Norfolk, Virginia 23529
Phone(757) 683-3460
Fax(757) 683-5902

DATE: February 25, 2020
TO: Lynn Tolle, MS
FROM: Old Dominion University Health Sciences Human Subjects Review Committee
PROJECT TITLE: [1561423-1] Perspectives of VA Dental Hygienists Toward a Mid-Level Dental Provider

REFERENCE #:
SUBMISSION TYPE: New Project

ACTION: DETERMINATION OF EXEMPT STATUS
DECISION DATE:

REVIEW CATEGORY: Exemption category # 2

Thank you for your submission of New Project materials for this project. The Old Dominion University Health Sciences Human Subjects Review Committee has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will retain a copy of this correspondence within our records.

If you have any questions, please contact Harry Zhang at 757-683-6870 or qzhang@odu.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Old Dominion University Health Sciences Human Subjects Review Committee's records.

APPENDIX B

INVITATION LETTER TO VIRGINIA DENTAL HYGIENISTS

Email Subject: A Survey on Dental Therapists in VA - We Need Your Help!

Greetings Fellow Dental Hygienists in VA,

Are you ready for a Mid-Level Dental Provider in VA? As a dental hygiene graduate student at Old Dominion University, I am conducting a study on *Attitudes of Virginia Dental Hygienists Toward Mid-Level Dental Providers*, specifically a Dental Therapist, currently being discussed as a provider option in the Commonwealth and other regions in the United States. States such as Alaska and Minnesota have already adopted the dental therapy model.

We know how valuable your time is and greatly appreciate your assistance for completing this important survey, which is found at the following link:
https://odu.co1.qualtrics.com/jfe/form/SV_2bCmSGcGqhAZ1xH

This brief survey should take approximately 6 to 8 minutes to complete. Results will be available upon request once the data is analyzed.

Thank you!

Helene Burns, RDH, BSDH
Graduate Student

Lynn Tolle
Professor
University Professor

School of Dental Hygiene
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Old Dominion University
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APPENDIX C

SURVEY QUESTIONNAIRE

GENERAL INSTRUCTIONS: Please respond to all items on the survey. After you have finished completing the survey, click on the "submit responses" button. Do not use your arrow keys to navigate each question. You will not be able to backtrack. Voluntary informed consent is understood by completion of the survey. All responses will be anonymous and reported in group form only.

CONTACT INFORMATION: Questions regarding the purpose or procedures of this research project should be directed to Helene Burns at hburns@odu.edu and/or Professor Lynn Tolle at ltolle@odu.edu. If you have any questions or concerns about your rights as a research participant, please contact Dr. Tancy Vandecar-Burdin, the current Institutional Review Board (IRB) chair, at 757-683-3802 at Old Dominion University. The IRB, a university committee established by federal law, is responsible for protecting the rights and welfare of research participants.

Please indicate your level of agreement with the following statements about a mid-level dental provider, defined as a licensed dental hygienist who has graduated from an accredited dental hygiene program who provides primary oral health care directly to patients and is also trained to perform restorative care, such as placing restorations and minor extractions:

	Strongly disagree (1)	(2)	(3)	(4)	(5)	(6)	Strongly agree (7)
A mid-level dental provider is needed in Virginia.	○	○	○	○	○	○	○
A mid-level dental provider, such as a dental therapist, could be part of the solution to the problem of access to care in Virginia.	○	○	○	○	○	○	○
It is important for Virginia to adopt legislation for a dental therapist model.	○	○	○	○	○	○	○
I have an understanding of the services dental therapists may perform.	○	○	○	○	○	○	○
There is evidence dental therapists can perform high quality work.	○	○	○	○	○	○	○
Dental therapists' practice should be restricted to acknowledged underserved areas in Virginia.	○	○	○	○	○	○	○
I would be interested in becoming a dental therapist if it was recognized in Virginia.	○	○	○	○	○	○	○

Please indicate your level of agreement with the following statements about a mid-level dental provider related to scope of practice. A dental therapist should be able to;

	Strongly disagree (1)	(2)	(3)	(4)	(5)	(6)	Strongly agree (7)
Perform simple extractions of primary teeth.	◯	◯	◯	◯	◯	◯	◯
Perform simple restorations (Class I occlusal or Class V buccal/lingual).	◯	◯	◯	◯	◯	◯	◯
Provide emergency palliative care; for example, pulpal capping.	◯	◯	◯	◯	◯	◯	◯
Prescribe non-narcotic analgesics, anti-inflammatory, and antibiotic medications.	◯	◯	◯	◯	◯	◯	◯

What level of supervision should be required for a mid-level dental provider?

◯ Direct Supervision
◯ Indirect Supervision
◯ General Supervision
◯ No supervision needed

What level of education should be required for a mid-level dental provider?

◯ Certificate
◯ Associate Degree
◯ Bachelor's Degree
◯ Master's Degree

What would be potential **advantages** of a mid-level dental provider in Virginia?

What would be potential **disadvantages** of a mid-level dental provider in Virginia?

What is your highest level of education?
◯ Associate
◯ Bachelor's
◯ Master's
◯ Doctorate

Are you a member of the American Dental Hygienists' Association (ADHA)?
◯ Yes
◯ No

What gender do you most identify with?
◯ Male
◯ Female
◯ Do not wish to disclose

What is your age?
◯ <29
◯ 29-39
◯ 40-49
◯ 50+

How many years have you been practicing dental hygiene?
◯ <10 years
◯ 10-19 years
◯ 20-29 years
◯ 30+ years

What is your predominant work setting?
◯ Community/Public Health
◯ Education
◯ Free/Safety Net Clinic
◯ Group Practice
◯ Solo Practice
◯ Other

Please provide any additional comments.

VITA

NAME: Helene Mesina Burns, RDH
ADDRESS: 4608 Hampton Blvd.
Norfolk, VA 23529

EDUCATION:

In progress	Old Dominion University Norfolk, VA Master of Science, Dental Hygiene
2018	Old Dominion University Norfolk, VA Bachelor of Science, Dental Hygiene
2014	Tidewater Community College Virginia Beach, VA Associate of Arts, Liberal Arts

PROFESSIONAL EXPERIENCE:

2020-Present	Adjunct Clinical Instructor, Department of Dental Hygiene, Old Dominion University, Norfolk, VA
2019-2020	Dental Hygienist, Dr. Aviles DDS, Norfolk, VA
2018-2020	Graduate Teaching Assistant, Department of Dental Hygiene, Old Dominion University, Norfolk, VA
2018-2019	Dental Hygienist (Temp), Virginia Beach, VA & Norfolk, VA

MEMBERSHIP IN PROFESSIONAL SOCIETIES:

2020-Present	American Dental Education Association
2020-Present	Alpha Eta National Honor Society for Allied Health Professionals
2016-Present	American Dental Hygienists' Association

SCHOLARSHIPS:

2019	Friends of Dental Hygiene, Old Dominion University