



Dental Faculty Loan Repayment Programs Evaluation

Academic Years 2016-2022

The Health Resources and Services Administration (HRSA) is the primary federal agency for improving health care for people who are geographically isolated or economically or medically underserved. HRSA's workforce development programs support the training of individuals in occupations that provide health care services to these underserved individuals. The programs achieve HRSA's mission by encouraging the geographical re-distribution of these health care providers to areas of the country where they are needed most.

In Fiscal Year 2016, HRSA initiated the Dental Faculty Development and Loan Repayment Program (DFDLRP) and the Dental Faculty Loan Repayment Program (DFLRP) to address barriers to accessing quality dental care by:

- Assisting dental and dental hygiene training programs in attracting, developing, and retaining faculty who in turn prepare dental and dental hygiene students to provide high-quality care; and
- Providing student loan repayment to participating faculty to alleviate financial concerns associated with choosing faculty careers.

This report summarizes the results of a retrospective, mixed methods evaluation of faculty who received loan repayment through the DFDLRP and DFLRP grant programs, collectively referred to as the Dental Faculty programs here forward, in Academic Years (AY) 2016-2022.

Key Findings

- During AY 2016-2022, 148 dentists and dental hygienists provided 424 years of service as full-time dental faculty through the Dental Faculty programs.
- Most Dental Faculty programs' participants had primary care backgrounds: general dentistry (55%), pediatric dentistry (32%), public health dentistry (5%), and dental hygiene (3%).
- Thirty-six percent of Dental Faculty programs' dental faculty were underrepresented minorities, and 68% were female. Diverse dental faculty encourage the recruitment of diverse dental students.
- Over the six-year period, the Dental Faculty programs provided \$12,202,108 in loan repayment, which relieved an average 43% of student loan debt for the programs' participants. This reduction helps address a key barrier to dental faculty careers.
- Without the Dental Faculty programs, dental faculty vacancies could have grown by 113% during AY 2016-2021; instead, they only grew by 78%. The Dental Faculty programs' faculty reduced national dental faculty vacancy rates from 5.4% to 5.2% in AY 2016-2017 and from 6.3% to 5.2% in AY 2017-2018.

How did HRSA's Dental Faculty programs increase the supply of dental faculty from different primary care dentistry specialties?

HRSA's Dental Faculty programs aim to increase the supply of full-time dental faculty. Program participants receive loan repayment in amounts equal to 10, 15, 20, 25, and 30 percent of their loan for each successive year of service for up to five years. This means faculty who participate in the Dental Faculty programs for five years can repay 100% of their eligible dental school loans.^{1,2}

Dental Faculty programs' participants agree to serve as full-time faculty members within the specialties of general dentistry, pediatric dentistry, dental public health, or dental hygiene.³ Participants from other specialties, such as endodontic and orthodontic dentistry, are required to serve in primary care dental faculty roles.

- During AY 2016-2022, 148 dentists and dental hygienists provided 424 years of service as full-time dental faculty through the Dental Faculty programs (Table 1).
- The Dental Faculty programs grew from eight dental faculty in AY 2016-2017 to 131 dental faculty in AY 2021-2022 (Table 1). Participation increased over the six-year period because of recruitment and because of the timing of the Dental Faculty programs' vacancies and awards.
- Most Dental Faculty programs participants came from primary care backgrounds: general dentistry (55%), pediatric dentistry (32%), public health dentistry (5%), and dental hygiene (3%). The remaining 4% of faculty specialized in endodontic, orthodontic, periodontic, or prosthodontic dentistry (Table 1).
- General and pediatric dentistry faculty positions, which are among the leading U.S. dental school faculty vacancies, accounted for 87% of the positions filled by Dental Faculty programs' participants.⁴ The Dental Faculty programs focus on recruiting faculty from these specialties to meet the needs of dental training programs.

¹ Health Resources and Service Administration. (2017). *Notice of funding opportunity: Dental faculty loan repayment program* (HRSA-17-115). U.S. Department of Health and Human Services.

https://grants.hrsa.gov/2010/Web2External/Interface/Common/EHBDisplayAttachment.aspx?dm_rtc=16&dm_attid=08efd4fb-1d26-45ee-99db-4dcd87327829

² Health Resources and Service Administration. (2016). *Notice of funding opportunity: Dental Faculty Development and Loan Repayment Program* (HRSA-16-182). U.S. Department of Health and Human Services.

https://grants.hrsa.gov/2010/Web2External/Interface/Common/EHBDisplayAttachment.aspx?dm_rtc=16&dm_attid=01e4467d-1b0e-4c82-8a54-c0d7a468ab7c

³ DFDLRP participants who receive loan repayment must participate in the proposed dental faculty development program in primary care and perform at least 50% of their full-time faculty duties in a community-based primary care setting.

⁴ American Dental Education Association. (2023, June 12). *2020-21 dental school faculty vacant positions in United States*. <https://www.adea.org/Data/Faculty/2020-Vacancies/>.

Table 1. Dental Faculty Programs' Participation by Primary Specialty and Academic Year (N=148)

| Academic Year | Number of Participants | General Dentistry | Pediatric Dentistry | Public Health Dentistry | Dental Hygiene | Other Specialty |
|----------------------------|------------------------|-------------------|---------------------|-------------------------|-----------------|-----------------|
| 2021-2022 | 131 | 73 (55.7%) | 44 (33.6%) | 8 (6.1%) | 0 (0.0%) | 6 (4.6%) |
| 2020-2021 | 110 | 54 (49.1%) | 36 (32.7%) | 4 (3.6%) | 13 (11.8%) | 3 (2.7%) |
| 2019-2020 | 94 | 43 (45.7%) | 34 (36.2%) | 2 (2.1%) | 11 (11.7%) | 4 (4.3%) |
| 2018-2019 | 61 | 25 (41.0%) | 26 (42.6%) | 2 (3.3%) | 7 (11.5%) | 1 (1.6%) |
| 2017-2018 | 20 | 11 (55.0%) | 9 (45.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| 2016-2017 | 8 | 2 (25.0%) | 2 (25.0%) | 1 (12.5%) | 3 (37.5%) | 0 (0.0%) |
| Unique Participants | 148 | 82 (55.4%) | 48 (32.4%) | 8 (5.4%) | 4 (2.7%) | 6 (4.1%) |

Note. "Other Specialty" includes endodontic, orthodontic, periodontic, and prosthodontic dentistry. The unique number of dental faculty by academic year will not sum across academic years. It represents the unique number of Dental Faculty programs' participants who participated for one to five years. If the primary specialty for an individual changed over time, then the most recent specialty is reported in the 'unique number' row.

Were HRSA's Dental Faculty programs successful in supporting diverse faculty?

Loan repayment reduces institutional barriers to academic employment and helps diverse dental faculty remain in academic positions.⁵ Having diverse dental school faculty encourages the recruitment of diverse dental students,⁶ and a diversified dental workforce improves dental care access and quality for racial/ethnic minorities and underserved populations.^{7,8}

HRSA's Dental Faculty programs prioritize recruiting and retaining diverse dental faculty, and an organization's experience training individuals from underrepresented backgrounds factors into which organizations receive dental faculty grant awards.

The Dental Faculty programs' dental faculty were significantly more diverse than national dental faculty for both race/ethnicity and gender:

- Thirty-six percent (36%) of Dental Faculty programs' dental faculty were underrepresented minorities, compared with 14% of dental faculty nationally (Figure 1).⁹

⁵ Cain, L., Brady, M., Inglehart, M. R., & Istrate, E. C. (2022). Faculty diversity, equity, and inclusion in academic dentistry: Revisiting the past and analyzing the present to create the future. *Journal of Dental Education*, 86(9), 1198-1209.

⁶ Andersen, R.M., Carreon, D.C., Friedman, J.A., Baumeister, S.E., Afifi, A.A., Nakazono, T.T., & Davidson, P.L. (2007). What enhances underrepresented minority recruitment to dental schools? *Journal of Dental Education*, 71(8), 994-1008.

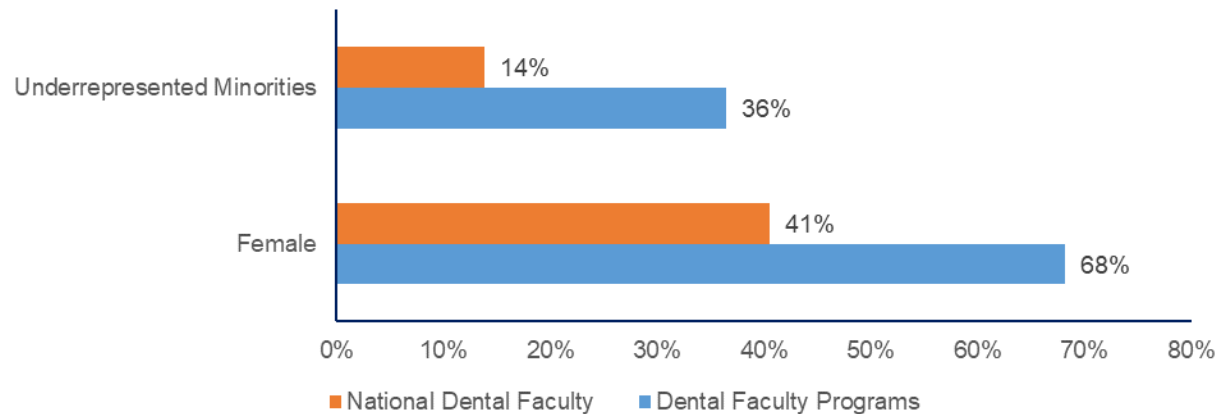
⁷ Cain, L., Brady, M., Inglehart, M. R., & Istrate, E. C. (2022). Faculty diversity, equity, and inclusion in academic dentistry: Revisiting the past and analyzing the present to create the future. *Journal of Dental Education*, 86(9), 1198-1209. <https://doi.org/10.2003/jdd.13013>

⁸ National Research Council. (2011). *Improving Access to Oral Health Care for Vulnerable and Underserved Populations*. <https://doi.org/10.17226/13116>

⁹ $\chi^2(1) = 34.5, p < .001$

- Similarly, 68% of Dental Faculty programs' dental faculty were female compared with 41% of all dental faculty (Figure 1).¹⁰

Figure 1: Underrepresented Minority Status and Gender of Full-time Dental Faculty Programs' Dental Faculty in AY 2016-2022 (N=148) Compared to Underrepresented Minority Status and Gender of Full-time Dental Faculty Nationally (N=5,066) in AY 2018-2019¹¹



Note. Hispanic or Latino ethnicity, Black or African American, American Indian or Alaska Native, and Native Hawaiian or Other Pacific Islander are underrepresented minorities in health professions. Race/ethnicity summaries reported by the American Dental Education Association (ADEA) follows the U.S. Department of Education guidelines (Federal Register /Vol. 72, No. 202 / Friday, October 19, 2007 /Notices). Race was aggregated for persons who report two or more races. Therefore, to be consistent with the data reported for dental school faculty by the ADEA, two or more races was not included in underrepresented minority calculations for faculty in the Dental Faculty programs in AY 2016-2022 and for U.S. Dental School Faculty in AY 2018-2019 shown in Figure 1. Adapted from the *2018-19 dental school faculty in the United States.*, by the American Dental Education Association, 2023 (<https://www.adea.org/data/Faculty/2018-2019-Survey/>).

Were HRSA’s Dental Faculty programs successful in relieving the burden of student loan debt for faculty?

On average, total educational debt (undergraduate and graduate) for graduating dental students ranged from \$203,218 to \$287,405 in 2017.¹² Standard student loans have a repayment period of 10 years; however, for dental students the repayment period may be extended to 25 or 30 years depending upon the amount of dental school debt.¹³

Student loan debt among dental school graduates can discourage teaching careers. In 2019, the mean annual wages for a general dentist were \$178,260, while a dental faculty member

¹⁰ $\chi^2(1) = 45.6, p < .001$

¹¹ American Dental Education Association. (2023, June 12). *2018-19 dental school faculty in the United States.* <https://www.adea.org/data/Faculty/2018-2019-Survey/>

¹² Wanchek, T., Cook, B. J., & Valachovic, R. W. (2018). Annual ADEA survey of dental school seniors: 2017 graduating class. *Journal of Dental Education*, 81(5), 615-630. <https://doi.org/10.21815/jde.016.027>

¹³ Hanson, M. (2021, October 11). *Average Dental School Debt.* Education Data Initiative. <https://educationdata.org/average-dental-school-debt>

servicing as an assistant professor earned \$113,838, on average.^{14, 15} Student loan repayment programs, such as HRSA's Dental Faculty programs, help attract and retain dental faculty by repaying dental school debt faster to reduce the financial gap between these career paths.

The Dental Faculty programs' dental faculty have more student loan debt repaid the longer they remain in faculty positions. This leads to strong retention rates. The AY 2016-2017 and AY 2017-2018 cohorts had retention rates of 88% and 86%, respectively. The AY 2018-2021 cohorts had retention rates over 95%.¹⁶ No one in the latest AY 2021-2022 cohort dropped out.

- The 148 Dental Faculty programs' dental faculty had a total of \$28,143,838 and an average of \$190,161 in student loan debt when they were recruited into the loan repayment program. Their average student loan balance ranged from \$165,449 in AY 2016-2017 to \$206,447 in AY 2021-2022 (Table 2).
- The Dental Faculty programs dental faculty averaged 2.9 years in the loan repayment programs and repaid an average of 43% or approximately \$12,202,108 of their student loan debt (Table 2).
- The dental faculty in the Dental Faculty programs' first cohort, which began in AY 2016-2017, averaged 4.4 years and repaid 92% of their student loans on average, while the latest cohort with complete data, AY 2020-2021, repaid 24% of student loans debt on average (Table 2).¹⁷

Table 2: Student Loan Balance and Relief by Dental Faculty Programs Academic Year Cohort, AY 2016-2022 (N=148)

| Academic Year | Unique Number of Faculty | Total Student Loan Balance at Recruitment | Average Student Loan Balance at Recruitment | Average Years of Service | Average Percent of Student Loan Balance Relieved by AY 2021-2022 |
|---------------|--------------------------|---|---|--------------------------|--|
| 2021-2022 | 30 | 6,193,418 | 206,447 | 1.0 | 2.0% |
| 2020-2021 | 20 | 3,345,812 | 167,291 | 1.9 | 23.7% |
| 2019-2020 | 34 | 5,791,621 | 170,342 | 2.9 | 42.7% |
| 2018-2019 | 36 | 7,364,356 | 204,565 | 3.8 | 65.6% |
| 2017-2018 | 20 | 4,125,036 | 206,252 | 4.3 | 80.8% |
| 2016-2017 | 8 | 1,323,595 | 165,449 | 4.4 | 91.7% |
| Total | 148 | 28,143,838 | 190,161 | 2.9 | 43.3% |

Note. The analysis may undercount the student loan balance relieved by Dental Faculty programs because the repayment schedule may not align with the annual performance reporting cycle. The AY 2021-2022 cohort lacks complete loan repayment data due to this data lag.

¹⁴ American Dental Education Association. (2023, June 16). *Bulletin on dental education: ADEA releases new research on faculty salary and compensation at U.S. dental schools.* https://www.adea.org/ADEA/Blogs/Bulletin_of_Dental_Education/ADEA_Releases_New_Research_on_Faculty_Salary_and_Compensation_at_U_S_Dental_Schools.html

¹⁵ Bureau of Labor Statistics. (2023, June 16). *Occupational employment and wages, May 2019: 29-1021 dentists, general.* <https://www.bls.gov/oes/2019/may/oes291021.htm>

¹⁶ The AY 2016-2017 and AY 2017-2018 cohorts' participants had five years of program eligibility. The participants in AY 2018-2019, AY 2019-2020, and the AY 2020-2021 had four, three, and two years of eligibility, respectively.

¹⁷ The AY 2021-2022 cohort lacks complete loan repayment data because the repayment schedule can lag behind the annual performance reporting cycle.

How did HRSA’s Dental Faculty programs help address faculty vacancies for dental schools?

According to the American Dental Education Association, there were 4,945 full-time dental faculty nationwide in AY 2016-2017, and 5,139 full-time dental faculty in AY 2018-2019. The full-time dental faculty vacancy rate was 5.2%¹⁸ each year. Without sufficient dental faculty to train future dentists and dental hygienists, dental schools may have difficulty graduating enough providers to meet future demand for these occupations. For example, a 10% decline in annual graduation rates would result in a national shortage of nearly 8,000 general dentists by 2035.¹⁹

Through recruitment and retention of dental faculty from student loan repayment, Dental Faculty programs potentially reduced full-time dental faculty vacancy rates from 5.4% to 5.2% in AY 2016-2017 and from 6.3% to 5.2% in AY 2018-2019.^{20,21,22}

- The number of full-time dental faculty vacancies grew from 272 in AY 2016-2017 to 486 in AY 2020-2021 (mostly for associate and assistant professor positions)—a 78% increase in five years (Figure 2).²³ Vacancies increased after the start of the COVID-19 pandemic in part due to a lack of response to vacancy announcements and overall labor market tightening among younger, educated workers.^{24,25}
- Dental Faculty programs’ dental faculty work as full-time dental faculty at U.S dental schools in exchange for loan repayment. Without the Dental Faculty programs, full-time dental faculty vacancies could have potentially been higher, since the program participants may have sought employment elsewhere. In absence of the Dental Faculty programs, total vacancies could have potentially grown from 280 to 596 (113%) during AY 2016-2021 (Figure 2).

¹⁸ Data on full-time faculty were not collected for AY 2019-2020 and are not available for AY 2020-2021.

¹⁹ Adapted from the National Center for Health Workforce Analysis. (2023). *Workforce projections*. <https://data.hrsa.gov/topics/health-workforce/workforce-projections>. In the public domain.

²⁰ American Dental Education Association. (2023, June 12). *2018-19 dental school faculty in the United States*. <https://www.adea.org/data/Faculty/2018-2019-Survey/>

²¹ American Dental Education Association. (2023, June 12). *2018-19 dental school faculty in the United States*. <https://www.adea.org/Number-of-Faculty-Positions-by-Appointment-2016-17-Academic-Year.pptx>

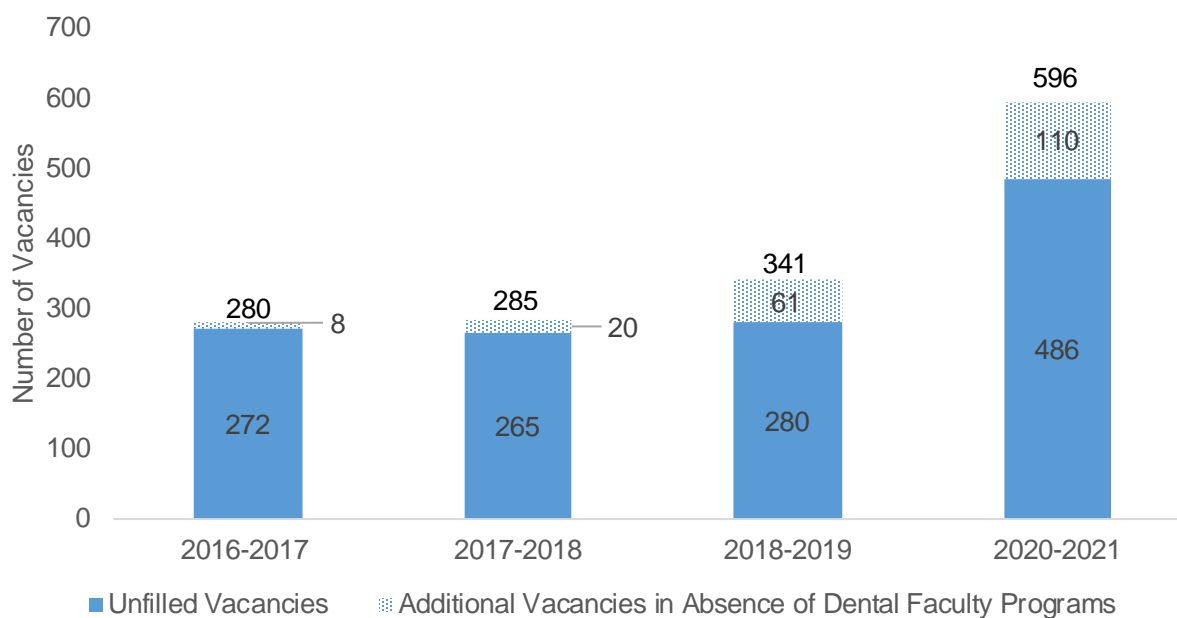
²² Data on full-time faculty were not collected for AY 2019-2020 and are not available for AY 2020-2021.

²³ Adapted from the American Dental Education Association. (2023, June 12). *2020-21 dental school faculty vacant positions in United States*. <https://www.adea.org/Data/Faculty/2020-Vacancies/>. Copyright 2013-2023 American Education Dental Association.

²⁴ American Dental Education Association. (2023, June 12). *2020-21 dental school faculty vacant positions in United States*. <https://www.adea.org/Data/Faculty/2020-Vacancies/>

²⁵ Lee, D., Park, J., & Shin, Y. (2023). *Where are the workers? From great resignation to quiet quitting* (NBER Working Paper No. 30833). National Bureau of Economic Research. https://www.nber.org/system/files/working_papers/w30833/w30833.pdf

Figure 2: Number of Potential Vacancies in Absence of Dental Faculty Programs at U.S. Dental Schools, AY 2016-2019 and AY 2020-2021^{26,27}



Note. AY 2019-2020 dental faculty vacancies were not collected by the American Dental Education Association (ADEA). The vacancies may be undercounted, since 57 out of 66 accredited dental schools responded to the AY 2020-2021 survey and 63 out of 66 accredited dental schools responded to the AY 2018-2019 survey. Adapted from the *2020-21 dental school faculty vacant positions in the United States*, by the American Dental Education Association, 2023 (<https://www.adea.org/Data/Faculty/2020-Vacancies/>).

How did HRSA’s Dental Faculty programs improve the quality of dental care?

HRSA’s Dental Faculty programs’ dental faculty prepare future dentists and dental hygienists to provide high quality oral health care to diverse patients, especially patients from medically vulnerable and underserved populations.²⁸ Dental Faculty programs helped improve the quality of dental care by developing and providing didactic and clinical training.

During AY 2016-2022, the Dental Faculty programs’ dental faculty developed and delivered 266 unique courses 3,009 times with a total of 136,373 hours of instruction. Courses were a combination of didactic and clinical training. Courses taught by the programs’ dental faculty reached 28,466 dental students, dental residents, and other students and health professionals, 95% of whom were in the field of dentistry. See Table 3 for additional curriculum information on the top five most common course content areas by total hours of instruction.

²⁶ American Dental Education Association. (2023, June 12). *2020-21 dental school faculty vacant positions in the United States*. <https://www.adea.org/Data/Faculty/2020-Vacancies/>

²⁷ American Dental Education Association. (2023, June 16). *Bulletin of dental education: ADEA releases new faculty data*. https://www.adea.org/ADEA/Blogs/Bulletin_of_Dental_Education/ADEA_Releases_New_Faculty_Data.html

²⁸ Albino, J.E., Inglehart, M.R., & Tedesco, L.A. (2012). Dental education and changing oral health care needs: Disparities and demands. *Journal of Dental Education*, 76(1), 75-88.

- The Dental Faculty programs' dental faculty provided almost 89,000 hours of instruction through 240 clinical practice information courses. While there were only seven unique clinical practice information courses developed, these courses required more time per course.
- The most course content developed by Dental Faculty programs' dental faculty focused on oral health with 180 unique courses developed. Dental faculty delivered oral health courses 1,836 times with 26,273 hours of instruction.
- The Dental Faculty programs' dental faculty spent nearly 10,000 hours teaching about HIV/AIDS. Oral health is important for people living with HIV because HIV weakens the immune system and causes dry mouth, which can lead to oral infections.²⁹
- The Dental Faculty programs' dental faculty developed five courses on evidence-based practice and medicine, which were delivered 113 times for a total of 3,370 instructional hours. Evidence-based practice and medicine courses help improve the quality of dental care by focusing on recent/advanced research and the best available evidence in dental care.³⁰
- The Dental Faculty programs' dental faculty further improved the quality of care by focusing on community-based dental care. Dental faculty developed five courses on community-based care, which averaged about 73 hours per course for a total of 2,136 hours of instruction.

Table 3. Top Five Dental Faculty Programs Course Content Areas by the Total Instructional Time, AY 2016-2022

| Course Content Area | Unique Number of Courses Developed | Number of Times Courses were Delivered | Average Length of Courses Delivered in Hours | Total Instructional Hours |
|--------------------------------------|------------------------------------|--|--|---------------------------|
| Clinical Practice Information | 7 | 240 | 370.3 | 88,974 |
| Oral Health | 180 | 1,836 | 14.3 | 26,273 |
| HIV/AIDS | 1 | 80 | 120.0 | 9,600 |
| Evidence-Based Practice and Medicine | 5 | 113 | 29.8 | 3,370 |
| Community-Based Care | 5 | 29 | 73.3 | 2,126 |

²⁹ Health Resources and Service Administration. (2023, June 21). *Oral health for people with HIV*. <https://www.hrsa.gov/oral-health/people-with-hiv>

³⁰ Durr-e-Sadaf. (2019). How to apply evidence-based principles in clinical dentistry. *Journal of Multidisciplinary Healthcare*. 12,131-136. <https://doi.org/10.2147%2FJMDH.S189484>

Examples of course titles are provided below to demonstrate the breadth of topics for each of the most common course content areas (Table 4).

Table 4. Sample Courses Titles by Course Content Area, AY 2016-2022

| Course Content Area | Sample Course Titles |
|---|--|
| Clinical Practice Information | <ul style="list-style-type: none"> • Clinical Sciences Seminar • Comprehensive Patient Care Clinic • Preclinical Pediatric Dentistry |
| Oral Health | <ul style="list-style-type: none"> • An Overview and Discussion of Sedation for the Pediatric Dental Patient • Contemporary Issues in Pediatric Dentistry • Cariology for the 21st Century- Management of Caries Lesions • Comorbidities Caries Risk Assessment and Considerations for Patients with Special Health Care Need • Dental Management of Pediatric Patients with Special Health Care Needs • Managing Dental Caries in Practice – From Baby to Adult • Oral and Maxillofacial Pathology • Oral Care for Older Adults • Quality Initiatives in Health Center Dental Programs • Using Implementation Science to Promote Oral Health Equity |
| HIV/AIDS | <ul style="list-style-type: none"> • Oral Health and HIV |
| Evidence-Based Practice and Medicine | <ul style="list-style-type: none"> • Evidence-based Dentistry • Dental Literature Review • Oral Health Systemic Health Connection: What's the Evidence? |
| Community-Based Care | <ul style="list-style-type: none"> • Community Learning Experience • Ethics of Charity Care |

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