

The Evolution of the Dental Assisting Profession

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Abstract: The objectives of this article are to describe the dental assistant's role in the dental delivery system; assess the educational structure of the dental assisting profession; and project factors likely to impact the future role of the dental assistant. The article summarizes the current status and trends of the dental assisting profession including general responsibilities, credentialing, and regulation. An overview of the workforce and parameters of employment is provided with a description of the broad scope of practice, education, and licensure options, which vary by state. Existing academic models and enrollment trends in accredited dental programs are included, as are the strengths and weaknesses of the current educational system. Multiple factors may impact the future of this profession. To address the anticipated increase in the demand for and responsibilities of dental assistants, curricular revisions will be needed to prepare for implementation of interprofessional care models in which dental assistants will play a vital role. Well-educated dental assistants will be needed to support viable models of dental care and wellness in the U.S. Enhanced career opportunities and varied employment environments may increase job satisfaction and practice longevity. As protection of the public is of the utmost importance in the dental profession, this evolving dental clinician must be formally educated in all aspects of clinical practice and be permitted to perform delegated patient care, as legally allowed by their states. This article was written as part of the project "Advancing Dental Education in the 21st Century."

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Dental assistants are important members of the dental team as they are employed in every type of dental practice. In most states, the dental practice act defines their specific roles and responsibilities. Statutes addressing credentialing and regulation of dental assistants vary significantly from state to state, including various levels of employer supervision.¹ However, responsibilities always include various types of clinical patient care, and, in some states, dental assistants perform advanced clinical care, such as restorative dentistry and orthodontic treatment. The objectives of this article are to describe the dental assistant's role in the dental delivery system; assess the educational structure of the dental assisting profession; and project factors likely

to impact the future role of the dental assistant. This article was written as part of the project "Advancing Dental Education in the 21st Century."

Dental Assisting Workforce

Approximately 318,800 dental assistants were employed in the U.S. in 2014, with the majority working in private dental practices.² The remainder of the national dental assistant workforce works in public and other sector dental clinics. In 2013, 86% of practicing private dentists employed a minimum of one dental assistant, with the average full-time solo dental practitioner employing 1.5 dental assistants.

Currently, the majority of dental assistants have received on-the-job training, although many Certified Dental Assistant (CDA) certificants have completed a one- to two-year formal education program.³ Data regarding the number of formally educated versus trained on-the-job dental assistants are not available.

The mean wage of dental assistants in 2014 was \$17.43/hour, with a mean annual salary of \$36,260.³ Dental assistants with advanced degrees and those employed in academia have higher annual salaries. Approximately half of dental assistants worked an average of 35-40 hours weekly in 2014, with the remaining dental assistants holding part-time positions in dental offices or clinics. No data are available regarding salary differences between formally educated and trained on-the-job dental assistants. However, information from the Dental Assisting National Board (DANB) indicates increased salaries for those holding CDA certification. This is noteworthy as one of the primary routes for qualification for the CDA examination is through formal education in a Commission on Dental Accreditation (CODA)-accredited dental assisting program.

From 1990 to 2013, the number of CODA-accredited program graduates decreased,⁴ while the total number of dental assistants employed increased. This finding may be due to more on-the-job trained dental assistants or the lack of available data regarding graduation rates of non-CODA-accredited dental assisting programs. According to the Bureau of Labor Statistics, dental assisting employment is expected to grow 18% from 2014 to 2024.² This estimate is based on the projected increase in number of dentists, a growing population, and an expansion of dental assistants' roles and responsibilities.

Dental assistants work clinically in every type of general and specialty dental practice. Examples of entry-level tasks are taking vital signs, reviewing medical and dental histories, charting oral conditions, asepsis, exposing intraoral and extraoral radiographic images, preventive treatment such as coronal polishing and administering fluoride, and manipulating dental materials.² They may also perform dental laboratory procedures such as pouring models and fabricating nightguards and bleaching trays. Examples of advanced or expanded clinical treatment are placing and finishing restorations, taking impressions for prostheses, fabricating provisional restorations, monitoring or administering nitrous oxide, and placing sealants.

Regulation

State dental boards most often define the scope of practice and the rules and regulations governing dental assistants. However, a state agency or division other than the board of dentistry (e.g., departments of environmental protection or health) may be responsible for the delegation of radiographic procedures. State guidelines vary considerably.^{1,5} Some state boards register or license practitioners, issue permits for selected advanced or expanded functions, establish educational criteria, administer or contract for development and administration of examinations, and identify clinical experience requirements prior to employment in dental offices or other facilities. Credentialing signifies that recipients have met the state's requirements to perform certain duties with legal authorization. Where state statutes and rules list only those types of treatment that are non-delegable, the supervising dentist is responsible for determining whether dental assistants are competent to perform each delegated treatment and whether such delegation aligns with accepted standards of care. Certain forms of patient care may be deemed "expanded" and require formal education, such as successful completion of an approved course by the state board or passing national competency examinations.⁶ Advanced training or education may lead to a state credential that qualifies the dental assistant to use a title such as expanded functions dental assistant.

Most state boards determine what types of patient care may or may not be delegated, as well as the required level of education, supervision, and credentialing.¹ In each state, the dental practice act and/or the state dental board regulates the level of required dental assisting supervision. Most states require direct or indirect supervision, e.g., the dentist must be present in the facility when dental assistants treat patients. Under general supervision, legally allowed dental treatment may be performed by dental assistants when dentists are not physically present in the facility, although a dentist is required to have pre-examined the patient and authorized the procedure.

Educational Credentialing

CODA is the nationally recognized accreditation agency for dental assisting programs. The CODA accreditation standards for dental assisting programs consist of six overarching standards with 52 substandards.⁷ Dental assisting programs must meet or exceed each of the accreditation standards to be

eligible for CODA accreditation. Dental accreditation is ongoing, and every seven years an accredited program must prepare a comprehensive self-study and participate in a peer-reviewed site visit. Accreditation is optional, and not all dental assisting programs at the post-secondary level are accredited by CODA.

A state's credentialing requirements may include education in a CODA-accredited program, in a non-CODA-accredited program, and/or through on-the-job training or work experience.¹ Some states also require standardized competency testing to obtain credentials or to perform advanced or expanded patient care. Although some states administer state-specific exams, many recognize the CDA credential developed and administered by the DANB as the American Dental Association (ADA)-recognized certification board for dental assistants. The DANB's CDA certification process consists of three national board examinations, and states recognize DANB examinations for patient care, such as placement of sealants, coronal polishing, and restorative treatment. In 2005, the DANB and the American Dental Assistants Association (ADAA) called for the mandatory education and credentialing of dental assistants in each state to ensure patient protection and demonstrated competence, as well as calling for all educational programs to be accredited by CODA to establish a common core knowledge nationally.⁵

Dental assisting requirements, job titles, and patient care vary from state to state. The DANB estimates that 24 of 50 states along with the District of Columbia require or accept graduation from CODA-accredited educational programs as a minimum requirement for state licensure, registration, or other credentialing.¹ In some instances, graduation from a CODA-accredited program may also qualify dental assistants to perform advanced treatment in that state. The DANB estimates that more than 40 job titles or credential designations for dental assistants currently exist in the U.S. An estimated 37 states have an entry-level or unlicensed dental assistant category with no educational or credentialing requirements to perform patient care. Most states recognize more than one level of dental assistant.

In states where graduates of a CODA-accredited program are authorized to perform advanced dental treatment, the program's curriculum must include didactic and laboratory/preclinical objectives with content at the level, depth, and scope required by the state.¹ Students must demonstrate laboratory/preclinical competence in performing these skills in the program facility prior to clinical practice. In 2014,

CODA revised its accreditation standards for dental assisting programs to include instruction in advanced or expanded patient care offered in CODA-accredited dental assisting programs to assess and recognize minimal competence.⁷ In states that do not publish specific approval criteria for courses, the individual state boards may require specific documentation of course curricula to be submitted for a case-by-case review.¹ Some state-approved programs that are not CODA-accredited teach basic skills for initial preparation toward state credentialing. Externship clinical experiences may or may not be part of the programs. The names of these programs vary, such as regional occupational or adult education programs.⁴

Dental Assisting Education Programs

Formal dental assisting educational programs are offered in community or junior colleges, vocational programs, universities, and dental schools.⁴ In addition to formal educational programs, some non-CODA-accredited programs are offered through private dental offices. Of the different types of educational programs, the most desirable are CODA-accredited. Specific academic criteria for non-accredited programs designated by individual academic institutions or state education networks also exist.

The majority of CODA-accredited dental assisting programs are one to two academic years in length.⁴ In 2013-14, there were 273 CODA-accredited dental assisting programs in the U.S. Most programs have affiliation agreements with private general and specialty practices, hospitals, or dental schools for most supervised clinical training. Programs' equipment costs therefore are lower than those costs in dental hygiene programs and dental schools. Instruction in general and oral pathology, diagnosis, and preclinical and chairside procedures are key aspects of the dental assisting curriculum, sometimes supplemented with expanded functions and dental materials.⁸

Students

In 2013-14, 7,397 dental assisting students were enrolled in the first year of CODA-accredited programs.⁴ The majority attended community or junior colleges (3,519), followed by technical colleges/institutes (2,156), and vocational/career colleges

(1,025). The remaining students were registered in schools of health science (123), dental schools (56), separate dental departments (28), and university/four-year colleges (309), and 181 students were unclassified. The dental assisting profession continues to attract more female students than males, with 7,098 total women enrollees in 2015-16 compared to 410 men.⁹ Regarding race, Hispanic/Latino and Asian student enrollees have doubled since 2001, while there has been an approximately 10% increase in enrollment among black/African American and American Indian/Alaska Native students, with stable enrollment numbers for white and Native Hawaiian/Pacific Islander students.⁴

In our experience, most individuals pursuing a formal education in dental assisting are self-pay students. Many of these students are self-supporting and may be single parents or first-generation college students. Financial aid opportunities may be available, including scholarships through public and private entities, foundation grants, and personal and bank loans for students who meet specific income- or merit-based qualifications. Tuition and fees vary based on the type and level of program. Tuition and fees are higher in private institutions and university or dental school settings, with proprietary schools commanding the highest rates. Many college-level programs include approximately 30 credits or more in their dental assisting curricula. The American Dental Education Association (ADEA) presidential task force on the cost of higher education and student borrowing noted in 2013 that the costs of allied dental education programs have been increasing, raising the debt level of graduates, and that students face additional difficulties by not being able to receive financial aid at some community colleges.¹⁰ That report also emphasized that research is needed to better understand the financial challenges facing dental assisting and other allied dental students.

Faculty

Demographic data for faculty members in U.S. dental assisting programs were obtained for CODA-accredited programs and member programs of ADEA.^{4,11} Further research is needed to obtain information regarding faculty in non-CODA-accredited programs.

Over 48% of faculty members in CODA-accredited programs in 2014 were 50 years of age or older.^{4,11} The estimated percentage of faculty members retiring in 2014-15 was 22%, with greater

numbers of retirements projected over the next five years. Faculty diversity was limited, with over 82% categorized as white and mostly female. Approximately 75% held a baccalaureate degree or higher. Approximately 73% held a state RDA credential or CDA certification, while 20% percent had an RDH credential and approximately 7% had earned a DDS/DMD, EdD, or PhD.

The majority (67%) of dental assisting faculty members held part-time positions in 2014.^{4,11} Approximately 50% of the faculty members that year had tenure or continuing-contract positions. The majority (69%) of full-time faculty members were categorized as instructors. Other appointments included administrator (14.5%), clinic coordinator/director (10.7%), and researcher (0.9%). The majority of faculty appointments were for 12 months (56.1%). Other contracts were for nine months (47%), ten months (35.3%), 11 months (9.1%), and the summer only (31.6%). Faculty salary ranges are categorized as Administration or Teaching. For both categories, average salaries ranged from \$30,000 to more than \$100,000 annually. An average salary could not be derived from available data.

Dental Assisting Educational System

The dental assisting educational system today has both strengths and weaknesses. Among its strengths are the following: accreditation standards exist for CODA-accredited programs; one- to two-year programs allow quick integration into the workforce; the shorter programs allow rapid curricular change in response to delivery system advances; opportunities for advanced degrees are available to those completing CODA-accredited college-based programs through articulation agreements with other institutions; and the cost of education is relatively inexpensive compared to the longer programs required in dental hygiene and dentistry.

However, the current system has weaknesses as well, beginning with the fact that the lack of regulation and standardization of education and licensure leaves the public potentially vulnerable to lower quality dental assisting care. Additional weaknesses are the limited value of formal education in the marketplace since, regardless of educational level, dental assistants may earn similar salaries; limited opportunities to transfer course credits to advanced

degree programs; and limited career opportunities and advancement. Other weaknesses are the following: no academic requirements for faculty who teach in non-CODA-accredited programs; graduates of non-CODA-accredited programs are, for the most part, unable to obtain recognized credentials or advanced education; and the expense of many private or proprietary programs is substantial and unaffordable for many students. Finally, currently there are no empirical studies that compare the performance of formally and informally educated dental assistants.

Future of Dental Assisting Education

Factors Influencing the Future

The major factors influencing the future role and numbers of dental assisting professionals are the rapid growth of large dental group practices; increasing numbers of dentists; new dental treatments; capitated Medicaid programs; and delegation of dental treatment to dental assistants. We consider some of those factors here.

Group practices. The dental delivery system is undergoing a major restructuring with the rapid growth of large group practices.¹² Many of these practices are corporate-controlled and -managed. The ADA Health Policy Institute reported that group practices employ more dental assistants per dentist than solo practices and that many of these large group practices work under global/capitation budgets with strong financial incentives to maximize dental treatment.¹³ Under these circumstances, it is reasonable to assume that they will employ more allied dental personnel, delegating more patient treatment to them. This trend may be especially the case when dental group practices are part of integrated medical practices since physicians have over 25 years of experience delegating treatment to physician assistants, nurse practitioners, and other allied medical providers.

Number of dentists. The number of dental graduates is increasing twice as fast as the population, so the number of dentists per capita is growing.^{14,15} Most of these graduates will become private practitioners and spend their careers providing clinical dental services.^{16,17} In 2013, there were 195,202 professionally active clinical dentists, and the ADA estimated that, in 2033, the number of clinical dentists will increase to 231,307.¹⁷ Relative to the growth

of the population, dentists per 100,000 people will increase from 61.7 to 63.3. As the number of dentists increases, so will the demand for dental assistants.

New treatments. In the long term, the dental services patients receive will be based on their risk for caries and periodontal disease. For those at higher risk for caries, more effective primary and secondary preventive methods are becoming available.¹⁸ Examples include the use of silver diamine fluoride to stop the caries process and the management of enamel caries with remineralization methods rather than restorations. As these and other preventive treatments become available, dentists are likely to delegate these services to dental assistants and other allied dental professionals including dental therapists.

Medicaid programs. The majority of oral diseases are seen in lower income populations.¹⁹ With the expansion of Medicaid under the Affordable Care Act (ACA), children up to 350% of the Federal Poverty Level (depending on the state) are now covered by Medicaid and the Children's Health Insurance Program (CHIP), making them eligible to receive basic dental services. Most states do not provide basic dental services to the lower income adult population. However, progress may be made over the next 25 years in providing services to adults up to 250% of the Federal Poverty Level and expanding benefits to include basic dental services.¹⁹⁻²³

According to the ADA Health Policy Institute, all medical, dental, and behavioral health Medicaid services will be provided under global budgets/capitation.¹⁹ Most Medicaid medical care is now provided by capitated medical group practices. Thus, there is likely to be a substantial increase in the number of low-income people eligible for Medicaid dental care. However, care will be provided by large capitated group practices.²⁰ With relatively low per eligible person capitation rates, compared to per person fee-for-service expenditures, these group practices will seek more efficient ways to deliver care to populations. This trend could certainly enhance utilization of clinical dental personnel and new dental delivery models such as school-based dental care systems as their Medicaid dental programs move from fee-for-service to capitation.²³

Implications for Dental Assisting Education

As the dental delivery system evolves over the next 25 years, the demand for dental assistants to have more advanced clinical skills will increase, creating a

need for their education to change. This demand may grow as evidence accumulates that use of expanded function dental assistants can increase the profitability of a practice, as Beazoglou et al. found in their study of 154 general dental practices in Colorado, a state that legalized use of those practitioners 30 years ago.⁶ We anticipate that dental practices will increasingly seek to employ dental assistants who possess clinical skills that cannot be taught on-the-job. These skills include advanced patient treatment now performed by expanded function dental assistants and dental therapists. Additional patient treatment may also include some of the preventive services currently provided by dental hygienists, assuming that more states legalize the use of advanced allied dental providers. As large group practices come to dominate the dental delivery system in many states, the allied dental workforce will need to be expanded to provide patient care.^{12,13}

Considerable changes in educational programs and curricula are thus needed to prepare dental assistants for 2040. Although there may still be a need for personnel who can provide less skilled dental services, a new title for dental assistants with higher education and skill levels may need to be identified. In 2014, community colleges were the primary educational providers of allied dental professionals.⁴ In 2040, more degree programs at colleges and universities will be needed. Necessary changes in dental assisting curricula may include augmented content in new and better targeted diagnostic and care technologies to prevent disease (e.g., genetic testing, risk assessment, and salivary diagnostic testing for caries and periodontal risk) and didactic and experiential learning related to interprofessional care models that integrate medicine and dentistry with prevention and early detection of diseases.^{24,25}

We envision that the more highly skilled, better educated dental assistant's focus will be on integrated, team-based clinical decision-making skills associated with clinical care outcomes. Curricula will need to incorporate biomedical education with better integration of basic and clinical sciences and various disciplines. Critical thinking skills to enable better clinical decision making in care delivery and an emphasis on ethical and professional values and lifelong learning will be essential. Students will learn to frame oral diseases and their management in the context of local and global problems and to provide oral health care that addresses patient demographics, epidemiology, and biopsychosocial variables. The 2040 curriculum will also need to include resources

to support evidence-based dentistry. Discipline-specific technical skills in dentistry, such as restorative, orthodontics, and preventive care, should be enhanced to reflect expanded scopes of practice. Ideally, faculty members in 2040 educational programs will possess a master's degree or higher.

Given the curriculum innovations needed for 2040, CODA will need to revise its standards to reflect the educational requirements for clinical practice models that address the future needs of society.⁷ In addition, such foundational documents as the DANB code of professional conduct and the ADEA competencies for entry into the allied dental professions will require revision to address expanded requirements for dental assistants.^{26,27} The DANB/ADAA core competencies for dental assistants will also likely need to be updated, based as they are on a study conducted from 2000 to 2005 that ranked dental assisting tasks from most basic to most complex and classified those tasks into defined categories/groupings by the level of education, training, and experience needed to perform the tasks in each group.⁵ That report identified 70 dental assisting tasks that represented the full range of skill levels for dental assistants at the time, reflecting the consensus of dental assistants, dental assisting educators, and dental assistants' employers regarding the education and training required for a dental assistant to be prepared to perform these tasks. A similar comprehensive study may be needed to define tasks for the future.

Finally, legislation will be needed to support requirements for educational programs with graduates being better positioned to receive more competitive salaries and fill more challenging and rewarding positions. In states that allow advanced patient care (e.g., expanded function dental assistants), we have observed that most dentists underutilize their employees' skills. Although the reasons are complex, a major factor may be that dental students are seldom trained to effectively utilize expanded function dental assistants. The need for intraprofessional education involving dental assistants and dental students will be even more critical in the future.

Conclusion

Dental assistants are critical members of the current and future oral health care team and should be fully utilized in clinical practice. As protection of the public is of the utmost importance in the dental profession, the evolving dental assistant clinician

should be formally educated in all aspects of clinical practice and permitted to perform delegated patient care, as legally allowed by each state. The dental profession has an obligation to ensure public protection by hiring the most qualified dental personnel. Mandatory education and credentialing, a more standardized scope of practice, and delegation of patient care are critical components of future dental assisting practice. By maximizing the utilization of qualified dental assistants, the dental profession of the future will significantly contribute to optimum care and best practices in dentistry, while increasing efficiency in practice management.

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