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Dental Health Aides in Alaska: A Qualitative Assessment to Improve Pediatric Oral Health in Remote Rural Villages

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Abstract

OBJECTIVE—Isolated villages in Alaska face disparities in oral health and access to care. Dental health aides such as the primary dental health aide (PDHA) and the dental health therapist (DHAT) fill a critical role for providing dental care in Alaska. Our objective was to describe strengths and barriers to pediatric dental care for children living in remote Alaska villages from the perspectives of the community and the health care system.

METHODS—This qualitative study collected data through semi-structured key informant interviews with community members (n=19) and healthcare workers (n=19) and focus groups with patients (n=31 adolescents and 16 caregivers of children under 12 years) living in or providing health care to three remote villages in Alaska. Using an inductively-developed codebook and a narrative approach, three researchers independently read and thematically analyzed the transcripts.

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Conflicts of Interest

The authors declare no conflicts of interest.

RESULTS—Two themes emerged: (1) PDHAs and DHATs are perceived as sustainable and strongly positioned to meet the unique dental needs of the rural communities; (2) PDHAs and DHATs face barriers that limit their effectiveness, and their distinct roles require clarification and administrative support.

CONCLUSIONS—Dental health aides, both PDHAs and DHATs, are well accepted in Alaska villages. An innate understanding of cultural norms and continuity of care are key elements driving village satisfaction. The potential exists administratively to strengthen the model with the implementation of clinical and office-system strategies to increase efficiency of the dental team. Culturally-adapted implementation strategies will be critical to the successful expansion of new workforce models that are addressing health disparities.

Keywords

Alaska; Community Health Workers/standards; Dental Care/manpower; Dental Caries/prevention & control; Health Services Accessibility; Health Services, Indigenous/manpower; Quality of Health Care

INTRODUCTION

Disparities in health between indigenous and non-indigenous populations exist throughout the Pacific Northwest Coast and Circumpolar North.^{1,2} Alaska's overall life expectancy at birth, for example, is the same as that of the United States, but it is about five years lower among Alaska Natives.^{2,3} Indigenous populations throughout Alaska and elsewhere also experience disparities in oral health.^{4,5} American Indian and Alaska Native (AIAN) children suffer from the poorest oral health of all population groups in the United States.^{6,7} One in five one-year old AIAN children has experienced tooth decay and by age 5, 75% have had tooth decay.⁷ Compared to non-Hispanic white children, Alaska Native children and adolescents have double the dental caries experience and triple the rates of untreated decay.⁶ They are more likely than white children to visit a dentist for immediate treatment (34% versus 17%), instead of for regular check-ups.⁸ Access to care is limited by dentist shortage and geographical isolation.

Health care is organized in different ways to address these disparities depending on the political and administrative systems in the region. Workforce skill and mix, provision of public health and primary care services, geographic remoteness and service models for indigenous populations, all have a substantial influence on the effectiveness and efficiency of the indigenous health care systems.² For some time, an innovative program to train dental therapists has addressed the need to provide better primary dental care at the community level in the Canadian North^{9,10} as have programs in other areas of the world.¹¹

Similarly, to increase access to dental services for rural Alaskans, the Dental Health Aide program started in 2003 through the efforts of the Alaska Native Tribal Health Consortium and its partners.^{12–14} The Dental Health Aide (DHA) program is part of the Community Health Aide and Practitioners (CHAP) Program, authorized under U.S. law in 1968 to devolve control of health care from the US government to the indigenous authorities throughout Alaska.

Dental Health Aides receive training to serve as one of four possible provider roles: Primary Dental Health Aide I or II (PDHA I or II), Expanded Function Dental Health Aide I or II (EFDHA I or II), Dental Health Aide Hygienist (DHAH) or Dental Health Aide Therapist (DHAT). In 2013, 24 PDHAs, eight EFDHA, one DHAH, and 28 DHATs entered the workforce through the DHA program.¹⁵

The curriculum for the DHA education is required to meet rigorous standards set by the CHAP Certification Board. PDHAs are trained to provide topical application of fluoride, nutritional counselling and oral hygiene instruction and can receive additional training in dental cleanings, dental radiology, dental sealants, atraumatic restorative treatment, and/or dental assisting. DHATs complete 2 years of post-high school education in dental disease prevention and basic dental treatment skills. The essential difference between the PDHAs and DHATs is that PDHAs are oral health promoters that can be trained to provide preventive care; while DHATs are trained to provide not only preventive care, but also oral diagnostic, restorative and surgical care. (see online Appendix 1 for differences in scope of practice for the PDHAs and DHAT). PDHAs and DHATs work with dentists and hygienists in tribal health organizations to provide dental services in a culturally appropriate manner.^{13,14}

Evaluations of the DHA program in Alaska and the dental therapist program in the Canadian North have demonstrated that the dental workforce is technically competent to address the community oral health needs, especially when DHATs are utilized and when services are provided in the community.^{10,16–20} However, community perceptions and the perspectives of PDHAs/DHATs on providing dental care were rarely assessed. Only one of the published evaluations considered the local context.²⁰ As part of a collaboration between a tribal health organization and academic researchers called Oral Health Equity for Alaska (OHEAL), we conducted a qualitative study to assess the community and organizational needs related to oral health and dental care. Our aim was to describe pediatric dental care for children living in remote villages in Alaska from the perspectives of the community and the health care providers. Specifically, we wanted to learn the strengths and barriers of the health care system, particularly the roles of primary dental health aides (PDHAs) and dental health aide therapists (DHATs) and where improvements could be made in service provision.

METHODS

This was a qualitative study that utilized interviews and focus groups as primary data collection methods.²¹ Taking a narrative approach, we used thematic content analysis to answer specific, a priori questions about oral health and dental care for rural Native Alaska children.²² This report conforms to the Standards for Reporting Qualitative Research.²³

The study setting was three rural villages within one tribal healthcare organization in Alaska. The organization is a non-profit healthcare consortium of Native communities. It is the main provider of dental care to these tribal communities and currently employs seven PDHAs and four DHATs. The villages were chosen because of the perceived high rate of pediatric oral disease and the organization's desire to improve the dental care provided to children. Each village has, on average, approximately 600 residents, 58% to 88% are Alaska Natives. One

quarter of the children live in families with annual incomes below the US federal poverty level, which in 2017 was USD\$ 30,750 for a typical Alaska family of 2 adults and 2 children.²⁴ The villages have fully-equipped dental clinics housed in health centers that offer medical, dental and behavioral services. Clinics are staffed by one dental health aide provider who is an Alaska Native and resident of the community. In two villages, there are PDHAs trained to provide topical application of fluoride, nutritional counselling, oral hygiene instruction, dental cleanings and dental radiology. In the third village, there is a DHAT trained in oral diagnostic, preventive, restorative and surgical care. In addition to the local PDHAs and DHAT, itinerant DHATs, hygienists, general and pediatric dentists provide services at least two to four times per year, for an average of 20 weeks of dental care each year. In villages with only a PDHA, DHATs, hygienists or dentists from regional clinics or DHATs from nearby villages visit to provide more skilled care. In villages fortunate enough to have a DHAT in residence, the visiting provider could be a dentist or hygienist from the regional clinic.

We used a purposive sample of community and healthcare organization stakeholders and a convenience sample of patient stakeholders. PDHAs and DHATs from the communities and their supervisors helped identify community stakeholders (tribal leaders, schoolteachers and village officials) and organization stakeholders who were involved with health care of the three communities (dental and medical providers, clinic administrators, dental directors). Participants lived either in the villages or in major Alaska cities in the same Alaska region. Some participants “wore many hats” as staff, community leaders and caregivers and were able to bring multiple perspectives to this study. Patient stakeholders - adolescents aged 16 to less than 21 years old and adult caregivers of children less than 12 years old - were invited to participate through flyers, Facebook postings and PDHA/DHAT outreach. Verbal consent was obtained and participants received either a small gift or a \$25 gift card. The study was approved by the Institutional Review Boards of the University of Washington and of the Alaska Area from the Indian Health Service.

We conducted semi-structured key-informant interviews with community and organization stakeholders and focus groups with patients. Using interviews and focus groups in combination allowed us to triangulate our data and cross-check reports from organization and community leaders with those of dental care recipients and providers. Data were collected over two weeks in August/September 2016. We chose late summer/early fall to coincide with the school year and to avoid the busy period of summer employment and subsistence food gathering and the fall hunting season. Interviews and focus groups lasted 45 to 90 minutes and were held in community locations familiar to the participants. Child care and food were provided for focus group participants.

Interview and focus group guides developed by the researchers and reviewed by organization leaders had open-ended questions organized into three main topics: emergency, restorative and preventive dental care and the following subtopics: a) experiences with dental care, b) barriers and facilitators to care, c) perceptions of providers, and d) dental needs of AIAN children in these remote settings. Topic areas were developed based on a planning model of pediatric dental care delivery system with the overarching goal to inform development of a future intervention to be delivered by the healthcare organization. The planning model

combined the Active Implementation Framework^{25,26} with the Improving Patient Care Model for the Indian Health System.²⁷ Interviewers were a medical anthropologist (KS), a psychologist (LN) and a dentist and epidemiologist (JCC). The psychologist was also the focus group facilitator. As an experienced researcher of Native American descent, he contributed expertise on optimal ways to communicate and interact with members of the Alaska tribes.

Data from interviews and focus groups were audio recorded and augmented with field notes and a demographic questionnaire. Audio recordings were transcribed verbatim by a professional transcriptionist; a random sample was verified by investigators to ensure data integrity. We used Dedoose Version 7.0.23 (Sociocultural Research Consultants, Los Angeles, CA) for coding and thematic content analysis.^{28–30} All transcripts were coded independently by two out of three researchers: a medical anthropologist (KS), a psychologist (CH) and a health services researcher (CP). Following the six steps outlined by Braun and Clarke,³¹ we inductively developed a hierarchically-organized codebook based on our planning model, guide topic areas and an initial review of the data. Coder agreement was assessed and resolved by comparing codings of all three coders on four transcripts and discussing the differences until reaching agreement. When necessary, the codebook was modified to accommodate new codes or definitions and data collectors were contacted to confirm interpretations and resolve discrepancies or confusion as needed. Quotes from respondents were identified by the letters A, P and C corresponding to Administrators, Providers or Community members followed by a participant identification number.

RESULTS

Nineteen community leaders and 19 staff, some of whom were also community residents, participated in the key informant interviews; and a combined 47 adolescent patients and caregivers of pediatric patients participated in the focus groups. Interview participants ranged in age from 26 to 75 years old, with most 46–55 years old. Half were AIAN, and 3/4 were women. Most of the 31 adolescents who participated in the focus groups were 16 or 17 years old (94%), female (58%) and AIAN (97%). Most of the 16 caregivers who participated in the focus groups were 26–45 years old (44%), female (81%) and AIAN (94%). Caregivers had an average of three children each, with the children ranging in age from infants to 19 years.

Two major themes emerged: First, PDHAs and DHATs are in a strong position to meet the unique needs of remote Alaskan villages, and they are sustainable. Second, PDHAs and DHATs face barriers that limit their effectiveness. They are not always well utilized and require better management and role clarification (Table 1).

Theme One: Strengths

Given the geographic remoteness and the cultural contexts unique to many Alaska Native communities, training local village residents as PDHAs and DHATs provides a sustainable and culturally competent solution to filling needed health service roles. One respondent disclosed that,

“It’s very hard to recruit [medical professionals] to a community of our size, because there aren’t amenities and there aren’t good schools” [A001].

Local PDHAs and DHATs can offer care on a more regular basis than dentists and hygienists who only travel to the villages periodically. As one administrator explained:

“People in those communities have much better access to a dentist because there’s a Primary Dental Health Aide there. Even though the Primary Dental Health Aide can’t do anything for their pain or fix their broken tooth, they could at least take an x-ray, consult with a real provider that day, and get an idea what we should do for that patient” [A004].

For geographically isolated villages, the size and remoteness of the communities often limit healthcare access, particularly to oral health services, and especially in the case of emergencies. As one community member explained

“... as far as an emergency, you could be stuck here for days... And that’s another thing, we’re landlocked, you know. If the weather’s bad, no dentist. And everything is cancelled because they’ve gotta move on to the next village” [C001].

For emergencies, in villages without a dentist or DHAT a permanent medical provider can triage and provide pain management, but emergent dental care must be sought in cities accessible only by seaplane. A healthcare leader speculated,

“If they’re [a patient] really in dire need, then there may be a chance that somebody could get them flown over ... for the care that they need. But it’s not going to be a fast process... And in the winter time, our flights in and out are decreased and depending on what the weather is, because it will rain sideways here or have high winds, then it may be that planes don’t fly” [A001].

PDHAs assist patients with dental emergencies by coordinating care between the villages and the dental clinic hubs in surrounding cities; they coordinate travel, forward radiographs and provide the link between patient and dentist separated by long distances.

Administrators recognize that PDHAs and DHATs “bridge the gap between the dentists and the community” [A004]. Their primary value may be as a member of the local Native community and “figuratively, to speak the language” [A005]. PDHAs and DHATs view themselves as allies of the community members. They are committed to providing dental care at the clinic and helping the healthcare organization maintain a good image in the community. Additionally, they recognize their unique status and influence as Alaska Natives working in Native communities where traditionally providers were neither members of the local communities nor culturally sensitive. As one PDHA explained:

“Our team believes that the DHA should be local. They shouldn’t be imported. Because we have that connection to our people. ... we just have a little bit more information than if they brought somebody in to do this job... so it’s localized is mainly how they put these DHAs in this position. They have to be from here” [P001].

The Native PDHAs and DHATs employed at the clinics understand the traditional practices of the communities and frequently have established relationships with clinic patients. As a staff member explained,

“...there’s kind of an ongoing emphasis on patient engagement and satisfaction and that can only happen if we are culturally appropriate” [A002].

Respondents told many stories about the traumatic history of dental care in these villages; dentists would come in on boats to provide sporadic invasive treatment for acute dental problems. Providers and community members talked about grandparents and parents passing their dental anxiety down to today’s generation of children. In this environment of collective trauma, trust in the provider can be paramount for successful service. As one provider explained,

“You know people here have really strong memories.... People have horror stories of 40, 50 years ago of, you know dental work without anesthesia and stuff. And so I think it does, it is, it does get passed down the whole historical trauma comes out” [A002].

Serving the mid-level roles, PDHAs and DHATs are uniquely situated to meet community needs through skilled service provision and one-on-one education sessions that itinerant dentists may not provide. PDHAs and DHATs perceive their roles as quite distinct, and this appears to vary by professional level. PDHAs and DHATs recognize their valuable role in providing dental services to their communities, and especially to children, but are quick to label which services they can and cannot perform. As one DHAT explained,

“A PDHA is more or less like a, like a mini-hygienist and a DHAT, D-H-A-T is a mini-dentist. So with the PDHAs, they again, they work within a scope of practice and they’re more or less like the preventative guru’s. Like preventative specialists. They also can perform cleanings that’s above the gum lines whereas the hygienist goes deep, deep all around” [P002].

Several respondents discussed the importance of in-person interactions, especially for oral health education. One individual remarked,

“...the interaction and the one-on-one, or that information [is] coming from an actual person as opposed to reading it, I think has more of an impact” [P001].

Community members said they noticed an increase in available preventive services when PDHAs or DHATs could clean teeth, apply fluoride and provide oral health education in both clinic and community settings, especially for children. Caregivers are very positive about the role PDHAs and DHATs play in outreach either applying fluoride or providing hygiene instruction to children in schools:

“It’s awesome having [our PDHA] in the school” [P003].

Many participants commented on the need for early intervention to establish good oral health habits for the adolescent and adult years. Preventive services offered at schools or Head Start were mentioned most frequently:

“[The village PDHA] comes in and she sends home little floss and toothbrushes and toothpaste for the kids to take home. She gives them a bag, she’ll come in and do fluoride.... And then for each grade, she’ll come in and she’ll have a bag for them to take home to their parents. So, that’s an intro to the parents from the clinic, showing, ‘Hey, you need to brush [your kids’ teeth]’” [C002].

Respondents commented on the important role of PDHAs and DHATs in the clinical setting as well. One provider emphasized,

“My experience is that when kids go to the dental clinic often, for simple things, they are comfortable being there and it makes the experience, when we need to sometimes do harder things, a lot easier, because they’re already comfortable being in the clinic. And they’re used to laying back in the chair, and have somebody brush their teeth, and have their finger in their mouths, so that when I come to do dental work, the kids are comfortable already in the dental clinic. And that makes the experience a whole lot easier and I think that desensitization piece is really huge” [A003].

Patients who know that their local provider is a DHAT are generally very positive about the individual therapist with whom they have developed a connection:

“Well now we’ve got _____[DHAT] here. So that’s, that’s been a really big benefit to the community and she’s great, people are real receptive to her and I think that’s another big part of dental care is having somebody that you can trust and somebody that you’re familiar with. I think people really bank on that and that makes it more comfortable to come back” [C005].

Others spoke of the importance of continuity of care and suggested that the qualifications or ethnicity of the provider is less important than the fact that the provider is based in the village or returns to the same village again and again, developing personal relationships with children and families while maintaining a professional demeanor.

Theme Two: Barriers

The second theme that emerged was barriers to effective provision of care. These barriers focused on day-to-day staff responsibilities, job turnover and limited skill sets.

PDHA Barriers—Administrators recognize that PDHAs in each village may function differently which can result in variable levels of care between villages. For example, PDHAs are part-time employees; work hours can vary and presence in the clinic can be irregular. While the PDHAs provide support for visiting dentists, the PDHAs have little control over the duration or frequency of the visits. Furthermore, pediatric and general dentists not familiar with the mid-level provider model may underutilize PDHAs and DHATs.

Administrators perceive that PDHAs require more supervision and ongoing training to work at the top of their skill set. The model emphasizes first finding a local resident committed to community health (whether that person has previous dental training or not); dental knowledge and skill development can be learned during the dental training provided by the organization. One healthcare leader explained,

“I think that the Primary Dental Health Aides, as long as they have good training and good supervision, and are well supported, they’re gonna be excellent at that job” [A004].

It is not clear how well the supervision model is functioning, but the variability (between villages) in PDHA activities suggests insufficient monitoring, supervision and centralized control. This may reflect a value placed on autonomy, but it has resulted in one village having extensive activities at the local school and Head Start while another village’s PDHA performed only intermittent activities in the community;

“I think it’s very hard for our Dental Health Aides to create a program. I think it’s, I think we ask a lot of our [Primary] Dental Health Aides. And I think that they need maybe more support than we’re currently offering” [A003].

PDHA and DHAT Barriers—PDHAs and DHATs spoke of the challenge to maintain a balance between personal and professional lives. This appears to stem partly from community members’ expectations that PDHAs and DHATs are always available professionally, even outside their working hours:

“I’ll go out to the store and I’ll have daily, people come up and they say, when’s the next dental clinic? Can you schedule me? Or else, can you, can you look at this, this tooth is really bad? It’s like, we’re in a public area. It’s like you know what, if you really want to get into the dental clinic, I think to myself, it’s like this is my time. This is my time with my kids. That’s the hardest thing is for me to find a balance where I have my personal life and then there’s dental” [P003].

Furthermore, on the dental clinic days, the local PDHAs or DHATs often work extra hours to support the visiting dentists or DHATs. They also spoke of the pressure they feel to see enough patients to meet administrative expectations. Specifically for DHATs, traveling to communities away from their primary service location can impinge upon family and personal time for some DHATs who fly to other villages to provide care.

While some community members are very aware of what PDHAs and DHATs in their villages are able to provide for children, others have misconceptions and underestimate their capacities. For example, one community member said,

“As far as we know it’s just brushing or doing some kind of test or x-rays that’s about it” [C004].

Caregivers generally report that they are unaware that PDHAs can apply fluoride or perform other preventive tasks. Some community members know that the local DHAT was trained to perform certain procedures but believe she is limited by a lack of equipment or products. Residents report that PDHAs/DHATs fail to advertise their skills and times they will be available in clinic which results in patients relying on visiting providers rather than on local PDHAs/DHATs.

Community members also vary dramatically in their understanding of how often, and when, visiting pediatric dental teams came to their villages, and the best way to get an appointment for their children. Rules about having missed appointments and subsequently scheduling

future appointments are generally misunderstood or misconstrued. Community members express that sometimes living and working in a small community can raise concerns about confidentiality and personal relationships might inhibit fair and equal access to dental providers:

“I think it has to do a lot with the scheduler, the scheduling or the clinic. You know I don’t understand why you know sometimes a pediatric dentist is in town, but my kids weren’t called. I never, I never really understood that. Or why it wasn’t, why I wasn’t put on notice to call for an appointment?” [C004].

Community members are very vocal about the need to increase dental provider availability. Whether a village has a PDHA or a DHAT, residents request having a higher level provider - in villages with PDHAs, community members ask for more DHAT visits and in villages already utilizing DHATs, residents call for more dentist visits.

DISCUSSION

Adding to our understanding of the dental health aide program in Alaska, this research focused on the local context and the healthcare system needs and capacity to reduce oral health disparities for Alaska Native children living in remote villages. Our results confirm the acceptance of both the primary dental health aide (PDHA) and the dental health aide therapist (DHAT) by the care system and the rural communities and identified key barriers for future quality improvement efforts to focus upon.

Community and healthcare stakeholders emphasized the important role of the dental health aides (PDHAs and DHATs) in reducing disparities in pediatric oral health. Recruitment of local people results in dental care providers willing to return to their villages to live and work, possessing cultural competence and assuring continuity of care that often imposes a challenge to itinerant dentists, which is the norm. Another strength is that dentists, PDHAs and DHATs are working at the top of their scope of practice. Both PDHAs and DHATs emphasized their role in health prevention, which is in agreement with the perspectives of Community Health Aides/Practitioners working in this environment.³² They perform outreach activities to deliver educational and preventive services to the children in community settings and also at the clinics. In addition, DHATs provide, within their scope of practice, diagnostic, restorative and surgical services, being able to handle most pediatric emergencies. DHATs are seen as excellent providers by the community members. The community perspectives corroborate the findings from studies that assessed DHATs clinical performance.¹⁷ Working collaboratively with dentists, PDHAs and DHATs are strongly positioned to meet the unique needs of the rural communities and they are seen as sustainable by healthcare administrators.

This study identified barriers for dental providers delivering dental care in the remote Alaska villages. First, PDHAs and DHATs are not always well utilized. Eventhough they are working at the top of their scope of practice, community members and administrators felt that outreach activities are sporadic and clinic hours confusing. Both PDHAs and DHATs could expand their outreach activities through regular use of topical fluorides such as silver

diamine fluoride and fluoride toothpaste programs as most villages do not have water fluoridation.

Second, PDHA and DHATs need role clarification within the healthcare system and for the communities. For example, the limited clinical scope of practice of PDHA seemed to be a challenge. Community members who do not understand this limited scope are frustrated when the PDHAs do not provide more services or do not provide services perceived to be valuable. Lack of designated clerical support for the program at the village level has created a system in which PDHAs facilitate referrals for emergency care or schedule patients for itinerant dental clinics. While this provides a primary function of uniting patients with care providers, the clerical tasks are detracting from delivery of primary preventive care. However, recruitment is limited by the applicant pool in these small villages and recruits' interest and availability for training away from home.

Finally, DHATs and PDHAs need better management skills and office-system strategies to provide consistent service within and across communities. Even though the providers deliver safe and competent care within their scope of practice at the individual, patient level,¹⁶ they lack office systems, organizational policies and processes to ensure that care is comprehensive and provided systematically to control dental caries at the population level. PDHAs and DHATs have the capacity and training to increase productivity and efficiency. For example, DHATs have been trained to design community based prevention programs, which can be delegated to a PDHA to implement, monitor and report back. However, PDHAs and DHATs do not have ongoing on-the-job training and lack consistent direction to reach oral health goals for their communities.

Within these strengths and barriers, future quality improvement efforts should focus on dissemination and implementation of culturally-appropriate evidence-based practices to care delivery and provider supervision. The dental providers need to work efficiently as a team with the goal of reaching out to all children in the villages. Evidence-based clinical practices already proven to be effective in controlling dental caries and recommended by leading national authoritative bodies^{33–35} are already being used, but need to be consistently provided. Such guidelines should include 1) an annual oral health assess-and-treat campaign to assess dental needs^{34,36} and provide follow-on care to stop the decay activity of all children in the villages;^{37–41} 2) a daily fluoride toothbrushing program at school-like settings to promote oral health;^{42,43} and 3) a semiannual or more frequent professional application of topical fluoride to prevent tooth decay.^{44–46}

With respect to quality improvement in a complex setting, the literature suggests that distribution of new guidelines will not be sufficient to improve care delivery.⁴⁷ In successful implementation, two mutually reinforcing evidence-based^{48–51} and theory-informed^{52,53} implementation strategies are needed: 1) office policies that fit the practice, patients, and local conditions such as a protocol on evidence-based practice guidelines, with algorithms and checklists; and 2) office practices such as feedback on audit with performance goals. Dental teams supported by their supervisors should create goals for care delivery and performance should be monitored frequently to meet goals. These general strategies will need to be adapted to include appropriate cultural meaning and context^{54,55} and increase

receptivity among AIAN organizations and communities.^{49,56} The tribal healthcare organization and its dental department is sufficiently large, and its employees sophisticated enough to address the barriers identified in this paper, allowing that recruitment and retention of skilled providers will always be a problem. Previous single-intervention trials⁵⁷ and extensive efforts of the Indian Health Services⁵⁸ failed to reduce tooth decay of AIAN children and adolescents. No studies, however, have evaluated more comprehensive and culturally-adapted quality improvement efforts as part of a comprehensive program to eliminate AIAN disparities in oral health.⁵⁹

Interest in the Alaska dental health aide program is growing among American Indian communities in the US lower 48 states and lessons learned from quality improvement in these settings can inform similar efforts throughout the Circumpolar North. Tribes in both Oregon and Washington states currently have practicing DHATs or sponsor DHAT trainings for tribal members.^{60–62} Nevertheless, our findings are from a single healthcare organization and are also limited by the inclusion of community and patient stakeholders from only three villages. Still, lessons have been learned and solutions proposed that apply more generally to the strengths and barriers of efforts to sustain and expand these innovative care models throughout the United States and elsewhere.

The PDHA and DHAT have been accepted by communities in Alaska and are addressing disparities in dental care and oral health for Native children. An innate understanding of cultural norms and continuity of care are key elements driving village satisfaction. Moreover, the potential exists administratively to strengthen the model. Thus, implementation of clinical and office-system strategies to increase efficiency of the dental team in real-world settings will be critical to the successful expansion of new workforce models. Multilevel, complex interventions have the potential to change the delivery system in the direction of culturally competent, population-, and evidence-based care to improve oral health and reduce disparities.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Themes, codes and quotes of the strengths and challenges of dental care in remote Alaska villages

Themes	Codes	Quotes
1. Strengths		
A PDHA and DHAT meet community needs	– Geographically small	“People in those communities have much better access to a dentist because there’s a Primary Dental Health Aide there.”
	– Isolated	“...there’s kind of an ongoing emphasis on patient engagement and satisfaction and that can only happen if we are culturally appropriate.”
– Overcome geographic barriers	– Specific issues for serving AI/AN	
	– Travel barriers	
– Overcome cultural barriers	– Preventive dental care/ What’s happening in the community	
– Provide clinic-based and community-based preventive care		
B DHA program is sustainable	– Locations where preventive care is currently available	“It’s very hard to recruit [medical professionals] to a community of our size.” PDHAs and DHATs “bridge the gap between the dentists and the community” “It’s awesome having her [PDHA] in the school”
2. Challenges		
A PDHA and DHAT are not always well utilized	– Awareness of what Dental Health Aides can do	“As far as we know it’s just brushing or doing some kind of test or x-rays that’s about it.”
	– Comments about provider	
	– Systems level issues	
B PDHA and DHAT need better management	– What is DHA/DHAT role	“I think we ask a lot of our Dental Health Aides. And I think that they need maybe more support than we’re currently offering.”
	– Systems level issues	
C PDHA and DHAT need role clarification	– What is DHA/DHAT role (Admin perspective, self-perception, community perspective)	“A DHA is more or less like a, like a mini-hygienist and a DHAT, D-H-A-T is a mini-dentist.”
	– See roles as distinct	“That’s the hardest thing is for me to find a balance where I have my personal life and then there’s dental.”
	– Need separation between professional and personal roles in the communities	“As far as we know it’s just brushing or doing some kind of test or x-rays that’s about it.”
	– Communities do not understand Dental Health Aide capacities	“You know I don’t understand why you know sometimes a pediatric dentist is in town, but my kids weren’t called.”
	– Communication barriers between Aides and communities	