

Experiences Promoting Healthcare Career Interest among High-School Students from Underserved Communities

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Promoting early interest in healthcare careers among youth from underserved areas is one promising strategy for addressing the health professional shortage in such communities. Most career choice studies try to predict outcomes using such traditional measures as grades and test scores. This study examines experiences influencing healthcare career interest among high-school students participating in health professions introductory programs in underserved communities. The opinions of parents and teachers regarding students' motivations are also considered. Seven focus groups (N=51) were conducted in one rural and two largely minority urban communities in New York State designated as health professional shortage areas. Qualitative data analysis involved a theory-driven, immersion and crystallization approach following the experiential learning model. Constructive experiences with the healthcare system, family role-modeling and support, interactive health-related school activities, the media, inspirational and accessible school staff, and strategic community partnerships, among other factors, facilitated student interest in health professions. Findings suggest that underserved and disenfranchised community environments still pose challenges for furthering healthcare career interest among youth.

Key words: children/adolescents ■ education ■ qualitative assessment ■ healthcare careers

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INTRODUCTION

Approximately 20% of the U.S. population resides in health professional shortage areas (HPSAs).¹ Efforts to increase the number of health professionals in underserved areas tend to focus on people's entry into a professional career development pipeline,² passage through the pipeline,³ workforce distribution⁴ and workforce retention.⁵ HPSAs tend to encompass poor urban and rural communities with many ethnic minority and/or disadvantaged residents. Tapping these populations is an attractive workforce development strategy because it expands the pool of potential workers while promoting workforce diversity as a way to address healthcare disparities.^{6,7} More than 25% of the U.S. population is of African-American, Latino and American Indian descent, but they make up only 9% of the nation's nurses, 6% of its physicians and 5% of dentists.⁷ In New York State, where approximately 3.6 million people reside in HPSAs⁸ and where this study is based, African Americans and Latinos also constitute a smaller percentage of the health profession workforce than of the general population.⁹ Of the four major U.S. regions, the northeast had the largest gap between rural and urban rates of generalist physicians (59 compared to 106 per 100,000 population).¹⁰

To help design interventions address the regional shortage of health professionals, the New York State Area Health Education Center (AHEC) System conducted a community health professionals needs assessment in underserved areas in 2001–2002. The study explored the experiences and opinions of high-school students, parents and teachers regarding how students develop a career interest in healthcare.

A key assumption of this study was that underserved communities have valuable human assets—the youth—that should be tapped and groomed in efforts to meet the demand for health professionals. Nurturing local talent is important because of the possibility that some graduates may practice in those communities where they have family and social ties.^{11,12} Studies show that rural back-

ground and proximity of family, among other factors, increases generalist physician recruitment success in underserved rural areas.¹⁰ According to the Association of American Medical Colleges (AAMC),¹³ in 2004, 21.4% of all medical school graduates planned to practice in an underserved area, 18.4% of which were white, 50.4% African-American and 33.2% Latino. Minority medical providers care for a disproportionately greater number of minority patients compared to nonminority providers¹⁴ and play a critical role in providing health-care for underserved populations.¹⁵ This “grow-your-own” approach carries the potential benefit that those newly minted professionals who decide to practice in their home town may be more knowledgeable of and sensitive to local population needs and characteristics, which is consistent with national efforts to develop a more culturally competent healthcare workforce.⁶

Early intervention and exposure to career awareness activities is important to attract students into particular professions,^{16,17} such as those in healthcare.¹⁸ Promoting diversity in healthcare workforce development also should start early at the K–12 level.^{7,18-20} The AAMC¹³ has warned that “fundamental structural problems ... in the medical education pipeline, often at the K–12 levels, play an essential role in hindering minorities from applying, being accepted to and enrolling in medical school.”

While scores of K–12 math and science enrichment programs exist, helping students to fulfill the educational requirements for pursuing a healthcare career, little is known about the experiences that lead students—particularly the underrepresented or disadvantaged—to develop interest in such careers. Most career choice studies try to identify prospects and predict outcomes using such traditional measures as specific course grades and test scores. As Trusty²¹ observes, “all theories of career development and career choice emphasize the influences of abilities, achievements and skills.” Little attention, however, is given in the literature to students’ life

experiences. To better predict minority students’ success in medical school, Sedlacek and Prieto²² noted the importance of taking into account nontraditional variables such as “understanding and dealing with racism,” “availability of strong support person” and “successful leadership experience,” among others. Similar considerations can be made in career decision-making assessments of underrepresented or disadvantaged youth in order to identify and groom more health professional candidates early on.

This study employs experiential learning theory²³ to examine how high-school students develop a healthcare career interest. This theoretical framework is particularly useful because it focuses on the breadth of interactions between participants and the social environments that could influence career choices and because it emphasizes process over outcome. Experiential learning represents continuous cycles of action and reflection that involve having a concrete experience, reflecting on that experience, formulating generalizations and testing those generalizations in other situations.²³ Based on this perspective, the community environment is regarded as a classroom setting. This study elicits perceived influences of student career interest in the health professions. The main research question is, “What factors encourage or discourage high-school students from underserved communities to pursue a healthcare career?”

METHODS

A total of 51 respondents participated in seven focus groups (Table 1). A pilot focus group was conducted with students and parents (n=14) in the city of Buffalo, NY. Three focus groups were separately conducted with students (n=7), parents (n=8) and teachers (n=8) from the rural town of Batavia. Three other focus groups also were independently conducted with students (n=5), parents (n=3) and teachers (n=6) from New York City (Bronx borough). All three communities were designated as HPSAs

Table 1. Distribution of participants in the seven focus groups (N=51)

Groups	Buffalo (Urban)	Bronx (Urban)	Batavia (Rural)	Totals N=51	African Americans	Latinos	Whites	Females	Males
Students	1 FG 9	3 FGs 5	3 FGs 7	21* 41%	12	3	6	13	8
Parents	5	3	8	16 31%	8	2	6	11	5
Teachers	N/A†	6	8	14 28%	1	0	13	9	5
Totals									
N	14	14	23	51	21	5	25	33	18
(%)	27.5%	27.5%	45%	100%	41%	10%	49%	65%	35%

*The students were high-school juniors and seniors between 16–17 years of age; †Teachers were not invited to participate in the pilot focus group.

in New York. Most of the rural participants (87%) were white, whereas most of the urban participants (82%) were minority. Students were enrolled in one of three health professions pipeline programs: the Medical Science and Technology Entry Program (Med-STEP) in Buffalo, the Health Career Exploration Program (HCEP) in Batavia and a health-oriented high school in the Bronx. The Med-STEP assists underrepresented minority or economically disadvantaged secondary-school students in acquiring prerequisite skills for professional or preprofessional education programs in medicine and other health-related professions. The HCEP, which operates in conjunction with Buffalo's Med-STEP, is designed to stimulate disadvantaged rural students' interest in similar careers. The health-theme high school is a public school that offers health-oriented programs to a student body that is overwhelmingly Latino and African-American and economically disadvantaged.

A criterion-based sampling strategy²⁴ was employed to select study participants from the three regional pipeline programs. These students were targeted in order to consider the motivations and challenges of adolescents who have demonstrated an aspiration to become a health professional. Parents and teachers were included because of their familiarity with and potential influence on the students' career decision-making. Letters were mailed to the homes of students enrolled in Med-STEP, HCEP and a health class elective at the Bronx high school inviting the student and at least one parent to participate. Letters also were sent to schools affiliated with these pipeline programs inviting teachers (especially in math and science) and career guidance counselors to participate (except for the Buffalo pilot). The students' response rate was 35%, the parents' 30% and the teachers' was unknown. An institutional review board approved the study. Informed consent was obtained from all participants, including parental consent for the students.

A semistructured interview instrument (Table 2) tailored to all three groups was used. A qualitative research expert constructed the questions and moderated all the focus groups. The questions elicited perceived life expe-

riences that influenced career interest or the process of developing such an interest, following an experiential learning framework. Focus groups lasted approximately 90 minutes and were audiorecorded and transcribed. Focus group methodology was employed because of our exploratory aims in "obtaining general background information about a topic of interest ... learning how respondents talk about the phenomenon of interest ... [and] stimulating new ideas and creative concepts"²⁵—specifically regarding developing an interest in health careers—and because it is consistent with an experiential learning model. This methodology encourages participants to openly discuss their opinions and experiences on the topic and allows the moderator to probe for depth, yielding meaningful personal narratives grounded in spatiotemporal context.

Data analysis followed a theory-driven "immersion-crystallization" approach consisting of a systematic iterative process of text interpretation and categorization "involving repeated delving into and experiencing of the data" to establish patterns of significance.²⁶ The group moderator, who is trained in social theory, and an education specialist trained in qualitative analysis, analyzed the transcripts. First, they reviewed each transcript independently from an experiential learning standpoint to identify statements regarding perceived determinants and processes of career decision-making. Then, they compared their findings and differentiated the statements by group composition (students/parents/teachers, rural/urban) before jointly developing thematic categories through consensus. Interpretive disagreements were resolved by presenting supportive evidence. Multiple references of motivating and discouraging experiences or opinions regarding healthcare career interest supported the thematic findings. A search for contradictory evidence was performed as a measure of analytical trustworthiness.²⁷

RESULTS

The students' declared career interests fell within seven categories: primary care physicians (four), med-

Table 2. Moderator's guide for the students' focus group

1. What professional career are you contemplating right now?
2. How did you learn about the Med-STEP program, and why did you decide to enroll?
3. When and how did you become interested in pursuing a career in healthcare?
4. What other things have made it easy for you to consider pursuing a career in healthcare? Please explain.
5. What things have made it difficult for you to consider pursuing a career in healthcare? Please explain.
6. What role, if any, has anyone played in your interest to pursue a career in healthcare? Please explain.
7. What role, if any, has the media played in your interest to pursue a healthcare career? Please explain.
8. What obstacles do you think lie ahead for you to complete studies or training leading to a healthcare career? Please explain.

ical specialists (six), allied health (three), dentistry (one), mental health (three), nonhealth careers (two) and not sure (2). Of the 21 students, three (all rural) had a parent who was a health professional and five others (three rural) had a close relative who was, none of whom was a physician. Of the 16 parents, two (rural) were health professionals and 11 others (four rural) had a close relative who was. Of the 14 teachers, five taught math, science or health; seven taught other subjects; one was a career guidance counselor; and one was an assistant school principal.

Study findings are presented as themes in narrative form under two main problem domains: I) experiences that *encourage* interest in healthcare career; and II) experiences that *discourage* interest in healthcare career (Table 3). Themes are not listed in order of significance. There was agreement among the students, parents and teachers from both rural and urban settings on each theme under domain I. Under domain II, there was some variability in agreement between the groups and by setting, as noted in Table 3 and in the narrative of findings below. Although some findings are predictable, others have received little, if any, attention. Together, they comprise an ecological model of factors—mostly social interactions and relations in various contexts as underlined by our model—that may influence students from underserved communities in developing interest in pursuing a healthcare career.

NARRATIVE OF FINDINGS

Experiences that Encourage Interest in Healthcare Careers

Family members in healthcare occupations. Students with relatives working in healthcare traced their interest to them, particularly in the rural group. They described relatives as lifelong role models, mentors and supporters. One rural student, for example, declared

that his interest in pharmacy derived from his father, a pharmacist. Teachers agreed, and added that such students did not necessarily pursue their relative's specialty. One urban mother noted that her sister, a nurse, influenced her daughter's interest in becoming a pediatrician.

Personal/family experiences with health problems. Students and parents alike described dealing with health issues as a source of awareness for healthcare as a career option. This involved: a) students' experiences with the healthcare system as patients, visiting loved ones at the hospital or seeing paramedics provide care to a relative; or b) coping with serious health problems at home. They spoke of a "sister with asthma" and "ailing grandparents living at home" as experiences that inspired their interest. Teachers also stated, "Students that have been injured, that have dealt directly with doctors or nurses or have been hospitalized—I think that gets them interested in healthcare."

A caring and altruistic personality. Many students described their interest as emanating from an affection or desire to care for people. They considered becoming a physician or pediatric nurse to "help people" or because they "love babies." Parents described them as "caring," "concerned," "compassionate" or responding to "a calling." One parent recounted how her child pleaded to "bring homeless people home" to feed and care for them. Some teachers also observed that students interested in healthcare often exhibit a caring personality and rationalize their career interest simply in terms of their altruistic character.

Professional/lay role models and mentors. Adult relatives, friends, local health professionals, school teachers and pipeline program personnel inspired and encouraged students. Several students, particularly in the rural group, identified professionals in their school and community as role models or mentors. Several African-American students identified only relatives

Table 3. Thematic outline of findings

I. Experiences that Encourage Interest in Healthcare Careers

- Family members in healthcare occupations
- Personal/family experiences with health problems
- A caring and altruistic personality
- Professional/lay role models and mentors
- Participation in health-related curricula/activities
- Work experience in healthcare environment
- Inspirational and accessible school staff
- Healthcare theme media productions
- Peers Interested in health professions
- Academic strengths in required subjects

II. Experiences that Discourage Interest in Healthcare Careers

- Perceived level of academic commitment
- Education cost of healthcare careers
- Lack of school staff support
- Limited social support networks[†]
- Reductions in education funding[†]
- Racism and discrimination in society*[†]
- Negative experiences with the healthcare system[§]
- Negative media portrayal of healthcare occupations[§]
- Geographic isolation from healthcare practice sites^{§,‡}
- Inadequate information about diversity of healthcare careers[§]

* Student/parents only; § Teachers only; † Urban setting only; ‡ Rural setting only

who were not health professionals as role models. As one female student said, “I look up to my mother ... she’s a strong person ... my brother who’s in school ... they’re my role models!” Several students stated that their parents encouraged them to enroll in pipeline programs and become health professionals. Teachers observed that some parents groomed children early for health careers, and that community health professionals, such as the local pharmacist or family dentist, sparked students’ interest.

Participation in health-related curricula/activities.

Students stated that they developed their interest after completing a health-related course, program or activity, such as an engaging science class, an internship in a healthcare setting, career fair or field trip. One student stated, “... biology interested me the most ... anytime we had to dissect anything, any hands-on activities, it was really neat.” Pipeline program activities also validated their interest. One parent recounted that at her daughter’s clinic internship “... the doctor put the robe, name tag and stethoscope on her—that was the icing on the cake. He let her listen to the heartbeat, take the pulse ... She felt so good.” Teachers also cited health-related class projects, extracurricular school activities and healthcare site visits as stimulating and emphasized the value of interactive approaches. As one teacher put it, “Kids want ‘shock value.’ They want to see the surgery ... go some place and do hands on ... It’s special ...”

Work experience in healthcare environment.

Some students stated that they developed an interest while working in a healthcare setting, such as working in a gift shop at a hospital one summer, working part-time in a neighborhood drugstore, or after volunteering as an assistant at a dentist’s office. These experiences were not part of an internship. Teachers and parents also acknowledged that students become interested or reaffirm their interest after temporary work stints at healthcare practice settings.

Inspirational and accessible school staff. Personable and approachable teachers who make their class interesting inspired students. As one student explained, “... my biology teacher sparked my interest ... he talked about all kinds of things ... I loved it.” Students hailed teachers that motivate them to excel, graduate and achieve career goals. Some African-American students praised one teacher who “stays on you until you do what you have to, knows when you’re absent, listens to you, bothers you before the Regents [exam] ... the type you can go to with a problem.” Teachers acknowledged colleagues who were passionate and engaging in the classroom for inspiring students.

Teachers and parents also noted that school career guidance counselors play a major role in advancing student interest in the health professions, although most were skeptical of the counselor’s ability to inspire and help underachieving students. Some rural students

appreciated their counselor’s assistance. One credited the counselor for her pipeline program placement; however, most of the students and their parents, particularly in the urban groups, believed that their counselor had not met their needs.

Healthcare-theme media productions. Students cited healthcare-related TV shows (“Maternity Ward,” “ER,” “Scrubs”), programming (Discovery Channel) or movies (“Patch Adams”) as inspiring and instructive, even before being asked the specific question. For example, one African-American female student said she felt encouraged when seeing a African-American female physician cast in a position of power or “in charge.” One parent described how her daughter begged to watch together a TV show about delivering babies because “I have to get used to this.” Teachers also claimed that TV healthcare dramas, among other media sources, engaged students and increased their career awareness.

Peers interested in the health professions. Teachers observed that students who share academic or career interest in the health fields sometimes befriend, tutor, compete against or motivate one another. As one rural teacher noted, “Kids are a good resource for other kids.” Some parents recognized the positive influence that a friend had on their child’s interest in a health career. Two pairs of students also talked about their friendship, common interests and mutual support, which led them to enroll together in the same pipeline program.

Academic strengths in required subjects. Students who performed well academically, particularly in math and science, believed their grades reflected their interest in and ability to complete studies leading to a healthcare career. Some parents validated this assertion. Teachers also mentioned that students who excel in math and science tend to enroll in accelerated programs and pursue higher education leading to a healthcare career.

Experiences that Discourage Interest in Healthcare Careers

Perceived level of academic commitment. Students were concerned about the sacrifice and dedication required to earn good marks in advanced high-school science courses and later in college. One student remarked, “I heard that organic chemistry is a killer ... if you can do it you’re pretty good for medical school ... if you can’t, it’ll weed you out.” Some considered the several years of study required by certain specialties to be a deterrent. Parents shared similar concerns. Students contemplating a highly regarded specialty, such as dentist or physician, also worried that graduate programs are “too demanding” and do not afford time to “have a social life” or “raise a family.” Some students cited personal “laziness” as a barrier. Teachers also believed that the academic demands for some specialties deter students, while some argued that there is “too much emphasis on test scores.” Some teachers said that many students do

not know what their graduation requirements are and that finishing high school alone is a major challenge.

Education costs of healthcare careers. Most students and parents cited education costs as a major obstacle, particularly for careers requiring graduate studies. Although some argued that motivated students “find a way to pay for it” by taking out loans or by other means, most agreed that the cost of higher education is discouraging. Most parents acknowledged that their children will have to find their own funding sources, but they remained supportive. Some parents stated that the financial burden was the only or main obstacle. Teachers agreed that education cost is a major concern.

Lack of school staff support. Some students said that teachers who are indifferent to students’ career interests or who do not provide adequate feedback and assistance with difficult subjects are “discouraging.” Teachers acknowledged missed classroom opportunities to cultivate students’ interest in health careers. Most students claimed their career guidance counselor was not helpful with their career plans, and some described their counselor as “the barrier.” According to one urban African-American student, her counselor’s response to a request for health career advice was, “Oh, but you have a lovely voice, why don’t you become a singer?” One white rural parent stated that after discussing his son’s medical school interest with the guidance counselor, the counselor “started talking to him about liberal arts programs at a community college.” Teachers remarked that some guidance counselors “stereotype and discriminate against” certain students by underestimating their potential or failing to link them with mentors.

Limited social support networks. Several students mentioned lacking support outside their family circle to fulfill their career goal. Several minority students could not identify formal role models or mentors. One Latino student who had decided not to pursue a health career complained about lack of family support: “I have no one to look up to ... never had anything stable ... stable parents, role models, nothing ... the only person I can depend on is myself ...” The same student also warned about the impact of “the stuff you see outside ... walking down the street to go home ... drug dealers standing on the corner ...” Another student remarked that having friends who “aren’t really into science” is somewhat discouraging. African-American students were concerned about not having a social support network in college. Teachers also believed that students who experience street violence, parental neglect or other negative socioeconomic circumstances could have difficulties contemplating a healthcare career. Some teachers were concerned about parental expectations that teachers or schools “do it all.”

Reductions in education funding. Parents spoke about the detrimental effect of “government budget cuts in education” on healthcare career awareness and enrich-

ment programs. Some students also were concerned about schools not having the resources for offering more courses relevant to their healthcare career goals. Teachers argued that budget constraints limit school services directed toward healthcare career development.

Racism and discrimination in society. Racial and gender discrimination, particularly in educational and professional institutions, was a major concern among urban minority students and parents. One African-American parent recalled how his daughter, when younger, noticed that all hospital doctors were white and asked, “... do I have to be white to be a doctor?” One African-American female student believed that she must overcome two barriers—race and gender: “It’s gonna be really hard because of my skin color and I’m female ... that makes it twice as hard, but I’m gonna go ahead.” Urban Latino students cautioned others against “following [ethnic] stereotypes” in their professional quest, meaning that minority students must be wary of and resist falling victim to negative stereotypical roles and low achievement expectations often attributed to people of color.

Negative experiences with the healthcare system. Some urban teachers believed that “bad experiences” with the healthcare system, such as lack of healthcare insurance, denial of care, or poor healthcare services or health outcomes could discourage students from pursuing healthcare careers. The dismal condition of some inner-city hospitals was believed to curb student interest in working in similar healthcare settings. Rural teachers also remarked that “if [students and their families] don’t have medical coverage, don’t see a doctor, don’t get good care when they’re sick ... they may say, ‘why bother,’” in terms of contemplating or pursuing healthcare careers.

Negative media portrayal of healthcare occupations. Some teachers suggested that TV castings of healthcare occupations in a negative light could diminish students’ interest. They argued that chilling and unfavorable depictions of healthcare work and workers’ roles, such as dealing with the death of a patient, service in hectic workplaces or staff mistreatment, could “turn off” some students.

Geographic isolation from healthcare practice sites. Some rural teachers noted that students in rural areas are isolated or removed from healthcare practices—“where the action is”—and therefore may lack the exposure that could awaken curiosity and interest. As one teacher described, students who “have little contact with the medical world” may not contemplate a career in healthcare as much as others who have proximity or greater contact with these settings.

Limited information about the diversity of healthcare careers. Some teachers argued that many average students perceive that a health career is beyond their reach. As one described, “When asked about the health professions,

many students think mostly of upper-level specialties ... they develop ‘tunnel vision.’” Such lack of information, some argued, partly contributes to some parents putting tremendous pressure on their children to meet lofty academic and career expectations, when a “stepwise career approach” may be advisable. Teachers also observed that some career guidance counselors do not have information and are not well informed on all the different careers in healthcare.

DISCUSSION

This study highlights the various life experiences and social interactions that influence the development of a healthcare career interest among high-school students from underserved communities. Constructive experiences with the healthcare system, family role-modeling and support, interactive health-related school activities, the media, inspirational and accessible school staff, and strategic community partnerships, among other factors, facilitated student interest in health professions. Potentially discouraging factors included unsupported social networks, inadequate school resources, perceptions of discrimination, limited or negative exposures to the healthcare system, and concerns about personal and financial commitments of health career training, among others.

This study lends support and further depth to the body of evidence that family and school play vital roles in shaping youth healthcare career interests. In a study of rural Latino high-school students, Lagerwey, Phillips and Fuller²⁸ describe how family and school offered critical support and challenges for considering nursing and other healthcare careers, as well as for completing high school. In a survey of 793 undergraduate minority students, Moore-West, West, Obenshain et al.²⁹ found that choice of a medical career was affected by, among other factors, “encouragement from family and friends” and “discouraging advisers,” just as found in our younger student sample. In our study, several students traced their career interest to having a relative working in healthcare. Parents, therefore, should be enlisted as key resources and partners in the students’ career development.³⁰ Parents can nurture their children’s healthcare career aspirations whether or not they are health professionals.

Students, parents and teachers also mentioned the importance of classes and school activities related to health careers, as well as the role of inspirational teachers. Teachers play a key function in shaping this environment. Science teachers, for example, could reinforce classroom instruction on health-related topics by demonstrating their practical applications, i.e., providing “contextual meaning in their schoolwork.”³¹ Interactive educational interventions, such as fieldtrips and hands-on activities, should complement passive class lectures to develop students’ awareness and interests, particularly for rural students living in geographic isola-

tion who have limited exposure to healthcare services and practitioners.³² Also, teachers should be accessible to students who demonstrate interest in health topics, and could proactively inform career guidance counselors of their interest and potential.

School career guidance counselors are uniquely positioned to spur students’ interest in health professions, but many of our focus group participants felt guidance counselors were largely unhelpful. Earlier studies have noted similar concerns.²⁹ Some of our students suggested that counselors need sensitivity training to resolve personal biases, and one teacher suggested that counselors need to better appreciate students as diamonds in the rough. The teachers in our sample did not have a practical working relationship with their school’s career guidance counselor. This is an important link that should be established and optimized.

Assessments of students’ academic performance generally trump life experiences as indicators of career interest and promise. The Sullivan Commission⁷ reported “over-reliance on standardized testing in the admission process” as a barrier that even talented minority students encountered at primary, secondary and collegiate levels of the pipeline to the healthcare professions. In a study of what nursing and college mean to high-school students of color, Hodgman³³ suggests that it may be more efficient to conduct “an initial interactive assessment of what students know about healthcare and their feelings about the healthcare that they and their families have experienced ... than approaching students with a predetermined agenda integrated into a didactic presentation.” An altruistic caring personality also can be particularly well suited for a career in healthcare.³⁴ The AAMC¹³ also found that “parents,” “experience with illness or accident” and “health-related work experience” were three of the top-five factors influencing recently matriculated students’ decision to study medicine—all of which had greater impact on the African-American and Latino students than on the white students.

Learning about students’ life experiences could help to identify and support students’ interest in the health professions as well as potential concerns about meeting family responsibilities while pursuing such a career. Interestingly, many students in this study traced their health career interest in part to their altruistic persona, while potential earnings did not emerge as a factor. Still, such idealism may give way to pragmatism as students reflect on the cost, length of time and commitment level required for completing professional training. Many minority and disadvantaged students tend to view the cost of professional education as “overwhelming and insurmountable.”³⁵ Financial assistance and mentorship interventions may help to overcome such hurdles.³⁷ Students who maintain strong relationships with peers who share their career interests also are known to “make progress committing to career choices”³⁵ and to develop

professional identity.³⁶

Strategic partnerships among high schools, health professions schools, healthcare institutions, government, and community organizations could help to overcome systemic obstacles found in disenfranchised and underserved communities. Educational partnerships among colleges, medical schools and high schools can be pivotal,^{2,7,18} when not too ambitious.³⁷ Such a strategy could help overcome geographic, technical and socio-economic challenges that shape the learning environment in underserved rural and urban communities, for example, by funneling resource materials to needy schools, promoting professional school staff development, rallying support networks for students and parents, and linking classroom and workplace environments, among other potential benefits. Improved access to and quality of healthcare in underserved communities and better working conditions for healthcare personnel may also afford more encouraging experiences and enticing images about the healthcare sector.

This study had a number of limitations. The sample of participants per region was small. The student sample included only two who had changed their mind about pursuing a healthcare career and, thus, additional discouraging experiences could have been missing. Only students interested in healthcare careers and participating in a health professions pipeline program were interviewed. The experiences of three students whose parents were health professionals may not reflect those of disadvantaged students. Minority teachers and Latino students also were undersampled. Moreover, the perspective of school career guidance counselors is not adequately represented.

In sum, this study confirms prior findings regarding factors that can promote or dissuade early interest in health careers among adolescent students from disadvantaged and underrepresented backgrounds, while also highlighting other less-known factors. A comprehensive outlook of the many factors that may influence such an interest is essential in assessing and facilitating the process of early entry into the health professions pipeline. Communities are social learning environments. Because of limited resources, unsupportive experiences and inconsistent messages, underserved communities have many challenges in promoting healthcare career interest among its youth. However, as this study shows, these communities have various formal and informal assets to draw from. Study findings may serve as a menu for tailored interventions in areas of needs.

REFERENCES

1. HRSA, B.o.H.P. Health professional shortage area designation. U.S. Department of Health and Human Services; Washington, DC; 2004.
2. Carline JD, Patterson DG. Characteristics of health professions schools, public school systems, and community-based organizations in successful partnerships to increase the numbers of underrepresented minority students entering health professions education. *Acad Med.* 2003;78:467-482.
3. Thurmond VB, Cregler LL. Why students drop out of the pipeline to health professions careers: a follow-up of gifted minority high school students. *Acad Med.* 1999;74:448-451.
4. Brewer CS, Feeley TH, Servoss TJ. A statewide and regional analysis of New York State nurses using the 2000 National Sample Survey of Registered Nurses. *Nurs Outlook.* 2003;51(5):220-226.
5. Feeley TH. Using the Theory of Reasoned Action to model retention in rural primary care physicians. *J Rural Health.* 2003;19:245-251.
6. Smedley BD, Stith AY, Nelson AR. Unequal treatment: confronting racial and ethnic disparities in health care. Washington, DC: National Academy Press; 2003.
7. Sullivan Commission. 2004. Missing persons: Minorities in the health professions. http://admissions.duhs.duke.edu/sullivancommission/documents/Sullivan_Final_Report_000.pdf. Accessed 03/23/06.
8. HRSA, B.o.H.P. Selected Statistics on Health Professional Shortage Areas. Rockville, MD: U.S. Department of Health and Human Services; 2001.
9. HRSA, B.o.H.P. HRSA State Health Workforce Profiles: New York. Washington, DC: U.S. Department of Health and Human Services; 2000.
10. Hart LG, Salsberg E, Phillips DM, et al. Rural health care providers in the United States. *J Rural Health.* 2002;18(suppl):211-232.
11. Kassebaum DG, Szenas PL. Rural sources of medical students, and graduates' choice of rural practice. *Acad Med.* 1993;68(3):232-236.
12. Osborne PB, Haubenreich JE. Underserved region recruitment and return to practice: a 30-year analysis. *J Dent Edu.* 2003;67(5):505-508.
13. AAMC. Minority students in medical education: facts and figures XII. Washington, DC: Association of American Medical Colleges; 2005.
14. Keith SN. Role of minority providers in caring for the underserved. *J Health Care Poor Underserved.* 1990;1(1):90-95.
15. Komaromy M, Grumbach K, Drake M, et al. The role of Black and Hispanic physicians in providing health care for underserved populations. *N Engl J Med.* 1996;334(20):1305-1310.
16. Magnuson CS, Starr MF. How early is too early to begin life career planning? The importance of the elementary school years. *J Career Dev.* 2000;27:89-101.
17. Arrington K. Middle grades career planning programs. *J Career Dev.* 2000;27:103-109.
18. Bumgarner SD, Means BH, Ford MJ. Building bridges: from high school to healthcare professional. *J Nurses Staff Dev.* 2003;19(1):18-24.
19. Nickens HW, Ready TP, Petersdorf RG. Project 3000 by 2000. Racial and ethnic diversity in U.S. medical schools. *N Engl J Med.* 1994;331(7):472-476.
20. Thomson WA, Denk JP. Promoting diversity in the medical school pipeline: A national overview. *Acad Med.* 1999;74:312-314.
21. Trusty J. Effects of high school course-taking and other variables on choice of science and mathematics college majors. *J Counseling Dev.* 2002;80:464-474.
22. Sedlacek WE, Prieto DO. Predicting minority students' success in medical school. *Acad Med.* 1990;60:161-166.
23. Kolb DA. *Experiential learning: experience as the source of learning and development.* Englewood Cliffs, NJ: Prentice-Hall; 1984.
24. Kuzel AJ. Sampling in qualitative research. In: Crabtree BF, Miller WL, eds. *Doing qualitative research.* Thousand Oaks, CA: Sage Publications Inc.; 1999:33-45.
25. Steward DW, Shamdasani PN. *Focus groups: theory and practice.* Newbury Park, CA: Sage Publications; 1990.
26. Borkan J. Immersion/Crystallization. In: Crabtree BF, Miller WL, eds. *Doing qualitative research.* Thousand Oaks, CA: Sage Publications Inc.; 1999:179-194.
27. Kuzel AJ, Like RC. Standards of trustworthiness for qualitative studies in primary care. In: Norton PG, Moira S, Tudiver F, et al., eds. *Primary care research: traditional and innovative approaches.* Newbury Park, CA: Sage Publications; 1991:138-158.
28. Lagerwey MD, Phillips E, Fuller K. Voices from the pipeline: high school completion among rural Latinos. *J Cult Divers.* 2003;10(2):42-49.

29. Moore-West M, West DA, Obenshain SS, et al. Factors influencing minority students' choice of medicine as a career. *J Med Educ.* 1984;59(6): 523.
30. Otto LB. Youth perspectives on parental career influence. *J Career Dev.* 2000;(27):111-118.
31. Johnson LS. The relevance of school to career: a study in student awareness. *J Career Dev.* 2000;26:263-275.
32. Goodell E, Visco R, Pollock P. A program to enhance k-12 science education in ten rural New York school districts. *Acad Med.* 1999; 74(4):332-335.
33. Hodgman EC. High school students of color tell us what nursing and college mean to them. *J Prof Nurs.* 1999;15:95-105.
34. Jones B. Nurses, the next generation. *Collegian.* 1997;4:30-34.
35. Felsman DE, Blustein DL. The role of peer relatedness in late adolescent career development. *J Vocat Behav.* 1999;54(2):279-295.
36. Cohen-Scali V. The influence of family, social and work socialization on the construction of the professional identity of young adults. *J Career Dev.* 2003;29:237-249.
37. Butler WT. Project 3000 by 2000: progress during tumultuous times. *Acad Med.* 1999;74(4):308-309. ■

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