

Policy on Workforce Issues and Delivery of Oral Health Care Services in a Dental Home

Latest Revision

2019

How to Cite: American Academy of Pediatric Dentistry. Policy on workforce issues and delivery of oral health care services in a dental home. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2024:64-8.

Purpose

The American Academy of Pediatric Dentistry (AAPD) advocates optimal oral health and health care services for all children, including those with special health care needs. Strategies for improving access to dental care, the most prevalent unmet health care need for disadvantaged United States (U.S.) children, and increasing utilization of available services should include, but not be limited to, workforce considerations. This policy will address workforce issues with an emphasis on the benefits of oral health care services delivered within a dentist-directed dental home.

Methods

In 2008, the AAPD created a Task Force on Workforce Issues (TFWI) which was charged, in part, with investigating the problem of access to oral health care services by children in the U.S. and analyzing the different auxiliary delivery systems available. The TFWI's findings and recommendations were summarized in a report¹ presented to the AAPD Board of Trustees in 2009. That report served as the basis for the original version of this policy, developed by the Council on Clinical Affairs and initially adopted in 2011. This document is an update of the 2014 revision. It includes an electronic search with PubMed®/MEDLINE using the terms: pediatric dentistry workforce, access to oral health care, disparities in oral health care, nondentist provider model, dental therapy model, expanded function dental assistants/auxiliaries, dental care delivery, dental workforce, oral health inequalities, access to dental care, and dental therapists.

Background

Access to oral health care for children is an important concern that has received considerable attention since publication of *Oral Health in America: A Report of the Surgeon General* in 2000.² The report identified “profound and consequential disparities in the oral health of our citizens” and that dental disease “restricts activities in school, work, and home, and often significantly diminishes the quality of life.”² It concluded that for certain large groups of disadvantaged children there is a “silent epidemic” of dental disease.² This report identified dental caries as the most common chronic disease of children in the U.S., noting that 80 percent of tooth decay is found in 20 to 25 percent of children, large portions of whom live

in poverty or low-income households and lack access to an on-going source of quality dental care.² Research on the topic has shown that the distribution of these disparities may vary by age group.³

The mission of the AAPD is “to advance optimal oral health for all children by delivering outstanding service that meets and exceeds the needs and expectations of our members, partners, and stakeholders.”⁴ The AAPD has long focused its efforts on addressing the disparities between children who are at risk of having high rates of dental caries and the millions of U.S. children who enjoy access to quality oral health care and unprecedented levels of oral health. The AAPD's advocacy activities take place within the broader health care community and with the public at local, regional, and national levels.

Access to care issues extend beyond a shortage or maldistribution of dentists or, more specifically, dentists who treat Medicaid or State Children's Health Insurance Program (CHIP) recipients. Health care professionals often elect to not participate as providers in these programs due to low reimbursement rates, administrative burdens, and the frequency of failed appointments by patients whose treatment is publicly funded.⁵⁻⁸ Nevertheless, American Dental Association (ADA) survey data reveals that pediatric dentists report the highest percentage of patients insured through public assistance among all dentists.⁹ Medicaid-enrolled children living in areas with more pediatric dentists are more likely to utilize preventive dental care.¹⁰ However, when considering the disincentives of participating as Medicaid/CHIP providers, more dentists and/or nondentist oral health care providers cannot be considered the panacea for oral health disparities.

Inequities in oral health can result from underutilization of services. Lack of health literacy, limited English proficiency, and cultural and societal barriers can lead to difficulties in utilizing available services. Financial circumstances, as well as geographical and transportational considerations, also can

ABBREVIATIONS

AAP: American Academy of Pediatrics. **AAPD:** American Academy of Pediatric Dentistry. **ADA:** American Dental Association. **CHIP:** Children's Health Insurance Program. **TFWI:** Task Force on Workforce Issues. **U.S.:** United States.

impede access to care. Eliminating such barriers will require a collaborative, multifaceted approach.^{11,12} Systematic policy and environmental changes that improve living conditions and alleviate poverty are needed to directly address the social determinants of health.¹³ All the while, stakeholders must promote education and primary prevention so that disease levels and the need for therapeutic services decrease.

All AAPD advocacy efforts are based upon the organization's strategic objectives.⁴ A major component of AAPD's advocacy efforts is development of oral health policies, best practices, and evidence-based clinical practice guidelines¹⁴ that promote access to and delivery of safe, high-quality comprehensive oral health care for all children, including those with special health care needs, within a dental home. A dental home is the ongoing relationship between the dentist and the patient, inclusive of all aspects of oral health care delivery, in a comprehensive, continuously accessible, coordinated, and family-centered way.¹⁵ Such care takes into consideration the patient's age, developmental status, and psychosocial well-being and is appropriate to the needs of the child and family. This concept of a dental home was detailed in a 2001 AAPD oral health policy¹⁶ and is derived from the American Academy of Pediatrics' (AAP) model of a medical home.^{17,18} The AAPD, AAP, ADA, and Academy of General Dentistry support the establishment of a dental home as early as six months of age and no later than 12 months of age.^{14,18-20} This provides time-critical opportunities to provide education on preventive health practices and reduce a child's risk of preventable dental/oral disease when delivered within the context of an ongoing relationship. Prevention can be customized to an individual child's and/or family's risk factors. Growing evidence supports the effectiveness of early dental visits in reducing dental caries.²¹⁻²³ Each child's dental home should include the capacity to refer to other dentists or medical care providers when all medically-necessary care cannot be provided within the dental home. The AAPD strongly believes a dental home is essential for ensuring optimal oral health for all children.²⁴

Central to the dental home model is dentist-directed care. The dentist performs the examination, diagnoses oral conditions, and establishes a treatment plan that includes preventive services, and all services are carried out under the dentist's supervision. The dental home delivery model implies direct supervision (i.e., physical presence during the provision of care) of allied dental personnel by the dentist. The allied dental personnel (e.g., dental hygienist, expanded function dental assistant/auxiliary, dental assistant) work under direct supervision of the dentist to increase productivity and efficiency while preserving quality of care. This model also allows for provision of preventive oral health education and preventive oral health services by allied dental personnel under general supervision (i.e., without the presence of the supervising dentist in the treatment facility) following the examination, diagnosis, and treatment plan by the licensed, supervising dentist. Furthermore, the dental team can be expanded to include auxiliaries who go into the community to provide

education and coordination of oral health services. Utilizing allied personnel to improve oral health literacy could decrease individuals' risk for oral diseases and mitigate a later need for more extensive and expensive therapeutic services.

In addition, advancing optimal oral health for all children through its policies, best practices, and clinical practice guidelines, AAPD advocacy efforts, in part, include:

1. working closely with legislators, professional associations and health care professionals to implement research opportunities in pediatric oral health and educate pediatric dentists, health care providers, and the public regarding pediatric oral health.
2. convening an annual Advocacy Conference in Washington, D.C. to advocate for funding for pediatric and general dentistry residency programs and faculty loan repayment.
3. working with the ADA to identify nonfinancial barriers to oral health care and develop recommendations to improve access to care for Medicaid recipients.^{25,26}
4. partnering with federally-funded agencies to develop strategies to improve children's oral health.²⁷
5. examining the various nondentist (also known as mid-level) provider models that exist and/or are being proposed to address the access to care issues.²⁸

The AAPD TFWI reported that a number of provider models to improve access to care for disadvantaged children have been proposed and, in some cases, implemented following the Surgeon General's report.¹ At the heart of the issue with each nondentist provider proposal is ensuring ongoing access to dental care for the underserved. Therefore, practice location and retention of independent nondentist providers are important considerations. When providers are government employees (e.g., Indian Health Services, National Health Services Corps), they are assigned to high-need areas. The dental therapy model has been shown to improve use of dental care services in Alaska.^{29,30} However, the current U.S. proposed models are private practice/nongovernment employee models, providing no assurances that independent providers will locate in underserved areas. Recent case studies of private practices in Minnesota describe the impact of dental therapists on production. Their findings suggest that while a therapist joining a dentist in a located practice may increase that dentist's efficiency, it does not expand geographic access to dental care characteristic of the Alaska initiative or of the international model of therapists.³¹⁻³³ Moreover, evidence from several developed countries that have initiated mid-level provider programs suggests that, when afforded an opportunity, those practitioners often gravitate toward private practice settings in less-remote areas, thereby diminishing the impact on care for the underserved.³⁴

In all existing and proposed nondentist provider models, the clinician receives abbreviated levels of education compared to the educational requirements of a dentist. For example, the dental health aid therapist model in Alaska is a two-year certificate program with a pre-requisite high school education.^{35,36}

The level of educational training varies from state to state,³⁷⁻³⁹ and none of the current programs is approved by the Commission on Dental Accreditation. In contrast, building on their college education, dental students generally spend four years learning the biological principles, diagnostic skills, and clinical techniques to distinguish between health and disease and to manage oral conditions while taking into consideration a patient's general health and well-being. The clinical care they provide during their doctoral education is under direct supervision. Those who specialize in pediatric dentistry must spend an additional 24 or more months in a full-time post-doctoral program that provides advanced didactic and clinical experiences.⁴⁰ The skills that pediatric dentists develop are applied to the needs of children through their ever-changing stages of dental, physical, and psychosocial development, treating conditions and diseases unique to growing individuals.

While most pediatric dental patients can be managed effectively using communicative behavioral guidance techniques, many of the disadvantaged children who exhibit the greatest levels of dental disease require advanced techniques (e.g., sedation, general anesthesia).^{41,42} Successful behavior guidance enables the oral health team to perform quality treatment safely and efficiently and to nurture a positive dental attitude in the pediatric patient.⁴³ Accurate diagnosis of behavior and safe and effective implementation of advanced behavior guidance techniques necessitate specialized knowledge and experience.

Studies addressing the technical quality of restorative procedures performed by nondentist providers have found, in general, that within the scope of services and circumstances to which their practices are limited, the technical quality is comparable to that produced by dentists.^{44,45} There is, however, no evidence to suggest that they deliver any expertise comparable to a dentist in the fields of diagnosis, pathology, trauma care, pharmacology, behavioral guidance, treatment plan development, and care of patients with special health care needs. It is essential that policy makers recognize that evaluations which demonstrate comparable levels of technical quality merely indicate that individuals know how to provide certain limited services, not that those providers have the knowledge and experience necessary to determine whether and when various procedures should be performed or to manage individuals' comprehensive oral health care, especially with concurrent conditions that may complicate treatment or have implications for overall health. Technical competence cannot be equated with long-term outcomes.

The AAPD continues to work diligently to ensure that the dental home is recognized as the foundation for delivering oral health care of the highest quality to infants, children, and adolescents, including those with special health care needs. The AAPD envisions that many new and varied delivery models will be proposed to meet increasing demands on the infrastructure of existing oral health care services in the U.S. New Zealand, known for utilizing dental therapists since the 1920's and frequently referenced as a workforce model for consideration in the U.S., makes dental care available at no cost

for children up to 18 years of age, with most public primary schools having a dental clinic and many regions operating mobile clinics.⁴⁶ In New Zealand's most recent nationwide oral health status survey, overall, one in two children aged two-17 years was caries-free. The caries rate for five-year-olds and eight-year-olds in 2009 was 44.4 percent and 47.9 percent respectively.⁴⁷ These caries rates, which are higher than the U.S., United Kingdom, and Australia, help refute a presumption that utilization of nondentist providers will overcome the disparities.

As technology continues to improve, proposed models may suggest dentist supervision of services outside the primary practice location via electronic communicative means to be comparable in safety and effectiveness to services provided under direct supervision by a dentist. Health care already has witnessed benefits of electronic communications in diagnostic radiology and other consultative services. The AAPD encourages exploration of new models of dentist-directed health care services that will increase access to care for underserved populations. But as witnessed through the New Zealand oral health survey, a multifaceted approach will be necessary to improve the oral health status of our nation's children.

Policy statement

The American Academy of Pediatric Dentistry remains committed in its vision and mission to address the disparities between children who lack access to quality oral health care and those who benefit from such services. The AAPD believes that all infants, children, and adolescents, including those with special health care needs, deserve access to high quality comprehensive preventive and therapeutic oral health care services provided through a dentist-directed dental home. In the delivery of all dental care, patient safety must be of paramount concern.

The AAPD encourages the greater use of expanded function dental assistants/auxiliaries and dental hygienists under direct supervision by a dentist to help increase volume of services provided within a dental home, based upon their proven effectiveness and efficiency in a wide range of settings.⁴⁵⁻⁵¹ The AAPD also supports provision of preventive oral health services by a dental hygienist under general supervision (i.e., without the presence of the supervising dentist in the treatment facility) following the examination, diagnosis, and treatment plan by the licensed, supervising dentist. Similarly, partnering with other health providers, especially those who most often see children during the first years of life (e.g., pediatricians, family physicians, pediatric nurses), will expand efforts for improving children's oral health.

The AAPD strongly believes there should not be a two-tiered standard of care, with our nation's most vulnerable children receiving services by providers with less education and experience. The AAPD will continue its efforts to:

1. educate families, health care providers, academicians, community leaders, and partnered governmental agencies on the benefits of early establishment of a dental home.

2. forge alliances with legislative leaders that will advance the dental home concept and improve funding for delivery of oral health care services and dental education.
3. expand public-private partnerships to improve the oral health of children who suffer disproportionately from oral diseases.
4. encourage recruitment of qualified students from rural areas and underrepresented minorities into the dental profession.
5. partner with other dental and medical organizations to study barriers to care and underutilization of available services.
6. support scientific research on safe, efficacious, and sustainable models of delivery of dentist-directed pediatric oral health care that is consistent with the AAPD's oral health policies and clinical practice guidelines.

Furthermore, the AAPD encourages researchers and policy makers to consult with the AAPD and its state units in the development of pilot programs and policies that have potential for significant impact in the delivery of oral health care services for our nation's children.

References

1. Hinson HP, Berlocher WC, Berg JH, et al. Report of the American Academy of Pediatric Dentistry's Task Force on Workforce Issues. Chicago, Ill.: American Academy of Pediatric Dentistry; 2009.
2. U.S. Department of Health and Human Services. Oral Health in America: A Report of the Surgeon General. Rockville, Md.: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health; 2000.
3. Macek MD, Heller KE, Selwitz RH, Manz MC. Is 75 percent of dental caries found in 25 percent of the population? *J Public Health Dent* 2004;61(1):20-5.
4. American Academy of Pediatric Dentistry. Strategic Plan 2020. *Pediatr Dent* 2018;40(6):8-9.
5. Damiano PC, Brown ER, Johnson JD, Scheetz JP. Factors affecting dentist participation in a state Medicaid program. *J Dent Educ* 1990;54(11):638-43.
6. Morris PJ, Freed JR, Nguyen A, Duperon DE, Freed BA, Dickmeyer J. Pediatric dentists' participation in the California Medicaid program. *Pediatr Dent* 2004;26(1):79-86.
7. Hughes RJ, Damiano PC, Kanellis MJ, Kuthy R, Slayton R. Dentists' participation and children's use of services in the Indiana dental Medicaid program and SCHIP: Assessing the impact of increased fees and administrative changes. *J Am Dent Assoc* 2005;136(4):517-23.
8. Berman S, Dolins J, Tang S, Yudkowsky B. Factors that influence the willingness of private primary care pediatricians to accept more Medicaid patients. *Pediatrics* 2002;110(2):239-48.
9. American Dental Association. 2009 Survey of Dental Fees. Chicago, Ill.: American Dental Association; September, 2009.
10. Heidenreich JF, Kim AS, Scott JM, Chi DL. Pediatric dentistry and preventive care utilization for Medicaid children. *Pediatr Dent* 2015;37(4):371-5.
11. American Dental Association. Breaking down barriers to oral health for all Americans: The role of workforce. A statement from the American Dental Association. February 22, 2011. Available at: "http://www.ada.org/en/-/media/ADA/Advocacy/Files/ada_workforce_statement". Accessed October 11, 2017.
12. Academy of General Dentistry. White paper on increasing access to and utilization of oral health care services. Available at: "<https://www.agd.org/docs/default-source/advocacy-papers/agd-white-paper-increasing-access-to-and-utilization-of-oral-health-care-services.pdf?sfvrsn=2>". Accessed July 13, 2019.
13. American Academy of Pediatric Dentistry. Policy on social determinants of children's oral health and health disparities. *Pediatr Dent* 2018;40(6):23-6.
14. American Academy of Pediatric Dentistry. American Academy of Pediatric Dentistry Oral Health Policies and Recommendations. Available at: "<https://www.aapd.org/research/oral-health-policies--recommendations/>". Accessed July 13, 2019.
15. American Academy of Pediatric Dentistry. Definition of dental home. *Pediatr Dent* 2018;40(6):12.
16. American Academy of Pediatric Dentistry. Policy on dental home. *Pediatr Dent* 2018;40(6):29-30.
17. American Academy of Pediatrics Ad Hoc Task Force on the Definition of the Medical Home. The medical home. *Pediatrics* 1992;90(5):774.
18. American Academy of Pediatrics. Preventive oral health intervention for pediatricians. *Pediatrics* 2008;122(6):1387-94.
19. American Dental Association. ADA Statement on Early Childhood Caries. 2000:454. Available at: "<http://www.ada.org/en/about-the-ada/ada-positions-policies-and-statements/statement-on-early-childhood-caries>". Accessed July 13, 2019.
20. Academy of General Dentistry. When should my child first see a dentist? Available at: "<http://www.knowyourteeth.com/infobites/abc/article/?abc=c&iid=296&aid=1186>". Accessed July 13, 2019.
21. Savage MF, Lee JY, Kotch JB, Vann WF Jr. Early preventive dental visits: Effects on subsequent utilization and costs. *Pediatrics* 2004;114(4):e418-23.
22. Lee JY, Bouwens TJ, Savage MF, Vann WF Jr. Examining the cost-effectiveness of early dental visits. *Pediatr Dent* 2006;28(2):102-5; discussion 192-8.
23. Nowak AJ, Casamassimo PS, Scott J, Moulton R. Do early dental visits reduce treatment and treatment costs for children? *Pediatr Dent* 2014;36(7):489-93.

References continued on the next page.

24. Damiano P, Reynolds J, Herndon JB, McKernan S, Kuthy R. The patient-centered dental home: A standardized definition for quality assessment, improvement, and integration. *Health Serv Res* 2019;54(2):446-54.
25. American Dental Association Council on Access, Prevention, and Interprofessional Relations. Report on the June 23, 2008 Medicaid Provider Symposium. Chicago, Ill. Available at: "<http://www.medicaidental.org/files/Resource%20Documents/MedicaidSymposiumFinalReport.pdf>". Accessed July 13, 2019.
26. American Dental Association. Proceedings of the March 23-25, 2009 Access to Dental Care Summit. Chicago, Ill. Available at: "http://www.ada.org/-/media/ADA/Public%20Programs/Files/access_dental_care_summit.pdf?la=en". Accessed July 13, 2019.
27. Office of Management and Budget. Providing Dental Homes for Head Start and Early Head Start Children. Reference #HHSP23320072912YC. Office of Management and Budget No. 0990-0115. Effective Date: September 30, 2007.
28. Wright JT, Graham F, Hayes C, et al. A systematic review of oral health outcomes produced by dental teams incorporating midlevel providers. *J Am Dent Assoc* 2013;144(1):75-91.
29. Chi DL, Lenaker D, Mancl L, Dunbar M, Babb M. Dental therapists linked to improved dental outcomes for Alaska Native communities in the Yukon-Kuskokwim Delta. *J Public Health Dent* 2018;78(2):175-82.
30. Senturia K, Fiset L, Hort K, et al. Dental health aides in Alaska: A qualitative assessment to improve paediatric oral health in remote rural villages. *Community Dent Oral Epidemiol* 2018;46(4):416-24.
31. Nash DA, Mathu-Muju KR, Friedman JW. The dental therapist movement in the United States: A critique of current trends. *J Public Health Dent* 2018;78(2):127-33.
32. Pew Charitable Trusts. Expanding the dental team: Studies of two private practices. February 2014. Available at: "http://www.pewtrusts.org/-/media/legacy/uploadedfiles/pes_assets/2014/expandingdentalteamreportpdf.pdf". Accessed May 24, 2019.
33. Delta Dental of Minnesota. Grand Marais family dentistry: Dental therapist case study. Minneapolis (MN): Delta Dental of Minnesota; May 2017. Available at: "<http://www.wilder.org/Wilder-Research/Publications/Studies/Delta%20Dental%20of%20Minnesota/Grand%20Marais%20Family%20Dentistry%20-%20Dental%20Therapist%20Case%20Study.pdf>". Accessed May 24, 2019.
34. Satur J, Gussy M, Mariño R, Martini T. Patterns of dental therapists' scope of practice and employment in Victoria, Australia. *J Dent Educ* 2009;73(3):416-25.
35. University of Alaska Anchorage Alaska Center for Rural Health and Health Workforce. Dental health aide. Available at: "https://www.uaa.alaska.edu/academics/college-of-health/departments/acrhhw/healthcareerresources/careersdescriptions/_documents/DentalHealthAide.pdf". Accessed July 13, 2019.
36. Bader JD, Lee JY, Shugars DA, Burrus BB, Weterhall S. Clinical technical performance of dental therapists in Alaska. *J Am Dent Assoc* 2011;142(3):322-6.
37. State of Minnesota. Revised Statutes, 150A.105, 150A.106. St. Paul: State of Minnesota; 2017. Available at: "<https://www.revisor.mn.gov/statutes/?id=150A.106>". Accessed July 13, 2019.
38. Vermont 2016 S.20. An act relating to the regulation of dental therapists as passed by House and Senate. Available at: "<http://legislature.vermont.gov/assets/Documents/2016/Docs/BILLS/S-0020/S0020%20As%20Passed%20by%20Both%20House%20and%20Senate%20Unofficial.pdf>". Accessed May 24, 2019.
39. State of Maine. An Act to Improve Access to Oral Health-Care. Sec. 1.32 MRSA c. 16, sub-c. 3-C. Augusta, Maine: State of Maine; 2014. Available at: "http://www.mainelegislature.org/legis/bills/bills_126th/billtexts/HP087001.asp". Accessed May 24, 2019.
40. American Dental Association Commission on Dental Accreditation. Accreditation Standards for Advanced Specialty Education Programs in Pediatric Dentistry. 2013. Revised 2018. Available at: "<https://www.ada.org/-/media/CODA/Files/ped.pdf?la=en>". Accessed July 13, 2019.
41. Vargas CM, Ronzio CR. Disparities in early childhood caries. *BMC Oral Health* 2006;(6 Suppl)1:S3.
42. Casamassimo PS, Thikkurissy S, Edelstein BL, Maiorini E. Beyond the dmft: The human and economic cost of early childhood caries. *J Am Dent Assoc* 2009;140(6):650-7.
43. American Academy of Pediatric Dentistry. Behavior guidance for the pediatric dental patient. *Pediatr Dent* 2018;40(6):254-67.
44. Ryge G, Snyder M. Evaluating the quality of dental restorations. *J Am Dent Assoc* 1973;87(2):369-77.
45. Scott Wetterhall S, Bader JD, Burrus BB, Lee JY, Shugars DA. Evaluation of the Dental Health Aide Therapist Workforce Model in Alaska – Final Report. 2010. Available at: "<https://www.communitycatalyst.org/initiatives-and-issues/initiatives/dental-access-project/RTI-Program-Evaluation-of-DHAT-Workforce-Model-in-AK-Executive-Summary-1.pdf>". Accessed July 13, 2019.
46. Gillies A. NZ children's dental health still among worst. *The New Zealand Herald*. March 6, 2011. Available at: "http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10710408". Accessed July 13, 2019.
47. New Zealand Ministry of Health. Age 5 and year 8 oral health. In: *Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey*. New Zealand, 2010. Available at: "<http://www.health.govt.nz/system/files/documents/publications/our-oral-health-2010.pdf>". Accessed July 13, 2019.
48. Luciano JW, Rothfuss LG, Von Gonten AS. The expanded function dental assistant training program. *U.S. Army Med Dep J* 2006;Jan-Mar:16-20. Available at: "<http://www.cs.amedd.army.mil/AMEDDJournal/2006janmar.pdf>". Accessed July 13, 2019.
49. Beazoglou T, Brown LJ, Ray S, Chen L, Lazar V. An Economic Study of Expanded Duties of Dental Auxiliaries in Colorado. Chicago, Ill.: American Dental Association, Health Policy Resources Center; 2009. Available at: "<http://www.aapd.org/assets/1/7/EFDAeconomic2009.pdf>". Accessed July 13, 2019.
50. Brearley Lj, Rosenblum FN. Two-year evaluation of auxiliaries trained in expanded duties. *J Am Dent Assoc* 1972;84(3):600-10.
51. Lotzkar S, Johnson DW, Thompson MB. Experimental program in expanded functions for dental assistants: Phase 3 experiment with dental teams. *J Am Dent Assoc* 1971;82(5):1067-81.