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Research

Attitudes of Virginia Dentists Toward Dental Therapists: A pilot study

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Abstract

Purpose: The purpose of this pilot study was to determine perceptions of Virginia (VA) dentists toward mid-level dental providers, specifically dental therapists (DT), and determine whether membership in the American Dental Association (ADA) membership affected attitudes.

Methods: A convenience sample of 1208 dentists in the state of VA were invited to participate in an electronic survey. The instrument consisted of 11 Likert type scale questions assessing attitudes toward DTs. Additional items included the appropriate level of education and supervision of a DT, and five demographic questions. Descriptive statistics were used to analyze the data. A one-sample t-test was used to determine statistical significance for the Likert scale items.

Results: An overall response rate of 12% was obtained (n=145). Most respondents were male (73%), members of the ADA (84%), and over the age of 40 (65%). Results suggest that most participants did not perceive (M=1.90, $p<0.001$) that a DT was needed in VA, and did not support (M=2.08, $p<0.001$) a DT model provider. Most participants (M=2.01, $p<0.001$) were not comfortable having a DT perform authorized procedures or ever employing one in their practice (M=1.82, $p<0.001$). Comfort having a DT perform authorized procedures (b=.63, $p<0.001$), but not years of practice (b=-.09, $p=0.18$), was significantly associated with support for this mid-level provider. Additionally, a lower tolerance towards DTs was associated with an increased likelihood of membership in the ADA (b=.14, $p=0.04$).

Conclusions: Virginia dentists surveyed did not perceive a need for DTs and generally reported unfavorable attitudes towards this mid-level provider. Findings support the need for more research with a larger, more diverse sample population.

Keywords: dental therapists, mid-level providers, access to care,

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Introduction

Oral Health in America: A Report from the Surgeon General, highlighted the importance of oral health to general health over twenty years ago.[1] Oral disease has been described as a "silent epidemic," and poor oral health is associated with other serious complications impacting overall health and well-being.[1] The report also identified lack of access to care as one of the major barriers to achieving optimal oral health.[1] However, many Americans continue to face multifaceted barriers, including limited income, lack of dental insurance coverage, and living in underserved areas with a shortage of dental professionals leading to disparities in oral health care.

According to the Health Resources and Services Administration, approximately 56 million people in the United States (US) live in a designated dental health professional shortage areas.[2] To exacerbate the access to oral health care challenges, research studies project that by 2025, all states are expected to have a shortage of dentists.[3] A 10% increase in the demand for dentists, coupled with only a 6% increase in the supply is expected nationally by 2025.[3] Conversely, an oversupply of dental hygienists has also been projected.[3] It is possible that the number of dental health professional shortage areas could be reduced if the roles of dental hygienists were expanded to compensate for the shortage of dentists.

There are 99 designated dental health professional shortage areas in the state of Virginia (VA).[2] In 2013, the VA Department of Health Behavioral Risk Factor Surveillance Survey found

that one-third of Virginians reported not having their teeth cleaned within the previous year.[4] Moreover, over a third Virginians reported lacking dental insurance to cover routine dental care.[5] An expansion in the role of the dental hygienist, such as the dental therapy workforce model, could be a potential solution to the projected shortage of dentists in VA.

In response to the Surgeon General's report in 2000, new workforce models were developed for dental hygienists to expand their scope of practice and potentially address some barriers related to access to care, particularly for those living in rural or underserved areas.[6] The American Dental Hygienists' Association (ADHA) defines a mid-level oral health practitioner 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."[7] A variety of mid-level dental providers (MLDPs) exist or are proposed with different levels of education and supervision (Table I).[8-11] Some MLDP models are dental hygiene-based, which means the provider is dually licensed as a dental hygienist and a dental therapist, while other models require no dental hygiene training. The most common MLDP is the dental therapist (DT).

Table I. Mid-level dental providers and scope of practice [8-11]

Model	Supervision	Examples of Permitted Procedures
Dental Health Aide Therapist (DHAT)	General supervision	Preventive care and education Basic restorations Prophylaxis (cleanings) Non-surgical/simple extractions
Dental Therapist (DT)	General or indirect supervision depending on the procedure	X-rays Fluoride Varnish Sealants Restoration of primary and permanent teeth Placement of temporary crowns Extract primary teeth
Advanced Dental Therapist (ADT)*	General supervision	All dental hygiene procedures All dental therapy procedures, plus: Complete an oral evaluation and create a treatment plan Perform simple extractions of diseased teeth
Dental Hygiene Therapists (DHT)*	Direct Supervision	All dental hygiene procedures, plus: Prepare and restore decayed primary and permanent teeth Prepare and place stainless steel crowns Extract primary teeth and nonsurgical extraction of periodontally diseased permanent teeth

*Dental hygiene-based models: dually licensed as dental hygienists and dental therapists

Minnesota signed the first MLDP workforce model into law in 2009 with two categories of practitioners, a DT and an Advanced DT(ADT).[8] Both models provide preventive and restorative procedures under the supervision of a licensed dentist in underserved settings throughout the state.[10] The DT provides care under general or indirect supervision depending on the procedure; however, the ADT can perform all services under general supervision.[9,13] Currently, DTs and ADTs are authorized to practice statewide in Minnesota, while dental health aide therapists (DHAT) practice in tribal communities in Alaska, Washington, Oregon, and Idaho.[12] Dental therapists, ADTs and DHATs follow specific regulations outlined by their respective state dental practice acts. In Maine, MLDP legislation was passed in 2014; however, there are no DTs currently practicing in the state. Vermont Technical College is working to develop a dental therapy program, as legislation was passed in 2016 in that state. More recently, dental therapy laws were passed in New Mexico, Connecticut, and Nevada.[12] Scope of practice, education, and supervision may differ per state; however, the overall goal of the MLDP is to increase access to dental care for underserved populations.[7]

While there are currently 11 states allowing dental therapy in some capacity,[6] research has shown mixed attitudes and opinions towards MLDPs joining the dental team.[14-21] In 2015, the American Dental Association (ADA) released a statement regarding the accreditation of dental therapy education programs, stating, "the ADA believes it is in the best interests of the public that only dentists diagnose dental disease and perform surgical and irreversible procedures."[21] A survey of Minnesota dentists identified concerns regarding the level of education and training DTs and ADTs receive, with less than one third (31%) reporting they would trust the quality of work performed by one of the MLDPs.[14] In Tennessee, 50% of dentists reported

DTs could provide care in the underserved areas; however over half of the respondents (61%) believed DTs would have a negative impact on the dental profession.[16] In a follow-up survey of dental school faculty four years later, there was a 20% increase in those who reported feeling comfortable with DTs providing care for their patients as well as a 20% decrease in dental faculty members indicating a need for significant oversight of DTs.[17,18]

A MLDP, such as a DT, could be one solution to address the access to dental care problem in VA. However, attitudes of dentists may impact future legislation if it is determined that a DT is a viable option for the oral health needs in VA. Research describing the attitudes of dentists toward DTs have been conducted in other states; however, no studies have assessed the attitudes of VA dentists.[14-21] Dentists will play a role in the future employment, supervision, and education of any MLDP model discussed for the state. The purpose of this study was to assess the attitudes of VA dentists towards MLDPs, specifically, DTs. A secondary aim was to determine whether membership in the American Dental Association (ADA) influenced dentists' attitudes towards MLDPs.

Methods

A descriptive survey design was used to explore the attitudes of a convenience sample dentists licensed in VA towards MLDPs. Upon Institutional Review Board approval from Old Dominion University, an investigator designed questionnaire "Attitudes of Virginia Dentists Toward a Mid-Level Dental Provider," was emailed to 1208 dentists whose addresses were purchased from an online email database (dentistlistpro.com). The survey was adopted with permission from a previously validated instrument,[17] and included researcher developed items. Eleven questions assessed attitudes of participants toward a DT using a seven-point Likert type scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The seven-item scale showed adequate internal reliability with a Cronbach's coefficient alpha of a= 0.73. Seven of the eleven questions focused on general attitudes of dentists towards the DT mid-level provider model, and the remaining four questions focused on respondent attitudes toward a DT relative to the participant's own dental practice. Participants were also asked to respond to items regarding supervision and education of the DT, whether a DT model accommodated the oral care needs of the underserved, two open-ended questions regarding advantages and/or disadvantages to a DT, as well as five demographic questions (gender, age, years of practice, predominant practice setting, and professional association membership). A panel of dental hygiene faculty reviewed the researcher developed items to establish face validity and clarity of instructions. Modifications were made based on feedback from the panel. An online questionnaire software (Qualtrics; Provo, UT, USA) was used to create the survey for online distribution, and three reminders were sent to the sample over a period of six weeks.

Statistical Analysis

Descriptive statistics were used to analyze response frequency. A one-sample t-test was used to determine statistically significant differences for Likert-type scale questions that were compared to a neutral rating of 4. Significance was set at the .05 level. Responses from the open-ended questions were coded based on reported advantages and disadvantages of a DT. The principal investigator analyzed the open-ended responses to develop five major themes. Responses were assigned to one of the five themes. The open-ended responses were sent to a second investigator prior to frequency analysis to establish content validity and reliability. A multiple linear regression model was used to determine the relationship between respondents' years of practice, comfort in having a DT perform authorized procedures in their office setting, and support of a DT mid-level provider model in VA. Additionally, a multiple linear regression was performed to determine whether membership in the ADA was associated with predicting support for a DT.

Results

Of the 1208 licensed dentists in VA, 145 (n=145) completed the online survey for a response rate of 12%. The majority of participants were male (73%), over 40 years of age (65%), and worked in either a solo (54%) or group (37%) dental practice. Most participants (64%) reported practicing dentistry for more than 20 years, with 29% reporting practicing between 10-19 years. Only 7% of participants reported practicing for less than 10 years (Table II). The vast majority of participants (84%) reported ADA membership, and 75% reported accommodating the underserved in their practice (Table II). Regarding the supervision requirements for a DT, most (70%) indicated direct supervision should be required. Opinions regarding the level of education required for a DT varied; a little more than half (58%) of indicated a master's degree would be the appropriate level while about one-third (34%) indicated a bachelor's degree would be appropriate (Table III).

Results from the Likert type questions on attitudes and general perceptions of participants toward the DT are shown in Table IV. T-test analysis results revealed participants did not perceive (M = 1.90, SD= 1.48) that a DT was needed in VA (d= -2.10, 95% CI [-2.35 to -1.86], t(144) = -17.11, $p < 0.001$).

Table II. Sample demographics (n= 145)

Category	n	%
Gender		
Male	106	73.0
Female	32	22.0
Do not wish to disclose	7	5.0
Age (years)		
Under 29	1	1.0
29-39	21	14.0
40-49	40	28.0
Over 50	83	57.0
Years Practicing Dentistry		
Less than 10	10	7.0
10-19	42	29.0
20-29	30	21.0
More than 30	63	43.0
Primary work setting		
Community/Public health	1	1.0
Education	7	5.0
Free/Safety net clinic	2	1.0
Group practice	55	38.0
Solo practice	78	54.0
Other	2	1.0
American Dental Association membership		
Yes	122	84.0
No	23	16.0
Accommodation of underserved in practice setting		
Yes	109	75.0
No	36	25.0

Additionally, respondents were significantly more likely to disagree (M=2.08, SD=1.56) than agree that a DT mid-level provider model could be part of the solution to access to care in VA (d=-1.92, 95% CI [-2.17 to -1.66], t(144)=-14.83, $p<0.001$). Similarly, more respondents disagreed (M=2.08, SD=1.85) than agreed that it is important for VA to adopt legislation for a DT mid-level provider model (d=-1.92, 95% CI [-2.23 to -1.62], t(144)=-12.56, $p<0.001$) (Table V).

Most respondents (M=4.88, SD=2.14) indicated an understanding of the range of services performed by a DT (d=.88, 95% CI [.53 to 1.23], t(144)=4.96, $p<0.001$). However, most participants did not agree (M=2.74, SD=1.65) that the evidence supported that a DT could perform high quality work (d=-1.26, 95% CI [-1.53 to -.99], t(144)=-9.19, $p<0.001$). More respondents agreed than disagreed (M=4.63, SD=2.19) that the public will perceive that the dentist is less important if a DT is permitted to perform a wide range of procedures (d=.63, 95% CI [.28 to .99], t(144)= 3.49, $p=0.001$). Most respondents (M=4.53, SD=2.36) also indicated that DTs should be restricted to practicing in acknowledged underserved areas in VA (d=.53, 95% CI [.14 to .92], t(144)=2.71, $p=0.007$).

Table III. Supervision and education required for a dental therapist (n=145)

	n	%
Level of supervision that should be required for a DT		
Direct	102	70.0
General	29	20.0
Indirect	14	10.0
No supervision needed	-	-
Level of Education that should be required for a DT		
Certificate	6	4.0
Associate degree	5	3.0
Bachelor's degree	50	34.0
Master's degree	84	58.0

Moreover the vast majority of participants indicated (M=2.01, SD=1.66) discomfort in allowing a DT to perform authorized procedures on patients in their practices (d=-1.99, 95% CI [-2.26 to -1.71], t(144)=-14.42, $p<0.001$) and were more likely to disagree than to agree (M=2.09, SD=1.56) that delegating some work to a DT would improve their own job satisfaction (d=-1.91, 95% CI [-2.17 to -1.65], t(144)=-14.51, $p<0.001$). Results also suggest significantly more VA dentists disagreed (M=2.33, SD=1.82) that employing DTs in their dental office would be cost-effective (d=-1.67, 95% CI [-1.97 to -1.37], t(144)=-11.05, $p<0.001$) and were not supportive of (M=1.82, SD=1.50) employing a DT in their practice (d=-2.18, 95% CI [-2.43 to -1.93], t(144)=-17.51, $p<0.001$).

Sixty-six participants responded to the open-ended question on potential advantages of DTs while 73 responded to the open-ended question on potential disadvantages. Responses concerning potential advantages were categorized according to the following themes: expanding care to the underserved (41%), lower costs for patients (4%), generate profit for the dental office (4%), care to Medicaid patients (2%), and no potential foreseen advantages (45%). Similarly, responses regarding potential disadvantages were further

Table IV. Perceptions regarding dental therapists (n=145)

	1. Strongly disagree	2.	3.	4.	5.	6.	7. Strongly agree
	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
A mid-level dental provider is needed in Virginia.	62.76 (91)	13.10 (19)	9.66 (14)	7.59(11)	2.76(4)	1.38(2)	2.76 (4)
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.	53.79 (78)	19.31 (28)	8.97 (13)	8.28 (12)	4.83 (7)	2.07 (3)	2.76 (4)
It is important for Virginia to adopt legislation for a dental therapist model.	64.83 (94)	11.72 (17)	4.83 (7)	4.14 (6)	4.14 (6)	4.83 (7)	5.52 (8)
I have an understanding of the services dental therapists may perform.	11.72 (17)	8.28 (12)	7.59 (11)	11.03 (16)	8.97(13)	18.62 (27)	33.79 (49)
There is evidence dental therapists can perform high quality work.	33.79 (49)	14.48 (21)	17.24 (25)	21.38 (31)	7.59 (11)	2.07 (3)	3.45 (5)
The public will think the dentist is less important if dental therapists are allowed to perform a wide range of procedures.	14.48 (21)	7.59 (11)	10.34 (15)	9.66 (14)	15.17(22)	11.03 (16)	31.72 (46)
Dental therapists' practice should be restricted to acknowledged underserved areas in Virginia.	20.69 (30)	4.14 (6)	8.97 (13)	15.17 (22)	6.21 (9)	8.28 (12)	36.55 (53)
I would be comfortable having a dental therapist perform authorized procedures on my patients.	61.38 (89)	15.86 (23)	3.45 (5)	8.97 (13)	3.45 (5)	3.45 (5)	3.45 (5)
Being able to delegate some work to a dental therapist would make my job more satisfying.	55.17 (80)	17.24 (25)	8.97 (13)	8.97 (13)	4.14 (6)	2.76 (4)	2.76 (4)
Having dental therapists in my practice will be a cost-effective addition to the dental office.	50.34 (73)	17.24 (25)	10.34 (15)	9.66 (14)	2.07 (3)	4.14 (6)	6.21 (9)
I would employ a dental therapist in my practice.	66.21 (96)	13.79 (20)	7.59 (11)	4.83 (7)	2.76 (4)	1.38 (2)	3.45 (5)

categorized into the following themes: safety concerns for the patient (21%), lower quality of care (38%), difficulty differentiating between complex and simple procedures (7%), lack of willingness to practice in underserved populations (10%), competition with patient pool (21%), and negative public perception of DTs (4%) (Table VI).

A multiple linear regression analysis was conducted to determine if years of practice and comfort in having a DT perform authorized procedures were statistically associated with participants' support for a DT (Table VII). For this analysis, comfort ratings were defined by responses to the Likert scale statement, 'I would be comfortable having a dental therapist perform authorized procedures on my patients' and support was defined by responses to the statement, 'A mid-level dental provider is needed in Virginia.' Results from the linear combination of years of practice and comfort having DT perform authorized procedures revealed 39% of variance in ratings of support for a DT ($F(2, 142)= 45.23$, $p<0.001$). The analysis revealed comfort having DTs perform authorized procedures in their practice ($b= .63$, $p<0.001$, 95% CI [.44, .68]), but not years of practice ($b= -.09$, $p=0.18$, 95% CI [-.32, .06]), was significantly associated with support of a DT.

A second multiple linear regression analysis was completed determine if an association existed between participants'

Table V. One Sample t-test results comparing mean values of responses to neutral rating (n=145)

	Test Value = 4					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
A MLDP is needed in Virginia.	-17.113	144	.000	-2.103	-2.35	-1.86
A MLDP, such as a dental therapist, could be part of the solution to the problem of access to care in Virginia.	-14.829	144	.000	-1.917	-2.17	-1.66
It is important for Virginia to adopt legislation for a dental therapist model.	-12.558	144	.000	-1.924	-2.23	-1.62
I have an understanding of the services dental therapists may perform.	4.961	144	.000	.883	.53	1.23
There is evidence dental therapists can perform high quality work.	-9.189	144	.000	-1.255	-1.53	-.99
The public will think the dentist is less important if dental therapists are allowed to perform a wide range of procedures.	3.491	144	.001	.634	.28	.99
Dental therapists' practice should be restricted to acknowledged underserved areas in Virginia.	2.713	144	.007	.531	.14	.92
I would be comfortable having a dental therapist perform authorized procedures on my patients.	-14.423	144	.000	-1.986	-2.26	-1.71
Being able to delegate some work to a dental therapist would make my job more satisfying.	-14.512	144	.000	-1.910	-2.17	-1.65
Having dental therapists in practice will be a cost-effective addition to the dental office.	-11.052	144	.000	-1.669	-1.97	-1.37
I would employ a dental therapist in my practice.	-17.513	144	.000	-2.179	-2.43	-1.93

membership in the ADA, and comfort in having a DT perform authorized procedures, and participants' tolerance toward a DT (Table VII). Ratings were defined by the same responses to statements as defined previously. Results from the linear combination of membership in the ADA and comfort having a DT perform authorized procedures revealed 40% of variance in ratings of tolerance toward a DT ($F(2, 142) = 47.30$, $p < 0.001$). Both membership in the ADA ($b = .14$, $p = 0.04$, 95% CI [.03, 1.07]) and comfort in having a DT perform authorized procedures ($b = .62$, $p < 0.001$, 95% CI [.44, .67]) were statistically associated with tolerance toward DTs. Participants who indicated membership in the ADA and decreased comfort in having DTs perform authorized procedures were more likely to be intolerant toward the DT mid-level provider model.

Discussion

Disparities in oral health care continue to affect many in underserved groups in the US; socioeconomic status, gender, ethnicity, race, geographic location, and access to care are important contributors to these disparities.[22] To increase the number of dental professionals available in underserved areas, policy makers in VA are exploring the DT mid-level provider model as a solution to difficulty finding a dentist, cost of treatment, and location of the care provider.[23] Recently, VA has made strides toward addressing one barrier, the cost of treatment for low-income adults, with the inclusion of a comprehensive dental benefit for Medicaid beneficiaries in the 2020 state budget.[24] Given this new policy, there likely will be a greater demand for dental services, and the use of a mid-level provider, such as the DT, may be one way to meet this increased demand. However, results from this study indicate that dentists in the state of VA have unfavorable attitudes toward the DT workforce model.

The majority of responses regarding DTs were overwhelmingly negative. Dentist participants were neither open, nor willing, to consider adding a DT to their practice, nor did they support potential legislation for a DT provider in VA. Over one half of all participants strongly disagreed with each survey statement concerning the DT model. As the majority of respondents were members of the ADA, attitudes

Table VI. Responses regarding potential advantages and disadvantages of dental therapists (n=139)

	n	%
Potential advantages (n=66)		
Expanding care to the underserved	27	41.0
Lower costs for patients	4	6.0
Generate profit for the dental office	4	6.0
Care to Medicaid patients	1	2.0
No potential advantages	30	45.0
Potential disadvantages (n=73)		
Safety concerns for the patient	15	21.0
Lower quality of care	28	38.0
Difficulty differentiating between complex and simple procedures	5	7.0
Lack of willingness to practice in underserved populations	7	10.0
Competition with patient pool	15	21.0
Negative public perception of dental therapists	3	4.0

appeared to be in alignment with previous literature related to DT providers.[14-18,20] Attitudes also aligned with the ADA's opposition to the DT provider model, which focuses on the lack of evidence supporting improvements in oral health as a result of treatment provided by DTs.[26] Additional concerns from the ADA include the cost of training and licensure, as well as the possible overpopulation of DTs in urban rather than underserved rural areas.[26] Similarly, Abdelkarim et. al., also found overall negative attitudes among Mississippi dentists toward the DT workforce model.[20]

Over half of respondents agreed the public would perceive dentists to be less important if DTs were allowed to perform a wide range of restorative procedures. Similarly, Blue et al., found Minnesota dentists were concerned that DTs would interfere with patient relationships with dentists and lead to a loss of respect.[14] Interestingly, a follow-up study among Minnesota dental faculty demonstrated that once there was exposure to DTs, significantly greater acceptance followed.[17] Results suggest dentists may possess unfavorable attitudes toward a DT because of unfounded concerns from a lack of familiarity and exposure to this workforce model. Another explanation for the negative attitudes may be the potential competition for the patient pool. Dentists may fear they will lose patients to mid-level providers who can provide similar care at a lower cost.

The open-ended responses also revealed an overwhelming impression of "no potential advantages" to a DT provider model in VA and "lower quality of care" was the most frequently cited. In addition to lower quality care, results suggest patient safety was a major concern of participants. Blue et al., also found most Minnesota dentists did not trust the quality of work performed by DTs.[14] Likewise, Abdelkarim et al. found Mississippi dentists also questioned the education and quality of care performed by DTs.[20] These findings suggest that a major barrier cited for accepting a DT in the dental community is uncertainty regarding the quality of education. In 2020 the first dental therapy program in Alaska was accredited by the Commission on Dental Accreditation (CODA)[27] signifying a major step for dental therapy education. It is noteworthy that both of the DT programs in Minnesota were developed prior to the development of CODA standards; however, these programs have served as educational models and meet the current accreditation standards.[28] Moreover, Minnesota DTs must pass the same clinical competency exam as dentists for the services they are permitted to provide as a requirement for licensure.[28] A majority of the participants in this study indicated that a DT should be educated at the master's degree level followed by a bachelor's degree, similar to the findings of Ly et al.[19]

Table VII. Summary of Multiple Linear Regression Analysis*

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Constant	1.170	.320		3.656	.000
Years of Practice	-.132	.097	-.090	-1.361	.176
Comfort	.558	.059	.626	0.499	.000
Constant	.142	.342		.414	.679
ADA Membership	.551	.263	.136	2.099	.038
Comfort	.554	.058	.621	9.549	.000

*Dependent Variable: A MLDP is needed in Virginia.

Regarding supervision levels, most participants (70%) believed DTs required direct supervision which is concerning since direct supervision, requirements could nega-tively impact access to care in VA, a major goal of this workforce model. Respondents in this study do not believe there is a need for DTs in VA and there is no evidence regarding the quality of the work provided by DTs. However, a review of the safety, quality and cost-effectiveness of dental therapy found the model to be a safe, effective, high quality approach to increase access to care and

health equity.[29] In 2014, the Minnesota Department of Health released a report of the early impacts of DT and safety aspects of the model in the state;[30] four years later there were 86 licensed DTs and none were disciplined for quality of care or safety concerns.[28] A 2010 review of DHATs in Alaska reported that the DHATs were performing procedures within their scope of practice safely and providing quality care.[31] Restorations placed by dentists and DHATs were compared and found to have no difference in deficiencies between the groups.[31] Currently, DHATs provide care to over 40,000 Alaskans, increasing the access to care to those living in rural areas.[27]

When examining predictors of DT support, interestingly, years of practice was not found to be a predictor of DT support; however, comfort in allowing a DT to perform procedures on patients in the dental practice was a predictor. It was hypothesized that while some dentists may never use a DT in their own practice (lack of operatories or a small patient pool), they could still support the concept of this provider model for underserved areas in VA. Findings did not support this hypothesis as participants who were uncomfortable with DTs in their own practice were not supportive of DTs practicing in VA. Based on this analysis, the comfort levels of VA dentists regarding the effective and safe care provided by DTs would need to be increased in order for dentists to be supportive of this mid-level provider in any setting.

Membership in ADA was associated with intolerance towards the DT provider model and results suggest that participants support ADA's negative position on dental therapy.[21,28] To overcome these negative perceptions against dental therapy, more research is needed to evaluate the longitudinal impact DTs on the provision of safe, high-quality, cost-effective care to underserved populations and the impact on the oral health care workforce.

This study had limitations. The use of a convenience sample did not include all dental licentiates in the state and may have impacted the sample demographics. Additionally, dentists who did not favor a DT model could have been more likely to respond, resulting in an overrepresentation of negative attitudes. Another limitation was the lack of females or younger dentists in the sample. Future studies should have a more representative sample of dentists to increase validity and reliability of results. While this study focused on the attitudes of VA dentists toward DTs, it did not investigate the knowledgebase regarding this MLDP. Future studies should determine the knowledgebase of dentists regarding dental therapy and whether knowledge of the provider model influences attitudes and support. Studies should also assess the attitudes of VA dentists toward DTs after more research is published about the impact of DTs in other states. Finally, attitudes of VA dental hygienists should be studied as a comparison to the attitudes of VA dentists.

Conclusion

Results from this pilot study suggest participants had overall negative attitudes toward a dental therapy provider model in VA. Results further suggest participants attitudes are congruent with the position of organized dentistry, which does not support DTs. Barriers to the acceptance of DTs relate to the uncertainty about quality of care and safety for the public. It is possible that an increase in the knowledge base regarding dental therapy and more exposure to DTs in practice would lead to more favorable attitudes towards this workforce model among dentists in VA. Findings underscore the need for more research with a larger and more diverse sample population.

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