

Attitude of school-based nurses towards incorporating advanced dental therapist in school settings: Increasing Access to Care

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Abstract

Objectives: The disparities in access to dental care experienced by children of underserved families have been documented. Despite being largely preventable, oral diseases are highly prevalent. Around 3.5 billion people worldwide live with dental conditions. These conditions are associated with lower academics and missed school days among children. Dental therapy has a long history and is seen in multiple countries. Comparatively, dental therapy is in the early stages of implementation in the United States. Minnesota is the most diverse state to recognize dental therapists to practice in various settings. Commentary showcasing how a dental therapist works in a school-based setting while addressing the needs of children with dental disease, pain, and lack of access to dental care is provided.

Method: Data were collected from participants without intervention through an anonymous Qualtrics® online survey. The collected data were analyzed to establish the level of support by school nurses based on the need seen in school children providing dental services by the Advanced Dental Therapist (ADT).

Results: Survey results indicate that more than ninety percent of the school nurses agree that students are likely to miss school due to oral pain. Having a dental therapist position in schools will help increase access to dental care for students who do not have access to it.

Conclusion: Utilizing an ADT in this role has been proven in some MN schools. Continued advocacy for kids is desperately needed to eliminate dental pain throughout our country, and ADTs can play an essential role in this.

Keywords: school-based dental clinics, advanced dental therapist, dental caries, preventative dental care, access to dental care.

1 INTRODUCTION

1.1 A Brief History of Dental Therapy

In the United States, dental therapists are relatively new dental team members. Dental therapy was introduced in the United States through Alaskan tribal communities to expand access to care in 2005.³ Internationally, dental therapists have provided basic oral health care for children since their introduction in New Zealand in 1921.⁴ Other countries such as Australia and the United Kingdom are most representative of development and deployment of dental therapists in the global health care workforce. These three countries provide dental care in a mix of private and public settings with a scope of practice, including restoring carious lesions, extractions of primary teeth, pulp therapies, and preventative services.⁵ In 2003, the Alaskan Native Tribal Health Consortium (ANTHC) sent six Alaska Native students to the University of Otago in New Zealand to study to become dental therapists.^{4,6} This cohort of students became the first qualified U.S. dental therapists, returning to practice in Alaskan tribal communities on tribal lands. In 2007, a training program was established in Alaska to continue meeting the needs of untreated dental disease among Alaskan Natives.^{4,6}

The barriers and challenges for Minnesota's most vulnerable populations have mirrored that of many other states. A chronic shortage of dentists, the focus on the importance of oral health, and the lack of access to care led to the introduction of a new oral health practitioner in Minnesota, the dental therapist.⁵ In 2009, Minnesota enacted legislation introducing dental therapists and advanced dental therapists.^{7,8} The first cohort of dental therapists began practicing in 2012 to meet the needs of underserved populations and health professional shortage areas where obtaining dental care is limited. Upon completing the program and successfully passing both a clinical and written test, the new graduate holds a license as a dental therapist. The dental therapist will work closely with their collaborative dentist performing many procedures with the doctor physically in the same setting. After reaching 2000 hours of patient care, the dental therapist can then approach the board of dentistry to demonstrate competency to obtain their

license as an advanced dental therapist. This advanced licensing further allows the dental therapist to continue patient care without the presence of their collaborative dentist being physically present where the services are taking place. Extractions of primary teeth, pulpal therapy on primary teeth, preparation and placement of preformed crowns, cavity preparations and restorations, placement of temporary crowns, and recementing of permanent crowns, are just some of the services an ADT can do without the presence of their collaborative dentist. The dental therapist (DT) can do these same procedures but requires the physical presence of their collaborative doctor in the same building while the work is taking place. As an ADT, the clinician can perform non-surgical extractions of mobile periodontally involved adult teeth and periodic exams of established dental patients. As an ADT, herein lies the groundwork for incorporating dental therapy in a school-based setting. By providing both preventative and restorative measures, the ADT can meet the children where they are most accessible, which is in schools. Not only would the child receive preventive dental care, but the ADT could also complete the continuity of future dental care in the school setting. Families with barriers to care would have the opportunity for their child to complete most, if not all, of their dental care while the child is at school. This results in timely dental treatment along with less missed school for the child and missed work for the guardian.

1.2 Pain and Dental Disease Among Children

According to the Global Burden of Disease study, untreated caries in primary teeth affects 573 million children.⁹ In 2010, untreated caries in primary teeth was the 10th most prevalent condition in the world, affecting nine percent of the population and the most common chronic disease of childhood.^{1,10} The impact of this problem affects the quality of life for both the child and their families due to dental pain, loss of sleep, time off from school, difficulties with eating and speaking, and interference with regular social activities. Children who suffer from poor oral health are 12 times more likely to have more restricted activity days, including missed school, than those who do not. Recognizing pain in young children is challenging. Children of

preschool age have difficulty communicating their pain because their cognitive abilities are underdeveloped and limited life experiences affect how they perceive, think, remember, and report pain.⁹ A child suffering from early childhood caries (ECC) is at a disadvantage for continued dental problems throughout their life. Although substantially preventable, ECC remains a major public health problem with potentially severe consequences at the individual, family, and community levels. Its consequences include pain, infection, difficulty eating and sleeping, poor school performance, and costly treatment that drains the health system as well as family and Medicaid funds.¹² The most profound impact of this disease is that a child suffering from early caries in life will be at a strong disadvantage for developing caries throughout their life. School-based health centers are recognized as key sites for the delivery of oral health services but face challenges with workforce recruitment and financial sustainability.¹⁸ By providing preventative services and a clinical examination at schools; dental caries and pain can be diagnosed and treated by the ADT. In the long term, state Medicaid programs could reap substantial savings from school-based dental services.¹⁸ To date, more than 50 million hours annually are lost from school due to oral diseases.¹¹

1.3 Socioeconomics and Access to Dental Care

A strong and consistent social gradient exists between socioeconomic status and the prevalence and severity of oral diseases.¹ Early childhood caries (ECC) remains a significant health problem across the states. Its incidence and prevalence are highest among socially vulnerable children of minority descent. Compared to their peers, poor and low-income children are roughly twice as likely to experience ECC, with twice the extent of caries, and twice as likely to suffer from acute pain and infection; however, they are only half as likely to obtain dental care.¹² Having access to dental care remains a challenge for many people. Certain racial/ethnic minority groups, people living in poverty, and people living in rural areas have even less access to dental care.¹³ Disparities and access to dental services directly relate to disparities in the prevalence of children and adolescents with these problems as well. A Centers for Disease

Control and Prevention report in 2019 highlighted many of these disparities, showing, for example, that the prevalence of caries and untreated tooth decay among African American and Mexican American children, adolescents, and young adults aged 2 to 19 years was up to 2 to 3 times higher than among their non-Hispanic White counterparts. Further, this report also showed those children and adolescents living below 200% of the federal poverty level had almost double the prevalence of caries and untreated decay as children and adolescents living at or above 200% poverty level.¹³ Preventable dental care and early intervention are desperately needed for all children, particularly those whose families have limited resources due to a variety of socioeconomic factors and/or have limited access to dental care. The potential impact of untreated dental caries became tragically apparent with the 2007 death of Deamonte Driver, a 12-year-old African American boy, whose death was caused by a brain infection from an abscessed tooth. His death highlighted problems in the oral health care delivery system, primarily the challenge of having an adequate number of providers in appropriate geographic locations for people to access care.^{2,14} Improving access to care is more complex than adding more providers to the system. Addressing the nation's challenge of improving access to care with alternative models of dental care is being considered in many states to help combat this issue. The concept of social justice is important regarding access to care because it stands for everyone receiving the same high-quality, affordable oral health care regardless of socioeconomic status, ethnicity, education, or ability to pay.⁶ Thus, dental therapists are a strong evidence-based solution to help address access to care for the 191 million people in the U.S. who cannot regularly access dental care today.² In Minnesota, one way of meeting the needs of underserved children or those with limited access to dental care is by utilizing Advanced Dental Therapists in a school setting.

1.4 School-Based Dentistry

The persistently high prevalence of caries experienced among children suggests that access to preventative services does not meet current needs, especially among the disadvantaged

and highest-risk population. Many strategies have been suggested to address this, including Medicaid expansion and the introduction of a new mid-level provider, the dental therapist.¹⁵

School-based programs target high-risk communities and address barriers to obtaining dental services by delivering care directly to students in their schools.^{4,16-18} Since children cannot take themselves to a dentist, school-based health centers are the best model for healthcare in this country for at-risk populations. School-based clinics in New Zealand have always provided care for preschool children. High-risk children in New Zealand are eligible for care from six months of age and all children from two and a half. In 2009, approximately sixty percent of children 2-4 years of age were cared for in school-based clinics, versus the 28% of 2-4-year-old children who had a dental appointment in the United States in 2007.⁴ To ensure that dental therapists and advanced dental therapists serve the intended population, Minnesota law stipulates that DT's and ADT's must work in a practice setting serving low-income and underserved patients, or in a health professional shortage area.^{5,6} Fifty-six of 87 Minnesota counties are designated, in whole or in part, as dental health shortage areas.⁷ Additionally, most dentists do not accept public insurance patients, leaving the burden of preventable dental disease being treated in the emergency room.^{9,10} So, what does a school-based program look like? A mobile dental bus equipped with almost everything seen in a dental operatory can be taken to schools throughout their district. Another way is by bringing the equipment directly into the schools. For either of these models, a "dental day" is reserved for students authorized by their guardian to receive dental services from the individual or organization providing treatment to the child. By setting up portable equipment or bringing a mobile unit to schools, the ADT is part of the dental team to evaluate and treat dental diseases by meeting the child's dental care needs. In public health and community settings, Minnesota dental hygienists view the consequences of untreated dental pain and disease daily. Even with a referral, follow-through is almost nonexistent because of barriers of cost, access to a dentist, missing work without pay, inability to navigate the oral health care system, and/or transportation challenges resulting in patients not completing their treatment. Six

months later, dental hygienists would find that the untreated dental caries had advanced, requiring more invasive procedures such as a pulpotomy, stainless steel crown, or extraction. Implementing an improved dental care model with an ADT working in a school-based setting would alleviate many of these oral health problems and disparities faced by children and their families.

1.5 Research Question

This research focuses on the level of support among Minnesota licensed school nurses for the role of ADT in increasing access to dental care for underserved school children, as expressed in qualitative data. These results will provide policymakers with an understanding of school nurses' level of support for the ADT to provide dental care to children. The following question is our main research question:

- How can advanced dental therapists help increase access to dental care for underserved children?

2 MATERIALS AND METHODS

2.1 Participants

This study aimed to assess the attitude and support of nurses in Minnesota working in school settings for incorporating advanced dental therapists to provide oral health care (dental exams, fillings) in school settings to help increase access to underserved children. An online survey tool was the vehicle for gathering data from Minnesota school nurses all over the age of 18. A total of forty-three responses were collected from the survey. The target population for this study was licensed school nurses in Minnesota. School nurses in this state are interested in incorporating the ADT in school settings to provide dental care to school children.

2.2 Data Collection Procedure

The Minnesota Department of Health was contacted via email to get access to school nurses in Minnesota. The research proposal was discussed with the Minnesota Department of Health individual along with one of the school nurses through multiple Zoom meetings. They agreed that having ADT, in addition to school nurses in school settings, will help meet the dental needs of children who do not have access to these services and agreed to help distribute the survey to school nurses.

The survey was completed via Qualtrics. The anonymous survey was accessible via an electronic link for seven weeks in Fall 2022. This survey was designed to determine the knowledge, attitudes, and support of Minnesota school nurses having ADT provide dental care to school kids. The survey question asked participants about years of work experience as a school nurse in Minnesota schools to get a good overview of dental unmet needs in schools. Other questions included: Have students missed school due to oral pain? What is the estimated percentage of tooth-related visits to the school health office, and does your school have an arrangement to provide a school-based oral health program? (e.g., Sealant, fluoride, dental treatment programs) helped us investigate the need for dental services in school settings. Survey questions regarding familiarity with the dental therapist position and their role gave us information about dental therapy careers in Minnesota. Other questions such as the opinion of school nurses on whether incorporating advanced dental therapists to provide oral health care (dental exams, fillings) in school settings would help increase access to underserved children and how the dental therapist position provides a positive impact on the oral health of your schools' students helped us understand the support of school nurses towards dental therapist providing services to children in schools.

An email invitation to participate in the survey was sent to the Minnesota Department of Health, who then forwarded it to all email addresses across school nurses in Minnesota.

3 RESULTS

The survey results indicate that 22 (51%) respondents have 20 or more years of experience as a Nurse. The other respondents' years of experience were divided somewhat evenly at less than 20 years. Not all respondents who took the survey are currently employed as school nurses. Most respondents (93%) currently work as a nurse, while 6% indicated not working as a school nurse. Inquiry into how many years of practice have worked in a school-based setting revealed that 100% of the respondents participated in this question, and all either have worked as school nurses or are currently working as school nurses. When asked if students have missed school due to oral pain, 42 participants responded to this question, and 39 (92%) agreed that students missed school due to oral pain. Approximately 20% of the visits to the school health nurse's office are due to oral pain. 53% agreed that their school does not have an arrangement to provide a school-based oral health program (e.g., Sealant, fluoride, dental treatment programs).

74% of participants were unfamiliar with a dental therapist's position and role. When asked if they would agree with incorporating advanced dental therapists to provide oral health care (dental exams, fillings) in school settings to help increase access to underserved children, 69% of school nurses strongly agreed, and 21% somewhat agreed. Approximately 87% of school nurses agreed that incorporating advanced dental therapist positions can positively impact the oral health of school students.

4 DISCUSSION

This study aimed to assess school nurses' opinions on the need to incorporate advanced dental therapists (ADT) in school settings. Most school nurses ($n = 43$) in Minnesota agree that including ADTs in school settings could help increase access to underserved children. The disparities in access to dental care experienced by children of underserved families have been documented in many articles on the subject.¹⁸ Dental therapy has a hundred-year history of safety and effectiveness in providing quality care in over 50 countries. In the United States, dental therapy is in the early stages of implementation compared to other countries.

Minnesota is the most diverse state to recognize dental therapists to practice in various settings. The results of this study indicate that children in schools visit the nurse's office with tooth-related problems. Some schools have dental programs set up to meet the dental needs of the school children. School nurses strongly agree and are willing to have advanced dental therapists in the school setting to provide dental care, leading to an overall positive outcome. Incorporating advanced dental therapists in the schools can help to provide oral health care (dental exams, fillings) for underserved children.

4.1 Limitations and Future Research

The survey comprised a small sample of participants ($n = 43$). Gathering more participants in future research is vital to help generalize our findings. The study is limited to one state, Minnesota, and to currently licensed nurses working in that state. Participation is limited to those who voluntarily choose to respond, and this limitation is an obstacle to hearing from all qualified respondents.

The online anonymous survey tool was a quick, simple, no-cost method of gathering participant data. However, the anonymous element relies on the willingness of the target population to participate in the survey, and the concern is that the ones who did not participate might have had a different view on the subject. This research survey was composed of ten questions to keep participation time brief and inviting. A longer survey with additional questions may have produced different insights and perspectives.

Obstacles to participation in this survey include understanding the role of advanced dental therapists, as this is a newly introduced profession to the State. 74% of the participants were not familiar with the ADT role. When informed regarding the role of ADT, approximately 87% of school nurses agreed that incorporating ADT in school settings can positively impact the oral health of school students and increase access to dental care.

Some future research should investigate how to increase awareness about ADT's role amongst other healthcare professionals such as nurses and physicians. This would open another

area to explore how ADT works alongside school nurses to provide dental care to school children and increase dental care access. A further area of research could be how to encourage more enrollment in dental therapy programs, leading to an increased workforce. Another area to investigate could be how to incorporate external rotations of dental therapy students to schools under their faculty supervision to encourage more dental therapists to provide dental care to school children and try to figure out a way to incorporate dental therapist services in schools. With an emphasis on medical-dental integration, I can see dental therapists, dentists, dental hygienists, and physicians working together in one facility, providing complete care.

5 CONCLUSION

Dental care remains one of the highest chronic and unmet needs in health care among children. As discussed, many factors accompany dental disease among school-age kids. High-risk children include those living in socioeconomic and financially disadvantaged households, cultural and ethnic differences, as well as a shortage of dental providers in areas with little to no access to care. School-based programs involving an ADT focused on prevention can help eliminate many of these barriers while identifying dental disease before a more significant problem occurs. The ADT can make a difference by treating the dental needs of kids in a school-based setting by eliminating missed work for families and school for children. The ADT plays a role in reducing the barriers and disparities for underserved kids and their families by being an important part of the oral health care team in the school setting.

The purpose of this study was to assess the support of licensed school nurses based on their observation in school settings on the need of incorporating advanced dental therapists in schools to increase access to care. Advanced dental therapists (ADT) are positions that would allow independent delivery of preventive, palliative, and limited restorative dental care to students in schools. Literature reflects on the need for more dental care providers and services to children in school settings, especially for the underserved and those without dental insurance. School nurses see that so many children report dental issues when they visit the school

health office, but schools have limited means to address those issues. With the support of schools and school nurses, advanced dental therapy can work and provide services in schools to these underserved populations. This paper reflects the need for dental services for children in schools and provides a solution to the problem, leading to increased access to dental care for the underserved. Incorporating advanced dental therapists into schools can increase dental care for underserved children in schools.

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