The dental therapist movement in the United States: A critique of current trends

David A. Nash, DMD, MS, EdD[1]; Kavita R. Mathu-Muju, DMD, MPH[2]; Jay W. Friedman, DDS, MPH[3]

1 William R. Willard Professor of Dental Education, Professor of Pediatric Dentistry, College of Dentistry, University of Kentucky, Lexington, KY, USA

2 Assistant Professor of Pediatric Dentistry, Faculty of Dentistry, University of British Columbia, Vancouver, Canada

3 Public Health Dental Consultant, Los Angeles, CA, USA

Keywords
dental therapists; dental hygienists; oral health workforce; children's oral health; global oral health delivery systems.

Correspondence
David A. Nash, William R. Willard Professor of Dental Education, Professor of Pediatric Dentistry, College of Dentistry, University of Kentucky, Lexington, KY. Tel.: 859-312-7600; Fax: 859-323-4685; e-mail: danash@email.uky.edu. Kavita R. Mathu-Muju, Assistant Professor of Pediatric Dentistry, Faculty of Dentistry, University of British Columbia, Vancouver, Canada. Jay W. Friedman, Public Health Dental Consultant, Los Angeles, CA.

Received: 4/18/2017; accepted: 8/4/2017.

doi: 10.1111/jphd.12252

Journal of Public Health Dentistry **00** (2017) 00–00

Abstract

Dental therapists are members of the oral health workforce in over 50 countries in the world typically caring for children in publically funded school-based programs. A movement has developed in the United States to introduce dental therapists to the oral health workforce in an attempt to improve access to care and to reduce disparities in oral health. This article critiques trends in the United States movement in the context of the history and success of dental therapists practicing internationally. While supporting the dental therapist movement, we challenge: a) the use of dental therapists treating adults, versus focusing on children; b) the use of dental therapists in the private versus the public/not-for-profit sector; and c) requirements that a dental therapist must also be credentialed as a dental hygienist.

Introduction

Oral Health in America: A Report of the Surgeon General raised awareness of the lack of access to care in the United States, and the disparities existing in oral health (1). This prompted consideration of adding the dental therapist to the oral health workforce to address these issues (2,3).

Internationally, dental therapists have provided basic oral health care for children since their introduction in New Zealand in 1921 (4). They have been trained in a two year post-secondary curriculum and have practiced in the public sector, typically in school-based programs, under the general supervision of a dentist (5). Numerous studies have documented their effectiveness in improving access and providing quality care for children (5-10).

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 (3). This cohort of students became the first qualified U.S. dental therapists, returning to practice in Alaskan tribal communities. In 2007, a training program was established in Alaska. Currently, 37 dental therapists practice in Alaska; however, only on lands overseen by tribal organizations, and under the auspices of the ANTHC. Alaska therapists also practice with the general supervision of a dentist. A number of reports document the success of the Alaska initiative (11-13).

In 2009, Minnesota became the first state to pass legislation permitting the practice of dental therapists (14). The legislation provided for two levels of dental therapists: a "dental therapist" educated at the baccalaureate level, able to function only with a dentist present in the office or clinic; and an "advanced dental therapist," educated in a master's degree program, and after 2,000 hours of clinical practice, able to be certified to practice with general supervision. The baccalaureate degree program to prepare a "dental therapist," which

had initially been established, has been discontinued. However, a number "dental therapists" were trained prior to its closure. The two therapist programs in Minnesota currently only train "advanced dental therapists," leading to certification as both an "advanced dental therapist" and a dental hygienist. Thus all current therapist graduates are hygienist-advanced dental therapists (15,16). In Minnesota, dental therapists may practice in the private and public/not-for-profit sector, treating both children and adults (17).

In early 2014, the Minnesota Board of Dentistry issued a report to the Minnesota Legislature entitled "Early Impacts of Dental Therapists in Minnesota" (18). The report suggested some preliminary positive impacts of dental therapists practicing in the state, but also acknowledged the evaluation's limitations as there were only 34 therapists practicing with a relatively small number of patients served. Recent case studies, one by the Pew Foundation and two by Delta Dental, describe the impact of dental therapists on three private practices in Minnesota (19-21). Therapists increased office productivity. While a therapist joining a dentist in a located practice may increase the dentist's efficiency, it does not expand geographic access to dental care characteristic of the Alaska initiative or of the international model of therapists. While "advanced dental therapists" in Minnesota are able to practice with the general supervision of a dentist, currently there are relatively few "advanced dental therapists" practicing, thus a lack of reports on their effectiveness, efficiency, or safety when practicing under general supervision.

In 2014, the Maine legislature authorized the practice of dental therapists (22). However, the legislation allows only a dental hygienist to qualify as a dental therapist. These hygienist-therapists may practice in private and public/not-for-profit sectors treating both children and adults. Vermont passed similar legislation in 2016 (23). No training programs currently exist in these two states.

From what is occurring in the United States, three trends are apparent: dental therapists are treating adults as well as children; are practicing in the private as well as the public/not-for-profit sector; and dental therapist training is being linked to that of dental hygienists. While supporting the dental therapist movement, we challenge these trends as not being the most effective and efficient utilization of dental therapists in their addition to the American oral health workforce.

Challenging dental therapists treating adults versus children

Dental therapists in the international oral health workforce have almost exclusively treated children. Of the over 50 nations identified in a global study of therapists, fewer than ten permit the treatment of adults by dental therapists, and in these few countries this has been a relatively recent development (5). The care provided by therapists to adults is limited, generally the same treatments therapists would provide for children. However, even in those countries where some adult care is permitted, therapists predominantly treat children.

An early example of therapists treating adults occurred in 1972 in the Canadian North (5). The Canadian government established a dental therapist training program in the Yukon to care for First Nations children living in the isolated villages of Northern Canada. The curriculum was based on the New Zealand model. While the focus of care was on children, a therapist living and practicing in a small native village had knowledge and skills that could help adults deal with dental problems. Thus, appropriately, some care was provided by therapists to adults. Circumstances were similar for the remote Alaska Native population. While the focus of care for Alaska's therapists is on children, Alaska followed Canada in expanding some care to adults, due to lack of any dental services in the small, remote communities being served by dental therapists (5).

Therapist training developed in a few sub-Saharan African nations in the 1970s and 1980s. In these countries, therapists treated some adults due to the significant need for the extraction of teeth (5). The General Dental Council of the United Kingdom began to permit an expansion of dental therapists' duties and their practice opportunities in the early 2000s (5). Some adult care by therapists in Australia has recently been permitted. However, the scope of practice for adults is limited and does not include restorative care past the age of 18–25 years (depending on the region), or the extraction of permanent teeth (5). The Dutch government has recently expanded the training of dental hygienists by adding the skill set of the international dental therapist. Dutch hygienists are currently able to provide some restorative care for adults with the prescriptive authority of a dentist (5).

Therapists treating adults has generally been strongly opposed by the dental profession throughout the world. Four significant issues emerge when considering the treatment of adults by dental therapists:

Complexity of adult care

Adult dental care is complex, involving a myriad of signs, symptoms, and problems requiring significant diagnostic expertise, as well as a large repertoire of therapeutic interventions. Many adults, especially those seeking care in safety net settings, present with dentitions that have been "mutilated" by dental caries, and/or have significant periodontal disease, and/or are missing teeth, including anterior teeth for which replacement is a social necessity. Therapy requiring extraction of permanent teeth, even surgical extraction, is common. These circumstances require restorative and surgical skills that are beyond the scope of practice of dental therapists.

Frequently, the argument is advanced that if dental therapists can prepare and restore a cavity on the tooth of a child

they can do so on an adult. We do not contest therapists' technical ability to do this. However, diagnosing, treatment planning, and providing rehabilitative care for adults is much more than just being able to prepare and place intra-coronal restorations or preformed stainless steel crowns, which is essentially what is permitted by therapist legislation.

Except for the small percentage of children requiring referral to a specialist, dental care for children is not nearly as complex diagnostically or technically. Care is primarily preventive. Dental caries is managed with a basic regimen of amalgams/composites and stainless steel crowns; pulpal disease in primary teeth is treated with pulpotomies; and extraction of primary teeth is generally uncomplicated. The 2009 Medical Expenditure Panel Survey (MEPS) indicated that diagnostic (41.2 percent) and preventive (35.8 percent) procedures accounted for most of the dental procedures in children from birth to age 20. Restorative procedures accounted for just 5 percent; orthodontics and extractions accounted for the remainder (24).

Inefficiency in treating adults

We recognize that a dental therapist assigned to a dental facility under the direct supervision of a dentist can treat adults within their limited scope of practice, since a dentist is present to accomplish those procedures that are beyond the therapist's competency to manage. But, to be an efficient addition to the oral health workforce, dental therapists need to be able to practice independently with general supervision of a dentist. Practicing with direct/indirect supervision, which requires the presence of a dentist within a private dental office or public clinic, does not expand the workforce to underserved areas lacking access to dental services. While this might increase the efficiency of a dentist, it does little to address the core problem of access to care.

Current legislation in Minnesota restricts the "surgical" care that dental therapists are able to provide adults to intra-coronal restorations and stainless steel crowns, and the extraction of teeth significantly loosened by the characteristic bone loss of advanced periodontal disease. Most adults who have not had periodic dental care require more treatment than a dental therapist is able to provide. Thus, a dental therapist, even if practicing with general supervision in an underserved area, would only be able to provide limited adult care; a dentist would still be needed to address the comprehensive care required by most adults. In contrast, dental therapists caring for children is efficient, as therapists are able to provide the basic care required by most children, with limited need for referral to a specialist.

Safety considerations

Dentists receive an extensive education in identifying, assessing and managing the general health and well-being of patients. Comprehensive courses in the biomedical sciences, as well as in oral diagnosis, oral medicine, and oral pathology, prepare student dentists to address the health constraints of the increasing number of elderly and biologically and/or pharmacologically compromised adults, and adults with "silent" disease. Even with such education, an Institute of Medicine report indicated that dentists were inadequately prepared to manage the changing health profile of the population, and that the dental curriculum should be revised to include a clerkship in clinical medicine (25). Dental therapists receive only limited such training and thus are not equipped to evaluate and manage the care of health compromised adults. While this safety issue is somewhat mitigated when dental therapists are practicing with a dentist present, it becomes more significant when practicing under general supervision.

Other than the small minority of children identifiable as having "special health care needs," most children are healthy. Healthy children can be safely treated by dental therapists with general supervision by a dentist, as over 90 years of international experience has documented. The research frequently cited in support of the clinical quality, safety, and effectiveness of treatment by dental therapists is based on therapists treating children, not adults (26).

Ethical considerations

Societies throughout the world have prioritized children in focusing their public resources, both financial and workforce, on dental care for children provided by dental therapists. Children are vulnerable because of their dependence on caretakers, and the time-critical nature of their development, with implications for all aspects of later life. What happens in the life of a child is determinative of whether that child will have a fair opportunity to fulfill his or her unique potential. The worthiness of a society can be judged in terms of its concern for and care of its children. Theories of distributive justice advanced by philosophers and health care ethicists support children receiving priority consideration in receiving health care (27-29). When resources are not adequate to care for all, morally, the care of children should be prioritized. Indeed, this is current practice in the United States with regard to oral health care. States are mandated to include children's dental care in Medicaid, but not adults. The majority of states provide only limited or emergency coverage for adult dental care; and some no care at all (30). The federal Children's Health Insurance Program provides coverage for children beyond those eligible for Medicaid. Identifying a source of funds to pay for care is a challenge for individuals

advocating that dental therapists treat poor and underserved adults.

Given the complexity of adult treatment, the limited scope of practice of dental therapists in providing comprehensive care for adults, the general lack of scientific evidence and broad-based experience of dental therapists treating adults, the questionable ability to safely care for health compromised adults when practicing with general supervision, constrained workforce resources and finances, and the moral imperative of prioritizing children, care by dental therapists should generally focus on children.

Challenging dental therapists functioning in the private versus the public/not-for-profit sector

Oral health is a social good – a public good. As such, oral health care for children is comparable to public education for children. Society must ensure that disadvantaged children can access oral health care in the public/not-for-profit sector, no different than education. Thus, we advocate for children's dental care being in the public/not-for-profit sector, not the private marketplace, preferably in school-based programs. The potential to add a new member to the oral U.S. oral health workforce, a dental therapist, offers a unique opportunity to address access to dental care for children as a public good, as in so many other countries of the world. As the distinguished American medical educator and ethicist Edmund Pellegrino stated: "Health care is not a commodity, and treating it as such is deleterious to the ethics of patient care. Health is a human good that a good society has an obligation to protect from the market ethos" (31).

A large corpus of evidence documents the effectiveness and cost-benefit of the international dental therapist deployed in the public sector providing access to care for children, generally in schools (5). The province of Saskatchewan, Canada, offers a lesson for the United States regarding how to transform a delivery system to provide access to care for all children. It is the only program in North America to have ever utilized dental therapists in a school-based dental service. In 1972, the province established a two year training program for dental therapists based on the New Zealand curriculum. Two years later, provision of dental care by these dental therapists was implemented in the province's elementary schools (32). After only six years, over 90 percent of the province's children were enrolled and had all of their treatment needs met; and. the average number of decayed teeth in six year olds had dropped from six teeth to one. Additionally, during the 13 years of the program's existence, the cost of providing care fell 271 percent from $341.89/child to $91.98/child. The program was closed in 1987 as a result of pressure from the province's dentists and the election of a conservative government. The experiences of countries internationally that employ dental therapists in school-based programs demonstrates comparable effectiveness (5).

Many of the adverse social determinants affecting health generally and oral health specifically are overcome by housing health care for children in schools. Children are essentially not-ambulatory in accessing care; they cannot take themselves to the dentist. Schools are where children are most accessible. School-based health centers (SBHC) reduce health inequities and improve health outcomes for underserved youth. As one academic pediatrician expressed it: "School-based health centers are the best model for healthcare in this country for at-risk populations. . .[they] increase access to health care, eliminate barriers and improve health outcomes for essentially every patient enrolled" (33). There are currently nearly 2,000 school-based health centers in the United States. These centers provide a ready resource in which to conduct demonstration projects to document the effectiveness school-based dental care by dental therapists (34).

Some question the ability of school-based care to address the issue of early childhood cares of preschool children School-based clinics in New Zealand have always provided care for preschool children. Parents bring their infants and toddlers to the school dental therapists for examination, fluoride treatment, and so forth (35). In fact, the original establishment of school dental nurses was based on the success of "Plunkett Nurses," individuals who provided a range of free health services to children under age five to improve their development, health and well-being (36). High risk children in New Zealand are eligible for care from six months of age, and all children from $2\frac{1}{2}$. In 2009, approximately sixty percent of children 2–4 years of age were cared for in school-based clinics; versus the 28 percent of 2–4 year old children who had a dental appointment in the United States in 2007 (37,38).

Currently, the oral health of children in the United States is primarily left to the private practice marketplace of care, creating significant barriers for children gaining the benefits of oral health, with resulting immoral inequities. Society pays for the dental care of 45.2 million of America's 73.6 million children (61.4 percent) with public taxpayer funds through Medicaid and CHIP, yet provides care in the expensive fee-for-service private sector (39). The barriers to dental care for the large majority of neglected children are not overcome with dental therapists practicing in private dental offices. Most dentists do not accept children in their practices whose care is funded by Medicaid/CHIP (40). Additionally, dental practices tend to be in affluent geographic areas; these are not areas where underserved children live.

The value of dental therapists practicing in the public/not-for-profit sector is recognized in the report of the Minnesota state board to the state legislature in which it is noted that of the 26 dental therapists whose employment was able to be

identified, 18 were employed in the public/not-for profit sector, with only 8 in private practice (18).

We are not suggesting that dental therapists are not contributing to the public good by practicing in the private sector. Rather, our critique is one of priorities. We believe that the evidence available indicates that therapists can make the greatest contribution to the oral health workforce in improving access and reducing disparities by focusing their care on children in the public sector, specifically in schools.

Challenging requiring a dental therapist be credentialed as a dental hygienist

Requiring a dental therapist to also be a dental hygienist places an unnecessary restriction on the expansion of the oral health workforce. To be sure, an existing dental hygienist could obtain the skill of a therapist with a year or less of training, but that does not actually increase the size of the workforce. The enormous oral health care needs of the underserved populations requires the addition, not a substitution, of a new oral health professional – a dental therapist – to the workforce.

The introduction of dental therapists in Alaska prompted the American Dental Hygienists' Association (ADHA) to promote the role a dental hygienist could contribute were hygienists' scope of practice expanded to include the skills of the dental therapist (41). The ADHA promotes hygienists acquiring therapist skills in a master's degree curriculum resulting in an *Advanced Dental Hygiene Practitioner.* Except for the training program for Alaska Natives, the only two dental therapist training programs existing in the United States are in Minnesota They are located at Metropolitan State University, in association with Normandale Community College, and at the School of Dentistry of the University of Minnesota. The program at Metropolitan is a two year graduate program leading to a master degree's degree in advanced dental therapy (MSADT), and is only open to dental hygienists with a bachelor's degree. The program accepts 6 dental hygienists each year (15). The program at the School of Dentistry is a $4^1/_2$ year (12-month) curriculum to complete a six academic year program in a reduced time frame. The program is an integrated hygienist/therapist curriculum and results in a baccalaureate degree in dental hygiene and a master's degree in advanced dental therapy; eight students are accepted each year. (16) These programs prepare the *Advanced Dental Hygiene Practitioner* as described and advocated by the ADHA. Interestingly, studies at Forsyth and the University of Kentucky have documented a dental hygienist can be trained in additional skills of a dental therapist in 9 months or less (42,43). Maine and Vermont have approved the practice of individuals with dental therapists' skills but have limited such practice to dental hygienists (22,23). Thus they have not expanded the workforce with therapists, but rather simply expanded the scope of practice of hygienists. Furthermore, the prerequisite of a hygiene credential increases not only the length of training for dental therapists, but also the cost of training (41).

We are not objecting to hygienists adding therapist skills to their scope of practice. In fact, repurposing their skills could be understood to make them more employable in the workforce. Rather, we are opposed to requiring that only hygienists can possess therapist skills, which is the case in both training programs currently in Minnesota and specified by legislation in Maine and Vermont. We also object to the excessive time and expense of the proposed programs to train them (44). The time frame of six academic years approaches that of a dentist. One school of dentistry in the U.S. makes it possible to complete education to become a dentist in six years. The ADHA has reported that hygiene-based therapist models, to the exclusion of the traditional dental therapist model, are in some stage of consideration in eight additional states (45).

The integration of dental therapist and dental hygienist training is associated with legislation that also enables therapists to work in private practices and to treat adults. Doing so enhances their economic value to dentist; however, it limits their outreach to underserved populations. Minnesota and Maine specify that 50 percent of a dental therapist's time must be with the undeserved; the other 50 percent can be with patients who are among the dentist's more affluent patients (14,22). This diminishes by half therapists' value in improving access for the underserved. Combining the training of therapists with that of hygienists would not be necessary were therapists to focus on children, as therapists can provide all of the preventive needs required by children; in fact, that has traditionally been their focus.

Conclusions

The only programs of documented, evidence-based effectiveness involving dental therapists in improving public health have been those in which therapists treat children; practice in the public sector; and are distinctive members of the oral health workforce with credentials not including those of a dental hygienist. Dental therapists treating adults raise significant issues regarding the complexity of adult care, the inefficiencies of treating adults, the safety of treating adults, and the ethical failure to prioritize the care of children. Dental therapists practicing in the public sector in school-based programs help ensure access to essentially all children, and also reduces the cost of care for children. Requiring that dental therapists also be credentialed as dental hygienists simply expands the scope of practice of hygienists; it does not numerically increase the oral health workforce. Additionally, it potentially diminishes the time available for dental hygienists to care for adults with periodontal disease. Dental

therapists should be a distinctive professional in the oral health workforce, caring for children in public/not-for profit programs, preferably school-based. Correspondingly, dental hygienists should continue their historic role of focusing their care on adults, managing prevention and therapy for periodontal disease. Dental hygienists who desire to do so should be able to train in cost effective programs to add dental therapist skills to their credentials. Requiring a merging of roles has negative consequences for addressing the issue of access to care and reduction of inequities in oral health.

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