

DENTAL TEAM CAREERS

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ABSTRACT

Many dental career opportunities are available in oral health. Students can become dentists which requires the most education and training or they can choose allied dental careers such as dental hygiene, dental assistant and dental laboratory technician. Each has different educational and training requirements. These career options are discussed and analyzed to determine the competitiveness of these programs.

KEYWORDS

Dental Career Paths, Dentists, Hygienists, Dental Assistants, Laboratory technicians

1. INTRODUCTION

The dental field offers many career options and all are involved with oral health. Dentists can pursue their careers in private practice or corporate dentistry. They can become general dentists or specialists. Dental hygienists are supervised by a dentist to do cleanings and preventive oral care. Dental assistants help the dentist in the office. Dental Laboratory Technicians fabricate dental prosthetics such as bridges, crowns and dentures as directed by the dentist. The educational requirements to be trained for each of these professions and the competitiveness are different.

2. MATERIALS AND METHODS

Publicly available data from the American Dental Association Health Policy Institute on dental education and allied dental education from 2003-2017 was obtained [1]. The number of applicants, first year enrollment, total enrollment and total graduates for US Dental schools and accredited dental hygiene, dental assisting and dental laboratory programs were analyzed to determine the competitiveness of these various programs. The compound average growth rate was calculated for the 13 years. This can be used to compare the different career pathways. Students who are interested in dentistry should be aware of options available for dental careers.

3. RESULTS

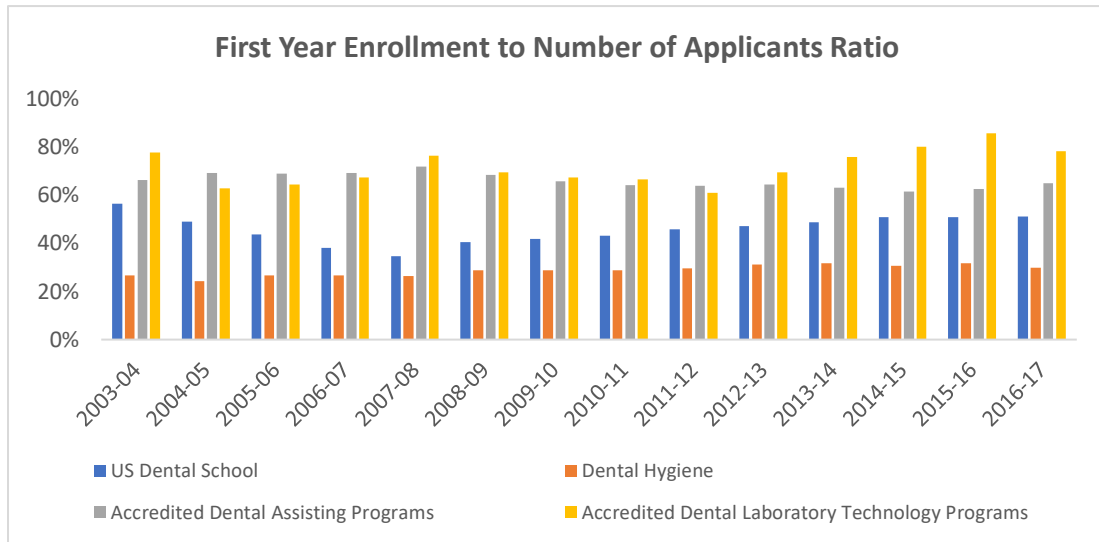


Fig 1: Ratio of First Year Enrollment to Number of Applicants over time

Dental hygiene programs show the lowest first year enrollment to number of applicant ratio while dental assistant and dental laboratory technology programs show highest ratio.

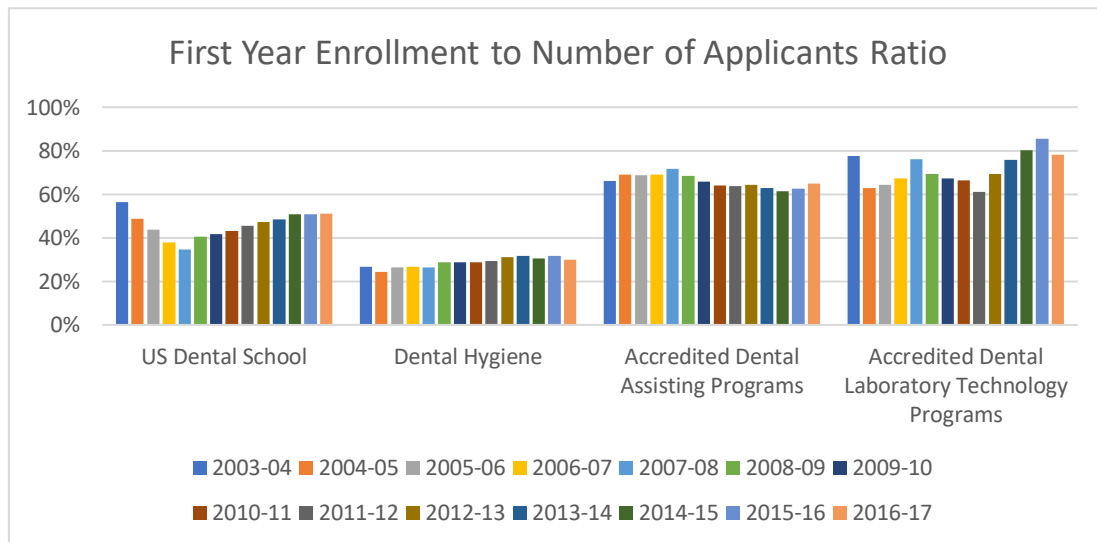


Fig 2: Ratio of First Year Enrollment to Number of Applicants for each career option

Lowest ratio for first year enrollment to number of applicants for US Dental School occurred in 2007-08.

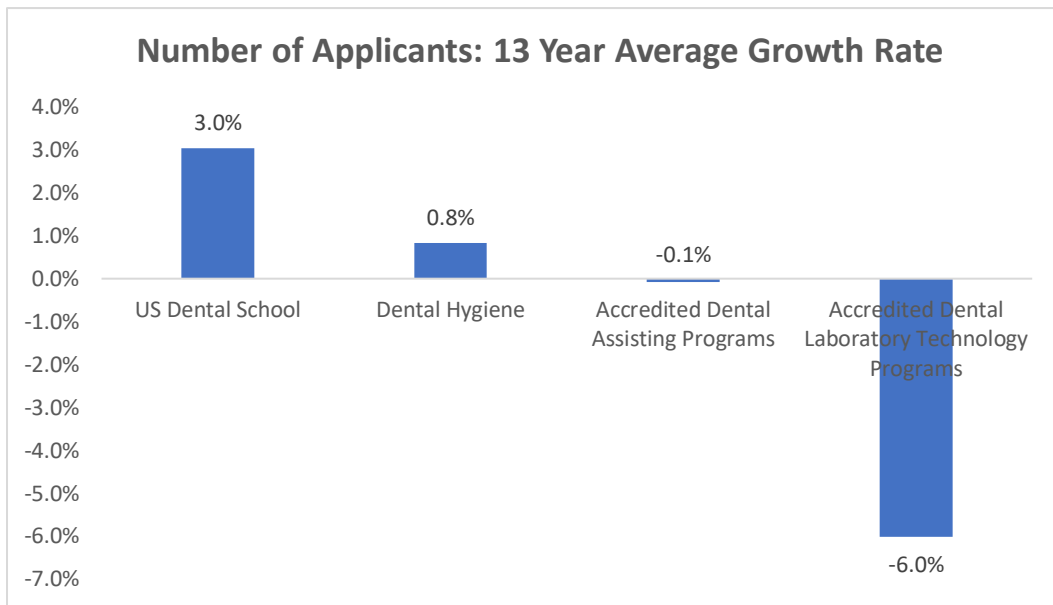


Fig 3: Compound Average Growth Rate over 13 years for number of applicants

The compound average growth rate was highest for US Dental Schools and lowest for Dental Laboratory Technology Programs.

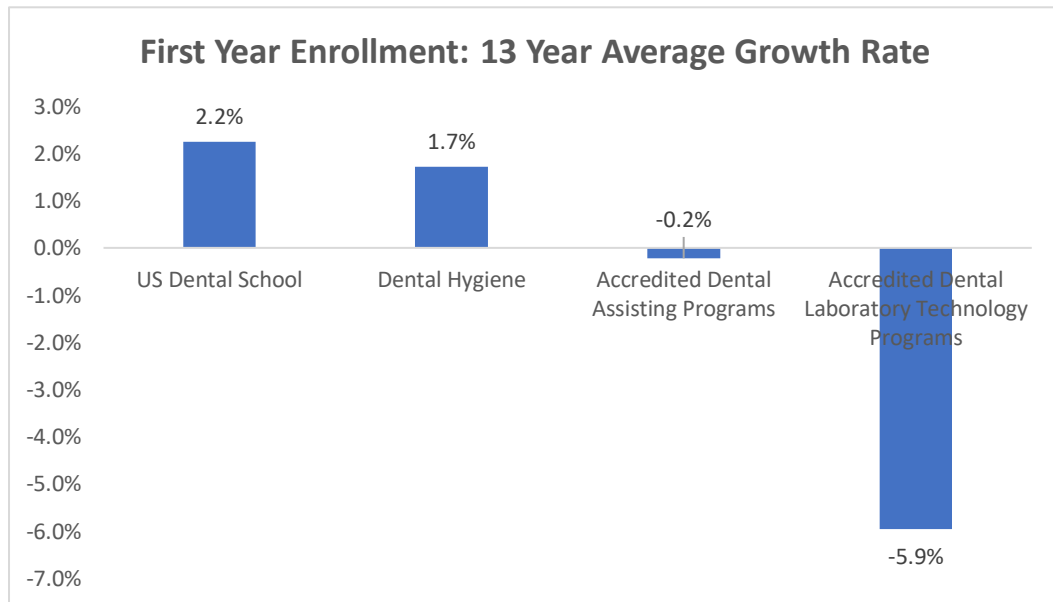


Fig 4: Compound Average Growth Rate over 13 years for First Year Enrollment

Dental laboratory technology programs show decrease compound average growth rate for first year enrollment compared to US Dental schools and accredited dental hygiene programs.

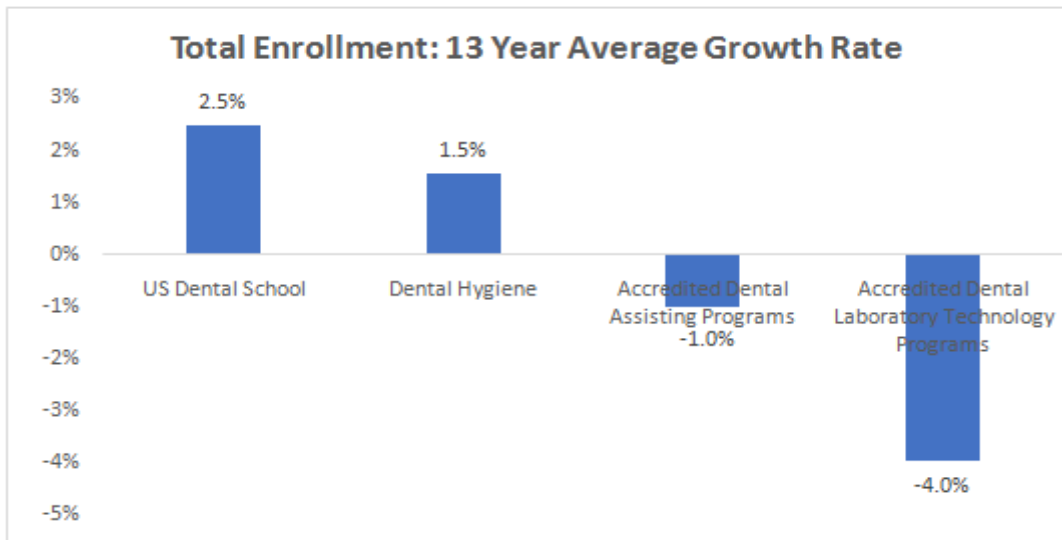


Fig 5: Compound Average Growth Rate over 13 years for Total Enrollment

Both accredited dental assisting programs and dental laboratory technology programs show decrease compound average growth rate for total enrollment compared to US Dental schools and accredited dental hygiene programs.

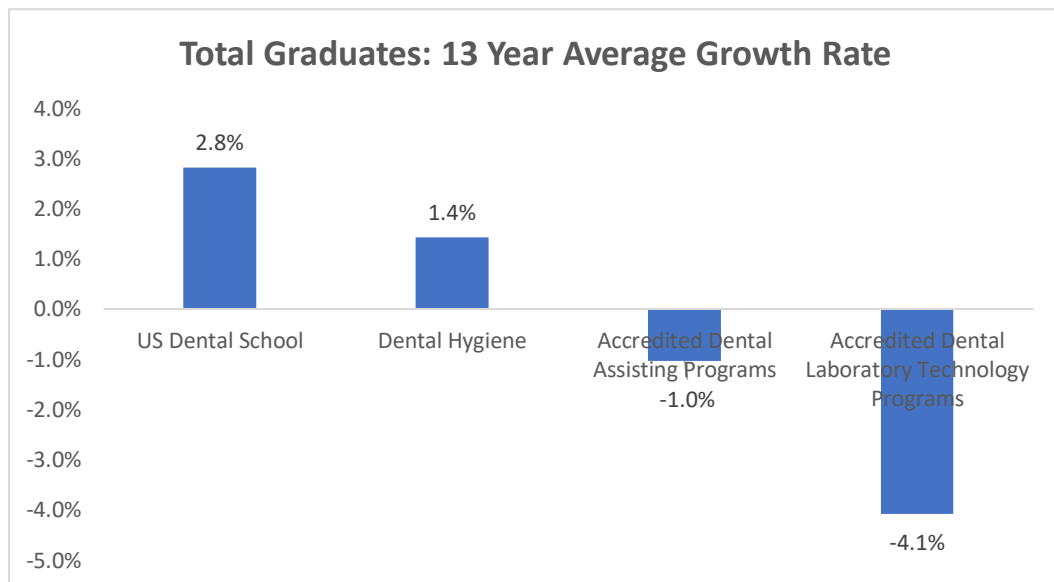


Fig 6: Compound Average Growth Rate over 13 years for Total Graduates

Both US Dental schools and accredited dental hygiene programs show increase in graduates compared to accredited dental assisting programs and dental laboratory technology programs.

4. DISCUSSION

There are many opportunities available in dentistry. Dental school graduates can work in private practice or corporate dentistry. As part of a dental team, dental hygienists provide oral care for patients including screening and removing calculus and plaque. Dental assistants may take x rays

and assist the dentist in procedures. Dental Laboratory Technicians make dental prosthetics such as crowns and dentures for patients based on impressions taken by the dentist.

Accreditation is defined as the process in which validation of competency, authority or reliability is presented to colleges, universities and other institutions of higher learning through evaluation [2]. For dental and dental-related education programs, the standards for accreditation are determined by the Commission on Dental Accreditation (CODA), the national program accrediting agency. This agency sets standards for all dental and dental related educational programs. These include pre and post doctoral dental education, dental hygiene, dental assisting and dental laboratory technology. These standards “foster continuous quality improvement of dental and dental related educational programs” [3].

The ADA lists all Commission of Dental Accreditation accredited dental and dental related education programs. There are 67 accredited US predoctoral DDS/DMD programs, 325 dental hygiene programs, 245 dental assisting programs and 14 dental laboratory technology programs. [4].

Dentists are physicians who diagnose and treat diseases of the mouth. They promote oral health and supervise others involved with patient’s oral care including dental hygienists, dental assistants and laboratory technicians [5]. They generally need a bachelor’s degree before applying to dental school. During the four years of dental school, students usually have basic science classes in the first two years and clinical work in the last two years [6]. The goal of these programs is to produce future dental practitioners by educating students to serve their patients and communities well, and by preparing them to continue to grow in technical and intellectual skills in dentistry [7]. Many dentists continue their training and education after graduation by doing a residency. This may be in general dentistry or a dental specialty. Before they can practice, they must pass a national exam and a regional licensing exam [5].

Dental hygienists are involved with the assessment of the oral health of patients. They perform screenings, do cleanings and teach patient oral hygiene [8]. They work under the supervision of a dentist, and provide clinical service and dental health counseling to patients in hospitals, clinics, private offices and health agencies. They must graduate from accredited dental hygiene programs and pass the national board examinations to become licensed dental hygienists. There are three types of entry-level programs which are for students with no prior dental hygiene education, that prepare them for the clinical practice of dental hygiene. Two-year programs require 84 credit hours and give associate degrees upon completion. Baccalaureate degree programs give baccalaureate degrees upon completion and are four-year program with 120 credit hours for completion. A post-baccalaureate degree program gives a baccalaureate degree but is designed for people who already have a baccalaureate degree in majors other than dental hygiene [9]. Dental hygiene programs include not only basic science courses, but also dental courses (dental anatomy, radiology, and oral pathology) and dental hygiene science courses (patient management, community dental health, oral health education, and preventive counseling [9].

Dental assistants perform various functions in a dental office such as assisting the dentists during procedures, taking radiographs, asking medical history and office management such as scheduling appointments, billing and ordering supplies. Dental assistant programs usually take between nine to eleven months, which is relatively shorter compared to other dental-related programs. Dental assistants can obtain certification by passing an examination. Licensure requirements may vary in different states. Formal education can be obtained through programs in community and technical colleges which are at least one year in length. Some people get on the job training [10].

Dental Laboratory Technicians use instructions from dentists to make dentures, bridges and orthodontic appliances. They use a variety of materials including plastics and metal. They can receive training from two year accredited programs or through on the job training. Some programs are four years where students would get a baccalaureate degree. Dental Laboratory Technicians can become certified by passing an exam and may specialize in implants, complete dentures, removable partial dentures, crown and bridge, ceramics or orthodontics[11].

Dental hygiene programs have the most applicants of all the dental team careers. An average of over 33,000 people have applied for dental hygiene programs during 2003-2017. This is mainly because of dental hygienist's promising career outlook, job security, and high salary. According to the report in the 2018 U.S. Bureau of Labor Statistics, dental hygienist's growth projection and employment are 11% which is greater than the average for all occupations. Many dental hygienists work part time, and they are hired to work only a few days a week, so they usually work for more than one dentist. The median annual salary of dental hygienists was \$74,820 in May 2018 [12]. This flexibility of work/life balance and relatively high median salary make dental hygiene programs very competitive. The number of applicants to accredited dental hygiene programs far exceeds the number of students accepted and enrolled first year. From 2003-2017 there was an average of over 33000 applicants and an average of about 9600 first year enrollment [1]. Dental hygienists may have the opportunity to work in nontraditional settings such as hospitals, health departments and clinics [13].

Dental assistant and dental laboratory technician programs have a high "first year enrollment" to "number of applicants" percentage (66% - 70%) as shown in Fig 1 and Fig 2. This may be related to the relatively lower minimum educational requirement for dental assistant and dental laboratory training. According to the American Dental Association most of the dental assisting and dental laboratory technician programs require a high school diploma as their minimum education requirement for enrollment. The majority of dental hygiene programs require some college education. Therefore, admission to dental hygiene programs is more competitive compared to the other allied dental education programs. US Dental schools generally require the most education before applying.

The number of applicants for dental assistants and dental laboratory technicians has declined especially seen in the last five years. Over the last 13 years there has been a decline of 6% in applicants compound average growth for dental laboratory technology programs as shown in Fig 4. There has been a 1% decline in total enrollment and graduates of accredited dental assisting programs and 4% in accredited dental laboratory technology programs as shown in Fig 5 and Fig 6. The reason for the decline may be partially related to the increasing cost of the tuition each year, financial burden, and the relatively low wage as a dental assistant or dental lab technician. The average total costs for tuition and fees in accredited dental assisting programs and dental laboratory technology programs in 2018 were \$11,555 and \$17,852, respectively [1]. The median pay of dental assistants in 2018 was \$38,660 [12] and the median pay for dental laboratory technicians was \$40,440 [14].

The decline of graduates for dental laboratory technician programs especially in the past 5 years may be partially related to decreased number of accredited dental tech programs. There are currently only 14 accredited dental laboratory technology programs. This decline may be due to globalization of the economy, with offshore laboratories taking up to 40% of fixed lab work in US away from domestic labs. Furthermore, rapid evolution and sudden incorporation of new materials and technology may also have made the practicing dental technicians difficult to adjust, contributing in some way to the decline of CODA accredited dental tech programs [15]. Some universities no longer have on site labs and use labs in China [16].

The lowest ratio of first year enrollment to number of applicants for US Dental schools occurred during 2007-2008 as shown in Fig 2. This may have related to economic reasons. This was the time of the great recession and with difficulty getting jobs, students may have considered pursuing additional education while waiting for the economy to improve [17].

US dental schools have the most compound average growth rate of 3% in number of applicants compared to other dental team careers as shown in Fig 3. First of all, with U.S. population growth of 12% from 1990 to 2000 and an aging dental workforce, the dentist to population ratio has declined, increasing the need for dentists [18].

Dentistry has been listed among its top jobs by the *U.S. News & World Report* “100 Best Jobs” for many years [19]. In addition, the U.S. Bureau of Labor Statistics predicts employment growth of 7% through the year 2028, which is higher than other occupations [20]. According to the ADA Health Policy Institute 2015 *Survey of Dental Practitioners*, the average net income for an independent private general practitioner who owned all or part of his or her practice was \$183,340 and \$344,740 for dental specialists [19]. There are various career and practice options dentistry and dentists can choose their own lifestyle, by deciding where, what hours and days they will work. Promising salary and flexible lifestyle are main reasons for consistent steady rise in number of applicants to US dental schools, contributing to the most compound average growth rate of dental team careers.

5. CONCLUSION

Dentistry is involved with oral health which is an important part of everyone’s overall health. Students who are interested in helping people with this can become dentists, dental hygienists, dental assistants or dental laboratory technicians. Each of these career paths require different educational requirements. Dental hygiene and US Dental school enrollments are the most competitive. By knowing the various options students can decide which pathway is right for them.

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