2015

The Dental Assistant Workforce in the United States, 2015

OHWRC
Oral Health Workforce Research Center

Center for Health Workforce Studies
School of Public Health
University at Albany, State University of New York

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PREFACE

This report is a profile of the dental assistant workforce and examined scope of practice statute and regulation in each of the states that recognize the workforce. The objectives of this study were to understand the demographic and employment characteristics of dental assistants, to describe the state-level regulatory climate for dental assistants, and to examine their potential contributions to improve patients' oral health education and access to care.

This report was prepared for the Oral Health Workforce Research Center (OHWRC) by Bridget Baker, Margaret Langelier, Jean Moore, and Stuart Damon, with layout design by Leanne Keough. OHWRC is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number U81HP27843, a Cooperative Agreement for a Regional Center for Health Workforce Studies, in the amount of $436,600. This information or content and conclusions are those of OHWRC and should not be constructed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS, or the U.S. government.

The mission of OHWRC is to provide accurate and policy-relevant research on the impact of the oral health workforce on oral health outcomes. The research conducted by OHWRC informs strategies designed to increase access to oral health services for vulnerable populations. OHWRC is based at the Center for Health Workforce Studies (CHWS) at the School of Public Health, University at Albany, State University of New York (SUNY), and is the only research center uniquely focused on the oral health workforce.

The views expressed in this report are those of OHWRC and do not necessarily represent positions or policies of the School of Public Health, University at Albany, or SUNY, Health Research, Inc., the U.S. Health Resources and Services Administration, or other subcontractors.

October 2015

ACKNOWLEDGMENTS

Special appreciation is extended to the American Dental Assistants Association and the Dental Assisting National Board. The informants from each national organization provided thoughtful input to this research study.

Suggested Citation:

Baker B, Langelier M, Moore J, Daman S. *The Dental Assistant Workforce in the United States, 2015*. Rensselaer, NY: Center for Health Workforce Studies, School of Public Health, SUNY Albany; October 2015.

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Executive Summary

BACKGROUND

Dental assistants are valued members of the oral health workforce team performing both clinical and administrative duties under the supervision of a dentist. In addition to directly assisting the dentist with oral examinations and dental procedures, dental assistants perform a number of independent tasks including preparing patients for treatment, arranging and sterilizing instruments, and educating patients about general and post-operative oral health care. Dental assistants also act in administrative capacities including scheduling appointments, maintaining patient records, and billing for treatment services.

Requirements for entry to dental assisting range from on the job training to formal accredited education programs culminating in an associate degree. Allowable tasks differ by state and in some instances are decided by employing dentists. Many states recognize expanded function dental assistants (EFDAs) which typically requires extra training and competency testing.

The Oral Health Workforce Center (OHWRC) at the Center for Health Workforce Studies (CHWS), University at Albany School of Public Health conducted a study of the dental assistant workforce to catalogue the variation in regulation of dental assistants by state, to identify sources of data about the characteristics of dental assistants in the United States, and to examine literature describing the contributions of dental assistants to patient care with special emphasis on how expanded roles for dental assistants are affecting both access to oral health services and population oral health outcomes. Project activities included an assessment of scope of practice to illustrate the state by state differences in regulatory structures governing dental assistants, required supervision of dental assistants, allowable dental assisting tasks, and recognition of extended functions for dental assistants.

KEY FINDINGS

- **The dental assistant workforce is predominantly young and female with a higher percentage of underrepresented minorities (URMs) than dentists and dental hygienists. Most dental assistants work in private dental practices on a full time basis.**

The dental assistant workforce is mainly female (95%) with an average age of 35 years. More than 20% of dental assistants in the United States identify as Hispanic while just 6.8% of dental hygienists and 6.1% of dentists identify as Hispanic. Approximately 93% of dental assistants work in private dental practices for an average of 34 hours per week. Demand for dental assistants has been steady over the last 20 years.

- **In the majority of states there are opportunities for dental assitants to work as EFDAs.**

Many states now regulate dental assistants at several levels of practice using a tiered approach to allowable tasks and supervision requirements. This approach to regulation effectively creates opportunities for advancement for dental assistants who wish to further their careers. Many states now restrict extended functions to dental assistants who have completed formal advanced didactic and clinical training or who have acquired significant clinical experience. Expanded functions permitted to appropriately trained individuals include coronal polishing, sealant and/or fluoride applications, and topical anesthetic application as well as expanded restorative and orthodontic functions.

- **There is considerable variation in state regulatory frameworks that recognize the dental assistant workforce.**

Dental assistants are either explicitly or implicitly recognized in state's dental practice acts or administrative rules in all states. Some states provide regulatory guidelines describing tasks that a dental assistant may provide based on education and proof of competency and required levels of dentist supervision. Other states allow dentists employing dental assistants to determine what functions they may perform under appropriate supervision. Over the last decade, dental assistant requirements for entry have been more specifically defined in state laws and regulations.

- **Requirements for dental assistants including education and training pathways, titles used, and tasks permitted vary by state.**

The variation in qualifications, range of allowable services, and job titles for dental assistants and EFDAs across states is noteworthy. Over 40 different job titles were identified for dental assistants and EFDAs across the United States. Classifications of allowable duties and tasks under these titles vary by state with

having as many as 5 levels and job titles for dental assistants. Titles in 1 state may be equivalent to different titles in another. For example, in 1 state, a Certified Dental Assistant (CDA) or a Registered Dental Assistant (RDA) might be allowed to perform the same tasks as an EFDA, while in another a CDA or an RDA would be required to obtain further training to also use the credential of an EFDA.

- **Studies of the clinical contributions of EFDAs suggest that when used appropriately, EFDAs contribute to increased efficiency and capacity in both private practice and public health settings.**

The impact of dental assistants on service provision has been evaluated in a few relatively recent studies. An early study in private practice dentist offices in Washington found that utilization of expanded function dental auxiliaries was related to increases in both the complexity of delegated tasks and the comfort of the dentist delegating tasks. The findings from a study of EFDAs in Colorado concluded that dentists in the study were able to increase patient caseload by using EFDAs. Research suggests that the increased scope of practice for dental assistants is beneficial to patients in private and public health settings, particularly for those most likely to utilize public health clinics and Medicaid benefits.

LIMITATIONS

Data about the supply and distribution and the demographic, educational, and practice characteristics of dental assistants were limited and at times, inconsistent across data sources. No single reliable source of data was available to describe key characteristics of dental assistants. As an example, it was challenging to estimate the current number of dental assistants in the United States as one data source reported the number of jobs for dental assistants while another reported the number of people who self-reported working as dental assistant.

CONCLUSIONS

Dental assistants play key roles in assisting dentists and others in the provision of oral health services. However, there remains variability across the 50 states in the required education and training to enter the workforce as a dental assistant, in the titles used to describe the workforce, and in the legally allowed functions. Further, there are limited data available to fully understand key characteristics of dental assistants in the United States.

Increasingly, policymakers and oral health stakeholders recognize the opportunity to utilize dental assistants in both private and public health practice to maximize service capacity to meet ever growing demand for oral health services. Recognition of the important roles of dental assistants on the oral health team have led to increased attention to creating more consistent roles for dental assistants and for creating opportunities for them to contribute to increased access to oral health services.

Recent research suggests that dental assistants, especially EFDAs, contribute to improved clinical efficiency and increased access to oral health services. Still, more research is needed to better understand how dental assistants contribute to effective oral health team-based care.

Technical Report

BACKGROUND

Introduction

Regulation of the dental assistant workforce is increasing in states. Dental assistants provide a wide range of oral health functions and work closely with dentists, dental hygienists, and dental therapists, among others. Previous studies indicate that dental assistants promote oral health literacy and patient education, thereby improving the patient care experience. The adaptable nature of the workforce is also reflected in workplace settings; dental assistants are employed in private-practice dental offices, dental specialty clinics, public health clinics, schools, and hospitals.

Dental assistants' practice and supervision requirements which are defined by state dental boards reflect significant variation in workforce conditions. Some states limit tasks that may be performed while others provide expanded opportunities in scope of tasks and supervision. The lack of national regulation and multiple states' legal and policy interpretations of the dental assistant's roles have produced substantial variation in allowable practices, supervision, education, and training requirements. The range of permitted tasks are as varied as the states' terminology used to define these roles and practices. More recently, some states passed legislation allowing for EFDAs to provide additional oral health services under varying levels of supervision by dentists and/or dental hygienists. An analysis of dental assistants' scopes of practice across the United States is critical, given that recent studies on appropriate use of dental assistants in a broad range of workforce settings indicate contributions to improved access to care for patients. In addition, substantial variation in regulating dental assistants suggests contrasting ideas about the utilization of this workforce, which could impact outcomes in education, training, and practices.

In 2015 the Oral Health Workforce Research Center (OHWRC) at the Center for Health Workforce Studies (CHWS) at the University at Albany, New York, School of Public Health completed a research project to study the dental assistant workforce. The researchers compiled and analyzed demographic, education, and practice data about the dental assistant workforce and compiled a table of legal requirements for practice. The objectives of this study were to understand the demographic and employment characteristics of dental assistants, to describe the state-level regulatory climate for dental assistants, and to identify gaps in data and information about the workforce. Study limitations included substantial variation in demographic data about the workforce and the statutory or legal definitions of recognized practice. Findings from this study support the need for further study of the impact of expanded scopes of practice for dental assistants on the clinical efficiency of dental teams and on improvements in patients' access to oral health services. The examination of regulatory and legal provisions for dental assistants by state which was part of this study pointed to the lack of standardization in requirements for preparatory

training and education to enter the dental assistant workforce and to the variation in dental assistants' roles and functions across states.

History

Dental assistants are a part of the dental workforce team, assisting oral health providers in the delivery of oral health care. The numerous roles a dental assistant assumes have evolved to include increasing technical skills and patient education. Subsequently, the history of the dental assistant workforce is evidenced by increasing professionalization through educational and training standards and the development of national professional organizations.[1]

The origins of the field have been traced to Dr. C. Edmund Kells of New Orleans, who hired the first female dental assistant in 1885[2,a] to provide oral health care to women without the need for a male chaperone. During the latter half of the 19th and early 20th centuries, many women continued to enter into the dental assistant workforce despite gender discrimination in obtaining employment.[1] Today, the dental assistant workforce is still largely dominated by women despite growing gender diversity.[1]

Attempts to standardize the dental assistant workforce were marked by early efforts to form state and national associations. The first dental assistant society, the Nebraska Dental Assistants Association, was organized in 1917 in Nebraska.[3] Subsequent efforts focused on a national association for dental assistants that would support and provide opportunities for professional growth in response to changes in dental practices, health care demands, and technological developments.[3] By 1921 Juliette A. Southard, a dental assistant, successfully organized fellow dental assistants into the Educational and Efficiency Society (EES), which was later known as the American Dental Assistants Association (ADAA).[1]

In 1930 the ADAA developed core competencies and educational guidelines for dental assistants. By 1943 members were required to obtain a high school diploma before formal membership to the ADAA was granted.[2] In 1944 the ADAA established a Certification Committee to promote professional standards and developed a certification examination for dental assistants.[2] Four years later the ADAA established a Certifying Board to credential dental assistants who passed the certification examination. That board, now known as the Dental Assisting National Board, Inc. (DANB), became a separately incorporated, independently governed organization.

In 1957 the American Dental Association's (ADA) Council on Dental Education sponsored the first national workshop on dental assisting to develop recommendations for education programs including standards for accreditation.[4] The recommendations were approved by the ADA's House of Delegates in 1960.[5] At the

[a] Dr. Kells is known as a pioneer in dentistry for his methods of treating dental abscesses and as an inventor of the surgical aspirator for dental and medical surgery, which is still used today.

time, dental assisting was characterized in dental practices as "4-handed dentistry." Dental assisting education and training were to prepare dental assistants to work as part of a coordinated team, performing effective dental procedures.[5] The role of dental assistants was further described as providing competent chair-side assistance with technical procedures and dental set-up.[6] In addition, effective use of a "second set of hands" provided by the assistant would become generally accepted as a usual means of delivering dental services.[6,7] In 1979 DANB joined the National Commission for Health Certifying Agencies, now known as the Institute for Credentialing Excellence, and continues to provide training and certification opportunities for dental assistants.[1,b]

During the early 1900s the duties of dental assistants were primarily administrative with some assistance in providing dental services. The range of skills expanded to include assistance with patient preparation for dental examinations and procedures, assisting with surgery, and polishing teeth, among others. Today, the ADAA and DANB support training and education for dental assistants in accordance with their recommended national standards.[2] Continuing movement for educational guidelines and certifications illustrate the ongoing development of the dental assistant workforce.

[b] The ADAA was officially incorporated on March 17, 1925, in Illinois after a constitution and bylaws were established. To date, Chicago, Illinois, remains the home of the ADAA.

A PROFILE OF DENTAL ASSISTANTS: SUPPLY & DISTRIBUTION

To better understand key characteristics of the dental assistant workforce, a variety of data sources were analyzed and information compiled on dental assistants. Data sources included:

- U.S. Bureau of Labor Statistics
- American Community Survey (2009-2013)
- American Dental Association (ADA)
- Dental Assisting National Board (DANB)
- American Dental Assistants Association (ADAA)

Data from each (national) source emphasizes limitations and variations in what is currently known about this growing workforce. The following summarizes findings from these analyses of demographics, education and training, and practices of dental assistants.

Supply and Distribution of Dental Assistants

Survey data collected by the ADA in 1949 found an average of 1 staff member (either dental assistant, dental hygienist, or administrative personnel) per dentist. More than one-third of dentists in private practice at the time stated they did not employ any dental staff.[8] In 1950 there were 54,950 dental assistants working in dental practices across the United States.[9] The number of persons entering into the dental assistant workforce continues to grow. By 2008 dental employers reported there was an average of 4.7 staff members per dentist working in dental offices.[10] The growth of the dental assistant workforce is parallel to the growth of the dental hygiene workforce.[9,11] Baltusis and Morgan suggest that growth in the dental assistant and dental hygienist workforce may correlate with increased use of dental auxiliaries in providing oral health services.

Even with national estimates showing workforce growth, it is difficult to provide accurate state-level information on persons working as dental assistants. Data from the U.S. Bureau of Labor Statistics (BLS)[c] evidence there were 927,000 people working in dental offices in 2010, and dental assistants comprised about one-third of practice staff (approximately 305,900 people).[11,12] In contrast, data collected from the American Community Survey (ACS)[d] between 2009 and 2013 estimate there were 334,423 dental assistants in the United States.[10] In addition, collecting state-level data on dental assistants is complicated by the fact that entry requirements and regulation of the dental assistant

[c] The BLS provides annual employer-reported data on jobs for dental assistants.
[d] The ACS collects self-reported demographic information from households in 5-year increments.

workforce vary significantly by state. This creates some difficulty in determining the exact number of dental assistants in current practice.[e]

In 2014 BLS data indicated there were 303,200 jobs for dental assistants and a projected 25% job growth for dental assistants by 2022.[9,13,f,g] BLS data about available jobs for dental assistants and projected growth do not differentiate between full-time and part-time work.[8,9,14]

Table 1. Employment Projections for Dental Assistants, BLS 2000-2014

Year	Projection Span	Starting Number of Jobs	Projected Change	Projected Number of Jobs
2000	1998-2008	229,000	42.4%	326,000
2002	2000-2010	247,000	37.2%	339,000
2004	2002-2012	266,000	42.5%	379,000
2006	2004-2014	267,400	42.7%	381,700
2008	2006-2016	280,000	29.3%	362,000
2010	2008-2018	295,300	35.8%	400,900
2012	2010-2020	297,200	30.8%	388,800
2014	2012-2022	303,200	24.5%	377,600
Source: Bureau of Labor Statistics, Occupational Employment and Wages, May 2014.				

The BLS continues to project increases in the number of dental assistant jobs, but employment for the dental assistant workforce has not grown as much as predicted. In 2004 BLS projected a 43% growth in jobs between 2002 and 2012 to 379,000 jobs. In 2012 the actual number of jobs for dental assistants was estimated at 297,200, an actual growth rate of approximately 14% over the prior 10-year period.[e,f]

The ADA conducts ongoing surveys of private-practice dentists to learn more about the characteristics of their practices and employees. In 2012 the ADA found that most (84.4%) dentists in private practice employed chairside dental assistants and that nearly one-quarter (24.9%) of all private-practice dentists employed EFDAs.[h]

[e] Some states do not register dental assistants even though they publish educational or training requirements for them.

[f] The BLS reports that the annual average job growth rate for all occupations is 11%; in comparison, the growth rate for dental assistants is relatively high. It should also be noted that the reported number of jobs held in allied dental fields exceeds the number of actual personnel because allied dental personnel may hold more than 1 job.

[g] Some limitations in using the BLS data include limited information about and from self-employed individuals. For instance, the BLS Occupational Employment and Wages survey does not cover the self-employed or owners and partners in unincorporated firms, which may include some dental practices. See the U.S. Bureau of Labor Statistics. Occupational Employment Statistics: overview. http://www.bls.gov/oes/oes_emp.htm#scope. Accessed September 18, 2015.

[h] EFDAs are defined as dental assistants legally allowed to perform additional tasks according to the state dental practice acts and state board regulations. Dental assistants may be required to acquire task-specific education, training, certification(s), or other credentials to perform said tasks.

Table 2. Percentage of Private Dental Practices Employing Nondentist Staff by Position, 1990-2012

	Dental Hygienists	Chairside Assistants	Expanded Function Dental Assistants	Secretaries/ Receptionists	Financial Coordinators (Business Personnel)	Office Managers	Dental Laboratory Technicians	Sterilization Assistants
Type of Dentist								
General Practitioners*								
All owners	78.5%	83.6%	25.1%	96.7%	14.1%	34.4%	3.9%	6.4%
Solo	76.4%	81.8%	24.3%	85.1%	12.2%	31.8%		5.3%
Nonsolo	89.6%	92.8%	28.9%	95.1%	24.2%	47.5%		12.2%
All General Practitioners	79.3%	84.1%	25.5%	87.2%	15.0%	36.0%	4.2%	6.5%
Specialists (Weighted)**								
All owners	31.0%	88.0%	22.3%	90.2%	28.9%	42.0%	12.6%	14.3%
Solo	30.7%	87.6%	21.5%	89.0%	25.1%	36.1%	12.5%	12.8%
Nonsolo	32.1%	89.3%	25.9%	95.3%	44.9%	66.7%		20.7%
All Specialists	31.6%	88.2%	22.1%	90.5%	29.3%	42.4%	12.4%	15.1%
All Dentists (Weighted)**								
All owners	70.1%	84.4%	24.6%	87.4%	16.7%	35.7%	5.4%	7.8%
Solo	68.5%	82.8%	23.8%	85.8%	14.4%	32.6%	5.0%	6.6%
Nonsolo	77.7%	92.1%	28.3%	95.2%	28.5%	51.5%	7.4%	14.0%
All dentists	70.9%	84.8%	24.9%	87.8%	17.5%	37.1%	5.6%	8.0%

Source: American Dental Association. Employment of Dental Practice Personnel: 2012. Survey of Dental Practice, 2013.
* Chairside assistants refer to dental assistants.
**The percentages in these categories have been weighted by specialty area and the inverse number of dentists in the practice.

Nearly 25% of dental assistants served in an expanded function capacity for both specialty and general dental practices.[13] Dental assistants working in expanded functions were only slightly more likely to be employed by general dental practitioners as compared with specialty dental practices.[15] Table 3 provides the ratio of dental assistants per dentist in private (general dental) practice between 1990 and 2012. The ratios remained relatively stable since 1990. Interestingly, the ratio of dental assistants per dentist in specialty private practice was greater than the ratio of dental assistants to general-practice dentists. The table evidences that the number of assistants per dentist or dental specialist has remained relatively stable over a 22-year period.[15]

Chairside dental assistants primarily work with the dentist as a team. This approach is called 4-handed dentistry (eg, a dental assistant may mix dental materials, maintain and exchange instruments, or assist in overseeing infection control procedures).[6]

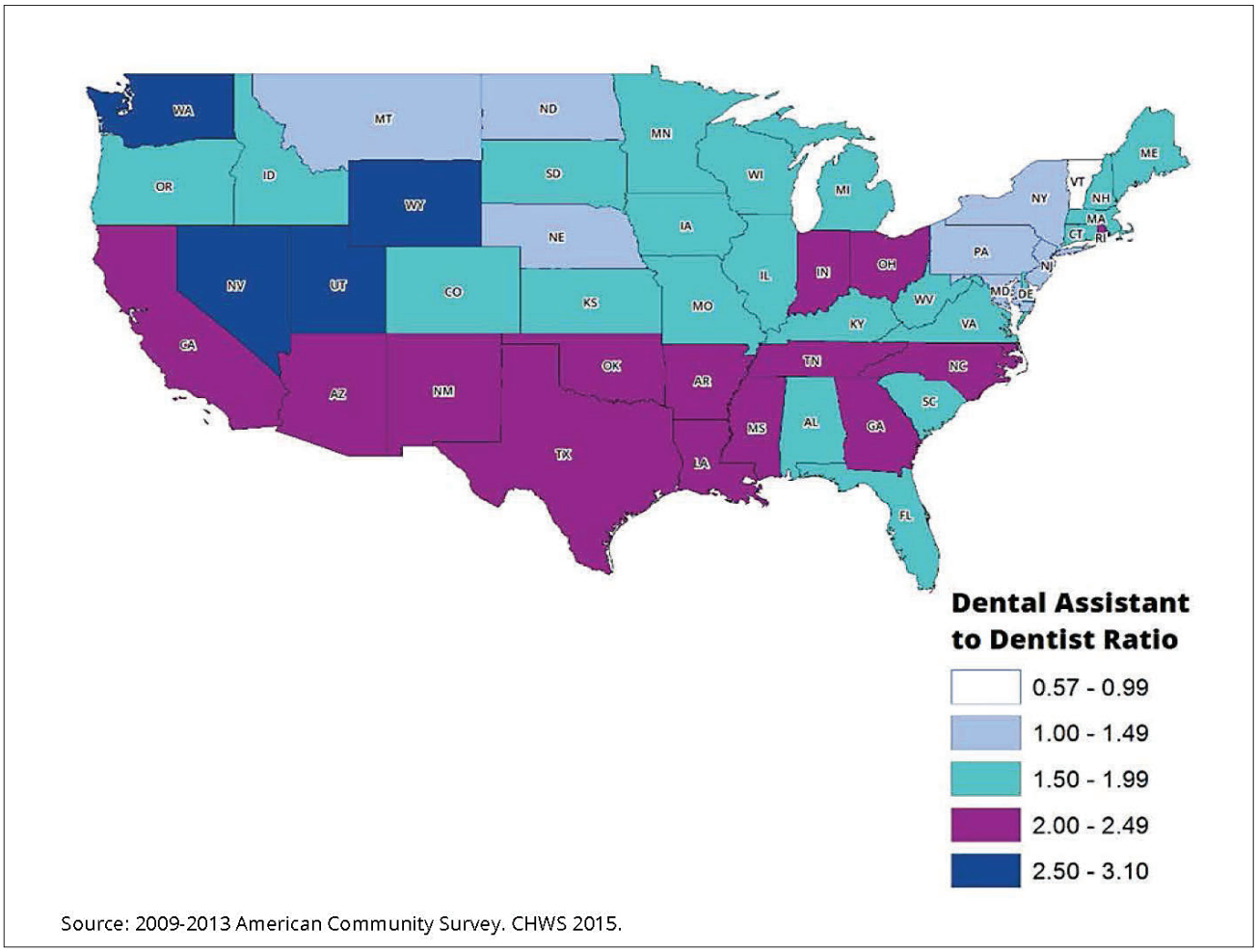
Table 3. Average Number of Chairside Assistants per Dentist in Primary Practice, 1990-2012

Type of Dentist	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
General Practitioners*	1.4	1.6	1.7	1.7	1.6	1.7	1.7	1.6	1.7	1.6	1.6	1.6	1.5	1.5
Specialists (Weighted)**	2.1	2.5	2.5	2.4	2.6	2.6	2.5	2.6	2.6	2.5	2.4	2.5	2.5	2.4
All Dentists (Weighted)**	1.5	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.8	1.7	1.7

Source: American Dental Association. Employment of Dental Practice Personnel: 2012. Survey of Dental Practice, 2013.
* Chairside assistants refer to dental assistants.
**The percentages in these categories have been weighted by specialty area and the inverse number of dentists in the practice.

Figure 1 illustrates the ratio of all dental assistants to dentists by state using 2009-2013 ACS data.[i] The map indicates there was a higher ratio of dental assistants to dentists in the southern and western regions of the United States, and a lower ratio of dental assistants to dentists in the northeastern and some southern coastal regions.

Figure 1. Ratio of Dental Assistants to Dentists by State, 2009-2013



Source: 2009-2013 American Community Survey. CHWS 2015.

Table 4 (see page 14) indicates the oral health workforce for each state and denotes counts of dentists, dental assistants, and dental hygienists using data from the 2009-2013 ACS. Based on the survey results, there were 180,007 dentists, 335,569 dental assistants, and 179,664 dental hygienists in the United States.[16]

[i] The 2009-2013 ACS data include the number and location of jobs for dentists and dental assistants according to the U.S. census.

Table 4. Counts of Dentists, Dental Assistants, and Dental Hygienists by State, 2009-2013

State	Dentists	Dental Assistants	Dental Hygienists
Alabama	1,807	3,270	3,868
Alaska	564	1,349	821
Arizona	3,459	7,244	3,825
Arkansas	1,382	3,039	1,742
California	26,521	54,912	16,874
Colorado	3,640	6,503	2,793
Connecticut	2,736	4,131	2,708
Delaware	474	809	556
District of Columbia	341	217	153
Florida	10,312	18,641	10,752
Georgia	3,828	8,218	5,806
Hawaii	1,037	1,956	861
Idaho	957	1,834	1,262
Illinois	8,273	12,413	6,485
Indiana	2,764	6,331	4,520
Iowa	1,697	3,323	1,657
Kansas	1,497	2,958	1,826
Kentucky	2,134	4,163	2,395
Louisiana	1,819	3,897	1,965
Maine	578	1,026	1,374
Maryland	4,814	6,171	3,174
Massachusetts	4,840	7,294	5,379
Michigan	5,543	10,410	8,819
Minnesota	2,957	5,672	4,109
Mississippi	1,224	2,591	1,385
Missouri	3,256	5,681	2,895
Montana	715	927	579
Nebraska	1,212	1,251	966
Nevada	1,306	3,720	1,196
New Hampshire	799	1,330	1,142
New Jersey	6,772	9,878	4,759
New Mexico	922	2,161	1,157
New York	13,267	19,006	10,317
North Carolina	4,098	8,802	6,635
North Dakota	442	551	420
Ohio	5,431	11,651	6,720
Oklahoma	1,688	3,998	1,958
Oregon	2,938	5,466	2,927
Pennsylvania	7,881	11,284	7,053
Rhode Island	517	1,262	811
South Carolina	2,476	3,777	2,904
South Dakota	478	899	597
Tennessee	2,728	5,704	3,587
Texas	12,252	27,561	10,567
Utah	1,659	5,138	1,975
Vermont	627	360	711
Virginia	4,995	8,628	4,757
Washington	4,168	10,788	4,846
West Virginia	896	1,348	1,505
Wisconsin	3,069	5,422	3,398
Wyoming	217	604	173
Total	**180,007**	**335,569**	**179,664**

Source: U.S. Census Bureau, American Community Survey, 2009-2013.

Demographics of Dental Assistants

Dental assistants in the United States are predominantly female, with an average age of 35 years.[16]

Table 5. Age Distribution of Dental Assistants, 2009-2013

Age Range(s)	Number	Percent
18-24 years	58,854	17.6%
25-34 years	108,138	32.3%
35-44 years	76,620	22.9%
45-54 years	56,564	16.9%
55-64 years	28,075	8.4%
65 years and older	6,172	1.8%
Total	334,423	100.0%

Source: U.S. Bureau of the Census, American Community Survey, 2009-2013.
Note: Data from respondents reporting an age of less than 18 years (0.4% of dental assistants) were excluded from the analysis.

This workforce is more diverse than dentists and dental hygienists. According to the ACS, a substantial number of dental assistants (64%) identified as white (non-Hispanic), while Hispanics comprised more than 20% of dental assistants. Black (non-Hispanic) dental assistants accounted for 6.7% of the workforce, and 5.4% were Asian or Pacific Islander (non-Hispanic). Those identifying as American Indians and Alaskan Natives accounted for 0.7% of dental assistants, and another 1.9% of dental assistants reported being of another race or 2 or more races.[16]

Table 6. Racial/Ethnic Distribution of Dental Assistants, 2009-2013

Race/Ethnicity	Number	Percent
American Indian or Alaskan Native (non-Hispanic)	2,484	0.7%
Asian or Pacific Islander (non-Hispanic)	18,131	5.4%
Black (non-Hispanic)	22,261	6.7%
Hispanic	71,146	21.3%
White (non-Hispanic)	214,030	64.0%
Other (includes two or more races) (non-Hispanic)	6,371	1.9%
Total	334,423	100.0%

Source: U.S. Bureau of the Census, American Community Survey, 2009-2013.
Note: Data from respondents reporting an age of less than 18 years (0.4% of dental assistants) were excluded from the analysis.

The data suggest that the dental assistant workforce is somewhat more diverse as compared to the general and specialty dental workforce or the dental hygienist workforce. For example, non-Hispanic white dentists comprised 75.7% of all U.S. dentists, and non-Hispanic white dental hygienists comprised 84.5% of all U.S. hygienists.[16] Dental assistants self-identifying as Hispanic represented 21.3% of all U.S. dental assistants; in contrast, Hispanic dental hygienists comprised 6.8% of the hygienist workforce and Hispanic dentists also comprised 6.1% of the dentist workforce.[16]

Residency (Citizenship) Status

Eighty-two percent of dental assistants were born in the United States and an additional 11% were born in a U.S. territory, abroad to American parents, or were naturalized citizens. Seven percent of dental assistants were not U.S. citizens.[16]

Table 7. Residency Status of Dental Assistants, 2009-2013

Status	Number	Percent
Born in the U.S.	274,998	82.2%
Born in U.S. territories	2,036	0.6%
Born abroad to American parents	3,408	1.0%
U.S. citizen by naturalization[a]	31,892	9.5%
Not a U.S. citizen/Foreign-Born	22,089	6.6%
Total	**334,423**	**100.0%**

Source: U.S. Bureau of the Census, American Community Survey, 2009-2013.
Note: Data from respondents reporting an age of less than 18 years (0.4% of dental assistants) were excluded from the analysis.
[a] This designation refers to foreign-born persons who became U.S. citizens by naturalization.

According to the ACS, approximately 31% of dental assistants received some college-level education without obtaining a formal degree. Twenty-nine percent of dental assistants indicated that a high school diploma or a GED was their highest level of educational obtainment. Nearly 25% of dental assistants possessed a 2-year, 4-year, or post-baccalaureate degree.[16] It is unclear if there is a significant relationship between earned income and educational attainment of dental assistants given the data limitations.

Table 8. Educational Attainment of Dental Assistants, 2009-2013

Educational Attainment	Number	Percent
Less than a high school diploma	10,483	3.1%
High school diploma/GED	98,266	29.4%
Less than one year of college	40,715	12.2%
More than one year of college without a degree	102,195	30.6%
Associate Degree	53,267	15.9%
Bachelor's degree	22,314	6.7%
Post-baccalaureate degree	7,183	2.1%
Total	334,423	100.0%

Source: 2009-2013 American Community Survey (ACS).

Practice Characteristics of Dental Assistants

Workplace

The majority of dental assistants worked in private for-profit dental practices (92.7%). In contrast, 3% of dental assistants worked for non-profit organizations and between 1% and 2% of dental assistants worked for either local, state, or federal entities.[16,17,j]

Table 9. Work Setting of Dental Assistants, 2009-2013

Institutional Setting	Number	Percent
Private, for-profit	309,880	92.7%
Private, non-profit	10,063	3.0%
Local government	3,140	0.9%
State government	4,210	1.3%
Federal government	6,567	2.0%
Self-employed	110	<0.1%
Working without pay in family business	453	0.1%
Total	334,423	100.0%

Source: U.S. Bureau of the Census, American Community Survey, 2009-2013.
Note: Data from respondents reporting an age of less than 18 years (0.4% of dental assistants) were excluded from the analysis.

Similarly, the BLS reports that in 2014 several common areas in which dental assistants were employed were private dental offices, private physicians' offices, employment services, and outpatient care centers.[17]

A Dental Assistant's Work Week

Between 2009 and 2013 full-time dental assistants worked on average 34 hours per week. In addition, dental assistants reporting part-time employment status worked fewer weeks per year than those reporting full-time work status.[16]

Table 10. Hours Worked a by Dental Assistants, 2009-2013

	Part-Time	Full-Time
Age Group	Hours	Hours
18-24	21.9	38.7
25-34	23.4	38.1
35-44	23.8	37.9
45-54	23.6	37.8
55-64	22.6	37.8
65+	18.6	38.2
Overall	23	38.1

Source: U.S. Bureau of the Census, American Community Survey, 2009-2013.
Note: Data from respondents reporting an age of less than 18 years (0.4% of dental assistants) were excluded from the analysis.

[j] ACS data results were corroborated with 2014 BLS Occupational Employment Statistics data. Out of the 314,300 jobs for dental assistants, over 91% (287,100) of the positions were located in private dental offices.

Table 11 indicates that the largest number of dental assistants were between 25 and 44 years of age and were more likely to work full-time.[16]

Table 11. Work Status of Dental Assistants, 2009-2013[a]

	Part-Time		Full-Time		Total	
Age Group	N	Percent	N	Percent	N	Percent
18-24	18,697	23.0%	37,239	16.9%	55,936	18.6%
25-34	22,440	27.6%	73,224	33.2%	95,664	31.7%
35-44	17,561	21.6%	52,110	23.7%	69,671	23.1%
45-54	12,921	15.9%	39,069	17.7%	51,990	17.2%
55-64	7,317	9.0%	16,929	7.7%	24,246	8.0%
65+	2,317	2.9%	1,658	0.8%	3,975	1.3%
Overall	81,253	100.0%	220,229	100.0%	301,482	100.0%

Source: U.S. Bureau of the Census, American Community Survey, 2009-2013.
Note: Data from respondents reporting an age of less than 18 years (0.4% of dental assistants) were excluded from the analysis.
[a] Counts in this table exclude individuals not working in the past 12 months (N = 32,941).

Compensation

Occupational Employment Statistics (OES) estimates indicate that in 2014 dental assistants earned a mean annual wage of $36,260 and a mean hourly wage of $17.43.[k] The median annual wage was reported to be $35,390.[17] Annual and hourly wages for dental assistants may vary depending on an employee's full-time or part-time status or the potential to work evening or weekend hours based on employer caseload and patient preparation (Table 10).[17] The OHWRC team chose to use OES estimates in addition to ACS to examine employment status and income.

Table 12. Employment and Median Income for Full-Time Dental Assistants, 2014[a]

			50%		
Percentile	**10%**	**25%**	**(Median)**	**75%**	**90%**
Hourly Wage	**$11.82**	**$14.07**	**$17.02**	**$20.58**	**$23.82**
Annual Wage	**$24,580**	**$29,260**	**$35,390**	**$42,810**	**$49,540**

Source: Bureau of Labor Statistics (BLS), Occupational Employment Statistics (OES), May 2014.
[a] Based on a 2,080 hour work year (40 hours per week for 52 weeks).

Table 12 shows the range of hourly and annual wages for dental assistants in 2014. There was a significant range in the hourly wages—dental assistants in the 10th percentile earned $11.82 per hour, whereas dental assistants in the 90th percentile earned $23.82 per hour. Full-time dental assistants earned a median hourly wage of $17.02 and a median annual wage of $35,390.

[k] The mean annual wage is applied to the current estimate of 314,330 jobs for dental assistants in the United States as of May 2014.

Table 13 describes the mean annual and hourly wages of dental assistants by state, providing a concise illustration of geographic variation in wages earned.[17]

Table 13. Mean Annual and Hourly Wages for Dental Assistants by State, May 2014

State	Hourly Mean Wage (May 2014)	Annual Mean Wage (May 2014)
Alabama	$14.73	$30,650
Alaska	$20.94	$43,330
Arizona	$17.70	$36,830
Arkansas	$15.14	$31,490
California	$18.32	$38,100
Colorado	$18.87	$39,250
Connecticut	$19.61	$40,790
Delaware	$18.15	$37,750
Florida	$16.88	$35,100
Georgia	$16.64	$34,600
Hawaii	$16.58	$34,480
Idaho	$15.93	$33,130
Illinois	$17.21	$35,800
Indiana	$17.30	$35,980
Iowa	$17.66	$36,740
Kansas	$17.87	$37,170
Kentucky	$16.20	$33,320
Louisiana	$14.34	$28,830
Maine	$18.37	$38,210
Maryland	$18.60	$38,690
Massachusetts	$20.00	$41,590
Michigan	$16.50	$34,330
Minnesota	$20.75	$43,160
Mississippi	$14.92	$31,030
Missouri	$16.53	$34,380
Montana	$15.97	$33,210
Nebraska	$15.87	$33,010
Nevada	$17.24	$35,870
New Hampshire	$21.43	$44,580
New Jersey	$19.11	$39,740
New Mexico	$15.31	$31,840
New York	$17.09	$35,550
North Carolina	$18.40	$38,270
North Dakota	$19.71	$40,990
Ohio	$17.26	$35,890
Oklahoma	$15.21	$31,630
Oregon	$19.16	$40,920
Pennsylvania	$16.22	$33,750
Rhode Island	$17.18	$35,730
South Carolina	$16.71	$34,760
South Dakota	$15.61	$32,480
Tennessee	$16.66	$34,650
Texas	$16.44	$34,190
Utah	$13.78	$28,670
Vermont	$18.68	$38,860
Virginia	$17.77	$36,960
Washington	$19.37	$40,290
West Virginia	$14.08	$29,280
Wisconsin	$17.26	$35,900
Wyoming	$16.12	$33,540

States with lowest wages for dental assistants.

States with highest wages for dental assistants.

Source: Bureau of Labor Statistics, Occupational Employment Statistics (OES), May 2014.

Table 13 indicates that Alaska, Massachusetts, Minnesota, New Hampshire, and North Dakota were reported to have the highest mean annual and hourly wages for dental assistants as of May 2014. In contrast, Alabama, Louisiana, Mississippi, Utah, and West Virginia were reported to have the lowest mean annual and hourly wages for dental assistants.[17]

Relationship Between Education, Employment, and Income

An examination of dental assistants' average wage suggests there was substantial geographic variation. Wage variation could also occur based on employment setting. Using the ADA's 2012 Survey of Dental Practice (employer-reported) data, Table 14 illustrates the hourly wage of dental assistants working for general practitioners and dental specialists; the data suggest the average wages for dental assistants gradually increased between 2000 and 2012.

In 2012 full-time chairside (dental) assistants employed by private-practice general dentists were reported as earning an average of $18.10 per hour, and part-time dental assistants employed in those same practices earned an average of $17.90 per hour. Full-time chairside assistants employed by private-practice specialty dentists earned on average $18.50 per hour and part-time assistants earned an average of $18.40 per hour in 2012.[18]

Table 14. Average Hourly Wage of Chairside Assistants, 1990-2012

Type of Dentist	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
General Practitioners*														
Full-time chairside assistants	$8.30	$13.60	$14.30	$15.00	$15.50	$15.50	$16.20	$16.80	$17.60	$17.80	$17.70	$18.20	$17.80	$18.10
Part-time chairside assistants	$9.30	$14.50	$15.20	$15.10	$16.60	$16.60	$16.40	$18.10	$18.80	$18.00	$18.30	$18.50	$17.50	$17.90
All chairside assistants	$8.70	$13.80	$14.60	$15.10	$15.80	$15.80	$16.30	$17.20	$17.90	$17.80	$17.80	$18.30	$17.70	$18.00
Specialists (Weighted)**														
Full-time chairside assistants	$9.20	$14.90	$15.60	$16.20	$16.50	$17.00	$17.40	$17.80	$18.70	$18.10	$19.40	$18.60	$18.70	$18.50
Part-time chairside assistants	$10.40	$15.00	$16.90	$17.10	$17.20	$17.40	$19.80	$18.50	$19.40	$21.30	$19.30	$20.90	$18.20	$18.40
All chairside assistants	$9.60	$14.90	$15.90	$16.40	$16.70	$17.10	$18.00	$18.00	$18.90	$18.80	$19.40	$19.30	$18.60	$18.60
All Dentists (Weighted)**														
Full-time chairside assistants	$8.60	$13.90	$14.60	$15.30	$15.70	$15.80	$16.50	$17.00	$17.90	$17.90	$18.00	$18.30	$18.00	$18.20
Part-time chairside assistants	$9.60	$14.70	$15.50	$15.50	$16.70	$16.70	$17.00	$18.20	$18.90	$18.60	$18.50	$19.00	$17.70	$18.00
All chairside assistants	$9.00	$14.10	$14.80	$15.40	$16.00	$16.00	$16.60	$17.30	$18.10	$18.00	$18.10	$18.50	$17.90	$18.20

Source: American Dental Association. Employment of Dental Practice Personnel: 2012. Survey of Dental Practice, 2013.
* The percentages for the category of full and part-time chairside assistants working for general practitioners was weighted by the inverse number of dentists in the practice.
** The percentages in the categories for both specialists and all dentists were weighted by specialty area and the inverse number of dentists in the practice.

In addition, the ADA survey asked about wages for full-time EFDAs in 2012. On average, private-practice dentists, including both general and specialty practitioners, paid full-time EFDAs $19.20 an hour. There was no historical data available on wages for EFDAs because these data had not been collected in prior surveys.[l]

[l] Refer to American Dental Association. 2011-2012 and 2013-2014, Survey of Allied Dental Education Programs.

Educational Pathways for Dental Assistants

There are a variety of educational options for persons entering the dental assistant workforce or for dental assistants seeking to earn continuing education and training:

- On-the-job training
- In-house training courses offered by dental employers
- High schools offering dental assisting programs
- Entry-level dental assisting education programs not accredited by the ADA's Commission on Dental Accreditation (CODA) but offered through postsecondary institutions accredited by U.S. Department of Education–recognized accrediting agencies
- Entry-level dental assisting education programs accredited by CODA
- Continuing education programs offered by a variety of approved vendors, including CODA-accredited dental assisting education programs
- Expanded function courses approved by state dental boards[36]

Most states permit dental assistants to be trained on the job by employing dentists who provide in-office training and work experience. Formal education in dental assisting is also offered through vocational programs, community colleges, trade and technical schools, dental schools, and universities.[17,m] Many dental assisting programs are located in community colleges across the United States.[l] CODA accredits many postsecondary dental assisting education programs.[m]

Many states require additional credentials (licenses, registrations, certifications, or permits) to provide specific services, even though dental assistants may directly enter the workforce. Generally, state legislatures and dental boards are explicit about the types of formal training required to qualify to perform specific functions.[n,o] For example, many states require training and certification to provide dental radiography services or require dental assistants to complete formal didactic and clinical training and competency evaluation to perform specific tasks or expanded functions.[p]

[l] Refer to American Dental Association. 2011-2012 and 2013-2014, Survey of Allied Dental Education Programs.
[m] Refer to the section titled Number of Accredited Programs for additional information about number and type of programs, entrance and graduation rates, etc.
[n] Many state legislatures and regulatory boards require that dental assisting programs apply for and be granted formal approval as in-state education providers.
[o] Many state legislatures and regulatory boards require that providers of dental assisting education programs apply to the state dental board or other appropriate regulatory agency for formal recognition that successful completion of the program meets the state's educational requirements for a dental assistant to qualify to perform the specified expanded functions. Often, education alone is insufficient to earn qualifications to perform expanded functions. Many states require that dental assistants also pass an independent exam on 1 or more expanded functions before earning the EFDA or similar state designation.
[p] Refer to Table 26.

Dental Assisting Programs[q]

Individuals graduating from dental assisting education programs receive diplomas or certificates of training and completion. The duration of dental assisting education programs is on average between 9 and 11 months. Some education programs offer accelerated training, training via distance education, and part-time status to enable completion. Two-year associate degrees in dental assisting are also available but less common.[5,9]

CODA currently accredits approximately 270 dental assisting education programs across the United States.[19,r,s] These programs are required to offer specific didactic and clinical content in which students learn about the teeth, gums, jaws, and other areas of the body pertinent to their coursework and the instruments used by dental assistants and the supervising dentists.[20] These programs also include supervised clinical practice for students.[20]

Number of Accredited Programs

The number of CODA-accredited dental assisting education programs in the United States increased from 247 during the 1999-2000 academic year, peaked at 286 during the 2011-2012 academic year, and then declined to 273 during the 2013-2014 academic year.[21] There was a decrease to 271 accredited programs during the 2014-2015 academic year.[22]

The 2013-2014 academic year is the last year for which data about the number of graduates from CODA-accredited programs by state are publicly available. In 2013 a total of 5,756 dental assisting students graduated from CODA-accredited program(s). California and Florida ranked first in the number of dental assisting education programs in the United States, with California also ranking first for the most dental assistant graduates during the 2013-2014 academic year.[t] Texas also produced 334 graduates among its 7 CODA-accredited dental assisting programs. States producing the greatest number of graduates generally have higher numbers of programs as well.[t] Table 15 distributes the 273 dental assisting education programs by state during the 2013-2014 academic year and also shows the total number of graduates by state in 2014.[22]

[q] Reporting is focused on CODA-accredited programs because there are more available national data about them as compared with non-CODA-accredited programs.

[r] These programs are actively supported by the ADAA and DANB. Both organizations also acknowledge non-CODA-accredited dental assisting education programs offered through institutions accredited by other U.S. Department of Education–recognized bodies.

[s] Both the ADAA and DANB acknowledge non-CODA-accredited dental assisting education programs offered through institutions accredited by other U.S. Department of Education–recognized bodies.

[t] Three states, Delaware, Louisiana, and Wyoming, and the District of Columbia have no CODA-accredited dental assisting programs.

Table 15. Number of CODA-Accredited Dental Assisting Education Programs, 2013-2014, and Number of Graduates, 2014

State	CODA-Accredited Programs, 2014	Graduates, 2014
Alabama	6	116
Alaska	1	17
Arizona	3	52
Arkansas	2	39
California	24	570
Colorado	5	153
Connecticut	4	64
Florida	24	399
Georgia	12	172
Hawaii	2	43
Idaho	2	35
Illinois	5	78
Indiana	11	325
Iowa	10	184
Kansas	4	74
Kentucky	2	42
Maine	1	14
Maryland	1	16
Massachusetts	8	116
Michigan	9	153
Minnesota	13	336
Mississippi	3	50
Missouri	5	181
Montana	2	26
Nebraska	6	121
Nevada	2	33
New Hampshire	1	26
New Jersey	6	189
New Mexico	5	67
New York	2	38
North Carolina	19	362
North Dakota	1	10
Ohio	5	82
Oklahoma	5	31
Oregon	6	124
Pennsylvania	6	107
Rhode Island	2	80
South Carolina	9	154
South Dakota	1	32
Tennessee	9	214
Texas	7	334
Utah	2	42
Vermont	1	25
Virginia	4	50
Washington	8	262
West Virginia	1	8
Wisconsin	5	110

Source: American Dental Association, 2013-2014 Survey of Allied Dental Education Programs.

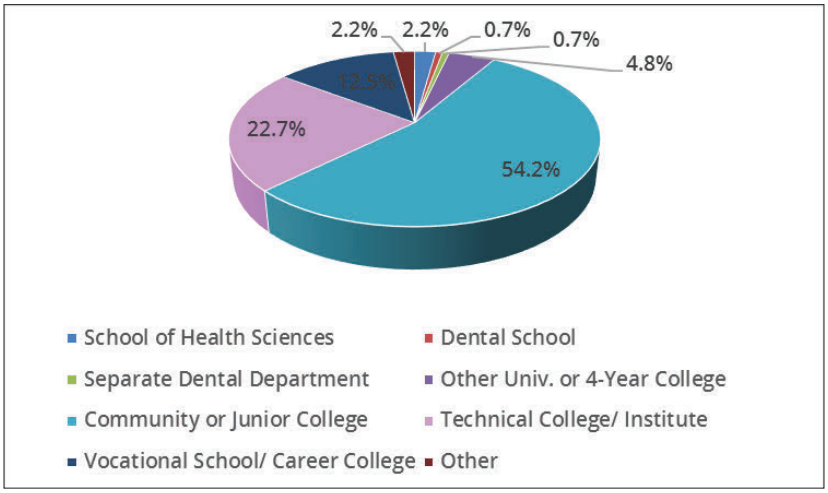
States with lowest number of graduates States with highest number of graduates

Source: Bureau of Labor Statistics, Occupational Employment Statistics (OES), May 2014.

Characteristics of CODA-Accredited Dental Assisting Education Programs

More than half (54.2%) of CODA-accredited dental assisting education programs are located in community or junior colleges and 22.7% are located in technical colleges or institutes.[22]

Figure 2. Type of Institution in Which CODA-Accredited Dental Assisting Programs Are Located, 2013-2014



Source: American Dental Association, 2013-2014 Survey of Allied Dental Education.

Most accredited dental assisting programs award certificates (58.6%) or diplomas (34.8%), with a few offering an associate degree (3.7%).[22]

Table 16. Awards Granted by CODA-Accredited Dental Assisting Education Programs, 2013-2014

	Number	Percent
Certificate	160	58.6%
Diploma	95	34.8%
Associate degree	10	3.7%
Other	8	2.9%
Total	273	100.0%
Source: ADA, 2013-2014 Survey of Allied Dental Education.		

As indicated in Table 17, these programs are mainly located in publicly sponsored institutions.[22]

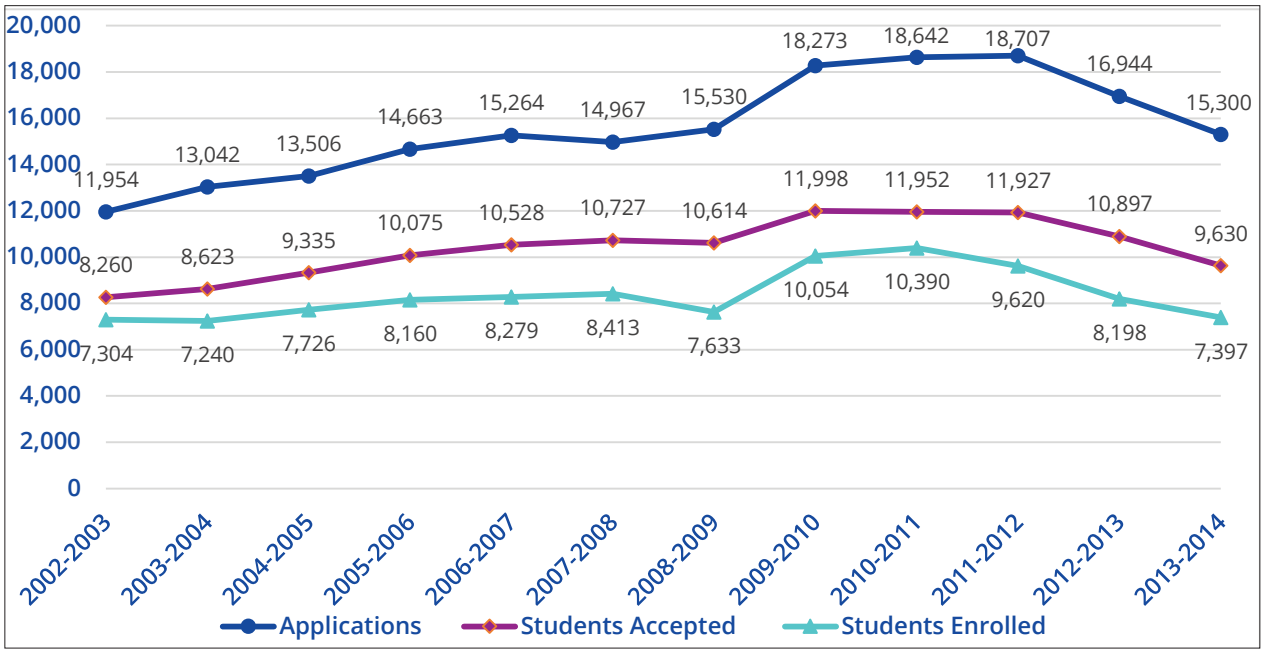
Table 17. Sponsorship of Institutions Offering Accredited Dental Assisting Education Programs, 2013-2014

Sponsorship	Number	Percent
Public	240	87.9%
Private, For-Profit	26	9.5%
Private, Non-Profit	6	2.2%
Other	1	0.4%
Total	273	100.0%
Source: ADA, 2013-2014 Survey of Allied Dental Education Programs.		

Students Applicants, Acceptances, and Enrollments

Figure 3 shows the number of student applicants, acceptances, and enrollments in CODA-accredited dental assisting programs between the 2002-2003 academic year and the 2013-2014 academic year. There was a notable increase in the number of applicants between 2009 and 2011. The number of students accepted also significantly increased. The number of applicants, acceptances, and enrollments, however, has decreased in recent years.[22]

Figure 3. Number of Student Applicants, Acceptances, and Enrollments in CODA-Accredited Dental Assisting Education Programs, 2002-2003 to 2013-2014



Source: American Dental Association, 2013-2014 Survey of Allied Dental Education Programs.

Table 18 illustrates the acceptance rates of student applicants beginning in the 2002-2003 academic year and the subsequent enrollment rates of those accepted students by academic year. Acceptance rates have declined after peaking during the 2007-2008 academic year. A decline in enrollment rates of accepted students is also evident in recent years.[22] Decline in enrollment may be indicative of people choosing direct entrance into the workforce with on-the-job training.

Table 18. Acceptance and Enrollment Rates in Accredited Dental Assisting Education Programs by Academic Year, 2002-2003 to 2013-2014

Year	Acceptance Rate[a]	Enrollment Rate[b]
2013-2014	62.9%	76.8%
2012-2013	64.3%	75.2%
2011-2012	63.8%	80.7%
2010-2011	64.1%	86.9%
2009-2010	65.7%	83.8%
2008-2009	68.3%	81.3%
2007-2008	71.7%	78.4%
2006-2007	69.0%	78.6%
2005-2006	68.7%	81.0%
2004-2005	69.1%	82.8%
2003-2004	66.1%	84.0%
2002-2003	69.1%	88.4%

[a] Acceptance Rate = Accepted/Applications.

[b] Enrollment Rate = Enrolled/Accepted.

Source: American Dental Association, 2011-2012 and 2012-2013 Survey of Allied Dental Education. 2013-2014 Survey of Allied Dental Education.

In 84% of CODA-accredited dental assisting education programs, the minimum education requirement for admission is a high school diploma. Less than 15% of programs require any college-level prerequisites prior to admission into a dental assisting program.[22,t]

Table 19. Minimum Education Requirements Needed to Enroll in Accredited Dental Assisting Programs, 2013-2014

Admission Requirement	Number	Percent
High school diploma/GED	230	84.3%
Less than 1 year of college	37	13.6%
1 year of college	3	1.1%
Other	3	1.1%
Total	273	100.0%

Source: American Dental Association, 2013-2014 Survey of Allied Dental Education Programs.

The highest level of education attained by first-year dental assisting students was most often a high school diploma. About 15.7% of first-year students have attained more than an associate degree prior to admission.[41]

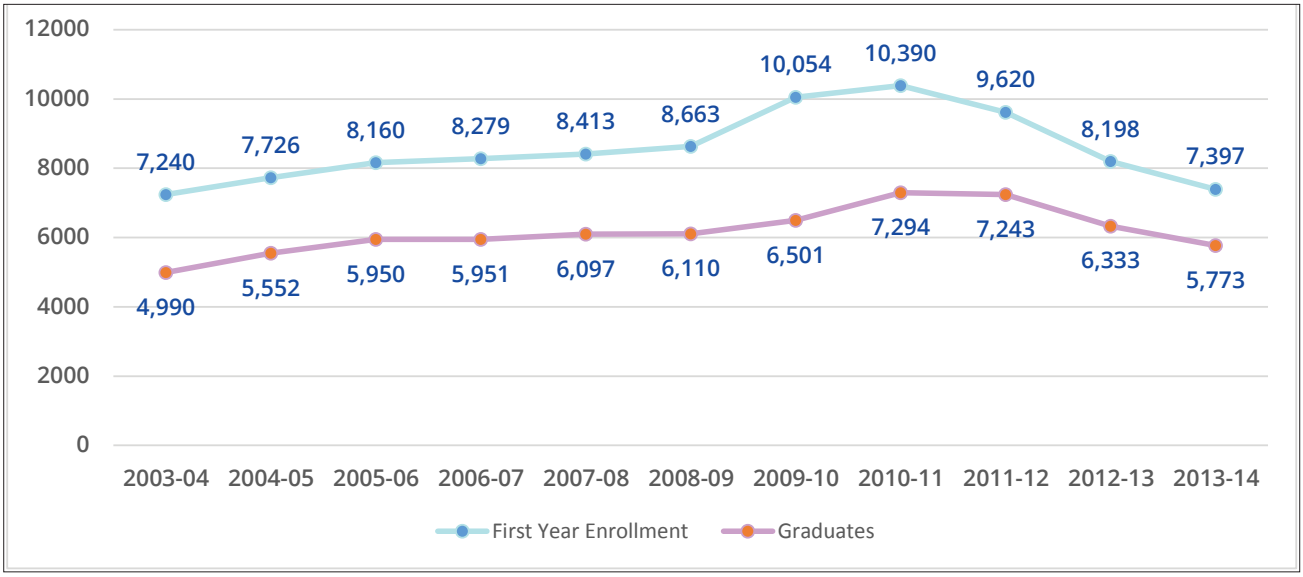
Comparison of Enrollment and Graduates in Accredited Dental Assisting Programs

Student enrollment in CODA-accredited dental assisting education programs increased annually from 2003-2004 academic year (7,240 enrollees) until 2010-2011 (10,390 enrollees) but has slightly decreased.

[t] Three states, Delaware, Louisiana, and Wyoming, and the District of Columbia have no CODA-accredited dental assisting programs.

By 2013-2014 just 7,397 students were enrolled in CODA-accredited dental assisting education programs, mirroring enrollment numbers of a decade earlier.[23] The number of graduates from CODA-accredited dental assisting education programs is, therefore, also in decline and is lower than enrollment due in part to student attrition from programs and also to part-time students who require a second year to complete the program.[24,u] Full-time students would be expected to complete the program during a single academic year, creating some alignment between enrollment and graduation rates.

Figure 4. First-Year Enrollment and Graduates from CODA-Accredited Dental Assisting Education Programs, 2003-2013*



Source: American Dental Association, 2013- 2014 Survey of Allied Dental Education Programs.

*Survey reports for academic years report graduates for the previous year (eg, report for 2013-2014 reports graduates for 2013).

Data about graduation rates for CODA-accredited programs indicate that the number of graduates increased from 6,110 in 2008 to 7,294 students in 2011 (a 19.4 percent increase).[22,t] However, the decreased enrollment in subsequent years resulted in only 5,773 graduates from accredited programs in 2013, a 21% decrease over the peak graduation rate in 2010.[22,t]

Estimated graduation rates were derived from dividing the number of graduates in an academic year by the number of first-year enrolled students in that same year (eg, 2010 graduates were divided by the 2009-2010 first-year enrollment).[22]

[t] Three states, Delaware, Louisiana, and Wyoming, and the District of Columbia have no CODA-accredited dental assisting programs.

[u] This number is based on the average number of graduates from ADA-accredited dental assisting programs and non-ADA-accredited dental assisting programs, multiplied by 11.4 years of working as a dental assistant, which is indicative of the average career span of a dental assistant employed by a private practitioner. This number is then subtracted from the BLS estimate of the number of individuals employed as dental assistants, and the result is divided by the same number to provide the estimated number of persons trained exclusively on the job.

Table 20. Graduates and Estimated Graduation Rates in Accredited Dental Assisting Education Programs by Graduation Year, 2003-2013

Year	Graduates	Graduation Rate[a]
2013	5,773	70.4%
2012	6,194	65.8%
2011	7,085	69.7%
2010	7,294	72.5%
2009	6,501	75.3%
2008	6,110	72.6%
2007	6,097	73.6%
2006	5,951	72.9%
2005	5,950	77.0%
2004	5,552	76.7%
2003	4,990	68.3%

Source: American Dental Association, 2011-2012 and 2012-2013 Survey of Allied Dental Education.
[a] Graduation Rate = Graduates/First Year Enrolled Students. These estimates should be interpreted with caution. The data do not differentiate for the duration of individual programs.

Among the 5,302 students (72.2%) in 2012, 3,104 (58.5%) passed 1 or more national or state licensure.[22] The 2012 ADA survey data did not differentiate between part and full-time students who graduated or were expected to graduate.

Table 21. Outcomes Assessment for Dental Assisting Classes of 2012

Outcome	Number	Percent Enrolled	Percent Completed
Completed program	5,302	72.2%	
Passed national/state exam	3,104	42.3%	58.5%
In dental-related activity	4,304	58.6%	81.2%
Originally enrolled	7,339		

Source: American Dental Association, 2012-2013 Survey of Allied Dental Education.

Table 22 provides a demographic view of the growing diversity in CODA-accredited programs. The data represents new dental assistants who completed CODA-accredited education programs. In 2008 a majority of graduates were White (64.0%).[22] By 2013 just 58.9% of graduates identified as White. There is notable racial and ethnic diversity in the workforce. In 2013, 13.5% of graduates were Hispanic/Latino of any race, 10.0% were Black, and 4.2% were Asian/Pacific Islander.[22]

Table 22. Demographic Characteristics of First and Second Year Students, 2013-2014, and Graduates of CODA-Accredited Dental Assisting Education Programs, 2013

Demographic Characteristics	First Year Students		Second Year		Total Enrolled		Graduates 2013	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Demographics Unknown	68	0.9%	51	5.4%	119	1.4%	298	5.2%
Sex								
Male	476	6.4%	63	6.7%	539	6.5%	200	3.5%
Female	6,853	92.6%	825	87.9%	7,678	92.1%	5,275	91.4%
Race								
White	4,241	57.3%	445	47.4%	4,686	56.2%	3,394	58.8%
Black	951	12.9%	114	12.1%	1,065	12.8%	580	10.0%
Hispanic/Latino	1,094	14.8%	138	14.7%	1,232	14.8%	777	13.5%
Am. Indian/Alaskan Native	71	1.0%	4	0.4%	75	0.9%	50	0.9%
Asian/Pacific Islander	357	4.8%	45	4.8%	402	4.8%	241	4.2%
Other (incl. two or more)	615	8.3%	142	15.1%	757	9.1%	433	7.5%
Citizenship Status								
United States	6,703	90.6%	832	88.6%	7,535	90.4%	5,136	89.0%
Canada	10	0.1%	0	0.0%	10	0.1%	27	0.5%
Other	249	3.4%	32	3.4%	281	3.4%	134	2.3%
Unknown	367	5.0%	51	2.6%	391	4.7%	178	3.1%
Age Group								
23 and under	4,618	62.4%	486	51.8%	5,104	61.2%	3,103	53.8%
24-29	1,515	20.5%	234	24.9%	1,749	21.0%	1,258	21.8%
30-34	513	6.9%	86	6.0%	569	6.8%	459	8.0%
35-39	260	3.5%	28	3.0%	288	3.5%	217	3.8%
40 and over	274	3.7%	31	3.3%	305	3.7%	235	4.1%
Unknown	149	2.0%	53	5.6%	202	2.4%	303	3.5%
Total	**7,329**	**100.0%**	**888**	**100.0%**	**8,336**	**100.0%**	**5,773**	**100.0%**

Source: American Dental Association, 2013-2014 Survey of Allied Dental Education Programs.

Cost of Dental Assisting Education Programs

The average costs for tuition and fees for dental assisting education programs have increased over time with some differences in costs for in-state and out-of-state students.[5] Table 23 illustrates tuition and fees for dental assisting programs between 2002-2003 and 2013-2014. Community colleges are often public and regionally or county-based. In-state tuition would apply to those students living outside of the college's catchment area but still residing in the same state. The average total cost for tuition and fees in a CODA-accredited dental assisting education program during the 2013-2014 academic year for in-state students was $9,996. The average total cost for out-of-state students was $14,060.[22]

Table 23. Average Costs for Tuition and Fees in Dental Assisting Programs, 2002-2003 to 2013-2014

Year	In-State	Out-of-State
2013-2014	$9,996	$14,060
2012-2013	$9,362	$13,016
2011-2012	$9,611	$13,063
2010-2011	$8,697	$12,136
2009-2010	$8,557	$11,680
2008-2009	$7,624	$10,969
2007-2008	$7,096	$10,225
2006-2007	$7,024	$10,084
2005-2006	$6,164	$9,317
2004-2005	$5,623	$9,170
2003-2004	$5,318	$8,333
2002-2003	$4,816	$7,765

Source: American Dental Association, 2011-2012 and 2012-2013 Survey of Allied Dental Education, 2013- 2014 Survey of Allied Dental Education Programs.

The data describe differences in tuition (fees not included) based on educational setting. Universities, 4-year colleges, and vocational schools charged higher tuition on average for dental assisting education than community or junior colleges.[22,t]

Table 24. Average First-Year Tuition in Accredited Dental Assisting Programs by Educational Setting, 2013-2014

	Tuition	Number	Percent
University or 4-year college	$7,563	23	6.9%
Community college	$4,774	146	54.4%
Technical college or institute	$6,216	61	21.9%
Vocational school	$8,896	34	15.0%
Other	$6,479	5	1.8%
Total/Average	$5,892	269	100.0%

Source: American Dental Association, 2013-2014 Survey of Allied Dental Education.
Note: The tuition rates are indicative of the yearly cost of dental assisting programs. Cost effectiveness is dependent upon the type of program.

Many (77.3%) students of accredited dental assisting education programs apply for financial aid, and most (90.1%) applicants receive it. As a result, 69.7% of all students in accredited dental assisting education programs benefit from some level of financial aid. In addition, many students in dental assisting education programs are employed or have family responsibility while attending school. During the 2013-2014 academic year 75.1% of students were reported to have employment or family care responsibilities as students.[22]

[t] Three states, Delaware, Louisiana, and Wyoming, and the District of Columbia have no CODA-accredited dental assisting programs.

Summary

The characteristics of CODA-accredited dental assisting education programs vary. The number of accredited education programs has grown over time, and most dental assisting programs are located in public community colleges. Most dental assisting programs require a high school diploma or equivalent for student admission to the dental assistant education program. Graduates of accredited programs are mainly awarded a certificate or diploma upon completion. The cost of dental assisting education has increased.

The number of student applicants, accepted students, and enrollees increased earlier in the decade. In recent years, however, there has been a decline in the number of applicants, accepted students, and enrollees, resulting in decreased enrollments in formal dental assisting education programs. After graduation, most dental assisting graduates are able to find employment within their field.

Non-CODA-Accredited Dental Assisting Programs

DANB estimates there are more than 370 non-CODA-accredited programs. These programs are not CODA accredited for the following reasons: program directors are unaware of or chose not to apply for CODA accreditation, or there are 1 or more CODA-accreditation standards the programs are unable to meet. Some programs may be for-profit, and others may be located in vocational or technical schools.

The programs (and schools) may be accredited by agencies recognized by the U.S. Department of Education. The dental assisting programs, however, have not earned programmatic accreditation from CODA. There is no one source of information about curricula, student populations, tuition, graduation rates, or postgraduate employment rates about these schools as a group. It is not possible with the available data to draw conclusions about the influence of these programs on the dental assistant workforce.

Informal Training for Dental Assistants

Even with increasing opportunities for formal training and education in dental assisting, more dental assistants are likely to be trained on the job.[9,25] This on-the-job orientation is often referred to as "chairside" training for "chairside" assistants. Dental assistants with no formal education in the discipline learn necessary skills under the guidance of the supervising dentist and/or an approved dental hygienist (depending on state regulations). On-the-job training may include instruction in dental terminology, the names and uses of instruments, completion of daily tasks, and effective communication with patients and may also include a component of formal education.[9,26]

Dental employers may choose to provide reading materials and testing in addition to hands-on learning in the office. This "in-office" training is a strategy for dental employers to teach newly hired dental assistants required job skills and evaluate their progress.[9,26] Dental employers using in-office training may supplement a new hire's studies by having the new dental assistant take (a) course(s) to become certified in specific areas such as dental radiography. Proponents of in-office training with training materials versus training without them suggest new dental assistants may learn required skills more effectively if hands-on learning is supplemented with readings and quizzes.

Regulation of the Workforce

Regulation of dental assistants varies by state. Dental assistants are regulated by health profession boards of dentistry or state boards of examiners.[v] Every state has a state dental board. These boards are charged with ensuring that requirements for entry to the workforce assure competence and that standards of practice are in place to protect patient safety. Another main function of regulatory boards is professional discipline of members who have been impaired, negligent, or incompetent in practice. In some states, dental assistants are represented on dental boards by an appointed dental assistant although the number of states with dental assistant representation on regulatory boards remains small (see Table 26).

Licensure and Registration

Dental assistants may be required to be licensed, registered, or certified to practice in a state or to qualify to perform certain functions.[w] Registration for dental assistants generally means applying to a state entity to be included on a list of recognized members. Requirements for registration may be less stringent, but it often requires proof of formal (general) training, training in specific skills, or proof of experience as a dental assistant. Only a few states currently license dental assistants, but the requirements for registration in some states closely mirror requirements for licensure in others.

[v] Certain functions such as performance of dental radiographic procedures may also be regulated by the entity responsible for general radiation safety, such as a department of environmental safety protection, a division of public health, or a subordinate bureau or commission of a similar agency.

[w] Licensure is a formal prescribed process that requires proof of meeting basic requirements to practice, including education and sometimes national certification as determined by the regulatory board.

National Certification

Certification is a process in which a non-governmental agency grants a time-limited recognition to a dental assistant after verifying that he or she has met that state's standard criteria. As previously noted, DANB is currently recognized by the ADA as the national credentialing agency for dental assistants, and its certification exams are accepted in 38 states. DANB's national certification programs are accredited by the National Commission for Certifying Agencies (NCCA), which is the accrediting body of the Institute for Credentialing Excellence.[27] A growing number of dental assistants have taken national certification courses. To date, DANB estimates that 20,000 dental assistants have taken 1 or more of the available exams.

The Certified Dental Assistant (CDA) exam provides national certification in dental assisting and is the most commonly held certification for dental assistants.[x] There are 3 ways to qualify to take the exam: graduation from a CODA-accredited dental assisting program, a high school diploma (or equivalent) and sufficient on-the-job training (3,500 relevant work hours over a 2-4 year period that is verified by a dental employer), or persons trained as dentists in other countries who are not licensed in the United States.[28] Dental assistants who have allowed their certification to lapse are required to renew through examination. Applicants must also have a DANB-approved current certification in cardiopulmonary resuscitation (CPR), basic life support (BLS), or advanced cardiac life support (ACLS). After passing the CDA exam, (certified) dental assistants must complete 12 hours of continuing education on an annual basis to maintain their DANB certification.[x] Required continuing education hours will gradually increase for dental assistants who have more than 1 DANB certification.[29]

DANB also offers other certification examinations in specific areas of practice, such as the National Entry Level Dental Assistant (NELDA), Certified Orthodontics Assistant (COA), Certified Restorative Functions Dental Assistant (CRFDA), and Certified Preventative Functions Dental Assistant (CPFDA) certifications.[29] Each national certification consists of component examinations. Many states recognize completion of specific individual components of the CDA examination, such as Radiation Health and Safety or Infection Control, for dental assistants to qualify to perform certain functions, especially dental radiography. The component exams for the CPFDA include coronal polishing, sealants, topical anesthetics, and topical fluoride to qualify the assistant to provide one or another of these preventive services (if these functions are allowed to be delegated to dental assistants in those states). Finally, DANB administers separate state-specific exams in various dental assisting functions for several jurisdictions, including Delaware, Maryland, Missouri, New Jersey, New York, and Oregon.[30] The requirement for passing particular examinations to meet individual state regulatory requirements is increasing the number of dental assistants who take one or another of the DANB-sponsored exams.[29]

[x] CDAs must also hold a current DANB-approved CPR, BLS, or ACLS certificate and pay an annual fee to DANB.

Dental Assistants' Titles

Titles describing dental assistants vary considerably across states. There is often greater consistency in the requisite qualifications for permission to perform certain tasks than in titles given to dental assistants who have qualified to provide those services. States require completion of formal training and/or education programs and clinical and/or knowledge-based competency testing for dental assistants to perform higher level functions, including preventive and restorative services. Dental assistants may have different titles depending on the state where they are employed, even though they may have received similar education or training.

The titles used by states may reflect specific skills or areas in which dental assistants provide specific services (eg, expanded functions orthodontic dental assistant). Titles used to describe dental assistants in one state may be substantially equivalent to different titles in another. For example, in some states a CDA certificant or a registered dental assistant (RDA) is allowed to perform the same tasks as an EFDA, while in other states a CDA certificant or an RDA is required to obtain further training to acquire an EFDA credential.[31] Titles for dental assistants may reflect specific levels of education or training or certification in specific areas. They may also be associated with differences in levels of required supervision under which dental assistants perform job functions. Table 25 illustrates the range of titles used in each state and includes titles recognized by DANB and state-specific titles, which indicate a status dental assistants may attain in a state (in 2013).

Table 25. Titles for Dental Assistants, by State, 2013

State	Titles
Alabama	Dental Assistant
	Expanded Duty Dental Assistant
Alaska	Dental Assistant
	Dental Assistant Qualified in Coronal Polishing
	Dental Assistant Qualified in Restorative Functions
Arizona	Dental Assistant
	Dental Assistant Qualified in Coronal Polishing Procedures
	Dental Assistant With Certificate in Radiologic Proficiency
Arkansas	Dental Assistant
	Registered Dental Assistant
	Dental Assistant with Permit in Radiologic Proficiency
California	Unlicensed Dental Assistant
	Registered Dental Assistant
	Registered Dental Assistant in Extended Functions
	Registered Dental Assistant in Extended Functions with Orthodontic Assistant Permit
	Registered Dental Assistant with Orthodontic Assistant Permit
	Orthodontic Assistant
	Registered Dental Assistant in Extended Functions with Dental Sedation Permit
	Registered Dental Assistant with Dental Sedation Permit
	Dental Sedation Assistant
	Dental Assistant State Certified in Radiologic Proficiency
Colorado	Dental Assistant
	Expanded Duties Dental Assistant
	Dental Assistant
Connecticut	Dental Assistant
	Dental Assistant with DANB Radiation Health & Safety Exam
Delaware	Dental Assistant
	Dental Assistant with State Certificate as a Dental Radiation Technician
District of Columbia	Level I Dental Assistant
	Level II Dental Assistant
	Registered Dental Assistant Qualified in Radiologic Proficiency
Florida	On-the-Job-Trained Dental Assistant
	Dental Assistant Formally Trained in Expanded Functions
	Dental Radiographer
Georgia	Dental Assistant
	Expanded Duty Dental Assistant
	Dental Assistant Qualified in Radiologic Proficiency
Hawaii	Dental Assistant
Idaho	Dental Assistant
	Dental Assistant Board-Qualified in Expanded Functions
Illinois	Dental Assistant
	Dental Assistant Qualified in Expanded Functions
Indiana	Dental Assistant
	Dental Assistant Qualified in Coronal Polishing
	Dental Assistant Qualified in Topical Fluoride Administration
	Dental Assistant with Limited Radiographic License
Iowa	Dental Assistant Trainee
	Registered Dental Assistant
	Registered Dental Assistant with Expanded Functions Training
	Dental Assistant Qualified in Radiologic Proficiency
Kansas	Dental Assistant
	Dental Assistant With Expanded Duties Training
Kentucky	Dental Auxiliary
	Registered Dental Assistant
	Registered Dental Assistant Qualified in Coronal Polishing
	Registered Dental Assistant Qualified in IV Placement
	Registered Dental Assistant Qualified in Radiologic Proficiency
Louisiana	Dental Assistant
	Expanded Duty Dental Assistant
	Dental Assistant Qualified in Radiologic Proficiency
Maine	Dental Assistant
	DANB Certified Dental Assistant
	Expanded Functions Dental Assistant
	Dental Assistant Licensed as a Dental Radiographer

Table 25. Titles for Dental Assistants, by State, 2013 (Cont.)

State	Titles
Maryland	Dental Assistant
	Dental Assistant Qualified in General Duties
	Dental Assistant Qualified in Orthodontics
	Dental Assistant State-Certified as a Dental Radiation Technologist
Massachusetts	On-the-Job-Trained Dental Assistant
	Formally-Trained Dental Assistant
	Certified Assistant
	Expanded Functions Dental Assistant
	Dental Assistant Qualified in Radiologic Proficiency
Michigan	Dental Assistant
	Registered Dental Assistant
	Registered Dental Assistant Qualified in Dental Radiography
Minnesota	Dental Assistant
	Licensed Dental Assistant
Mississippi	Dental Assistant
	Dental Assistant with Permit in Dental Radiography
Missouri	Dental Assistant
	Expanded Functions Dental Assistant
Montana	Dental Auxiliary
	Dental Assistant Qualified in Dental Radiography
Nebraska	Dental Assistant
	Dental Assistant Qualified in Coronal Polishing
	Dental Assistant Qualified in Dental Radiography
	Dental Assistant Qualified in Radiologic Proficiency
Nevada	Dental Assistant
	Dental Assistant with Formal or In-Office Training for Radiologic Proficiency
New Hampshire	Dental Assistant
	DANB Certified Dental Assistant
	Graduate Dental Assistant
	Dental Assistant Qualified to Perform Expanded Duties
	Expanded Function Dental Auxiliary
	Graduate Dental Assistant Qualified in Radiologic Proficiency
New Jersey	Unregistered Dental Assistant
	Registered Dental Assistant
	Dental Assistant Licensed as a Dental Radiologic Technologist
New Mexico	Dental Assistant
	Dental Assistant with State Certification in Expanded Functions
	Expanded Function Dental Auxiliary
	Dental Assistant Certified in Radiologic Proficiency
New York	Unlicensed Dental Assistant
	Dental Assistant with a Limited Permit
	NY State -Licensed Certified Dental Assistant
North Carolina	Dental Assistant I
	Dental Assistant II in Training
	Dental Assistant II
	Dental Assistant Qualified in Radiologic Proficiency
North Dakota	Dental Assistant
	Qualified Dental Assistant
	Registered Dental Assistant
	Registered Dental Assistant Qualified to Apply Pit and Fissure Sealants
Ohio	Basic Qualified Personnel
	DANB Certified Dental Assistant
	OCDAC (Ohio Commission on Dental Assistant Certification) Certified Ohio Dental Assistant
	Expanded Function Dental Auxiliary
	Dental Assistant Certified as a Dental Assistant Radiographer
Oklahoma	Dental Assistant
	Expanded Duty Dental Assistant
	Dental Assistant with State Radiography Permit
Oregon	Dental Assistant
	Expanded Functions Dental Assistant
	Expanded Function Dental Assistant with Restorative Functions Certificate
	Expanded Functions Orthodontic Dental Assistant
	Dental Assistant with State Certificate of Radiologic Proficiency
Pennsylvania	Dental Assistant
	Expanded Functions Dental Assistant
	Dental Assistant Qualified in Radiologic Proficiency

Table 25. Titles for Dental Assistants, by State, 2013 (Cont.)

State	Titles
Rhode Island	Dental Assistant
	DANB Certified Dental Assistant
	Dental Assistant Qualified in Radiologic Proficiency
South Carolina	Dental Assistant
	Expanded Duty Dental Assistant
	Dental Assistant with Certification in Radiation
South Dakota	Dental Assistant
	Advanced Dental Assistant
	Dental Assistant with State Dental Radiography Licensure
Tennessee	Practical Dental Assistant
	Registered Dental Assistant
	Registered Dental Assistant Qualified to Perform Expanded Functions
	(Registered) Dental Assistant with Certificate in Dental Radiology
Texas	Dental Assistant
	Registered Dental Assistant
	Dental Assistant Qualified to Perform Expanded Functions
Utah	Dental Assistant
	Dental Assistant Qualified in Radiologic Proficiency
Vermont	Traditional Dental Assistant
	DANB Certified Dental Assistant with State Certification
	Expanded Functions Dental Assistant
Virginia	Dental Assistant I
	Dental Assistant II
	Dental Assistant Qualified in Radiologic Proficiency
Washington	Registered Dental Assistant
	Expanded Functions Dental Auxiliary
West Virginia	Dental Assistant
	Dental Assistant Qualified in Expanded Functions
Wisconsin	Dental Assistant (Unlicensed Person with On-the-Job Training)
Wyoming	Dental Assistant
	Dental Assistant Qualified in Placement of Pit and Fissure Sealants
	Dental Assistant Qualified in Radiologic Proficiency

Source: Dental Assisting National Board, 2013; American Dental Association, 2007.

SCOPE OF PRACTICE FOR DENTAL ASSISTANTS

Scope of practice is a term used to describe the conditions for and boundaries of practice for a health workforce. Scope of practice is defined by states in statutes and regulations that put forth the requirements for dental assistants entering into the workforce. These statutes and regulations include educational requirements, credentials, the tasks permitted, the level of required supervision by other health care workforces, and the settings in which dental assistants provide services. Sometimes scope of practice for dental assistants may include limitations on the types of services patients may receive. For instance, regulation about expanded practice for dental auxiliaries may state that only children insured by Medicaid or uninsured children may receive services from dental hygienists and dental assistants in public health settings.

State Regulation

There are no national guidelines to govern the scope of practice for dental assistants in the United States. Each state independently regulates the scope of practice for dental assistants and for other oral health workforces including dentists and dental hygienists.[31] For many years, state dental practice acts clearly defined the practice of dentistry and dental hygiene, but dental assistants were mainly cited in statute or regulation describing requirements for dentist supervision and task delegation. As a result, specific scopes of services for dental assistants were historically defined at the prerogative of supervising dentists delegating tasks at their professional discretion. Prohibited tasks were often the only tasks for dental assistants that were clearly specified in state regulations.

The body of law and regulation governing dental assistants has grown over recent years with dental assistants now acknowledged to be a distinct oral health workforce. A review of current statute and regulation by state indicates that dental assistants are recognized (either implicitly or explicitly) in the dental practice acts or administrative rules in all states. In addition, all but 2 states have dental practice acts and/or statutes that either implicitly or explicitly recognize more than 1 level of dental assistant practice.[31]

Increasingly, states are providing regulatory guidelines that describe the tasks that can be provided by a dental assistant based on education and proof of competency, including the levels of required supervision, with supervision becoming more direct or immediate as task complexity increases. Tasks for dental assistants are often prescribed based on the educational preparation of the dental assistants and on their demonstrated competencies.

Task Complexity

Between November 2003 and January 2005 the ADAA and DANB surveyed dentists, certified and noncertified dental assistants, and program directors in CODA-accredited dental assisting programs and asked them to rank typical dental assisting tasks into 4 categories on a continuum from basic to complex. The study was undertaken to help create guidelines for developing a uniform national model of education and practice for dental assistants. Categorizing tasks would allow educators, policymakers, and other stakeholders to make informed decisions about required preparation and training to safely perform these tasks.

The study questionnaire included 70 different tasks that might be delegated to dental assistants under the supervision of employing dentists.[32,y] Each of the tasks was associated with a predefined level of education, training, and experience. The surveys were fielded to participants at different intervals over a 16-month period. Based on survey results, tasks for dental assistants were grouped into categories about core competencies for dental assistants. The survey results were also designed to inform dental assisting education programs how to better prepare students entering into the workforce. These categories include the following:[33]

- **Category A:** Basic dental assisting tasks that did not require minimum education, training, or experience, although some tasks might require orientation for the employee to perform.
- **Category B:** Tasks with low to moderate complexity requiring up to 12 months of formal education or training or less than 2 years of full-time experience or up to 4 years of part-time experience. Tasks in this category were considered appropriate for newer on-the-job trained assistants and for students who were currently enrolled in a formal dental assisting educational program.
- **Category C:** Assigned tasks that were of moderate complexity that would require either 12 months of formal education or training or at least 2 years of full-time work experience, at least 4 years of part-time experience working as a dental assistant, or some combination of full- and part-time work experience. Tasks in this category were considered appropriate for dental assistants who had completed a formal education program or who were highly experienced on-the-job trained assistants.

[y] For the ADAA/DANB Alliance study on core competencies, participants were instructed to rate tasks in terms of education, training, and/or experience they thought should be required to perform said tasks and not what would be currently required according to state dental practice acts in each survey respondent's state. Four waves of surveys were successively mailed in November 17, 2003, (twice in) January 2005) and again to a fourth group of respondents by the end of the project. The first wave of respondents were private-practice dentists (97%), a majority of whom practiced general dentistry (82%). The return rate for completed surveys was at 11%; out of the 5,000 surveys mailed to a stratified (by state) randomized sample of dentists on the ADA mailing list, 544 dentists returned completed surveys. In January 2005, 2,500 Core Competency surveys were sent to a stratified (by state) random sample of Certified Dental Assistants, of which 728 surveys were completed and returned. The return rate was 29% for this group. Again in January 2005, 236 directors of ADA-accredited dental assisting programs received a Core Competency survey; 112 completed surveys were returned. Program directors had a return rate of 41%. It should be noted 84% of respondents practiced dental assisting for over 10 years and 63% believed their employing educational institution supported certification. Finally, a postcard was mailed to a random sample of 2,500 dental offices to reach noncertified dental assistants. Fifty-eight noncertified dental assistants requested a survey, of which 31 were completed and returned. Out of the surveys, 24 were from noncertified dental assistants and 7 were from CDAs. Data from this last group was not incorporated into the analysis as the survey group was small.

- **Category D:** Assigned tasks in this category were the most complex, requiring advanced education and/or training in addition to the CDA/RDA level.[32]

These categories serve as a useful guide for state policymakers as they consider modifications to the scope of practice for dental assistants and the required preparation for the dental assistants to safely provide a particular oral health service.

STATE-LEVEL SCOPE OF PRACTICE ASSESSMENT

The review of statutes and regulations governing dental assistants in each state resulted in the development of the following table (Table 26), which presents specific requirements for for dental assistants to practice by state. The table does not present a comprehensive list of allowable tasks and functions (see www.danb.org). It does provide a general guide to commonly permitted tasks, particularly those allowed to be delegated to dental assistants who have met state requirements for EFDA.

These tables account only for tasks that are expressly allowed in governing statutes and regulations in a state. Absence of a check mark next to a particular task does not necessarily mean that it is not allowed to be delegated to dental assistants, only that it is not specifically enumerated as an allowable function in statue or regulation. A state may permit delegation of tasks under clauses addressing the conditions for dental delegation that omit specific enumeration of tasks. Dental supervision is guided by state law and entails an assessment by the supervising dentist that the dental assistant is properly trained to safely and competently perform a service. For example, sterilization of instruments is a task commonly performed by dental assistants that is generally not specifically listed as permissible but which would be widely delegated to dental assistants. Conversely, tasks listed under expanded functions would seldom be delegated by a dentist to a dental assistant who 1) does not meet state requirements to perform these tasks and 2) has not been formally trained to perform tasks of advanced complexity, as assessed by the dentist.

This table is informative about the current requirements for practice of dental assistants. The evolution of the workforce is evidenced by the number of tasks and functions permitted to dental assistants across states and by the increasing similarities across states. These commonalities suggest that states are independently moving toward a uniform national model of practice for the workforce.

Developing the Scope of Practice Tables

The OHWRC team designed the scope of practice tables to provide a comparative analysis of states' regulation, supervision, universal tasks, and expanded practices for dental assistants across the United States. The oral health workforce team compiled and analyzed dental practice acts and board regulations for each of the 50 states and the District of Columbia. Emphasis was also placed on aspects of state dental practice acts and board regulations permitting dental assistants to provide expanded functions that may improve clinical efficiency and access to care.

The following suppositions directed the construction of the tables:

- Individuals must be legally enabled to perform in their workplace environment,
- Individuals may be allowed to work under circumstances that permit some autonomy within the legal scope of practice, and
- Permitted tasks must reflect either formal or informal education or training.

The individual tasks under each of the 4 categories in the scope of practice were selected based on conditions that are perceived to affect access to care in a variety of workplace environments.

Legal and regulatory environment: Addresses state governance of the workforce, the composition of a state regulatory board, and the conditions for state licensure and/or registration.

Supervision in practice settings: Indicates the dental supervision requirements either under indirect or general supervision provided by the dental employer, and whether dental assistants may be supervised by dental hygienists under certain conditions.

Tasks under any level of supervision with or without formal credential(s): Specifies 7 tasks dental assistants may engage in regardless of the type of dental (or dental hygiene) supervision, on-the-job training, or formal training and credentials.

Expanded functions: Designates tasks allowed in the legislation and by state regulatory boards that are considered expanded practices in addition to the scope of services generally provided by dental assistants. State legislation and board regulations may require dental assistants to earn additional credentials to provide expanded services either through (documented) additional training hours, formal education, or examination processes that culminate in registrations, certifications, or licensure.

The scope of practice tables for dental assistants are designed to examine and illustrate the extent to which disparity may exist in the state-level regulation of dental assistants. Outcomes from the tables may also suggest opportunities for change to occur and how (expanded) practices may increase and improve access to care while still providing appropriate safeguards to the public.

Limitations may include lack of statutory or regulatory language that recognizes and denotes the role of dental assistants. Some states' dental practice acts and/or board regulations may not explicitly recognize dental assistants as part of a dental team in the provision of oral health services and may instead refer to a broader category of "dental auxiliaries." In addition, some state dental practice acts may describe tasks that a dental assistant is not allowed to perform rather than is allowed to perform. Standardization of the professional norms and requirements across the 50 states and the District of Columbia may require

legislative and regulatory change and may also require a chance in governance of the dental assistant workforce.

Table 26. Regulation, Supervision, and Scope of Practice for Dental Assistants, by State (AL to DC), 2014

	AL	AK	AZ	AR	CA	CO	CT	DE	DC
Regulation									
Dental assistant is licensed	x[a]								
Dental assistant is registered				x	x				x
Dental Assistants Represented on the Board of Dentistry					x				
Scope of practice is formally defined in statute and/or regulation	x	x	x	x	x	x	x	x	x
Supervision									
May perform some tasks under indirect or general supervision		x	x		x				
May be supervised under certain circumstances by a dental hygienist					x				
Tasks Under Any Level of Supervision or With or Without Formal Credential									
Chart existing restorations or conditions	x		x		x	x			
Take and expose radiographs	x	x		x	x	x	x	x	x
Apply topical fluoride	x	x	x		x	x			x
Patient instruction and education	x		x					x	
Place liners and bases					x				
Perform sterilization and disinfection procedures									
Mix dental materials	x								
Expanded Functions									
Expanded tasks allowed to certified or registered dental assistants		x	x	x	x				x
Expanded tasks allowed to any dental assistant with extra training and competency evaluation		x		x	x	x			x
Perform oral health assessments in school-based or community health settings					x				
Perform coronal polishing/supragingival scaling procedures	x	x	x	x	x	x			
Apply pit and fissure sealants	x	x	x	x	x				
Apply desensitizing agents or topical anesthetics	x					x			x
Remove sutures	x		x		x				x
Take preliminary impressions	x				x	x		x	x
Take final impressions					x	x			
Monitor nitrous oxide			x	x	x	x			
Monitor vital signs									
Place and cement temporary/provisional crowns	x		x		x				x
Adjust and cement permanent restorations					x				
Place amalgam		x			x				
Carve amalgam		x							
Place periodontal dressings	x				x				x
Any orthodontic task	x				x				x
Rebond brackets/removal of bonded brackets									
Testing pulp vitality					x				x
Minor palliative care of dental emergencies									
Apply bleaching agents									

Source: OHWRC, CHWS. Review of individual state law and regulation governing dental assistants, 2014.

[a] In 2013, the Alabama state legislature passed a law authorizing the Alabama Board of Dental Exmainers to licensed expanded duty dental assistants. As of this time, the Board is in the process of developing rules to implement this new law.

Table 26. Regulation, Supervision, and Scope of Practice for Dental Assistants, by State (FL to KY), 2014

	FL	GA	HI	ID	IL	IN	IA	KA	KY
Regulation									
Dental assistant is licensed									
Dental assistant is registered							x		x
Dental Assistants Represented on the Board of Dentistry									
Scope of practice is formally defined in statute and/or regulation	x	x	x	x	x	x	x	x	x
Supervision									
May perform some tasks under indirect or general supervision									
May be supervised under certain circumstances by a dental hygienist									
Tasks Under Any Level of Supervision or With or Without Formal Credential									
Chart existing restorations or conditions	x		x	x					
Take and expose radiographs	x	x	x	x	x	x	x	x	x
Apply topical fluoride	x			x		x			x
Patient instruction and education	X		x	x					
Place liners and bases	x	x		x			x		x
Perform sterilization and disinfection procedures									
Mix dental materials			x						
Expanded Functions									
Expanded tasks allowed to certified or registered dental assistants		x		x	x	x	x	x	x
Expanded tasks allowed to any dental assistant with extra training and competency evaluation	x		x	x	x	x	x	x	x
Perform oral health assessments in school-based or community health settings	x								
Perform coronal polishing/supragingival scaling procedures				x	x	x		x	x
Apply pit and fissure sealants	x	x		x	x				x
Apply desensitizing agents or topical anesthetics	x	x	x	x			x		x
Remove sutures	x	x	x	x					x
Take preliminary impressions	x	x	x	x					x
Take final impressions	x						x		x
Monitor nitrous oxide	x	x	x	x	x		x	x	x
Monitor vital signs	x		x						x
Place and cement temporary/provisional crowns	x	x		x					x
Adjust and cement permanent restorations	x								
Place amalgam					x				x
Carve amalgam					x				x
Place periodontal dressings	x	x		x			x		x
Any orthodontic task	x	x	x	x					
Rebond brackets/removal of bonded brackets	x	x							x
Testing pulp vitality							x		
Minor palliative care of dental emergencies	x	x		x			x		
Apply bleaching agents		x							x

Source: OHWRC, CHWS. Review of individual state laws and regulations that govern dental assistants, 2014.

Table 26. Regulation, Supervision, and Scope of Practice for Dental Assistants, by State (LA to MT), 2014

	LA	MD	ME	MA	MI	MN	MO	MS	MT
Regulation									
Dental assistant is licensed						x			
Dental assistant is registered				x	x				
Dental Assistants Represented on the Board of Dentistry				x	x	x			
Scope of practice is formally defined in statute and/or regulation	x	x	x	x	x	x	x	x	x
Supervision									
May perform some tasks under indirect or general supervision		x	x	x	x	x			
May be supervised under certain circumstances by a dental hygienist									
Tasks Under Any Level of Supervision or With or Without Formal Credential									
Chart existing restorations or conditions	x		x	x	x				x
Take and expose radiographs	x	x		x	x	x	x	x	x
Apply topical fluoride	x	x	x	x		x	x	x	x
Patient instruction and education	x	x	x	x					x
Place liners and bases	x		x	x	x		x		
Perform sterilization and disinfection procedures		x							
Mix dental materials									
Expanded Functions									
Expanded tasks allowed to certified or registered dental assistants	x	x	x	x		x	x		x
Expanded tasks allowed to any dental assistant with extra training and competency evaluation	x	x				x			x
Perform oral health assessments in school-based or community health settings									
Perform coronal polishing/supragingival scaling procedures			x				x	x	x
Apply pit and fissure sealants			x	x			x	x	x
Apply desensitizing agents or topical anesthetics	x	x	x	x	x			x	x
Remove sutures	x		x	x	x	x		x	x
Take preliminary impressions	x	x	x	x	x	x	x	x	x
Take final impressions					x				
Monitor nitrous oxide				x	x	x	x	x	x
Monitor vital signs	x		x	x	x	x			
Place and cement temporary/provisional crowns		x	x	x	x	x	x		
Adjust and cement permanent restorations		x				x	x	x	
Place amalgam			x	x	x	x	x	x	
Carve amalgam				x	x		x		
Place periodontal dressings	x	x	x	x	x	x		x	
Any orthodontic task	x	x	x	x	x	x	x		
Rebond brackets/removal of bonded brackets									
Testing pulp vitality		x	x	x					
Minor palliative care of dental emergencies							x		
Apply bleaching agents				x	x	x		x	

Source: OHWRC, CHWS. Review of individual state laws and regulations that govern dental assistants, 2014.

Table 26. Regulation, Supervision, and Scope of Practice for Dental Assistants by State (NE to OH), 2014

	NE	NV	NH	NJ	NM	NY	NC	ND	OH
Regulation									
Dental assistant is licensed				x		x		x	
Dental assistant is registered			x	x					x
Dental Assistants Represented on the Board of Dentistry						x			
Scope of practice is formally defined in statute and/or regulation	x	x	x		x	x	x	x	x
Supervision									
May perform some tasks under indirect or general supervision	x		x		x				
May be supervised under certain circumstances by a dental hygienist		x	x					x	
Tasks Under Any Level of Supervision or With or Without Formal Credential									
Chart existing restorations or conditions			x			x		x	x
Take and expose radiographs	x	x	x	x	x	x	x	x	x
Apply topical fluoride		x		x	x		x		x
Patient instruction and education		x	x	x		x	x		x
Place liners and bases			x				x		
Perform sterilization and disinfection procedures			x						x
Mix dental materials									
Expanded Functions									
Expanded tasks allowed to certified or registered dental assistants	x		x	x	x	x	x	x	x
Expanded tasks allowed to any dental assistant with extra training and competency evaluation	x		x	x	x	x	x	x	x
Perform oral health assessments in school-based or community health settings									
Perform coronal polishing/supragingival scaling procedures	x	x	x		x		x	x	x
Apply pit and fissure sealants		x	x	x	x		x	x	x
Apply desensitizing agents or topical anesthetics		x	x	x		x	x	x	x
Remove sutures		x	x	x		x	x	x	x
Take preliminary impressions		x	x	x	x	x	x	x	x
Take final impressions									
Monitor nitrous oxide			x	x			x	x	x
Monitor vital signs			x	x			x	x	x
Place and cement temporary/provisional crowns		x	x	x	x			x	
Adjust and cement permanent restorations					x				
Place amalgam			x	x			x		x
Carve amalgam									
Place periodontal dressings		x	x	x		x	x	x	x
Any orthodontic task		x	x	x	x	x	x	x	x
Rebond brackets/removal of bonded brackets			x						
Testing pulp vitality			x					x	x
Minor palliative care of dental emergencies					x				
Apply bleaching agents			x	x					

Table 26. Regulation, Supervision, and Scope of Practice for Dental Assistants, by State (OK to VT), 2014

	OK	OR	PA	RI	SC	SD	TN	TX	UT	VT
Regulation										
Dental assistant is licensed						x	x	x		
Dental assistant is registered										x
Dental Assistants Represented on the Board of Dentistry			x	x			x			x
Scope of practice is formally defined in statute and/or regulation	x	x	x	x	x	x	x	x	x	x
Supervision										
May perform some tasks under indirect or general supervision		x				x		x		
May be supervised under certain circumstances by a dental hygienist		x				x				
Tasks Under Any Level of Supervision or With or Without Formal Credential										
Chart existing restorations or conditions					x		x			
Take and expose radiographs	x	x	x	x	x	x	x	x	x	x
Apply topical fluoride	x		x	x			x	x		
Patient instruction and education							x			
Place liners and bases			x				x			
Perform sterilization and disinfection procedures							x			
Mix dental materials										
Expanded Functions										
Expanded tasks allowed to certified or registered dental assistants		x	x	x	x	x	x	x	x	x
Expanded tasks allowed to any dental assistant with extra training and competency evaluation	x	x	x		x	x		x	x	x
Perform oral health assessments in school-based or community health settings										
Perform coronal polishing/supragingival scaling procedures	x	x	x		x	x	x	x	x	x
Apply pit and fissure sealants	x	x	x	x	x	x	x	x		x
Apply desensitizing agents or topical anesthetics		x			x		x			
Remove sutures					x		x			
Take preliminary impressions			x		x		x		x	
Take final impressions										
Monitor nitrous oxide	x				x	x	x	x	x	x
Monitor vital signs					x		x			
Place and cement temporary/provisional crowns		x			x					
Adjust and cement permanent restorations										
Place amalgam		x	x				x			
Carve amalgam		x	x							
Place periodontal dressings		x			x		x			
Any orthodontic task		x			x		x			
Rebond brackets/removal of bonded brackets		x								
Testing pulp vitality							x			
Minor palliative care of dental emergencies		x					x	x		
Apply bleaching agents										

Source: OHWRC, CHWS. Review of individual state laws and regulations that govern dental assistants, 2014.

Table 26. Regulation, Supervision, and Scope of Practice for Dental Assistants, by State (VA to WY), 2014

	VA	WA	WV	WI	WY
Regulation					
Dental assistant is licensed		x			
Dental assistant is registered	x	x			
Dental Assistants Represented on the Board of Dentistry		x	x		
Scope of practice is formally defined in statute and/or regulation	x	x	x	x	x
Supervision					
May perform some tasks under indirect or general supervision	x	x			x
May be supervised under certain circumstances by a dental hygienist	x				
Tasks Under Any Level of Supervision or With or Without Formal Credential					
Chart existing restorations or conditions	x		x		x
Take and expose radiographs	x	x	x	x	x
Apply topical fluoride	x	x	x		
Patient instruction and education	x	x			x
Place liners and bases	x		x		
Perform sterilization and disinfection procedures	x				
Mix dental materials	x				x
Expanded Functions					
Expanded tasks allowed to certified or registered dental assistants	x	x	x		x
Expanded tasks allowed to any dental assistant with extra training and competency evaluation	x	x	x		x
Perform oral health assessments in school-based or community health settings					
Perform coronal polishing/supragingival scaling procedures	x	x	x	x	x
Apply pit and fissure sealants	x	x	x		x
Apply desensitizing agents or topical anesthetics		x	x		x
Remove sutures	x	x	x		x
Take preliminary impressions	x	x	x		x
Take final impressions		x	x		
Monitor nitrous oxide	x	x	x		
Monitor vital signs	x	x			x
Place and cement temporary/provisional crowns	x	x	x		x
Adjust and cement permanent restorations					
Place amalgam	x	x			
Carve amalgam	x	x			
Place periodontal dressings	x				x
Any orthodontic task	x	x	x		x
Rebond brackets/removal of bonded brackets			x		x
Testing pulp vitality			x		
Minor palliative care of dental emergencies					x
Apply bleaching agents	x				

Source: OHWRC, CHWS. Review of individual state laws and regulations that govern dental assistants, 2014.

DISCUSSION OF SCOPE OF PRACTICE FINDINGS

Results from a Review of Statutes and Regulations by State

A detailed review of the dental practice acts and regulations governing the practice of dental assistants in each of the 50 states and the District of Columbia found substantial variation in the approach to regulating dental assistants. In most states, statutes and regulations continue to clearly describe tasks that may never be delegated to dental assistants, such as the cutting of teeth or the initiation of anesthesia. Seventeen states continue to provide significant latitude to supervising dentists to determine the tasks that can be delegated to dental assistants. In the remaining states, the practice of dental assistants is more clearly defined. Another important point is that there may be substantial differences in what is described in states' dental practice acts and what is practiced in the field. For example, some states' dental practice acts state that dentists may delegate to dental assistants procedures the dentists may deem advisable.[z] This means some dentists may allow dental assistants to perform many tasks and some dentists may be more restrictive about the functions dental assistants are and are not allowed to perform.

In 3 states the tasks that may be delegated to dental assistants mostly remain at the discretion of supervising dentists. Regulations in those states address the workforce vaguely, often indicating that a dental assistant can perform any delegated procedure or task for which the unlicensed person has been trained by a dentist or another "verifiable" source.

In 1 state there are lists of functions that dental assistants are never allowed to perform but no lists of permitted functions:

- Nebraska[34]

One state lists functions dental assistants are never allowed to perform; it also lists 1 delegable function:

- Connecticut[35]

Other states describe a few functions expressly permitted to dental assistants as well as tasks that may *never* be delegated. Otherwise, dental assistants are allowed to perform tasks at the discretion of the supervising dentists. These states include:

- Delaware[36]
- Indiana[37]
- Rhode Island[38]
- South Dakota[39]

[z] This is with the exception of nondelegable tasks that may be enumerated in a state's dental practice act.

- Utah[40]
- Vermont[41]
- Wisconsin[42]

Some states clearly enumerate the list of functions that can be performed by EFDA or CDA certificants, but are less clear about the functions that can be delegated to entry-level dental assistants without formal training or certification. Again, these states provide a list of tasks that may never be delegated to dental assistants, but leave delegation of other tasks to the discretion of the supervising dentists. These states include:

- Illinois[43]
- Iowa[44]
- Pennsylvania[45]
- Oklahoma[46]
- Texas[47]

Many states regulate dental assistants using a tiered approach to task permissions and supervision requirements. Some jurisdictions specifically restrict performance of particular functions to dental assistants who have completed formal advanced clinical training and didactic education requirements or have acquired significant workforce experience, and/or to those who maintain pertinent credentials, including state registration, license, permit, or national certification. Permission to perform tasks is based on the level of task complexity in relation to the preparation and competency of the dental assistants. As a result, many states now have complex regulations governing dental assistants at several levels of practice. This approach to regulation effectively provides a career lattice for dental assistants who wish to advance in their current position.

North Dakota is an example of a state that permits varying levels of dental assistant practice. The state was one of the first in the nation to require registration/licensure for dental assistants to provide higher level services. North Dakota permits the following levels of practice:

- **Dental assistants** are allowed to practice without any requisite education or certification. Dental assistants in this category are allowed to perform only limited assistive functions that are specifically enumerated in regulation and provided under direct supervision of a dentist. Dental assistants are not required to be credentialed in the state; however, they are required to hold a current certificate in CPR.

- **Qualified dental assistants** in North Dakota must register with the board and show proof of passing the infection control and radiation health and safety components of the DANB CDA exam, evidence of at least 650 hours of dental assistant instruction/experience, including on-the-job training, CPR certification, and passing of a state jurisprudence examination. Qualified dental assistants are permitted to provide dental radiography services in addition to the basic assistive functions of the dental assistant.

- **Registered dental assistants** must qualify though completion of formal education and/or through extensive experience and national certification to perform both basic assistive functions and an expanded list of tasks enumerated in regulation. The qualifications for registration for these dental assistants are similar to the qualifications for licensure of dental assistants in other states. Registered dental assistants may also earn a permit to provide services such as anesthesia duties (including insertion of intravenous lines) if proof of completion of training and competency testing in an approved course and BLS certification are presented to the board. Registered dental assistants may also earn a permit to perform restorative functions, including placing and finishing certain types of restorations, by providing proof of completion of the required training program and passing required written and clinical exams. Registered dental assistants in North Dakota work under both the direct and indirect supervision of dentists.[48]

DANB has developed concise mapping of dental assistant titles, qualifications for specific tasks, and allowable duties by state that are useful in describing both differences and commonalities in practice.[49] (See: http://www.danb.org/Meet-State-Requirements.aspx). This compilation provides material evidence of the variation in complexity in regulation by state.

Supervision

Appropriate supervision is an important component of safe practice for dental assistants. Requisite supervision of dental assistants varies across all states by functions and by settings in which practice occurs. Although levels of supervision cited in governing laws and regulations commonly follow those described by the ADA, there is some variation in meaning and sometimes nuanced differences in requirements among the states. For instance, one state may describe indirect supervision as "contiguous" supervision. Another may require that a patient seen under general supervision be seen by a dentist within 6 months of the service performed by the dental auxiliary, while another state may only require a visit within 12 months. Thus, states commonly provide definitions of supervision levels in governing regulations that describe the legislative intent relative to specific requirements for supervision.

States generally require more restrictive supervision for dental assistants, especially for those trained on the job, than for dental hygienists. Direct or personal supervision of dental assistants defined as the immediate presence and supervision of a dentist for allowed tasks and functions is prevalent. Some of the common levels of supervision described in state regulations are as follows:

- **Personal supervision** generally describes the prevailing level of supervision of the dental assistant working directly with the dentist in four-handed dental procedures.

- **Direct supervision** requires the immediate presence and supervision of the dentist who assigns particular tasks to the dental assistant and monitors the quality of the work at its completion.

- **Indirect supervision** requires the supervising dentist to assign a task and remain available or be present in the treatment room or treatment facility where the service is being performed.

- Sometimes dental assistants are permitted to work under the **general supervision** of a dentist. This permission is more commonly granted to EFDAs working in community public health settings or to dental assistants in office settings when providing services that pose only minimal or no risk to patients. General supervision implies that the dentist has provided permission and direction to perform a task, but the dentist is not required to be on the premises when the service is provided.[50]

In some circumstances states' regulations or statutes may permit general or indirect supervision of a dental assistant by a dental hygienist or dental therapist for a limited set of expanded functions. Enabling a dental hygienist to supervise a dental assistant could contribute to efficiencies when providing services in community settings, such as school-based oral health programs, where sealant and fluoride applications are common services.[50]

Allowable levels of supervision described in state regulations may vary by circumstance, including: [51]

- The level of formal education and training of the dental assistant to qualify to provide a particular service.
- The complexity of the task to be performed.
- The confidence of the supervising dentist in the ability of the dental assistant to safely perform an assigned task.

Tasks and Functions Performed by Dental Assistants

Dental assistants perform a wide range of tasks, including prepping patients, exposing dental radiographic images, performing infection control procedures, assisting with dental treatment procedures, providing patient education, record-keeping, and scheduling appointments. Allowable duties vary by state and by delegation of supervising dentists. According to the ADA's job description, dental assistants may engage in any or all of the following tasks:[51]

- Assisting the dentist during a variety of procedures and treatments
- Sterilizing dental instruments and equipment
- Working with a dentist to develop and adhere to infection control protocol
- Serving as an infection control officer
- Inquiring about the patient's medical history
- Taking blood pressure and pulse
- Preparing patients for treatments and procedures
- Situating patients to help them feel comfortable before, during, and after dental procedures
- Taking and developing dental radiographs
- Completing assigned laboratory tasks under the direction of a dentist
- Providing patients with instructions for oral care following surgery or other dental procedures (eg, placement of a restoration)
- Taking impressions of patients' teeth for study casts
- Assisting in teaching patients about appropriate oral hygiene techniques to maintain oral health (eg, flossing, brushing teeth, and nutritional counseling)
- Communicating with patients (scheduling appointments, answering the telephone, and working with patients on billing and payments)
- Maintaining patients' dental records
- Helping a dentist in providing direct patient care in dental specialties such as orthodontics, pediatric dentistry, periodontics, and oral surgery
- Engaging in office tasks that require the use of computers

There are several regulated tasks that dental assistants are commonly permitted to perform in states, especially if they have qualified through requisite training and/or exam. These include but are not limited to:[9,aa]

- Coronal polishing

[aa] Note that coronal polishing is the removal of soft deposits, such as plaque; the procedure gives teeth a cleaner appearance. Sealant application involves the process of painting a thin plastic substance over teeth to seal out acid-producing bacteria and food articles to keep teeth from developing cavities. Fluoride application is another anti-cavity measure in which fluoride is placed directly on the teeth. Some dental assistants may qualify to apply topical anesthetic to an area of a patient's mouth, temporarily numbing the area to prepare a patient for appropriate dental procedures.

- Sealant application
- Fluoride application
- Topical anesthetics application

The review of laws and rules governing practice for dental assistants that was conducted for this study revealed that all states allow dental assistants to:

- Perform infection control and occupational safety procedures.
- Perform duties not listed in the state dental practice act if assigned by a dentist and are not expressly prohibited.
- Perform chairside functions assigned by a supervising dentist that are reversible, as long as they are allowed or not expressly prohibited by the state dental practice act. The supervising dentist is responsible for the acts of the dental assistant and for assuring that the dental assistant has received proper training.

Dental practice acts across states consistently prohibit dental assistants from performing certain tasks, including:

- Diagnosis and treatment planning
- Application of certain medicaments including anesthetics (except topical)
- Irreversible procedures including the cutting of teeth
- Acts that are defined in states' dental practice acts as the exclusive scope of practice for dentists or dental hygienists including, for example, scaling and root planning

All states, except for Alabama, Hawaii, Idaho, Illinois, Kansas, Missouri, New York, West Virginia, and Wisconsin, have some requirement for dental assistants to operate radiography equipment and process dental x-rays. These requirements may include successful passage of the DANB radiation health and safety exam, completion of a state dental board–approved course in radiologic competencies, certification, etc.

Settings

Data from the ACS and the BLS indicate that a majority of dental assistants are employed by private-practice dentists in general or specialty dental practices. A small number of dental assistants are employed through nonprofit organizations and clinics and governmental organizations. Some states' scope(s) of practice may allow EFDAs to provide oral health services in community settings, including public schools, Head Start programs, and long-term care settings, such as nursing homes.[52]

EXAMINING CLINICAL CONTRIBUTIONS IN THE DENTAL ASSISTANT WORKFORCE

Since the 1970s states have continuously expanded scopes of practice for allied dental personnel, often through step-wise change in statutes and regulations that govern the practice of dentistry. The actual impact of change in laws on professional practice and patient outcomes has not been widely studied. Currently, there is much debate over the appropriate uses and economic advantage of expanded function dental personnel that highlights the importance of research into changing professional scopes of practice and the impact of broadened privilege on efficiency in service delivery, patient safety, and access to care.[53] The variation in qualifications, range of allowable services, and job titles for dental assistants and EFDAs confounds comparative studies. Tuthill describes 41 different job titles for EFDAs in the United States, all with various education, examination, and experience requirements. Classifications of allowable duties and tasks under these titles vary, with some states having as many as 5 levels and job titles for dental assistants.[54]

Dental assistants have typically worked in 4-handed dentistry under the direct and often immediate supervision of a dentist providing restorative and treatment services. EFDAs are now working not only in private practices but also in public settings at a distance from supervising dentists. Besides their historical focus on restorative tasks, EFDAs are often trained to also provide many preventive services, including coronal polishing, placement of sealants, and application of topical fluoride. Most states that allow delegation of these functions to dental assistants also require extra training and competency testing before granting permission. The restorative functions permitted to dental assistants have also increased. Some states now allow appropriately trained and qualified EFDAs to directly place and finish dental restorations after a dentist cuts and removes decay from a patient's tooth, or to create temporary crowns after the dentist prepares the tooth and takes final impression for the permanent restoration.

The ability of dental assistants to safely assume increasingly varied duties is evidenced by their changing scope of practice in states' dental practice acts and regulations. DANB observes that there are noticeable legislative trends across states in the expanded duties that are permitted.[5,31] Tasks identified as commonly permitted to be delegated to appropriately qualified dental assistants and EFDAs are:[5,55]

- Dental radiography
- Placing retraction cords
- Applying sealants
- Taking impressions for study casts, mouth guards, and removable prosthesis with some movement to allowing EFDAs to do final impressions
- Monitoring nitrous oxide anesthesia

- Placing and removing dental dams
- Placing and removing matrices
- Coronal polishing
- Placement of temporary restorations and placing and carving and placing amalgams and composite restorations

Dental assistants do not perform irreversible procedures to hard or soft tissues such as extractions or cutting patients' teeth, gingiva, or mucosa.[55] Tuthill suggests that allowing dental assistants to engage in expanded functions such as direct dental restorations or coronal polishing allows dentists and dental hygienists to have more time to provide services for other patients.[56] A study conducted in Colorado to examine the economic implications of using expanded function dental auxiliaries found that private general dental practices could substantially increase the number of patient visits, service efficiency, and practice net income by delegating allowable duties to dental auxiliaries, including EFDAs.[56]

The impact of dental assistants on service provision has been evaluated in a few relatively recent studies. An early study in private-practice dentist offices in Washington found that utilization of extended function dental auxiliaries was related to increases in both the complexity of delegated tasks and the comfort of the dentists delegating the tasks. The study found that dentists participating in the study delegated, on average, only about 38% of allowable tasks to dental auxiliaries in their practices. If a task was delegated at all, it was usually consistently delegated in the dental practice. The study also found that delegation increased productivity in a practice. One interesting finding was that tasks in operative dentistry were less frequently delegated to dental hygienists than to dental assistants.[57]

Foreman surveyed pediatric dentists nationwide and found that delegation of sealant placement to auxiliaries was positively correlated with rates of sealant placement. As delegation of this task to dental auxiliaries increased, the quantity of sealants and efficiency in practice also increased.[58] Folke, Walton, and Feigal's 10-year study of occlusal sealant success among dentists, dental hygienists, and dental assistants also supported the positive impacts of delegation of sealant placement to auxiliaries. The study findings included that long-term sealant effectiveness for sealants placed by dental assistants and dental hygienists for Medicaid-insured patients in Minnesota were equal to or better than those sealants placed by dentists in the study.[59]

Colorado allows EFDAs working under the direct supervision of a licensed dentist to assist in providing reversible, restorative, and prosthetic services.[56,60,bb] A 2012 study was conducted to understand the

[bb] Colorado's dental practice act does not expressly prohibit delegation of expanded functions to dental assistants. Dental assistants may not perform any procedure that contributes or results in an irremediable alteration of the oral anatomy. As Colorado state law does not prohibit delegation of reversible tasks, dental assistants may perform intraoral and extraoral tasks and procedures necessary for the fabrication of a complete or partial denture under the direct supervision of licensed dentists. Dentists do delegate these tasks to dental assistants, and training and educational programs are available for these functions. See Dental Practice Law of Colorado, 12-35-128.

impact of EFDAs in 154 Colorado dental practices. The study found that, on average, dentists in these practices, the majority of whom were solo practitioners (66.2%), spent 2,289 hours per year providing services during 5,365 patient visits.[61] Total average annual work hours for the complex of allied dental personnel in an average dental practice in the study was 8,126 hours per practice, demonstrating the potential for auxiliaries to contribute to patient care. In 64% of the dental practices in the study, allied dental personnel actively engaged in the provision of extended function services. Practices utilizing expanded function auxiliaries had higher gross and net incomes, provided nearly twice the patient visits, offered more operatory space, and had higher laboratory and supply expenses than practices that did not use expanded function personnel.[62] In half of the practices, 35% of amalgam placement and finishing was delegated to EFDAs and 43% of practices used EFDAs to place and adjust temporary crowns and bridges.[63]

Delegation of restorative tasks was positively correlated with increased net revenue of $100,000.[62,64] The findings, while thought to be not generalizable to all private practices using EFDAs, included that dentists in the study were able to increase patient caseload by using expanded function personnel.[62,64] The increased role of dental assistants also meant that employing dentists were able to adequately cover increased overhead expenses through increased revenue.

In a 2013 study of expanded function dental staff, Blue, Funkhouser, Riggs et al. found that dental practitioners do not always utilize expanded function personnel to the fullest extent allowed by state law.[53] Practitioners using expanded function staff were more likely than those who did not employ EFDAs to work in large or group practices and/or have prior experience with expanded function personnel. Prior experience working with EFDAs was correlated with higher rates of delegation and with more positive perceptions of expanded scopes of practice among nondental staff.[53,54]

In a study using survey research of general and pediatric dentists in Iowa, Darling, Kanellis, McKernan, and Damian found that some dentists were more willing to delegate restorative tasks to appropriately trained EFDAs than others. The study was motivated by concern that the dental insurance benefits available through the provisions of the Affordable Care Act would increase demand for dental services and stretch available workforce capacity in the state. In anticipation of increased demand, expanding the scope of practice for dental auxiliaries in Iowa to include more complex restorative functions was being considered as a strategy to increase capacity in the dental workforce and to also improve access to oral health care for historically underserved populations in Iowa.[64] The study used a survey methodology to obtain an understanding of the willingness of dentists to utilize EFDAs to place restoratives if regulatory change allowed it.[63]

Survey findings were that 59% of respondents were already delegating allowable expanded functions to EFDAs at the time of the survey and more than a third (37.0%) of responding dentists were willing to consider delegating at least one of the newly proposed restorative functions to an EFDA. Pediatric dentists

(68%) were more willing to consider new task delegation to EFDAs than general dentists (36%). The authors found that placement of stainless steel crowns (31.9% of responding dentists would delegate if allowed) and amalgam restorations (22.3% would delegate) were the most accepted proposed tasks for delegation to EFDAs. Dentists were most reluctant to delegate placing and finishing composite restorations (only 18.6% would delegate if allowed).[55]

Utilization of EFDAs is a multidisciplinary workforce strategy to increase access to oral health care by providing the opportunity for dentists to provide more complex, high-technology services and for dental auxiliaries to provide low- to medium-technology services for patents.[14] Research suggests that the increased presence and scope of practice for dental assistants is beneficial to patients in private and public health settings, particularly among patients most likely to utilize public health clinics and Medicaid benefits.[64] Both clinical and field-based research indicate that dental auxiliaries may provide a range of services without loss of quality of work.[62] In a 10-year review of auxiliaries' services nationwide, researchers found no significant variation in the quality of restorative procedures performed by an auxiliary and those performed by a dentist; in fact, auxiliaries exhibited higher quality work in functions such as the application of pit and fissure sealants.[63] Novak suggests that some states allow for more flexibility in job tasks for dental assistants as compared with dental hygienists.[2]

Additional benefits to population oral health may occur with the increased use of EFDAs to help respond to the changing oral health needs of communities. Some researchers suggest, however, that a barrier to the increased use of EFDAs is the variation in pathways to the designation and the varying definitions across jurisdictions.[61,63] These researchers call for national standardization of professional education and training programs and reciprocal recognition of dental assistant qualifications among states.[14] Calls for standardization and recognition of competency evaluation and related credentials and skill sets indicate there is interest in building career pathways to encourage retention in the workforce and to enable transparent career transitions and greater mobility for dental assistants.[2]

DISCUSSION

Dental assistants are increasingly recognized as important members of the oral health workforce team, contributing to enhanced service capacity and efficiency in service delivery. Progressively changing regulations affecting professional practice are an indicator of the increased recognition of the capabilities of dental assistants and of their potential to contribute to improved access to oral health services.

The noticeable attention of regulatory bodies to standardizing entry qualifications, defining requisite training and competency evaluation, and describing tasks that constitute safe practice for dental assistants suggests that the workforce is impacting the provision of oral health services. The emergence of the expanded function status and the increased availability of a variety of professional opportunities for training and practice illustrate recognition of the potential for the workforce to contribute to improvements in population oral health.

However, variation in regulations in the qualifications to practice in the workforce and in allowable functions provide evidence of still disparate views on dental assistants. In some states, the onus of determining safe practice remains solely at the discretion of supervising dentists. The lack of clear definitions of allowable functions for dental assistants in those states and the lack of opportunity for extended practice suggests significant variation in the roles of dental assistants by individual practice.

Data about the health workforce is important for many reasons, including evaluating the adequacy of supply and obtaining an understanding of the impact of a health profession on access to and delivery of health services. Currently, data on dental assistants is available from several sources, but due to differences in the purposes of the surveys that collect information and to the variety of career paths for dental assistants, data about the workforce is inconsistent. Although examination of the titles and functions for dental assistants by state presents an interesting and varied picture of professional growth, the lack of consistency across states confounds the ability of stakeholders to collect reliable data about dental assistants or to compile a conforming national definition of the scope of practice for the workforce. Recent studies on the roles of EFDAs suggest patients' improved access to care when appropriately used. Delegation of increasingly complex tasks, improving overall clinical efficiency, and increasing patients' access to oral health care are significant findings in this growing area of study.

The research compiled for this report demonstrates a growing body of knowledge about the dental assistant workforce. Increasingly, policymakers and oral health stakeholders recognize the opportunity to utilize the workforce in both private and public practice to maximize service capacity in oral health to meet ever growing demand for oral health services. Recognition of the important roles of dental assistants on

the oral health team have led to increased attention to creating more consistent roles for dental assistants and for creating opportunities for them to contribute to increased access to oral health services.

Appendix A

APPENDIX A

The American Community Survey (ACS) is a household- and population-based survey that provides a comprehensive picture of the U.S. population. The ACS collects information on individual characteristics, such as age, sex, ancestry, race or ethnicity, employment status, occupation, job setting and work hours, and educational attainment. Information for the ACS is annually collected from approximately 3,000,000 households (1% of the U.S. population); providing data for areas with populations of 65,000 persons or more within a 1-year time period. ACS data are available in 1- and 5-year increments (it was previously available in 3-year increments.) For example, the ACS collected information on 5 percent of the U.S. population, providing demographic data on any U.S. geographic region. For these reasons, the ACS data may be effectively used to better understand specific job-title characteristics, such as those for dental assistants. (See http://www.census.gov/programs-surveys/acs/).[65]

Limitations in using ACS data are based on its self-report nature and what data are not available. The survey is comprised of a section on households as a single unit and a section about each individuals in a household. Data are self-reported by participating individuals. The self-report aspect of ACS creates some susceptibility in response and recall biases. For example, a person may provide his or her entire household income instead of providing only his or her individual income based on his or her annual earned ages. Recall bias may occur, for example, if a respondent does not remember how many weeks he or she worked during the past 12 months, and instead provided a rough estimate of weeks worked. Coding errors may occur when respondents provide open-ended responses, such as responses to open-ended questions about their occupation(s). Survey questions do not address specific individual detail about educational attainment.[65] This also created some data limitations about the educational background of dental assistants in the body of the technical report. As the sample is representative of the entire U.S. population, it was unclear if the information on dental assistants in the survey was representative of the entire dental assistant population.

Appendix B

APPENDIX B

The Occupational Employment Statistics (OES) made available through the U.S. Bureau of Labor Statistics (BLS), is a federal and state cooperative program between the BLS and State Workforce Agencies. The OES program provides wage and employment estimates for over 800 professions, disseminating data on (hourly) wage and salaried workers in nonagricultural environments.

Estimates are derived from employers responding to states' requests to participate in the OES survey. It is an employer survey, which allows researchers to estimate the number of jobs in a profession rather than the number of individuals working in a workforce. Occupational estimates are produced for the nation as a whole, by state, by metropolitan and nonmetropolitan areas, and by ownership and industry.[66,67] For example, a group of individuals employed on a part-time basis may comprise 1 full-time position, which does not characterize the number of workers in a workforce. In addition, BLS data have some self-report susceptibilities, such as data errors associated with response and recall biases. For example, employee occupations could be misclassified based on employer responses if workers have training in one field but are currently working in another field. BLS data do not provide information about employees' educational attainment, weekly work hours, or details about income such as bonuses or benefits. It is also important to stress that employment projections are estimates and are vulnerable to economic fluctuations such as a recession. Finally, the raw data from the BLS survey are not made available to independent researchers, even if identifying factors of survey respondents are omitted.

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