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Across the nation there remains a disparity in the number of Hispanics entering the health care professions. Project Participation and Training in Health was a school-based intervention that used the Salud para su Corazon heart health initiative to deliver a culturally competent health promotion program. This study examines the program's goal to motivate Hispanic students to be interested in entering the health professions.

The sample included 488 Hispanic ninth graders from two inner-city Dallas high schools. Specific health professions studied were dentist, nurse, optometrist, pharmacist, physician, and podiatrist. Statistical analyses included repeated measures ANOVA, chi square, and logistic regression. Results show a significant difference health profession interest between the intervention and control participants. Students in the intervention school expressed interest in a greater number of the health professions and interest for each individual profession was higher among the intervention participants for all 6 professions studied.

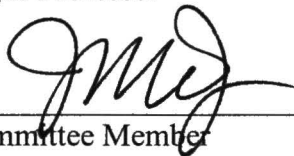
HISPANIC REPRESENTATION IN THE HEALTH CARE PROFESSIONS: A
STUDY OF NINTH GRADE INTEREST

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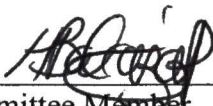
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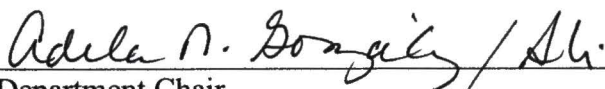
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**HISPANIC REPRESENTATION IN THE HEALTH CARE FIELD: A STUDY OF
NINTH GRADE INTEREST**

THESIS

Presented to the School of Public Health

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In Partial Fulfillment of the Requirements

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By

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CHAPTER I

INTRODUCTION

Hispanics are one of the fastest growing minority groups in the U.S. making up 12.5 percent of the total population (Health, U.S. Census Bureau, 2002). However, Hispanic enrollment in the health care professions is extremely low (Murdock, 2000). Table 1 illustrates the number of Hispanics enrolled in professional training programs to become physicians, dentists, nurses, pharmacists, podiatrists, and optometrists respectively (Health, U.S. Census Bureau, 2002).

Hispanics in Texas account for 35.3 percent of the population. However, in Texas, as well as nationally, there remains a large disparity in the rate at which minorities are entering the health professions. Table 2 shows statistics compiled by Texas state demographer Steve Murdock. Hispanics in Texas make up 7.11 percent of the total professionals in the 6 careers being studied. The face of health care in Texas is not representative of the changing face of the state.

A diverse work force within the health professions is necessary to deliver high quality care to all Americans. Providing a diverse population of health care professionals should be considered an ethical issue that affects public health and public policy. The training of a diverse population of health professionals is necessary to meet the “ethical requirements of providing health care without discrimination or bias” (Rosenau & Roemer, 2001, p. 506). As the U.S. minority population increases, so does the need for diversity within the health professions.

Increasing the proportion of minority physicians in the U.S. will help increase access to adequate and culturally competent care. A precursor to obtaining higher levels of formal education is receiving sound basic primary and secondary educations, as a result, students can then excel in completing their college education in order to be accepted into professional programs. Once admitted they must continue to do well in **their studies in order to complete their training**. To alleviate the shortage of minority health care professionals, students must be prepared with the necessary tools and encouraged to seek higher education. Programs such as Project Participation and Training in Health (PATH) aim to do just that.

The focus of this study will be on Project PATH's goal to increase the racial and ethnic representation in the health professions through its school-based health promotions program. Project PATH was conducted at an inner-city high school where a majority of the students were of Hispanic/Latino origin. The intervention consisted of 9 lessons that focused on increasing physical activity, reducing overweight and obesity and reducing cigarette-smoking among high school freshmen. Hispanic teaching assistants, who served as near-peer mentors to students, implemented these culturally appropriate lessons. They also formed a health club that was devoted to increasing students' knowledge of the career opportunities within the health care professions. This reflected one of the program's objectives and Healthy People 2010's goal to increase the number of underrepresented racial and ethnic minorities in the health profession (HP2010, 2002).

Objective

The objective of this research project will be to analyze whether Project PATH impacts Hispanic students' interests in specific health professions.

Hypothesis

This project will evaluate the hypothesis that students who received the intervention will demonstrate a greater interest in the health professions than those who did not receive the intervention.

CHAPTER II

LITERATURE REVIEW

Access to the Health Professions

Access is an issue in health care today, not only access to health care services but, as illustrated above, also access to the health professions. In 2003 the Institute of Medicine (IOM) was charged with the task of conducting a study assess the state of minority health in the United States (Smedly, Stith & Nelson, 2003). Congress asked the IOM to specifically study the potential sources of ethnic disparities in the health care system. The IOM published their findings and issued recommendations. These included the need to increase the proportion of minorities entering the health professions in the United States (Smedly, Stith & Nelson, 2003).

“An important issue in educating health professionals is the need to assure racial and ethnic diversity in both the training and practice of health professionals” (Rosenau & Roemer, 2001, p.507). There is a substantial amount of literature justifying diversity. Reasons we should educate Hispanic health professionals include: social justice, improving access to quality care for all Americans, enhancing the educational experience, promoting relevant research and important health policy issues, and strengthening the health care delivery system (Sullivan Commission [SC], 2003).

Social Justice

Social justice can be defined as the concept that “each person, regardless of race or ethnicity, or other factors such as gender, sexual orientation, or class, should be afforded the same benefits of society and opportunities for advancement” (SC, 2003, p.27). Social justice as it refers to disparities in the health professions can be seen as an issue that causes a domino effect. A shortage of minorities in the health professions reflects an unequal access to educational opportunities for minorities. Due to the lack of minorities entering training programs, there is an unequal access to professionals and economic opportunities (SC, 2003). This also creates a less culturally competent workforce which translates into less culturally competent health care for Americans.

When exploring the reasons for low representation of minorities in the health professions a fundamental theme is that of the “educational pipeline” (Thomson & Denek, 1999). This refers to the shortage of minority students entering the educational path necessary to enter healthcare related training programs. “Not all students face the same challenges with an equal set of resources in their pre-health professional education, resulting in uneven access to the health professions schools that often require 13 to 16 years of prior educational preparation” (Treviño, Sumya, Miranda, Martinez & Saldaña, 1993, p.552). Measures should be taken to increase the number of Hispanics being prepared for professional school at an early stage in their educational experience. This would create a larger applicant pool, thus giving these students access to career opportunities within the healthcare field and in turn providing culturally competent care to all Americans. In

recruiting minority students, medical schools health profession training programs are showing a commitment to justice and serving the community (Roach, 2001).

Access and Barriers to Quality Care

The IOM outlines the nature and scope of racial and ethnic disparities in health care in its report to congress. They state that the “high burden of disease and mortality among minorities has profound implications for all Americans, as it results in a less healthy nation and higher costs for health and rehabilitative care” (Smedly, Stith & Nelson, 2003, p. 125). This same report points to three indicators of access to health care: health insurance status, having a usual source of health care, and having a regular source of care.

The uninsured rate in the U.S. has remained at roughly 15 percent (HP 2010, 2000). Substantial disparities remain in health insurance coverage for certain populations. Racial and ethnic minorities continue to be more likely to lack health insurance than whites. In 2002 Hispanics comprised 12.5 percent of the total population, but made up 29 percent of the uninsured in America (Collins et al., 2002). Thirty-three (33) percent of Hispanic adults under the age of 65 lacked coverage in 1988 as compared to 15 percent of the national average and 16 percent of whites (HP2010, 2000). Hispanic males suffer from the highest rates of uninsured of all racial/ethnic groups (Smedly, Colburn & Evans, 2001). This creates a huge roadblock to accessing care. Lack of health insurance is an impediment to receiving preventative care and can delay care needed to treat illnesses that may become lifelong, or life threatening (Collins et al., 2002).

Hispanics are also two times as likely to lack a usual source of care and have a lower likelihood of receiving the appropriate management of and treatments for their conditions (Smedly, Colburn & Evans, 2001). They “have the lowest known access to health care in the United States evidenced by the fact that almost one in five Mexican Americans older than the age of 4 has never seen a dentist and fully one third of the Mexican American population does not see a physician in the course of a year” (Treviño et al., 1993, p.553). Low-income Hispanic children between the ages of 2-9 have a much higher percentage of untreated decay of primary teeth (Noonan & Evans, 2003). This lack of a usual source of care has serious implications in terms of preventative care. Studies show that minorities have higher hospitalization and mortality rates due to preventable health conditions (Smedly, Colburn & Evans, 2001). Hispanics’ low access to the healthcare system in general causes delays in diagnosis and treatment along with a lower probability of adhering to treatment plans.

While disparities in accessing the system can be partially attributed to the two factors mentioned above, i.e. lack of health insurance and lack of a usual source of care, other less tangible barriers exist. Cultural factors can many times serve as barriers to accessing care even when it may be available. In 2003, 1 out of every 10 American households (43%) were Spanish-speaking (SC, 2003). An increase in foreign-born Hispanic immigrants has resulted in a limited or lower English proficiency rate. Twenty five percent of the Hispanic population in the U.S. lives in a linguistically isolated household (Smedly, Stith & Nelson, 2003). This creates a barrier to receiving adequate care and adhering to treatment plans. Forty three percent of Spanish speaking Americans

reported one or more problems with communicating with their physicians (SC, 2003). This language gap makes it provider to patient communication difficult. Health care providers may miss cues in diagnosis and compromise informed consent. The language barrier makes patient education and adherence to treatment more difficult (SC, 2003). Increasing the number of Hispanic professionals would alleviate this problem by creating a greater accessibility to culturally and linguistically appropriate care.

Increasing the number of minority representation in the field has shown to have positive affects on both access and quality of care. Minorities have less access to primary and preventative care (Smedly, Stith & Nelson, 2003). This results in inadequate care. For example, chronic conditions such as diabetes, when left undiagnosed or mismanaged, can be exacerbated and leads to avoidable, higher subsequent health care costs (Smedly, Stith & Nelson, 2003). Due to their low access to primary and preventative care racial and ethnic minorities disproportionately receive medical care in a hospital emergency setting (Smedly, Stith & Nelson, 2003). Increasing access would allow underserved populations broader access to preventative services, thus alleviating the burden on hospital emergency rooms and cutting overall healthcare costs (Smedly, Stith & Nelson, 2003).

It is important that communities be served by professionals that reflect the ethnic diversity of the population to ensure adequate access and culturally competent care for all Americans. Investing in producing a larger number of minority health professionals will help alleviate the burden faced by underserved populations. "Because many racial and ethnic minority communities have a shortage of physicians, increasing the numbers of

health professionals- and in particular, providers who are themselves racial and ethnic minorities- to serve in these communities has been proposed as one means of addressing the excess burden of illness among minorities” (Smedly, Colburn & Evans, 2001, p. 9). Thus increasing the number of minority health professionals is a viable remedy to unequal access.

Studies suggest that an interest in serving minority or underserved communities is present in minority students from early on in their training. A 2002 survey of dental students found that minority students expressed higher interest in serving underserved communities. Seniors were asked what communities they planned on serving after graduation. The study found that approximately 69 percent of African American students and 45 percent of Hispanic students planned to provide dental care to underserved populations as compared to 20 percent of white students (SC, 2003).

This trend is also evidenced in the number of practicing health providers. Many studies show that minority practitioners are significantly more likely to practice in minority and medically underserved communities than their Caucasian counterparts (SC, 2003). Racial and ethnic minorities are 4 times more likely to be treated by minority physicians (Smedly, Stith & Nelson, 2003). On average Hispanic physicians’ practices are made up of 55 percent Hispanic patients as compared with 20 percent among non-Hispanic physicians, yet they make up only 6 percent of the physician workforce (Smedly, Stith & Nelson, 2003). This trend can also be seen in other arenas of the health field. “Health Professions Career Opportunity Program in California found that among minority students who graduated from California Dental School between 1969 and 1975,

85 percent were serving patient loads that were more than 50 percent minority and more than one-third had greater than 90 percent minority patient loads” (Treviño et al., 1993, p. 553). Also, there is evidence that minority physicians tend to serve a higher percentage of vulnerable populations. It was found that they often have a higher percentage of patients who are low income, have worse health status and who are more likely to be covered by Medicaid (Smedly, Colburn & Evans, 2001). Medicaid recipients were 2.62 times more likely to receive care from a minority physician (Smedly, Colburn & Evans, 2001). It therefore seems reasonable to invest in training minority health professionals. The same amount of resources that are spent on a non-minority student that can be spent to train an underrepresented minority physician who has a very high likelihood of practicing in an underserved area where his/her services are needed (Treviño et al., 1993). In its findings the Sullivan Commission (2003) stated that substantial improvements in healthcare access and quality could be achieved through parity in minority representation in health care professions (SC, 2003).

Enhancing the Educational Experience through Cultural Competence

Although the evidence supports increasing the number of minority health professionals because they are more likely to seek to serve minority and underserved populations, minorities should not be trained primarily to serve racial and ethnic minorities. It should also not be assumed that white physicians cannot adequately serve minority patients (Smedly, Colburn & Evans, 2001). For this reason it is important to address the concept of cultural competence. A physician’s understanding of cultural and social factors is as important as their scientific competence (Smedly, Stith & Nelson,

2003). Therefore including an element of cultural competence in health professional training programs will help ensure culturally appropriate care for their patients. "It has been widely hypothesized that culturally and linguistically competent care will result in better clinician-patient communication, and better communication will facilitate more successful patient education efforts" (Smedly, Colburn & Evans, 2001, p. 78). Increasing the cultural competence of health professionals has the potential to positively affect barriers to both access to care and to the receipt of appropriate treatments (Smedly, Colburn & Evans, 2001). Evidence of this is that many major corporations such as Aetna, Johnson and Johnson and other Fortune 500 companies are making efforts to diversify and provide cultural competency training for their employees. The hope is that in doing this they will improve the medical treatment of minorities thereby minimizing the high costs associated with inadequate care (SC, 2003).

The diversity of students and faculty helps to ensure that students are prepared to care for an increasingly diverse nation (Smedly, Stith & Nelson, 2003). A diverse student body enables students to share their own cultural experiences and creates an atmosphere of cultural sensitivity (Whilta et al., 2003). Increasing diversity in training programs will allow students to gain firsthand insight on how different cultures perceive situations. It will allow them to better understand and cope with the cultural barriers that they may encounter in their practices. Therefore, increasing the proportion of minorities in health profession training programs will serve as a method to "integrate cross-cultural education into the training of all current and future health professionals" (Centers for Medicare Advocacy, 2004).

Research, Policy and the Health Care Delivery System

Creating a more diverse and culturally aware healthcare workforce would serve to strengthen the health care delivery system as a whole. Cultural competence on a system level manifests itself in terms of designing, developing, maintaining, and evaluating policies, programs, and processes that directly or indirectly serve racial and ethnic minority groups (SC, 2003). “Such policies, programs, and processes include the education and training of health professionals; community needs assessments; programs for community and patient feedback on systems access and quality; systems for data collection of patient race; ethnicity, and language; policies and procedures for measuring health care access, delivery and quality; and processes for ensuring culturally and linguistically appropriate services, health education materials, and health promotion and disease prevention programs” (SC, 2003, p. 17). Thus, insurers, policy makers and administrators also have a vested interest in diversifying the health professions. If policy makers include minorities it can be reasonably assumed that they will strive to implement policies that will benefit and address the needs of all stakeholders, especially those of underserved racial and ethnic minorities. In order to create a health care system that addresses the needs of our diverse population it is imperative that those who work in and administer the system be representative of those they serve (Betancourt, 2000).

The spread of improvements in cultural competence throughout the healthcare system may expand patient choice and access to a wider range of providers as well as to new innovative treatments (Smedly, Colburn & Evans, 2001). A research study conducted at Yale University reported that Blacks and Hispanics were underrepresented

in clinical trials at a statistically significant rate (Fields, 2004). Authors of the study suggested that such disparities are dangerous since the effects of the experimental treatments on populations who are underrepresented in trials are not clear (Field, 2004). Increasing minority health professionals can be a useful tool in educating and promoting minority participation in clinical trials. This will serve to ensure that the nation's research agenda includes all sectors of the population (Roach, 2001). Minority health care professionals have been more successful in recruiting minority patients to participate in clinical research studies. Ensuring that underserved minority populations are included in these studies will allow for fair and equitable access to scientific advancements. (Smedly, Colburn & Evans, 2001).

"The Pipeline"

Hispanics have not been well represented in the health professions or sciences. Though there was a period of increase in representation, due in part to affirmative action initiatives, Hispanic's in the U.S. never reached parity in the health care professions. Affirmative action programs played an active role in enhancing diversity within the health field. They were implemented not only in employment but also in education in the form of scholarships, and special admissions policies and programs for minorities. Medical educators believed that they needed to "act affirmatively" to increase diversity in their schools, these programs targeted minority college students for recruitment and academic enrichment (Brunner, 2000).

After these programs were enacted in 1969, Hispanic enrollment increased from virtually zero to 3.9 percent (Lac, 1997). Minority enrollment, defined as African

American, Native Americans, Mexican-Americans, and mainland Puerto Ricans, grew from 2 percent in 1960 to 12.3 percent in 1995 (Greene, 1998). The IOM's study "Balancing the Scales of Opportunity" reported the progress made in various professions from the early 1970s to the mid/late 1980s. During this time minority representation fared best in podiatric medicine, dentistry and allopathic medicine, while they were least represented in veterinary medicine and osteopathic medicine. Dentistry was reported as having one of the highest proportions of underrepresented minorities among all health professions, and representation in optometry was further from reaching parity than medicine or dentistry (Lewin & Rice, 1994). In spite of all the positive gains made, minorities were still far from reaching parity. In the early 1990s they made up 6.9 percent of the total workforce, yet only 5.5 percent of the nation's physicians, 3.3 percent of the nation's dentists, and 2.7 percent of the nation's natural scientists (Lewin & Rice, 1994). All minority groups remained significantly underrepresented in registered nurse programs making up only 1.6 percent of registered nurses (Yates et al., 2003).

These gains in minority enrollment were further compromised by a number of anti-affirmative action judicial and legislative decisions. In 1978 Allan Bakke sued the University of California Medical School alleging reverse discrimination. Bakke had been rejected by the university two years in a row, and alleged that less qualified minority students had been accepted (Brunner, 2000). Then on March 18, 1996 the Hopwood decision was issued. Cheryl J. Hopwood sued the University of Texas Law School for reverse discrimination on the ground that the university used special admissions procedures for admitting minority students (University of Texas v. Hopwood, 1996). The

court ruled that diversity was not a compelling state interest and that the defendants had “not presented sufficient evidence of a remedial need for that of the affirmative action proposal” (University of Texas v. Hopwood, 1996). This court ruling outlawed race-based admissions in California, Texas, Louisiana and Mississippi (University of Texas v. Hopwood, 1996).

The Texas legislature directed a coordinating board to conduct a study on the impact of the Hopwood decision in regard to education. The board found that the Hopwood decision was detrimental to the diversity of higher education. The study also showed that there was a dramatic decrease in minority participation in all Texas medical schools the year after Hopwood. Since the decision was handed down, applicant rates in affected states (California, Texas, Louisiana and Mississippi) dropped 20 percent, and 12 percent nationally since 1996 (Greene, 1998).

These events added to the challenges already faced by recruiters who were dealing with limited applicant pools. This can be defined by the concept of an “educational pipeline” and is present in a majority of the literature surrounding this issue. The “pipeline” that leads to health professional training programs begins at an early stage of the educational process. Students must receive good preparation in their undergraduate educations in order to be equipped with the skills and knowledge to go on to higher education. Preparation to enter the “pipeline” must therefore begin early in a student’s academic course. A major obstacle to minority enrollment is inadequate supply of competitive underrepresented minority students who seem to slip through the cracks (Thomson & Denek, 1999). These students “have a disadvantage in the college

admissions systems by having poorer grades, coming from poorer schools and from having fewer opportunities to succeed” (Roach, 2001, p. 273).

“Hispanics-Latinos in the United States as a group have not achieved high levels of formal education because of multiple sociocultural barriers” (Treviño et al., 1993, p. 551). Hispanics have a disproportionate high school drop out rate and receive fewer high school diplomas and college degrees than other Americans (Treviño et al., 1993). In 2000 the Hispanic drop out rate was 21 percent as compared to 10 percent for students 16-to-19 (Fry, 2003).

In the 1970s the Commission on Human Resources and Advanced Education concluded that socioeconomic status has a substantial influence on how far a student will advance academically (Odegaard, 1977). “A child of the ghetto is much more likely than the child of suburbia to drop out of school before getting his (her) high school diploma” (Odegaard, 1977, p. 80). Schools in underserved minority communities are often identified as being academically low-performing (Treviño et al., 1993). A study of Scholastic Aptitude Test (SAT) scores found that of all students who scored over 600 on the verbal section of the test, only 21 percent were minorities. Low scores suggest that minority students lag behind in their academic preparation and that their inability to compete with other applicants create serious barriers to entering the “pipeline” (Thomson & Denek, 1999).

Many Hispanic parents are functionally illiterate or have a limited English proficiency. This limits their interaction with teachers and school administrators and can therefore create difficulties in playing an active role in their children’s academic planning

(Treviño et al., 1993). Often times parents, due to their own limited formal education, are not aware of the formal education needed to pursue careers in the health professions (Treviño et al., 1993). This combined with the pressure to work in order to supplement the family income create additional barriers to entering the “pipeline” (Odegaard, 1977). For some students, teachers and school administrators are the sole source of information regarding the importance of a high school education and higher learning opportunities (Treviño et al., 1993). Often times teachers are not completely in tune with the needs of Hispanic students and may provide improper guidance. Studies show that although many children express interest in math and science in the early grades the school environment quickly “erodes that interest” (Lewin & Rice, 1994, p. 26). The “pipeline” is therefore affected by, as studies suggest, a lack of positive role models in some Hispanic communities (Treviño et al., 1993).

Best Practices

Healthy People 2010 addresses the need to create a more diversified health care workforce through objective 1-8, “in the health professions, allied and associated health professions fields and the nursing field, increase the proportion of all degrees awarded to members of underrepresented social and ethnic groups”(HP2010, 2002). With the elimination of many affirmative action initiatives, new innovative strategies must be created in order to recruit minorities. Many of these programs focus on intervening early in students academic studies in order to create a competitive applicant pool (Thomson & Denek, 1999). These programs represent a shift in paradigm from earlier interventions that created quick results but no long term solutions (Thomson & Denek, 1999). Many

programs now place greater emphasis on the educational process and hope to significantly increase the number of minorities who are academically prepared to pursue careers in the health professions (Lewin & Rice, 1994).

Many programs whose goal is to increase the number of minorities entering the “pipeline” rely heavily on community and grassroots efforts. It is important to create programs that are tailored specifically to the targeted community. Interventions that are specifically tailored to the communities they hope to impact are more likely to succeed than generic externally planned interventions (Lewin & Rice, 1994). Working with communities and schools to create a better learning atmosphere and providing positive role models are key components of successful programs. Partnerships are key in this effort. Any future progress made in diversifying the health professions will rely on collaborations and linkages between health centers and other educational entities.

“A significant component of the community initiative would be a structured grass-roots mentoring program, using the social leverage of minority and non-minority individuals who have achieved professional standing” (Lewin & Rice, 1994, p. 9). The mentor/student relationship can be a very powerful one. Mentors engage students in learning about the possibilities beyond high school and serve as guides (Lewin & Rice, 1994). Through these mentors minority adolescents witness first hand that becoming a health professional is an attainable goal. It is therefore important to provide students with supportive professional role models (Lewin & Rice, 1994). There have been increased efforts to use role models and mentors to reach out to the community and provide all stakeholders with the information needed to enter the “pipeline” (Thomson & Denek,

1999). These efforts underscore the importance of encouraging minority students to look ahead to higher education and to give them the skills and confidence need to achieve this (Lewin & Rice, 1994).

The Health Centers Opportunity Program (HCOP) was established in the 1970s and focused on preliminary education. Most of the efforts were “designed to prepare students for entry into schools of medicine, osteopathy, veterinary medicine, optometry, pharmacy, and podiatry” (Thomson & Denek, 1999, p. 305). These programs had modest results but were affected by trends in legislation and legal cases. In the early 1990s the Hispanic Centers for Excellence (COE) Program was created to attract and train more minorities for health professions schools. The goal was to provide large numbers of culturally competent physicians who would chose to practice in underserved communities. These institutions are awarded federal funds to increase Hispanic admissions to medical, dental and pharmacy schools. However there is a need to expand these initiatives to additional health disciplines such as nursing, allied health, and public health. The following are examples of other community based strategies that have been implemented.

Project 3000 by 2000: Health Professions Partnerships Initiative

Project 3000 by 2000 begun in 1996 by the Association of American Medical Colleges (AAMC) in order to address the underrepresentation of certain racial/ethnic groups in the health professions (Carline & Patterson, 2003). Project 3000 by 2000 aimed to increase the number of underrepresented minorities to 3000 by the year 2000. It included the Health Professions Partnerships Initiative (HPPI) that was funded by the

Robert Wood Johnson Foundation and the W. K. Kellogg Foundation. The By 2000, 26 HPPI grants had been awarded to medical and other health professions schools, including 5 schools of public health. These grants were designed to create a more competitive minority applicant pool by fostering equal partnerships between colleges, K-12 school systems, community based organizations and communities themselves (Carline & Patterson, 2003). A typical partnership consists of health professions schools, undergraduate colleges and public schools (Carline & Patterson, 2003).

Carline and Patterson (2003) conducted a study on 10 of the Health Professions Partnership Initiatives centers. The study included semi-structured interviews with awardees and representatives of the funding agencies, the national program office, and the national advisory committee between the fall of 2000 and the summer of 2002. They also conducted site visits with representatives of partner institutions, teachers, parents, and children. The study used qualitative methods to identify “characteristics that supported and hindered development of successful partnerships” (Carline & Patterson, 2003, p. 467). The most significant finding was that the most successful programs involved strong partnerships (Carline & Patterson, 2003).

Minority Medical Education Program

Another program that was introduced as part of the 3000 by 2000 vision was the Medical Minority Education Program (MMEP). This program, now known as the Summer Medical Education Program (SMEP), is also sponsored by the Robert Wood Johnson Foundation and offers minority college students six-week summer sessions that include both academic enrichment courses and firsthand clinical exposure (AAMC,

2004). This has been a successful program that has enrolled 900 minority students since its inception in 1989 (Cohen, 2000). Of the more than 5,500 MMEP participants who have applied to medical school, 63 percent were accepted (AAMC, 2004).

McNair Scholars Program

The McNair Research Program was established in memory of the astronaut-physicist and Challenger crew member Ronald E. McNair at the University of North Texas. (McNair, 2002). This program was created in order to allow UNT juniors and seniors to be part of the research that is conducted at the University of North Texas Health Science Center-School of Biomedical Sciences. Minority students who will be first generation college graduates are provided with faculty mentors and assist in conducting research experiments. (McNair, 2002). Programs such as this one allow minority students pursue graduate degrees in research and will help to ensure that the nation's research agenda is representative our diverse population.

Start Out

Start Out is an “innovative community partnership effort to address the need for young, culturally sensitive, and multilingual health care providers” (Yates et al., 2003). The program was developed for bilingual students between the ages of 16 and 19 who are economically disadvantaged in the Seattle area. The program was offered in the summer of 2002 and included life planning, mentorship, nursing assistant training, college preparation skills, work scholarships, and summer salary stipends (Yates et al., 2003).

As in the previous programs cited, the primary strategy of this intervention was community partnering. The concept of Start Out was developed by leaders at the Sea Mar

Community Health Centers. The Center's goal was to increase Hispanics and other immigrants access to primary health care (Yates et al., 2003). In working with this particular segment of the population, leaders realized the need for bilingual health care workers. They saw this as an opportunity to help interested Hispanics receive the training to enter the health field. This would allow them to excel professionally while at the same time providing culturally competent providers.

Sea Mar Community Health Centers in conjunction with South Seattle Community College and the University of Washington School of Nursing came together to develop a Certified Nursing Assistant training program for immigrants who are economically challenged and speak limited English (Yates et al., 2003). The program aided 150 adults find work in the health care field. Because this program had worked so well with the adult population, coordinators decided to expand to the high school population and they formally created the Start Out program. In creating this new adolescent focused program, new collaborators, City of Seattle Youth Employment Program, the University of Washington Office Of Minority Affairs, and the Northwest Electronic Chapter of the National Association of Hispanic Nurses, were brought into the partnership. The partners came together with the community and other stakeholders and created a clear mission. Six inner-city high schools were recruited to participate in Start Out (Yates et al., 2003). This was an effort to "encourage bilingual teenagers to become healthcare professionals by continuing their education beyond the high school level and giving back to their respective ethnic communities" (Yates et al., 2003, p. 121).

The programs mentioned above all include what the AAMC considers to Best Practices in the effort to increase minority participation in the health field. These all center on the principle that interventions must begin early in students education in order to prepare them for the academic competitiveness needed to enter higher education. (Association of American Medical Colleges-Health Professions Partnership Initiative [AAMC-HPPI], 2004). Also crucial to creating innovative strategies to stop the “leak” of minorities into the “pipeline” is creating successful partnerships that strengthen academic skills, self-esteem, sense of purpose, and cultural awareness (AAMC-HPPI, 2004). These programs, through their innovative strategies and strong mentorship approaches, will help lead the nation to a more diverse health care workforce (Cohen, 2000).

CHAPTER III

RESEARCH AND DESIGN METHEDODOLOGY

Research Design

This study will utilize data from the results of Project Participation and Training in Health (PATH) to assess high school students' interest in entering specific health care professions. Project PATH was a program designed to increase the quality of life of undeserved students and eliminate health disparities. It was implemented during the 2002-2003 school year at a high school in Dallas, TX. This program was funded by the Texas Higher Education Coordinating Board who has "set a statewide priority to increase the enrollment of disadvantaged youths in professional and graduate schools" (Castro et al., 1999).

Project PATH was a school-based health promotion program delivered in a low-socio-economic inner-city high school where a majority of the students were of Hispanic/Latino origin. The student body consisted of 78% Hispanics, 13% African American, 6% Asian, 3% White and <1% American Indian (GreatSchools.net, 2003). The study consisted of an intervention group, High School A, where ninth graders enrolled in Career Connections and Health Education classes. In the corresponding control group, High School B ninth graders did not receive Career Connections or health classes. In the fall semester of 2002 the program was delivered through students' Career Connections classes and in the spring through the students' health classes. Due to the

school-based nature of the intervention, the curriculum was disseminated to all intervention school students enrolled in health or Career Connections classes during the 2002-2003 academic year regardless of race or ethnicity. Career Connections was based on a life and study skills curriculum that sought to arm freshmen with the tools to succeed in high school. It was taught fall semester of the 2002. For the purpose of this study the population of interest will be self-identified Hispanic students who participated in the program.

Project PATH's goals were based on Healthy People 2010 and addressed the objectives of the top 3 Leading Health Indicators. These were to increase the amount of physical activity in which students engage, reduce the number of overweight/obese students and reduce student cigarette smoking (HP2010, 2002). Project PATH's fourth objective was to train university students in the delivery of a health promotion program. This element of the program created the framework necessary to address the last objective which was to increase the racial and ethnic representation in the health professions (Morrow & Martin, 2001). This last goal was to be achieved through the dissemination of a health promotion curriculum by near-peer mentors.

The framework of the program is in tune with the AAMC's Best Practices for increasing minority representation in the health field (AAMC-HPPI, 2004). Project PATH incorporated both elements of community partnerships and mentorship to create a "participatory empowerment approach that emphasizes cultural competence, consciousness raising, skill building, problem solving and social support" (Jackson, 2003, p. 44). Project PATH was a collaboration between the University of North Texas (UNT),

the University of North Texas Health Science Center (UNTHSC), The North Texas Salud para su Corazon Outreach Initiative (SPSC), and the Dallas Independent School District (DISD). Together their goal was to develop and disseminate a culturally appropriate healthy lifestyle behavior curriculum that would help to eliminate health disparities in underserved high school students (Morrow & Martin, 2001).

The lessons taught in the intervention were developed using materials adapted from the North Texas Salud Para su Corazon (Health for your Heart) Program, a Latino Community Cardiovascular Disease Prevention and Outreach Initiative from the National Heart, Lung, and Blood Institute (NHLBI) (Morrow & Martin, 2001). The SPSC initiative had its inception in Washington, D.C. but has expanded across the nation and joined forces with community partners such as the National Council of La Raza (National Institutes of Health [NIH], 2001). The University of North Texas Health Science Center serves as one of only 12 Cardiovascular disease Enhanced Dissemination and Utilization Centers funded by the National Institutes of Health's NHLBI. This community-based heart health education program is unique in that it trains promotoras, Hispanic lay health educators, to teach their communities how to prevent and control heart disease (NIH, 2001).

The program curriculum, Su Corazon, Su Vida, includes 9 educational lessons that address such issues as heart disease, being more physically active, hypertension, cholesterol, maintaining a healthy weight, healthy eating habits and smoking cessation. Other programmatic materials used in Project PATH included: educational videos such as De Corazon a Corazon (From Heart to Heart) - A Bilingual Group Discussion Guide;

educational videos such as mini-telenovelas; a fotonovela, *Mas Vale Prevenir que Lamentar* (An Ounce of Prevention); and cookbooks. These materials were all readily available to Project PATH through its strong partnership with the health science center and the North Texas SPSC initiative. The lessons included statistical and background information regarding subjects such as hypertension, cholesterol, nutrition and physical activity.

They also included hands-on activities that demonstrated the concept of the lesson. Although these lessons did not directly address the health professions, they did introduce the roles of health professionals in achieving good health. For example, in the lesson that focused on hypertension, students were taught that blood pressure was measured using a sphygmomanometer. They then used wrist monitors to find their blood pressures. The lessons provided a medium in which to introduce the role of health professionals in being and staying healthy.

Project PATH staff consisted of a bilingual Project Coordinator and 3 bilingual teaching assistants. They were all students of the UNT or UNTHSC. Their presence created a unique experience of near-peer mentorship. The staff had the task of modifying the SPSC modules and then implementing them through the school-based intervention. Additionally, a school-wide health club was established. Through these after-school meetings, students were able to learn more about health promotion and careers in the health professions. Also, three field trips were taken during the school year. These field trips were designed to give students exposure to institutions of higher learning and other health care facilities. They visited The UNT, UNTHSC and The Cooper Institute. While

visiting these facilities students had the opportunity to hear a variety of different speakers, some minorities, who spoke of the importance of education.

Students in the intervention and comparison group answered surveys at the beginning of the school year and then again toward the end of the school year. Specific questions from the surveys used in Project PATH were assessed. These questions were created for the purpose of addressing the program's objective to "provide Texas with the professionals to improve the health of the state's population" (Morrow & Martin, 2001, p. 1). The comparison school had similar demographics and ethnic backgrounds. Self-reported responses were obtained from approximately 488 Hispanic/Latino students between the ages of 14-16.

Analysis

A quasi-experimental study design was used to analyze the impact of Project PATH on Hispanic students' interest in entering specific health professions. Statistical analyses were conducted to measure the impact Project PATH had on Hispanic students' interest in entering the educational "pipeline" to the health professions. Data from the results of the portion of the Project PATH survey regarding interest in specific health professions was analyzed, in specific the following question:

Item 49. "I am interested in becoming a(n):

F. Dentist

K. Nurse

N. Pharmacist (Druggist)

M. Optometrist

Q. Physician (Doctor)

R. Podiatrist (Foot Doctor)

These professions were selected from a list of twenty-four professions. They were chosen based on the health professions listed in the U.S. Census' Table 105 (Census, 2002):

Total Enrollment of Minorities in Schools for Selected Health Occupation. Items 44 and 45 of the Project PATH survey, which state, "Do you plan to graduate from high school?" and "Do you plan to go to a College or University?" respectively, will be analyzed for descriptive purposes. All data will be received from Project PATH supervisors without any student identification information. Data was obtained on a disk, for the self-identified Hispanic/Latino students who answered item 49 on pre-tests and/or post-tests.

The data was analyzed inferentially to explore the research question of whether Project PATH influenced students' interests in entering the health professions. First, the total number of health professions that students had interest in (dependent variable) was determined at pre and post tests. A mixed model ANOVA (school by occasion) was used to determine if the number of interest areas changes across time (the occasion effect), between the intervention and control schools (the program effect), or the program by occasion interaction. Then, a Chi-square analyses of pre-test interest in the six professions (dentist, nurse, optometrist, pharmacist, physician, and podiatrist) based on school attended was conducted. This was done to ensure that there were no significant association between program and pre-test interest. The third analysis used post- test data to create a 2x2 contingency table for each profession studied to determine if there was an

association between interest in the specific health care profession and the school (intervention vs. comparison) in which they were enrolled. Finally, a logistic regression was performed on post-survey interest for each type of profession. The dependent variable was whether they wanted to be this type of professional (yes/no). The predictors were (a) whether they know what this profession is (Q48), (b) gender, (c) school (program) and (d) pretest interest in this profession. These provided estimates of the odds of one having interest in a particular profession based on these variables.

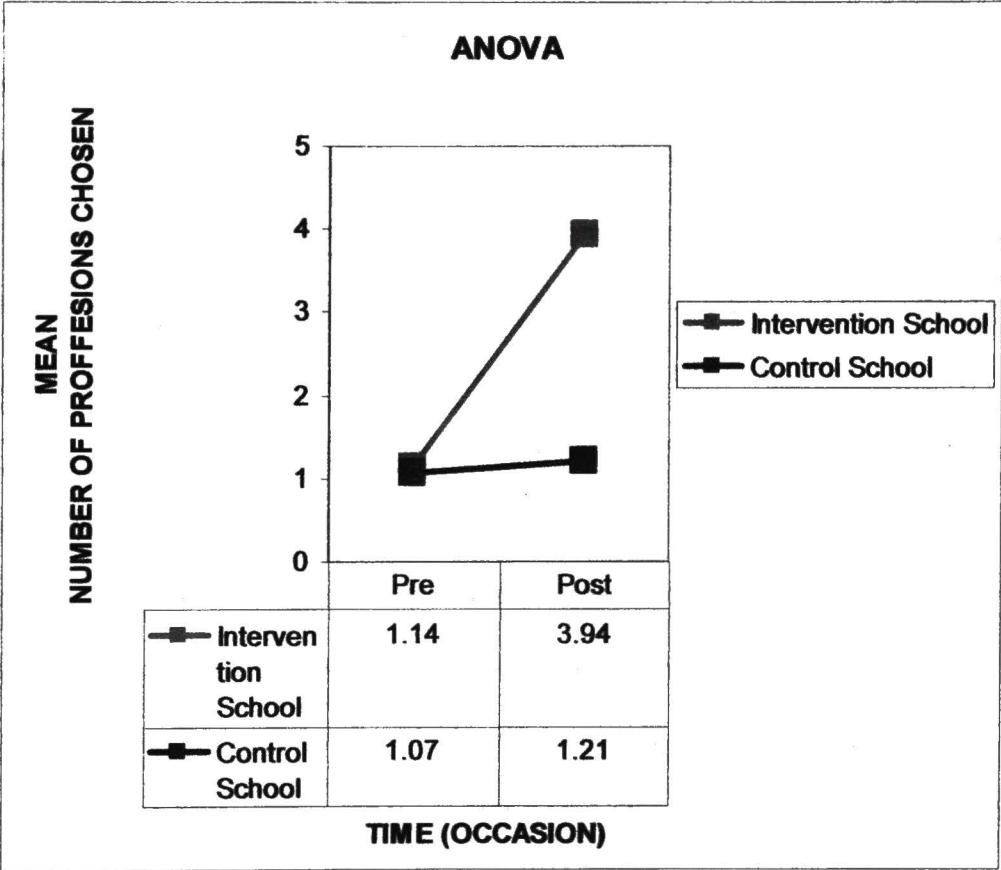
CHAPTER IV

RESULTS

The sample included 488 Hispanic ninth graders, 339 high school A students and 149 high school B students. Of the total sample, 49.7% were female and 50.3% were male. Of the students sampled the same percentage of students, 97.9%, stated they planned to graduate from high school. The percent of students who answered the question asking if they “planned to go to college” did not vary and remained at approximately 85% for both pre and post tests at both intervention and control schools.

A mixed model ANOVA was used to determine if the number of professions students were interested in changed across time (occasion effect), between schools (program effect), or the program by occasion interaction. The occasion effect analysis showed that there was a significant difference ($F=107.23$, $p<.05$) between the mean numbers of professions chosen at pre (1.12) vs. post test (3.17). The program effect analysis showed that there was a significant difference ($F=82.68$, $p<.05$) between the mean numbers of professions chosen at intervention group (2.54) vs. control group (1.14). The program by occasion interaction was also statistically significant ($F=87.99$, $p<.05$), indicating a difference between the mean number of professions of interest chosen between schools and across time. The mean number of professions of interest chosen at the intervention school during the pre-test was 1.15 and 1.07 at the control school. The mean numbers of professions of interest chosen during post test were 3.94 and 1.12 for the intervention school and the control school respectively (Figure 1).

Figure 1: ANOVA.



Note. N= 334.

Chi-square analyses of pre-interest in each of the six professions (dentist, nurse, optometrist, pharmacist, physician, and podiatrist) based on school attended were conducted. The results for all six professions were found to not be statistically significant at baseline ($p>0.05$). The odds ratio values ranged between 0.781 and 1.897 (specific values are shown in Table 3). Because all of the OR 95% confidence intervals include the null value of 1.0, the results illustrate no association between a student's inclination to say they are interested in the professions of interest and the school they attend at the baseline.

A 2x2 contingency table was created for post interest in the six professions being examined and school attended. Table 4 shows the percentages of how both groups answered the post test question that asked if they were interested in becoming a dentist, nurse, optometrist, pharmacist, physician, or podiatrist. Results showed that students attending the intervention school had more interest in becoming each of the six professions. Chi-Square analyses for each of the six professions were statistically significant ($P\leq 0.05$). Odds Ratios for post test analysis are shown in Table 3.

Multivariate Logistic Regression analyses confirmed these results. Once pre-test profession interest and post-test understanding of the specific profession were controlled the odds ratios generally occurred in the expected direction. Most notably, the odds ratios for school attended reflected that students attending the intervention school were more likely to answer that they were interested in becoming each of the six professions being studied. These multivariate results confirm the observed relations identified for each profession.

CHAPTER V

DISCUSSION

Project PATH was a successful example of an academic health center forging partnerships with other educational entities targeted to building programs to attract and support youth's interest in the health professions (Lewin & Rice, 1994). The data supports that Project PATH had a positive impact on students' attitudes towards becoming health professionals. The model of this program had many elements included in what the AAMC found to be best practices in initiatives to increase minority recruitment in the health professions. Project PATH was a health-professions partnership that recognized the need to influence students early in the "educational pipeline" (AAMC-HPPI, 2004).

The results indicate that Project PATH was successful in its goal to motivate students to enter the health professions "pipeline." The successes of the program can be attributed to its unique and innovative practices. The theoretical framework of the program combined many approaches that helped engage and motivate students. Creating strong community partnerships was key to the programs success. UNT had provided other out-reach programs and sport psychology consultations to the intervention school. This long-standing relationship with intervention school allowed for good communication and trust between partners. This ability of the stakeholders to communicate effectively was key to the success of the program. Often times the

discontinuities between higher education and the public school system can create distrust and skepticism (Carline & Patterson, 2003). The open and clear communication between the project coordinators/staff and the school administrators allowed for greater student and teachers support for the program and its goals.

In working with collaboration with UNTHSC and the SPSC initiatives program planers were able to create a very community specific culturally appropriate intervention. The use of these culturally appropriate materials enhanced Project PATH's ability to reach out to the community. Bilingual materials that were specifically targeted towards the Hispanic community allowed for increased student and parental involvement in the program. Parental support and involvement is an important concept included in AAMC's best practices (AAMC-HPPI, 2004). Previous studies point to the lack of parental guidance as a factor in students' ability to enter the "pipeline" (Treviño et al., 1993). During the program, all students were encouraged to take SPSC materials home to their parents and share what they had learned in class. As a contest, students were asked to write essays on what they had learned from Project PATH. In these essays many students expressed that, together with their families, they had used the information to make positive health behavior changes. Involving parents helped to reinforce program concepts.

Perhaps one of the most significant aspects of these was the ability of the program to connect with the community through near pear mentors. The 4 young Hispanic role models were able to become part of the school community. All of the project staff involved were college or graduate students. This provided program participants with role

models with whom they could identify with. The program staff implemented the program by being a visible force within the school. They went into classrooms and taught lessons, created a contest for participating classes and created a health club. By being a constant participant in students' classes and activities they were able to mentor students and were able to serve as positive role models. Also, the field trips taken to UNT, UNTHSC and The Cooper Institute exposed students to other role-models and experiences that encouraged them to enter the "pipeline."

Disseminating these materials in conjunction with other curricula added a third dimension to the program. In the fall semester the program was taught as part of the Career Connections class. This class was designed to prepare high school freshman for future academic success. Administrators hoped the program would improve retention and increase graduation rates. Specific objectives of Career Connections were time management, not taking strategies and motivation and goal setting. Pairing this with the health promotions aspect of Project PATH allowed students to apply life skills such as time management to health promotion objectives such as physical activity. The career-planning portion of the class helped reinforce Project PATH's goal to motivate students to pursue careers in the health field. The after school health club was also dedicated one of the AAMC's best practices, career exposure (AAMC-HPPI, 2004). Students had the opportunity to learn from health professionals what their careers entailed and what they needed to do in order to achieve the same success.

Project PATH is an important example of a school-based intervention that had positive results in increasing students' interest in the health professions. This grass-roots

effort addressed many of the barriers associated with minorities' failure to enter the 'pipeline.' By combining elements that had worked in different previous initiatives such as a health professions collaborative, near-peer mentoring and a culturally appropriate intervention, Project PATH was able to have a positive impact on students' interests in becoming health professionals.

Targeting interventions such as Project PATH earlier in the "pipeline" may also be beneficial. It is important to motivate students to excel in the sciences at an early age. Interest in the sciences will help ensure that students are receiving the needed skills in order to be competitive in higher education. Therefore it is also important to create interventions that target elementary and middle schools.

Project PATH studied six professions: dentists, nurses, optometrists, pharmacists, physicians and podiatrists. Because minorities are underrepresented in all of these professions, it is important that programs address them. Many of the interventions in place focus on increasing minorities in medicine. It is important the programs be developed that address the shortage in all health professions in order to create a culturally competent health care system that can work in conjunction to provide the highest quality of care possible.

Limitations

Because the program took place in a school-based setting the manner of delivering the curriculum varied according to teacher, teaching assistant, classroom time, acceptance, and enthusiasm. A study that assessed the HPPI programs cited many of the difficulties encountered when implementing a school-based program. Among these was

the relationship between the intervention team and the public school system. "Schools able to utilize resources from a partnership have principals who have the time, interests, and ability to consider ways to use outside resources. Successful teachers are those willing to attempt changes in teaching methods and integrate new content into course work" (Carline & Patterson, 2003, p. 474-475). Therefore faculty and staff buy in of the program was a limitation. Teachers' perspectives about implementing such projects could be affected by competing priorities such as increased stress on standard-base testing.

Project PATH was delivered through the nine-lesson, *Salud para su Corazon* curriculum. This format provided for limited formal interaction with students as only these 9 lessons were taught throughout the 2002-2003 academic year. Also, the *Salud para su Corazon* lessons did not directly focus on health care professions. They instead related mostly to teaching students about heart disease risk-factors such as cardiovascular disease, hypertension and cigarette smoking.

The health club that was established by Project PATH staff was aimed at enhancing students' knowledge and interest in the health professions. However, the pressure of being an employed student was also a limitation. Some students were burdened by the pressure to get a job in order to assist the family financially. This made it difficult for them to participate in extra curricular activities that enriched the Project PATH experience. Also, the study period of Project Path was very limited. Student's interests were followed for a year with no follow-up studies planned. Therefore the lasting and long-term impact of the program is not known.

CHAPTER VI

CONCLUSION

“Young, culturally sensitive, and multilingual health care providers are needed to serve the health care needs of an increasingly diverse population” (Yates et al., 2003, p. 117). Analyses of results infer a positive relationship between Project PATH and students’ interest in pursuing careers in health. Project PATH uses its unique and innovative strategies to help funnel students into the educational “pipeline” needed to successfully enter the health care professions.

Project PATH’s success paved the way to for the inception of Project Participation and Training in Health Science (PATHS). This program will attempt to increase interest in health and science careers by high school students. PATHS is a 3-year program funded by a grant from the National Center for Research Resources of the National Institutes of Health under the Science Education Partnership Program (SEPA). The program will be conducted for three academic years beginning in 2004 and ending in 2007. The partnerships for this project remain the same as those for Project PATH. This expansion of the original pilot program will enable the new group of students to benefit from the same community based intervention. This program has the benefit of following students for an extended time period. With the elements of mentorship and exposure to the health care field, Project PATHS has the potential to make a real impact on students’ futures.

Project PATH is an example of the many initiatives being conducted to overcome the barriers to Hispanic youths' interest in the health care professions. These programs must use creative methods to overcome "denial of access to quality education; teachers who expect too little of their students; anti-intellectual peer pressure; and a culture gap between the world in which they study and that of their family and neighborhood" (Lewin & Rice, 1994, p. 21). It is imperative that institutions of higher learning create programs to motivate young Hispanic students to enter the "educational pipeline" that leads to the health professions. Programs such as Project PATH encourage diversity and foster cultural competency which is one of the elements needed to provide the nation with the highest level of care.

TABLES

Table 1. Hispanic enrollment in schools for selected health professions. (Health, U.S. Census Bureau, 2002)

Health Care Professions	Percentage of Hispanic in the Respective Training Program
Physician	10 %
Dentistry	5.3%
Nursing	3.9%
Pharmacy	3.3%
Podiatry	5.4%
Optometry	5.1%

Table 2. Hispanic Professionals in the State of Texas. (Murdock, 2000)

Health Care Professions	Percentage of Hispanic in the Respective Training Program
Physician	7.8%
Dentistry	4.0%
Nursing	7.3%
Pharmacy	8.3%
Podiatry	7.0%
Optometry	5.5%

Table 3: Odds Ratios

Profession	Intervention School		Control School	
	Pre	Post	Pre	Post
Dentist	17.5	75.8	23.4	26.6
Nurse	25.8	73.3	30.9	33.0
Optometrist	13.3	63.3	12.8	19.1
Pharmacist	15.0	59.6	8.5	9.6
Physician	31.7	69.2	25.5	25.5
Podiatrist	10.4	52.5	6.4	7.4

Note. N= 334.

Table 4: Pre and Post Analysis of Profession Interest.

Profession	Odds Ratio Pre-Test	Odds Ratio Post-Test
Dentist	0.70 (95% CI, 0.39-1.24)	8.66 (95% CI, 5.02-14.93)
Nurse	0.78 (95% CI, 0.46-1.32)	5.60 (95% CI, 3.33-9.37)
Optometrist	1.05 (95% CI, 0.52-2.14)	7.29 (95% CI, 4.10-12.99)
Pharmacist	1.90 (95% CI, 0.85-4.25)	13.92 (95% CI, 6.68-29.00)
Physician	1.35 (95% CI, 0.79-2.31)	6.54 (95% CI, 3.82-11.21)
Podiatrist	1.71 (95% CI, 0.68-4.30)	13.74 (95% CI, 6.11-30.90)

Note. N= 334.

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