

Journal of Dental Education / Volume 74, Issue S10 / p. S110-S120

Chapter 12 | [Full Access](#) |

The Role of Enrichment Programs in Strengthening the Academic Pipeline to Dental Education

Charles J. Alexander Ph.D. , Dennis A. Mitchell D.D.S., M.P.H.

First published: 01 October 2010

https://doi-org.ezproxy.cul.columbia.edu/10.1002/j.0022-0337.2010.74.10_suppl.tb04987.x

Citations: 13

[Columbia e-Link >>](#)

Abstract

Academic enrichment programs can be essential to efforts by dental schools to recruit and enroll underrepresented minority students (URM). Many summer academic enrichment programs provide additional preparation and support to URM students in the sciences. They often address barriers to student achievement such as unevenness in academic preparation, less rigorous educational background, family influence on preparation aspiration and success, unease in a new setting, and lack of professional role models. To be successful, these programs must address both the academic and social complexities of URM students and often require a range of programs to meet the specific needs of different student groups.

Enrichment programs designed to strengthen the academic pipeline were initially started to address the underrepresentation of minority groups in health care professions and to provide an opportunity for diverse health care providers to practice in their own communities. Most enrichment programs were offered in the summer and provided additional academic preparation and support to underrepresented minority (URM) students in the sciences. They often addressed barriers to student achievement such as unevenness in academic preparation, less rigorous educational background, family influence on preparation aspiration and success, unease in a new setting, and lack of professional role models. Since these programs must address both the academic and social complexities of URM students (defined as African American/Black, Hispanic/Latino, and Native American students), they often required a range of programs to meet the specific needs of various student groups.

The civil rights movement of the 1960s led universities and the federal government to examine and address the issue of equal access to careers in the health professions by removing cultural, educational, and other discriminatory barriers that historically discouraged URM students from pursuing health

careers.¹ The federal government was an early advocate for addressing the shortage and workforce diversity issues, having enacted the Health Professions Educational Assistance Act of 1963 (Public Law 88-129). This law was designed to increase the total number of health professionals through grants for expansion of existing schools, incentives for new schools, and student loan and scholarship programs.² Nonetheless, the number of URM students remained extremely low.

In 1972, the federal government, through the Comprehensive Health Manpower Training Act of 1971, began to increase financial support to health professions schools by granting Special Health Career Opportunity Grants (SHCOGs). These grants were designed to assist URM and disadvantaged students with academic preparation for careers in the health professions. In 1976, the law was changed to set up a new authority, which created the Health Careers Opportunity Program (HCOP).³ From this period forward, there was a considerable increase in the number of health professions students, graduates, and practitioners.

It was through the HCOP grants that many dental schools began to seek funding to diversify their entering classes and address the underrepresentation of URM graduates. These grants were designed to increase the number of URM and disadvantaged students admitted to and graduating from dental schools. Dental schools also used HCOP funds to develop recruitment programs for increasing awareness of dentistry as a career. It was during this time that schools created summer enrichment and prematriculation programs designed to increase the enrollment of underrepresented and disadvantaged students. Among the early programs for URM dental student were those established at the University of California, San Francisco, Howard University, University of Nebraska Medical Center, Creighton University, and the University of Illinois at Chicago. As HCOP funding grew from \$14.5 million in 1978 to \$35.6 million in 2005, more dental schools established programs, including Marquette University, the University of Michigan, and the University of North Carolina at Chapel Hill. Academic enrichment programs have successfully increased URM enrollments in health professions schools, and particularly in dental schools.⁴

It is clear that the growth of academic enrichment programs, sparked by the increased funding of programs sponsored by the federal government, led to an increase in URM enrollment in the nation's dental schools. Later, the 2000 U.S. surgeon general's report, *Oral Health in America: A Report of the Surgeon General*, opened the door for more funding, particularly from private foundations (Robert Wood Johnson Foundation, W.K. Kellogg Foundation, and The California Endowment). These foundations provided additional financial support to assist dental schools with their efforts to address disparities in oral health and inadequacies in the pipeline for URM dental students. The recent initiative by the Robert Wood Johnson Foundation and The California Endowment—the Pipeline, Profession, and Practice: Community-Based Dental Education program—is further evidence that academic enrichment programs are very instrumental in diversifying the dental profession. The Pipeline program recognizes that URMs have been historically absent in dentistry and that their academic experiences may not have adequately prepared them to be successful applicants to dental schools.⁵ Many of the Pipeline schools established academic enrichment programs to assist in the recruitment and enrollment of URM students. These schools experienced an increase in applicants and higher grade point averages of enrolled dental students.⁶ The Pipeline program and the Summer Medical and Dental Education Program funded the creation or expansion of summer enrichment and postbaccalaureate programs at twenty-one of the fifty-seven U.S. dental schools. The W.K. Kellogg Foundation also contributed to this initiative.⁷

After briefly reviewing the legal context of this issue, this chapter will provide an overview of academic enrichment programs in dental education and then describe several successful programs.

The Legal Context of Academic Enrichment Programs

Academic enrichment programs typically come under scrutiny by the public and the courts. Their legality and fairness have always been an issue and continue to receive public attention. In *Regents of the University of California v. Bakke* (1978), the U.S. Supreme Court ruled that while colleges and universities can consider race as a “plus” factor in the admission process, they may not do so by imposing quotas.⁸ In *Hopwood v. Texas* (1996), the U.S. Court of Appeals for the Fifth Circuit ruled that any consideration of race in admissions is unconstitutional.⁹ When the U.S. Supreme Court declined to review the *Hopwood* decision, all affirmative action programs in public universities in Louisiana, Mississippi, and Texas were ended. That same year, California Proposition 209, a state ballot initiative (known as the California Civil Rights Initiative), was voted into law prohibiting preferences in public education on the basis of race and sex. In 1998, the Washington State Initiative 200, modeled on California's Proposition 209, ordered public agencies in the state of Washington to stop giving preferential treatment on the basis of sex, color, ethnicity, or national origin.

The next time that the U.S. Supreme Court ruled on a case that influenced public policy on diversity in education was *Gratz v. Bollinger et al.* (2002) and *Grutter v. Bollinger et al.* (2002). These two rulings upheld the “compelling interest” of using affirmative action to create campus diversity as a rationale for race-conscious admissions and outlined constitutionally acceptable ways of doing so.^{10,11} These two rulings also reaffirmed the unconstitutionality of quotas and opened the possibility of the court's revisiting the need for the decision in the future.

Paramount to the responsibility of designing academic programs that address diversity in education, including enrichment programs, is the legal responsibility of ensuring that the programs appropriately address all of the applicable state and federal regulations. It is also highly recommended to incorporate enough flexibility into the design of the program so that it can adapt to possible future legal and policy challenges that may arise.

Academic Enrichment Programs in Dental Education

Academic enrichment programs come in many shapes and sizes. They range from summer enrichment programs, which focus on career awareness and introduction to the Dental Admission Test (DAT), to postbaccalaureate programs designed to assist college graduates with preparing a competitive application. There are also programs that offer students an opportunity to demonstrate their ability to handle a dental curriculum through a pre-enrollment experience. The following sections highlight the types of enrichment programs and key components that make each a success.

Summer Enrichment Programs

Summer enrichment programs have a successful history of enrolling URM undergraduate students who are interested in health professions schools. Programs tend to range from two to twelve weeks in length, and coursework may be a half- or full-day commitment. Medical schools were the first to establish summer enrichment programs.¹² Dental schools adopted similar models in the 1980s and 1990s. Dental

schools also discovered that many URM students lacked exposure to the profession and the rigorous nature of the curriculum.

The largest coalition of dental school summer enrichment programs is the Summer Medical and Dental Education Program (SMDEP) funded by the Robert Wood Johnson Foundation (RWJF) at twelve sites nationwide. The SMDEP is a free six-week residential program for first- and second-year college students interested in medicine and dentistry.¹³ The following criteria must be met for a student to qualify for the SMDEP: college freshman or sophomore; U.S. citizen or permanent resident; and a minimum overall 3.0 grade point average (GPA), with a 2.75 GPA in the sciences, or equivalent academic credentials.

Other factors that some programs consider include a combined verbal and math SAT score of at least 950 or ACT score of at least 20; identification with a group that is racially/ethnically underrepresented in medicine or dentistry; coming from an economically or educationally disadvantaged background; and a demonstrated interest in issues affecting underserved populations. In addition, a program may prefer students who are local or regional residents, who submit a compelling personal statement, and who have strong letters of recommendation.

Components of most summer enrichment programs include the following:

Science academic enrichment: basic science courses to strengthen academic preparation for dental and medical school.

Medical and dental career development: admissions application preparation, personal statement writing, presentation techniques, and introduction to areas of advanced medical and dental care.

Learning skills orientation: activities to raise student's awareness of his or her strengths and weaknesses in personal learning style and study habits.

Clinical experiences: rotations through medical and dental clinical settings to observe provider-patient interaction and to learn about the health care setting.

Financial planning orientation: activities to raise student's awareness about personal finance, student loans, and financial planning for a health professions education.

Strategies that have proven successful in the SMDEP model are integrating the summer experiences of college students interested in both medicine and dentistry; ensuring that dental school faculty are enlisted to teach in the program to become familiar with the students; providing peer mentoring by enrolled dental students; and tracking students by contacting them during the academic year following SMDEP participation.

SMDEPs are funded by a \$300,000/year grant from the RWJF. Each program must also provide matching funds in the same amount, for a total program cost of \$7,500 per student each year.

A unique and cost-cutting strategy for summer enrichment programs is to collaborate with other dental schools in the region or state that host a summer program targeting a specific population of students (e.g., URM, low-income). This type of program typically resembles the SMDEP but is briefer (two to eight weeks) and often funded with institutional or grant funds. It consists of a DAT review/preparation, basic science classes, an overview of the dental admissions process, mentoring activities, and classes on learning

strategies. The cost for operating these summer enrichment programs ranges from \$2,800 per student (nonresidential) to \$5,500 (residential). Finally, summer enrichment programs are generally housed in and report to the dean of student/diversity affairs. Program directors also play a valuable role in the admissions process and many serve as a member of the admissions committee.

Postbaccalaureate Programs

Postbaccalaureate programs were initially established to assist students from culturally diverse and disadvantaged backgrounds in gaining acceptance into medical school within one year after completion of the program. Dental schools adopted a similar model and created programs in the late 1990s.¹⁴ The premise of most dental postbaccalaureate programs is 1) to improve access for underserved populations to dental services through the admission of students with an expressed and demonstrated interest in caring for the underserved and 2) to increase diversity in the dental school student population by assisting a group of educationally and/or economically disadvantaged students in gaining admission to dental school. Postbaccalaureate programs have proven to be a very successful short-term strategy for preparing and assisting disadvantaged students—particularly those from underrepresented backgrounds—for gaining acceptance to dental school.¹⁵ They also appear to be a very effective intervention for increasing the number of successful applicants for dental school admission.

The objectives of most programs are fourfold: assist students with becoming more competitive for admission to dental school; assist students with the application process; advance students' professional growth and knowledge in the delivery of oral health care to underserved communities; and prepare students for the academic climate and the challenge of the dental school curriculum. Emphasis is placed on strengthening the students' chances of gaining acceptance to dental school by addressing learning strategies and study skills, improving DAT performance, assisting with the application process, enrolling in challenging upper-division science courses, and providing in-depth exposure to and enhancing knowledge about the dental profession.

Many programs require applicants to have completed and received their undergraduate degree from an accredited college or university. Most have other criteria for admission such as the following:

- Overall GPA of 2.6 and a science GPA of 2.4 on a 4.0 scale.

- DAT scores of 14 or lower (Perceptual Ability Test and Academic Average).

- A demonstrated interest and desire to work with underserved communities or in communities with limited access to dental health care.

- Documented evidence of being academically or economically disadvantaged or a member of a group that has historically been underrepresented in the dental profession.

A “disadvantaged” applicant is defined as a person who comes from an environment that has inhibited the individual from obtaining the knowledge, skill, and ability to enroll in and graduate from a health professions school or a person who comes from a family with annual income below a level based on low-income thresholds according to family size, as published by the U.S. Census Bureau in the Federal Register and adjusted annually for changes in the Consumer Price Index.

Each applicant usually submits a concise statement detailing his or her present academic status, personal or educational hardships overcome, rationale for consideration of disadvantaged status, anticipated benefits from the program, and plans for the location and type of dental practice in the future. The applicant also submits a recent copy of his or her American Dental Education Association Associated American Dental Schools Application Services (ADEA AADSAS) application, three letters of recommendation, college transcripts, a copy of a denial letter from a dental school, and, if available, a copy of an invitation letter for a dental school interview. Some postbaccalaureate programs admit students who were not denied admission to dental school; however, students are admitted based upon a strong desire to work in underserved communities. The selection and application process usually has no fees. The criteria of economic or educational disadvantage and willingness to serve in dental shortage areas are heavily weighted in the final selection process. Each applicant's personal statement, letters of recommendation, and interview are used to document these subjective factors.

The program is usually offered in six components. In the summer and fall are usually DAT preparation, learning skill workshops, seminars, application support, and clerkships. The academic program (six to thirteen units of science courses) starts in the fall and continues until summer. The program requires a year of full-time participation. The following is a brief description of each component:

DAT preparation: The primary program activities for the first two months during the summer component are tutoring and practice sessions in preparation for the DAT. It is best to contract with a test preparation agency that prepares a course to fit the summer curriculum. The program staff and student tutors also supplement the formal DAT review course to provide more in-depth instruction. Students must take the DAT within two weeks of concluding the summer component.

Learning skills training: The learning skills components consist of an initial assessment, study skills workshops, and individual consultations with students. Individual assessments are completed during the first two weeks of the program. Each student takes a mock DAT, completes a questionnaire about learning styles, writes an in-class essay, takes a timed silent-reading comprehension test, and indicates his or her preference for study skill workshop topics. The results of the assessment are analyzed by a learning skill specialist and integrated with other academic information. The learning skills specialist and program director then meet with each student to discuss the assessment results, identify learning strengths and weaknesses, and plan specific study skills support. The study skill workshops are based on student needs, preference, and program demands. Individual consultations are also held to provide assistance with students' personalized study skills.

Seminar series: Seminars during the summer focus on topics such as financial aid, diversity training, application assistance, and team building. These help students prepare for the academic year. It is best to align the series with a center that addresses disparities in health care. These centers usually host researchers and public health dentists who engage in disparities research. The experience provides students with an opportunity to interact with senior researchers, become more familiar with the needs and concerns of disadvantaged communities, and, hopefully, have their desire to practice in an underserved community reinforced.

Application support: Postbaccalaureate students participate in a three-hour workshop on preparing a personal statement. Each student makes several revisions to his or her statement and reviews each draft with program staff. The program staff also provides guidance for each student in selecting dental

schools based on matching the academic profile with the likelihood of obtaining an interview and eventual admission at a particular school.

Clerkships: Each student is assigned a faculty mentor who oversees and supervises a clinical clerkship. Students are required to meet regularly with their mentors and to participate in clinical activities at least three days per week for at least two hours each day. Participants should receive infection control and HIPAA training prior to entering the clinics.

Academic coursework: All students are enrolled at a nearby undergraduate campus in fall and spring semesters in upper-division science courses such as anatomy, physiology, microbiology, neuroscience, pharmacology, and cell biology. Occasionally, a student who received a grade less than a C- prior to entering the program is advised to repeat a prerequisite course, often chemistry or inorganic chemistry. Students are expected to excel in each course and earn no grade lower than B. The academic coursework is personalized for the spring semester based on each student's transcripts, needs, and interests.

The cost of operating postbaccalaureate programs can range from \$9,500 to \$15,000 per student. The majority (approximately 74 percent) of the expenses are attributable to summer housing and student stipends. The remaining expenses include consultants for the learning skills component, test preparation services, student worker support, and assistance with the application process. The cost of operating a program can be lessened greatly by reducing or eliminating the student stipend and identifying housing that is low-cost and reasonable. It should be noted that students cover the cost of the academic year component with undergraduate financial aid. This could be in the form of student loans and grants if they meet eligibility guidelines of the matriculating institutions.

Pre-Enrollment Programs

Pre-enrollment programs have been in existence since the late 1970s. Howard University and Meharry Medical College were early pioneers. Later, dental schools at the University of California, San Francisco, Marquette University, and Creighton University started programs designed to admit URM and low-income students to diversify their entering classes. The basic premise behind pre-enrollment programs is to provisionally admit students into dental school with the condition that they complete a series of classes during a six-week summer session. Most programs provide a small stipend and require that students live on campus.

Pre-enrollment programs generally have a maximum of ten students each year. Student selection is completely holistic in approach, taking into account a student's background and ability to overcome social or economic barriers. Students selected for most programs must meet underrepresented or disadvantaged criteria, which include race and ethnicity, disabilities, or economic hardship.

The specific objectives of the program are to facilitate the transition of disadvantaged and underrepresented students from an undergraduate program of study to the more substantial demands of the dental curriculum; to provide opportunities for early exposure to didactic portions of biomedical and clinical sciences, preclinical lab sciences, and clinical observation; and to inculcate participants with appropriate study skills and strategies—all with the goal of increased retention rates and graduation from dental school.

The program is generally administered through a series of classes and counseling sessions. The classes are designed to assess students' abilities to handle a dental school curriculum. Upon successful completion of the classes, students are given full admittance to the entering class without any conditions. The three primary classes that most programs offer are anatomy or general histology, biochemistry, and dental sciences. These classes are usually part of the first-year dental school curriculum and present the greatest challenges to most dental students. Students attend classes from three to five hours each day and are given daily assignments. Examinations and quizzes are administered on a weekly basis and used as diagnostic and self-assessment teaching tools. Students meet with tutors at least two hours each day to review class material and receive academic assistance if necessary.

In addition, participants are enrolled in a series of support seminars designed to develop confidence and the necessary coping skills to succeed in dental school. Topics range from managing test anxiety to effective note-taking. Each seminar is taught one day each week for two hours. Weekly meetings are also held with the program director to provide an update and assessment of the student's progress. The meetings are designed to instill confidence and motivation.

The cost of operating a pre-enrollment program ranges from \$8,000 to \$11,300 per student. A large portion of the expenses are for instructional cost, housing, and a small stipend for each student. The housing and stipend are important because the students are required to participate fully and not take on other part-time work during the program. Many pre-enrollment programs are financed with grant funds. There are a few that use grants and institutional funding.

Successful Enrichment Programs in Dental Education

There are many successful enrichment programs in dental schools across the nation. Some have operated over a sustained period of time and have been very successful in recruiting and enrolling URM students in U.S. dental schools. This section describes programs at the University of North Carolina at Chapel Hill School of Dentistry, Baylor College of Dentistry, Marquette University School of Dentistry, Columbia University College of Dental Medicine, and Creighton University School of Dentistry. The first two of these are public dental schools, and the other three are private dental schools.

University of North Carolina at Chapel Hill

The Schools of Medicine and Dentistry at the University of North Carolina at Chapel Hill (UNC-CH) sponsor a medical education development (MED) program together. Their nine-week intensive summer program was established in 1974 and designed to increase opportunities in the health professions for individuals who demonstrate educational promise and commitment to a health career but who have lacked the opportunity to move towards their professional goal. In addition to being supported by the Schools of Medicine and Dentistry, the MED program receives support from the federal Health Careers Opportunity Program and the state of North Carolina. North Carolina residents receive preference for admission and typically constitute 80 to 85 percent of participants.

The program usually enrolls sixty-five to eighty students each summer. Selection is based on factors such as educational promise, a strong commitment to a health career, and a lack of past educational, social, and economic opportunities that placed the student at a disadvantage in seeking admission and

successfully entering medical or dental school. Applicants must have completed at least three years of college coursework, passed organic chemistry I and II, and possess a strong background in biological and physical sciences. The student's application to the program must contain an essay, financial aid application, transcripts from all institutions attended, and two letters of recommendation. An interview is recommended but not required.

The MED program provides demanding academic preparation on the level of beginning medical/dental studies for rising college seniors and postgraduates planning to apply to medical or dental school in the fall. Students are engaged in over 215 scheduled class and lab hours in gross anatomy, microbiology and immunology, biochemistry, histology, dental theory and technique (for the predental students), MCAT/DAT preparation, clinical shadowing, and an annual health professions recruitment seminar. Students also receive individualized work in learning, study, and test-taking skills, preprofessional counseling, seminars, workshops, and orientation to the medical and dental school environment. Participants receive a grade in each course and a certificate upon completion of the program. A program evaluation is issued to graduates and is favorably recognized by dental and medical school admissions committees nationwide.

The UNC-CH Schools of Medicine and Dentistry cover all instructional costs (tuition, textbooks, etc.) for all participants. A stipend is awarded to qualifying applicants who demonstrate financial need. UNC-CH medical faculty members conduct all basic science courses; dental faculty members conduct the dental courses. Current UNC-CH medical and dental students serve as teaching assistants and counselors. Since 1974, over 2,288 students have attended the MED summer program, and 88 percent have applied to health professions schools. Ninety percent of those gained admission, with 80 percent matriculating into medical or dental school and the remainder entering other health professions schools. Of the 330 (14.4 percent) students who expressed interest in dentistry, 236 (71.5 percent) applied and were accepted to dental school and 195 (83 percent) received dental degrees. Most (157; 80 percent) attended the UNC-CH School of Dentistry. Upon graduation, 49 percent are practicing in North Carolina, with 30 percent choosing to practice in underserved communities.

Baylor College of Dentistry

The primary objective of the postbaccalaureate program at Baylor College of Dentistry is to assist students from culturally diverse and disadvantaged backgrounds in gaining acceptance into Baylor College of Dentistry after successful completion of the program. This is achieved by enrolling the students in a rigorous year-long curriculum that focuses on DAT preparation and successful completion of upper-division science courses. Students enhance their test-taking skills and develop more effective learning strategies by participating in specially designed seminars and workshops. Students also observe and participate in college and community dental clinics.

Applicants must meet the following criteria to be eligible for the program: completion of a baccalaureate degree from an accredited college or university in the United States; Texas residency; GPA of 2.5 (overall) or higher; history of overcoming adverse circumstances and/or being considered academically or economically disadvantaged; demonstrated desire to work with underserved populations or in communities with limited access to dental health care; and have applied for admission to Baylor College of Dentistry. The program selection committee is comprised of the program director, the executive director of recruitment and admissions, and other appropriate faculty. The committee reviews all applications and

selects students to interview and admit. A maximum of sixteen participants are selected each year. Participants who successfully complete the postbaccalaureate program are admitted to Baylor College of Dentistry.

There are two summer components to the program. The first consists of intense DAT preparation including tutoring, review sessions, and taking of mock DATs. The second component offers courses in preclinical dentistry, introduction to the human body, and learning strategies. The curriculum is designed to enhance academic success during the first year of dental school. All courses offered during the summer sessions must be completed to the satisfaction of faculty.

The academic year component consists of thirty hours of courses to enhance the students' science background and to improve their communication and other social skills. These courses include a minimum of four upper-division biology courses per semester. Each participant is advised of the proper courses to enroll in during the academic year. The curriculum is designed specifically to magnify the strengths of the student's academic profile as well as focus on the real and perceived weaknesses in his or her preparatory background. The student must maintain a GPA of 3.25 or higher in all program courses.

Each program participant receives a small stipend to help cover program-related costs. It does not cover all costs, and it is the responsibility of participants to secure additional funds (personal or loans) for the academic year and the next summer session. Estimated school-related expenses (tuition, fees, books, etc.) and living expenses for the fall and spring semesters at Baylor College of Dentistry are approximately \$20,000.

Since its inception in 2002, Baylor's postbaccalaureate program has placed 86 percent of its participants in dental school.

Marquette University School of Dentistry

For over twenty-five years, Marquette University School of Dentistry has operated a pre-enrollment program, which is primarily funded by a Health Careers Opportunity Program grant. The grant allows the dental school to actively and substantively address the challenges of responding to the critical need for increased enrollments of underrepresented students in dentistry and assisting them with gaining access to a professional school education. Marquette's Pre-Enrollment Support Program (PESP) is open to a maximum of ten students each year. Student selection is completely holistic in approach. Students must meet criteria related to race and ethnicity, disabilities, or economic hardship, but need not be a resident of Wisconsin.

The PESP is a six-week residential experience. Participants are provided course instruction in biochemistry, general histology, clinical dental sciences, dental lab sciences, clinical observation, and study skills enhancement. The objectives of the program are threefold:

- To facilitate the transition of qualified underrepresented students from an undergraduate program of study to the more substantial demands of the dental curriculum.

- To provide opportunities for early exposure to didactic portions of biomedical and clinical sciences, preclinical lab sciences, and clinical observation.

To inculcate participants with appropriate study skills and strategies, with the goal of increased student retention rates and graduation of underrepresented students from the dental school.

Successful completion of the six-week summer program leads to an offer of admission to the fall dental school term. Since 2000, forty-five women and forty-two men have participated in Marquette's PESP. Forty-two (48 percent) are Hispanic; twenty (23 percent) are African American; and ten (12 percent) are Native American. Only four of the students did not complete the program. The program has had a remarkable track record of success and has enrolled approximately 95 percent of its participants in dental school.

Columbia University

Each year since 2004, the Columbia University Summer Medical and Dental Education Program (SMDEP) has enrolled eighty freshman, sophomore, and community college students in its intensive academic summer program. The aim is to assist the students with training that will increase their likelihood of seeking and gaining admission to medical or dental school. The program seeks students, called "scholars," from disadvantaged, low-income backgrounds or from groups that have been historically underrepresented in medicine and dentistry. Participants must be U.S. citizens or permanent residents; have an overall GPA of 3.0, with 2.75 in the sciences; and have a combined SAT score of at least 950 or ACT score of at least 20. Sixty of the scholars have been selected from a pool of applicants who identified themselves as having an interest in medicine, and twenty have been selected from those identifying themselves as pre-dental students. Columbia University's College of Physicians & Surgeons and College of Dental Medicine share responsibility and leadership for the program.

Columbia College's undergraduate program of biological sciences assists with the development and teaching of the basic science curriculum. The integration of students interested in both medicine and dentistry is one of the strengths of the SMDEP. The cross-fertilization of knowledge and shared experiences contributes to scholars who previously had little understanding of the dental profession. Some switch their interest from applying to medical school to applying to dental school.

Courses offered in Columbia's SMDEP include clinical anatomy, histology, narrative medicine, general chemistry, organic chemistry, physics, biology, accelerated learning skills (ALS), and career development and information resources (CDIR). Scholars are assigned two basic science courses based on a thorough review of their academic record. Scholars are also given pretests to determine the appropriate class assignment. All scholars take ALS, CDIR, narrative medicine, and histology. Each course is taught by faculty and senior graduate students from the Columbia University Departments of Biology, Chemistry, Mathematics, and Physics or related departments. Lectures are supplemented with small study groups that focus on problem-based learning. Scholars who need extra help meet one-on-one with the teaching assistants.

A series of seminars and complementary laboratory experiences are held for the scholars. The goal is to introduce them to medical writing, oral presentations, and current topics in health. Seminars also give scholars the keys to navigating medical and dental schools' admissions process, including completing the application, interviewing skills, and writing a strong and compelling personal statement.

Scholars spend three to five hours each week for five weeks in settings designed to give them experience in a variety of clinical activities in medicine and dentistry. The goal of the clinical experience is to have the scholars view several aspects of medicine and dentistry, including the broad scope of medicine and dentistry as it is practiced in the United States; the organizational requirements and challenges involved in providing medical/dental care; the direct delivery of health care in various settings; and the medical/dental students, residents, and faculty caring for patients while teaching and learning

As the participants get to experience and explore possible careers in medicine and dentistry, they also engage in weekly activities designed to expose them to many of the cultural and social venues of New York City. Participants visit museums and landmarks and take part in cruise/bus tours.

The program evaluation generates data that are used for quality assurance and improvement processes. Program outcomes since 2004 show that, of the 115 participants who expressed an interest in dentistry, fifty-four (47.0 percent) are currently eligible and have applied to dental school, and forty-seven (87.0 percent) have been accepted and matriculated, thirteen (27.6 percent) of them to the Columbia University College of Dental Medicine.

Creighton University

Creighton University School of Dentistry sponsors a summer enrichment program for Native American students interested in a career in dentistry. Creighton is part of a collaborative, the Jesuit Dental School Recruitment Collaborative for Native American Students, that works to address oral health disparities in the Native American population. Along with their educational partners—Gonzaga University and Marquette University School of Dentistry—Creighton has developed a pipeline effort to address this issue.

The program enrolls six students for a four-week residential program at the Creighton University School of Dentistry. The target audience is undergraduate freshmen and sophomores. The program is designed to expose students to the profession of dentistry; provide exposure and have students participate in clinics, labs, and classes in a dental school environment; prepare students for admission to dental school; and teach students about the various financial aid programs available to finance a dental education. Selection is based on factors such as tribal enrollment with strong cultural and tribal affiliation, academic promise, personal statement, and documentation of health vaccinations. There is a telephone interview prior to admission to help assess the strength of the student's tribal affiliation and commitment to participating in the program.

The program offers participants an exploratory and challenging curriculum over a four-week period and includes classes and labs in basic sciences, dental sciences, dental clinic assisting and observation, and research. The students take tours of community health centers, learn about computers in dentistry, and have a mock interview for dental school admission. Classes are taught by Creighton's dental school faculty from the Departments of Oral Biology, General Dentistry, Endodontics, Pediatric Dentistry, Orthodontics, Community and Preventive Dentistry, and Research. Students are required to complete a research paper by the end of the program focusing on dental diseases or issues related to Native American populations.

The total cost of the program is approximately \$16,000, which covers all instructional cost, housing, transportation to the training site, and a meal allowance. Creighton School of Dentistry covers the cost of the program along with a grant from the Robert Wood Johnson Foundation.

Summary and Conclusion

Underrepresented minority students continue to be underrepresented in dental schools. However, academic enrichment programs have been an effective tool in addressing this issue. Academic enrichment programs have a long history of preparing URM and low-income students for health professions schools, particularly dentistry. In addition to being crucial for diversifying the dental student population, they have been instrumental in diversifying the profession. Summer enrichment programs have been very effective in introducing URM students to the field of dentistry and preparing them for the admissions process. They have also been successful in expanding the pool of competitive URM students.

Postbaccalaureate programs have also been an effective intervention for increasing the number of URM and disadvantaged dental school matriculants. These programs provide an opportunity for capable students to spend an additional year or more taking science courses in a structured environment and an opportunity to develop other attributes that a successful applicant must possess. Most programs offer students admission to dental school upon successful completion. Postbaccalaureate programs have also been useful in developing a pool of candidates who were not previously science or pre-dental majors.

Six- to eight-week pre-enrollment summer programs, which have been in existence since the early 1980s, give students an opportunity to demonstrate their academic abilities. Upon successful completion of the summer program, students are granted admission for the fall term. Pre-enrollment programs have been very successful in enrolling significant numbers of URM students into dental schools.

Public policy and court decisions have had some impact on enrichment programs. Programs have been forced to review their selection process and broaden their criteria for admission. Many programs have redesigned their admission and selection processes to withstand court challenges. They became more inclusive of students from low-income and disadvantaged backgrounds. This has led to greater diversity among participants and increased the number of students who are interested in treating underserved populations once they complete dental school. Programs that have strong institutional commitment and support of the dean's office tend to be the most effective.⁴

Academic enrichment programs can be essential to efforts to recruit and enroll underrepresented minority students. They offer another means to address oral health care disparities by expanding and diversifying the dental workforce. The passage of federal health care reform legislation in 2010 will increase the demand for primary care and oral health services. It is imperative for dental schools to devise new ways to increase and diversify the dental applicant pool to meet the future oral health needs of the nation. Enrichment programs are proven methods to address this concern and will assist schools with meeting the nation's demand for an increased oral health workforce. This will be important for not only underserved and underrepresented communities but for the overall health of the nation. Dental schools must consider creating more programs or partnering with existing programs to address this important issue.

Acknowledgments

The authors would like to express their thanks to Dr. Ernestine Lacy and Baylor College of Dentistry; Mr. Brian Trecek and Marquette University School of Dentistry; Dr. Dave Brunson, former Assistant Dean for

Predoctoral Education, University of North Carolina at Chapel Hill School of Dentistry; Mr. Larry Keith, Assistant Dean of Admissions, University of North Carolina School of Medicine; Dr. Hilda Hutcherson, Associate Dean for Diversity, Columbia University College of Physicians & Surgeons; Dr. Shana Lassiter, Associate Director for Diversity and Multicultural Affairs, Columbia University College of Dental Medicine; Dr. Kelly Gould, Creighton University; the National Program Office for the Summer Medical and Dental Education Program, under the administration of the Association of American Medical Colleges and the American Dental Education Association; the W.K. Kellogg Foundation; The California Endowment; and the Robert Wood Johnson Foundation.

REFERENCES



- 1 Testoff A., Aronoff R. The Health Careers Opportunity Program: one influence on increasing the number of minority students in schools of health professions. *Public Health Rep* 1983; **98**: 284– 92.
[CAS](#) | [PubMed](#) | [Web of Science®](#) | [Google Scholar](#) | [Columbia e-Link >>](#)

- 2 Strelnic A.H., Taylor V.S., Williams B., Lee-Rey E, Herbert-Carter J, Fry-Johnson YW, et al. Struggle for survival among leading diversity programs. *Mt Sinai J Med* 2008; **75**: 504– 16.
[Google Scholar](#) | [Columbia e-Link >>](#)

- 3 Simpson C.E., Aronoff R. Factors affecting the supply of minority physicians in 2000. *Public Health Rep* 1988; **103**: 178– 84.
[PubMed](#) | [Web of Science®](#) | [Google Scholar](#) | [Columbia e-Link >>](#)

- 4 Gravely T., McCann A., Brooks E., Harman W., Schneider-man E. Enrichment and recruitment programs at dental schools: impact on enrollment of underrepresented minority students. *J Dent Educ* 2004; **68** (5): 542– 52.
[Wiley Online Library](#) | [Google Scholar](#) | [Columbia e-Link >>](#)

- 5 Leviton L.C. Foreward to Evaluating the dental pipeline program: recruiting minorities and promoting community-based dental education. *J Dent Educ* 2009; **73** (2 Suppl): S5– S7.
[Google Scholar](#) | [Columbia e-Link >>](#)

- 6 Sekiguchi E., Glassman P., Lidner C., Marcus M., Ponce J. Pipeline, profession, and practice: community-based dental education. Report to The California Endowment from the Health Policy Committee, 2004.
[Google Scholar](#) | [Columbia e-Link >>](#)

- 7 Bailit H.L., Formicola A.J., D'Abreu K.C., Bau I., Zamora G., Stavisky J.S. The dental pipeline program: the national program office perspective. *J Dent Educ* 2009; **75** (2 Suppl): S15– S22.
[Google Scholar](#) | [Columbia e-Link >>](#)

- 8 Regents of the University of California v. Bakke, 438 U.S. 265 (1978).
[Google Scholar](#) | [Columbia e-Link >>](#)

- 9 Hopwood v. Texas, 78 F.3d 932 (5th Cir. 1996) 50664.
[Google Scholar](#) | [Columbia e-Link >>](#)

10 Gratz v. Bollinger, 539 U.S. 244 (2003), (2002).

[Google Scholar](#) | [Columbia e-Link >>](#)

11 Grutter v. Bollinger, 539 U.S. 306 (2003), (2002).

[Google Scholar](#) | [Columbia e-Link >>](#)

12 Clemendor A.A., Moore O.N. A premedical summer program for disadvantaged students. *J Med Educ* 1978; **53** (8): 658- 60.

[Google Scholar](#) | [Columbia e-Link >>](#)

13 Terrell C. The Health Professions Partnership Initiative and working toward diversity in the health care workforce. *Acad Med* 2006; **81** (Suppl 6): S2- 4.

[Crossref](#) | [PubMed](#) | [Web of Science®](#) | [Google Scholar](#) | [Columbia e-Link >>](#)

14 Brody H., Alexander C.J. The UCSF postbaccalaureate reapplication program: a preliminary report. *J Dent Educ* 2000; **64** (11): 775- 84.

[Wiley Online Library](#) | [Google Scholar](#) | [Columbia e-Link >>](#)

15 Jackson E.W., McGlinn S., Monteicinos C., Smith J., McKinley J., Bardo H.R. Follow-up study of an enrichment program for students preparing for health professional schools, 1972-87. *J Med Educ* 1988; **63**: 472- 4.

[Google Scholar](#) | [Columbia e-Link >>](#)

Citing Literature



[Download PDF](#)

About Wiley Online Library

[Privacy Policy](#)

[Terms of Use](#)

[Cookies](#)

[Accessibility](#)

[Help & Support](#)

[Contact Us](#)

[DMCA & Reporting Piracy](#)

[Opportunities](#)

[Subscription Agents](#)

Advertisers & Corporate Partners

Connect with Wiley

The Wiley Network
Wiley Press Room

Copyright © 1999-2021 John Wiley & Sons, Inc. All rights reserved