Creighton Collaborative Health Professions Partnership: Assessing Impact beyond the Numbers

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Abstract

Creighton University, a private Jesuit institution in the Midwest, included a Health Professions Partnership Initiative (HPPI) to increase the pool of qualified underrepresented minority applicants by identifying students early and encouraging their progress through elementary and middle school, high school, college, and professional schools. Activities available to the five hundred student participants included workshops on study skills and time management, summer research institutes, enrichment activities including classroom presentations by medical professionals, shadowing, ACT skill building, priority registration for science and math programs, college prep planning, regular informational and social meetings, mentor/mentee sessions, and academic counseling. Quantitative and qualitative research results reveal that the HPPI was a successful collaboration yielding satisfactory results with the resources available to encourage academic achievement, the exploration of health sciences as a career choice, and development of positive attitudes of participants toward themselves, peers, academic success, health careers, health and safety issues, and Creighton University.

Introduction

For decades the need to meet escalating demands on the nation’s health care industry has been recognized, particularly the need to increase the minority representation in medicine (AAMC 1970; AAMC 1978; AAMC 1992). Many minority students are unaware of allied health professions, and others simply do not perceive allied health disciplines as attractive career options. Results of a study by Thomson and others (1991) in Houston are consistent with other reports suggesting that new strategies must be employed nationally to promote greater participation in allied health, especially by groups previously underrepresented in these professions.

In 1996, the Association of American Medical Colleges (AAMC), along with the Robert Wood Johnson Foundation and the W. K. Kellogg Foundation, embarked on a unique, long-term effort to increase the representation in the health professions of
African Americans, Hispanics, and Native Americans, as well as other educationally disadvantaged students. The Health Professions Partnership Initiative (HPPI) challenged U.S. health-professions schools to link with neighboring colleges and K-12 school districts to improve curricula and educational programs in ways that will prepare and attract more underrepresented minorities into health careers (Patterson and Carline 2004).

Since 1996, twenty-six Health Professions Partnership Initiatives have been implemented nationwide. The HPPI model was based on established research showing that minority students share the same level of aspiration to health careers as majority students but typically do not receive the secondary education necessary to ensure their success. The goal is to expand the pool of well-qualified applicants, matriculants, and graduates in medicine, nursing, pharmacy, dental, public health, and other health professions schools. HPPI projects were put in place at all points of the pipeline, with most of them concentrated on the early stages of education.

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Purpose

Creighton University School of Medicine, a private Jesuit institution in Omaha, has included an HPPI pipeline as part of its long-term efforts to increase the pool of qualified applicants by identifying students early and encouraging their progress through elementary and middle school, high school, college, and professional school. At Creighton University’s partnership, herein referred to as Creighton Collaborative Health Professions Partnership (CCHPP), the overall goal was to enhance the communication, coordination, and effectiveness of the partner institutions in implementing programs that increase the academic achievement and health career preparation of African American students in the targeted schools and that will translate into actual enrollment in Creighton University and Metropolitan Community College health professions programs. This collaborative effort included Creighton University’s four health sciences schools (Medicine, Dentistry, Nursing, and Pharmacy and Health Professions) and its undergraduate college, including its Department of Education. Community partners include Metropolitan Community College, Omaha Public Schools and the Banneker Partnership, the Jesuit
Middle School, Sacred Heart Elementary School, Boys and Girls Clubs of Omaha, and 100 Black Men of Omaha. This campus-community interaction developed an infrastructure designed to enhance the communication, coordination, and effectiveness of the partners in implementing academic and health career programs for African American students in targeted Omaha schools beginning in the fourth grade. Partners effectively cooperated to plan, organize, implement, and assess educational opportunities designed to enhance aptitude and achievement scores in science and mathematics and to inform students of health science career opportunities and the training required. Activities available to CCHPP participants included regular meetings, mentor/mentee sessions at Creighton University, workshops on study skills and time management, the Health Sciences Minority and Cultural Affairs’ (HS-MACA) summer research institutes, enrichment activities including presentations by medical professionals in the classroom, shadowing, ACT skill building, priority registration for science and math programs, college prep planning, and academic counseling.

Leadership

The vice president of Health Sciences and dean of the School of Medicine originally guided the partnership. After the original principal investigator left Creighton for a position at a different university, the leadership transferred to the associate vice president for Health Sciences Multicultural and Community Affairs. Both principal investigators are African American physicians, passionately committed to increasing the enrollment of underrepresented minorities into the health sciences. The deans and their selected associates represented Creighton’s School of Medicine, School of Pharmacy and Health Professions, School of Dentistry, School of Nursing, and College of Arts and Sciences. Community partners were represented by principals or high-ranking administrators, science instructors, or counselors who could effectively make decisions, work directly with persons involved, coordinate activities, and implement change.

Participants

CCHPP targeted economically and educationally disadvantaged minority students, particularly African Americans, in the Omaha public and parochial schools. African Americans are the largest minority population in Omaha, and the Creighton campus is near organizations and schools with large African American populations. CCHPP aimed to include 50 students per grade in 4th
through 6th grades (150), 75 per grade in 7th and 8th grades (150),
30 per grade in high school (120), and 25 per college level (100).
Targeted schools initially included North High School (36.3% African American), McMillan Magnet Center (45.1% African American), King Science Center (39.6% African American), and the Jesuit Middle School (100% African American). After implementation of the program, school partners were expanded to include Sacred Heart Elementary (100% African American) and the schools to which identified participants transferred.

The target numbers projected were unrealistically high for the community. However, over the course of four years, 500 minority students, primarily African Americans, with 10 Hispanic students, from grade 4 through college, participated to varying extents. The population was very fluid. The schools identified as the pipeline did not necessarily “flow” students into each other. As students left the pipeline for different schools or by natural attrition, the target schools were expanded and new students were invited to participate.

Methods
The program’s original strategic plan included quantitative interim outcome goals built upon previous math and science efforts as part of an areawide systemic initiative, including the expectation of significantly improving scores on standardized achievement tests and college entrance exams. These data sources included math CAT percentiles, Omaha Public Schools Science Benchmark scores, geometry grades, and ACT scores. These quantitative indicators were expanded to included math ITBS scores and science grades used in the parochial partner schools. Improving these numbers is a worthwhile endeavor. However, the education evaluation specialist, as well as the partners, soon recognized that the programs sponsored by CCHPP could have little direct impact on these scores, and that many intervening variables impacted achievement. Scores, grades, and test results were collected and reported each academic year; however, no significance could be attributed to CCHPP involvement. Therefore, the evaluator incorporated multiple methods, quantitative and qualitative, direct and indirect, embedded and ongoing, to systematically measure academic achievement as well as knowledge of and attitudes toward health careers and the impact of the programs supported by the CCHPP infrastructure (see figure 1).

For the program directors, the partners, the funders, and the evaluation specialist, the big questions concerned the real impact of the partnership and its programs on the participants and the
partnership as a collaborative group. The evaluation specialist used several strategies to ensure internal validity in this investigation. Triangulation, or using multiple sources of data to confirm the emerging findings, was one technique. Another strategy the evaluation specialist employed for verification was member checks. Each interviewee reviewed the annotated transcriptions to confirm the emerging themes and categories. As the analysis and conclusions were written, copies were given to the informants for comments, clarification, and suggestions. Another strategy was peer examination. The evaluation specialist asked other colleagues inside and outside the partnership to verify the themes and categories.

**Career Awareness and Preference Survey:** To assess participants’ knowledge and attitudes toward health careers, the evaluation specialist developed a Career Awareness and Preference Survey. This instrument was based on the instrument developed and reported on by Mishoe, Valeri, and Beveridge (1993) of the Schools of Allied Health Sciences and Graduate Studies of the Medical College of Georgia. The evaluation specialist piloted the modified instrument with education majors, who in turn piloted it with elementary and middle-level students. The survey was appropriate for use with any grade level of CCHPP participant. The evaluator provided the opportunity to administer the survey.
electronically, but this proved problematic. Because surveys mailed to participants had a return rate of only 19 percent, surveys were conducted at school sites. There was a 90 percent return rate for those surveys administered by classroom teachers. The rate for those administered by CCHPP representatives or the evaluator was 100 percent. Over the course of academic years 2001–2002 and 2002–2003, the CCHPP participants at Creighton University, Metropolitan Community College, King Science Center, North High School, McMillan Magnet Middle School, Jesuit Middle School, and Sacred Heart—a total of 103 informants—completed the Career Awareness and Preference Survey.

Participants’ perceptions of CCHPP: Perceptual data can be defined as views, judgments, or appraisals from an individual’s perspective (Bernhardt 1998). The evaluation specialist sought formal expression of perceptions of CCHPP student participants and key players among the partnership at various intervals over the five-year period. These included focus groups and a program satisfaction survey at a formative level during the second year, interviews of key players in the partnership during the third year, and summative focus groups during the fourth year.

Formative focus groups: To obtain richer qualitative data from significant populations of participants, a series of focus groups following a specific protocol were conducted. Informants were all student participants at the Jesuit Middle School in grades 7 and 8, a total of 21 students in two groups; three rotating groups of North High School participants over their lunch hours, for a total of 19 informants; and one group of 11 middle school participants at McMillan Magnet Middle School.

Interviews of key players: To gain perspectives of partners, an interview protocol was developed and piloted. Over the course of several months, interviews were taped and transcribed with the original principal investigator, the director and later PI, the associate dean of the Creighton University College of Arts and Sciences, the representative of Metropolitan Community College, the assistant project director, and the principal and the Science Department chair of King Science Center.

Final year focus groups: Twenty-two student participants with extensive involvement in CCHPP offerings over time were purposefully identified as informants in focus groups near the completion of the funding period. Students completed checklists of their high school and undergraduate involvement, and then responded orally or in writing to the questions on the Fourth-Year Focus Group Feedback.
**Presentation evaluation/feedback:** Results of individual offerings such as tutoring, mentoring, and enrichment programs were evaluated by those responsible for each program. Typically, the developer of those offerings was accountable at some level for reporting assessment results. A simple evaluation instrument for presentations at the elementary and middle levels was developed and utilized by anyone involved in presentations in CCHPP partner schools. This one-page form provided immediate feedback to the presenter(s) and to the program director on the learning and perceptions of the participants who attended specific offerings.

**Data analysis:** Interviews and some focus groups were taped and transcribed in their entirety.

**Findings**

**Summary of Career Survey results:**

1. Prior to CCHPP activity exposure, younger students identified simply “doctor” and “nurse” as limited career options within the health careers.

2. Inappropriate responses were more prevalent among students who had not yet experienced CCHPP activities or presentations. For example, students indicated “vegetarian” or “vet” as examples of health professions.

3. CCHPP professionals significantly increased medical/health science career awareness after presentations; for example, after presentations by ophthalmologists, students specifically identified “ophthalmologist” or “eye doctor” as a career option. After presentations by the School of Dentistry, students identified specific related careers, including dentist, orthodontist, oral surgeon, and dental hygienist.

4. Longer-term participants who had had more exposure to CCHPP enrichment experiences indicated more appropriate, numerous, and specialized careers.

5. 98 percent of respondents across age groups indicated that parents and relatives, particularly mothers, are significant influences in career selection.

6. 84 percent of college students pursuing health science careers indicated that health professionals were a great influence or some influence, compared to 74 percent of respondents in grades 4–9, who saw little or no influence of health professionals on their career interests.
7. Respondents across grade levels indicated that tutors and mentors had little or no influence on career interest. Some young respondents inquired what “mentor” meant. Several older respondents indicated the value of and/or the need for tutors or mentors.

Themes and Notable Observations from Formative Focus Groups and Surveys

Understanding of purpose: Student participants in the middle schools and high school could rarely define “HPPI,” but they could articulate the goals, describe activities, and tell of their personal impact.

A middle school student: HPPI? It’s something about health, health priorities . . . I don’t know.

Focus Group Facilitator: But what does it mean?

Another middle school student in the group: It’s like if you wanted to be a doctor, it helps let you know what it would take.

One high school student: It’s to get more involved with Creighton University and see what different people in health professions do.

Personal encouragement: For many, CCHPP was synonymous with “Ms. Bell,” the project coordinator. Her personal contact and encouragement to them and their families were vital to their involvement. When one high school participant was asked about the impact of CCHPP, she looked puzzled, asking, “CCHPP?” A classmate jumped in: “You know, Ms. Bell!”

One high school participant said, “Ms. Bell kept pushing us. She motivated us and told us it would look good on a college application.” Another said, “Miss Bell checks up on me and my goals.” Another commented, “Ms. Bell is doing a great job, helping me.”

Enjoying hands-on science: The theme that occurred with the most frequency involved an appreciation for the hands-on experiences provided inside and outside school classrooms. Students enjoyed hands-on science activities and were subsequently motivated to do better in science.

Exploring roles: Students appreciated exploring the roles and training of health professionals, particularly shadowing and one-to-one contact.

Girl: We could see more of them. They only came [to our school] a couple of times, and I think that for us to grasp it we need to have a heart to heart talk
with people that’s older, experienced and everything. Like, we’re going through lots of peer pressure right now, so if they come and maybe have a heart to heart talk about what they do and what we’re going to do and what they’ve done, it would be great.

Facilitator: Great! What else do you have to say about those kinds of things?

Girl: I don’t know. Like, we’d like to have doctors come here more and tell us what they do and us go watch what they do.

Facilitator: OK, so you’d like to have doctors here more and you’d like to go up and see the doctors?

Girl: Yeah, I think I’d like to go see them sometime. Cuz we don’t know what they’re doin’ . . . they can talk all they want to, but . . .

Facilitator: OK, so you’d like to go see what the doctors do. What about seeing some of the things that they do to get trained to be doctors? Like shadowing some students training to be doctors or nurses or health professionals?

[Buzz of affirmative responses]

Interest and intent: The majority of participants interviewed at the high school level indicated an interest in or intent to pursue a health profession.

Healthy choices: Student participants who had experienced enrichment presentations by health professionals shared the impact. For example, the following exchange occurred regarding a presentation on smoking:

Boy: There was a group of Creighton students that came and told us all about smoking, you know, and the hazards and they did a couple of experiments with us that really helped. That’s pretty much helped all of us.

Facilitator: How many of you had the opportunity to participate in the presentation about smoking? [All in that middle school focus group raise hands.] So, that’s something that everybody got to do? . . . What are some of the things that you learned?

Boy: Makes your lungs bad!

Another boy: Sores in your mouth.
Girl: Stains your fingers.

Facilitator: What are some of the impacts, what are some of the things it makes you think about smoking?

Boy: It makes you see how bad it is!

Facilitator: Does it make any impact on any of the personal choices that you will make?

Boy: Yeah! It makes me sure that I’m not gonna smoke!

**Synthesis of interviews:** Key player interviewees were unanimous in their affirmation of these key points:

1. CCHPP is a successful collaborative effort between Creighton and a wide range of school and community partners. CCHPP has been influential in strengthening the partnership between Creighton University and the community it serves. This relationship will translate into students from partner schools choosing the health professions as possible careers.

2. CCHPP activities have a beneficial impact on the student participants at every level.

3. The quantitative academic achievement measures collected, including standardized test scores and course grades, do not appropriately reflect the accomplishments of the infrastructure.

**Final-year focus group feedback:** Some themes that emerged included the same types of responses seen in earlier surveys and focus groups.

1. The value of the interpersonal relationships offered by the project director and the project coordinator.

2. The positive impact of shadowing and mentoring.

3. A more in-depth awareness of the variety, training, and responsibilities of an increased number of health professions.

4. Active CCHPP student participants are developing optimistic outlooks toward themselves and their cohorts in CCHPP, toward health careers, and toward Creighton University.
5. Students are formulating wiser individual options linked to health and safety information provided by CCHPP professionals and mentors.

6. They are also making better-informed individual choices regarding career decisions, educational efforts, and their long-range goals.

7. A notable new theme emerged—“Passing it on.” Successful participants find a sense of self-efficacy and joy in giving back by speaking, serving as role models, and participating in presenting activities to the younger students coming through the pipeline.

**Lessons learned:** This partnership identified problems, but treated them as challenges rather than excuses, remaining goal focused and solution oriented as a team. The evaluator synthesized issues discussed in partnership meetings, focus groups, and interviews into a matrix, a living document that clarified the challenges, the solution strategies, and the results, and made recommendations. In addition to the issues of population numbers, consent, flow, and attrition previously described, the following concerns were addressed by the partnership:

**Student participation:** Students expressed many time conflicts related to participation in CCHPP-sponsored activities. For pull-out presentations during school, students were concerned about missing classes or tests. Therefore, some presentations were given to an entire class rather than to just registered CCHPP participants. For after-school or weekend activities, students had conflicts with other school activities, transportation, jobs, sports, babysitting siblings, day care, child rearing, and other personal concerns. Meetings/sessions and activities were scheduled during lunch periods or immediately after school, and incentives such as pizza increased participation for some events.

**Insufficient funding:** The partnership soon recognized that the lofty goals and numerous activities supported by the CCHPP infrastructure were grossly underfunded. To contribute to the expenses required for labor, instructors, mentors, and summer projects, CCHPP sought and received supplemental support from the medical dean’s office, the office of HS-MACA, and other grants. Nonetheless, most personnel contributed time and effort far beyond the paid duty.

**Mentoring:** The need for increased mentoring became evident through the administration of surveys, focus groups, and interviews.
The partnership had hoped to involve the 100 Black Men of Omaha in a mentoring role, but this never materialized due to changing leadership and membership involvement within that organization. To meet the mentoring need, the office of HS-MACA developed its own mentoring activities, where opportunities were provided for one-on-one mentoring by faculty, staff, and upper-level classmates. The mentoring activities were advertised with posters and brochures. One-on-one assistance was offered by the HS-MACA staff. This included tutoring, mentoring, shadowing, and role-playing. Elementary students were paired with high school students while the undergraduate students were paired with health science graduate students, faculty, or staff. Socials were held every two months to share success stories of the mentor-mentee relationship.

**Articulation agreement:** Partners repeatedly expressed concern about the lack of an articulation agreement between Metropolitan Community College and the Creighton University College of Arts and Sciences. Creighton’s School of Nursing and Metro Community College have an articulation agreement for transfer students, which was in place before the inception of CCHPP. As a result of CCHPP’s efforts in accumulating data and the cooperation of the dean of Arts and Sciences, an articulation agreement was finally reached and publicized to prospective health career students in 2004.

**Discussion and Recommendations**

By 2004, the AAMC also recognized that “[a]cademic enrichment programs alone do not provide enough educational content to make a difference in academic performance; adding social and motivational components [has] been shown to help these efforts succeed” (Patterson and Carline 2004, ii). To increase the likelihood of an outreach program’s success in impacting health science career awareness and academic preparation, the evaluator made the following recommendations.

1. Clarify student participation criteria and identify a reasonable, manageable number of participants for the resources available, including personnel, time, and funds. Partners at meetings and in interviews identified fifty as an optimal number of participants to make any significant impact. For long-term pipeline programs like CCHPP, be prepared to address the challenges caused by mobility, attrition, and changes in personnel.
2. Offer opportunities to inform participants of the variety of health career options, the knowledge, training, and academic background required, and the academic and financial assistance available to pursue these career goals.

3. Recognize the essential value of personal relationships in recruitment, retention, participation, academic success, and reaching project goals. Individual contacts between project directors, school and community partners, project coordinator, presenters, community members, parents/guardians, principals, teachers, and students have an enormous impact.

4. Offer opportunities for one-on-one assistance, including tutoring, mentoring, homework and science project assistance, and shadowing.

5. Solicit crucial support and involvement of parents and teachers.

6. Emphasize the importance of academic success, performance on standardized achievement tests, and completion of entrance exams, and their cause-effect relationship to pursuit of career goals.

7. Involve the program evaluator at the time of proposal and budget development to identify assessment strategies that are logical, valid, and congruent with the program’s goals and impact potential. Make appropriate arrangements for the evaluator to be provided with the correct data in a timely way. Consider having graduate students work with portions of the vast data collected for research studies to be published.

8. Identify and recognize the major and minor success stories along the way.

9. Promote the self-efficacy of participants by continuing to have them serve as mentors, tutors, and role models.

Conclusion

Overall the Health Professions Partnership Initiative was a successful collaboration doing a commendable job with the resources available to encourage academic achievement and the exploration of health sciences as a career choice. The quantitative academic indices could not adequately measure the impact of CCHPP, and should be disregarded when measuring CCHPP’s
effectiveness. It is also important to recognize that longitudinal comparisons are inappropriate, because the participant population is fluid; students are continually lost to attrition and replaced with new participants. Survey results and qualitative indices reveal that CCHPP-supported activities have a significant impact on career awareness and preference. Groups of marvelous young people are developing positive attitudes toward themselves, peers, academic success, health careers, and Creighton University. Students are making better-informed personal choices regarding career options, academic efforts, health, and safety.

Endnotes
1. Assessment instruments and protocols are available upon request from Dr. Lynne E. Houtz, lhoutz@creighton.edu.
2. Transcriptions of interviews and focus groups are archived with Dr. Houtz, Creighton University.

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References


### About the Authors

- Lynne E. Houtz, M.S., Ph.D., is an associate professor of science education in the Education Department. Dr. Houtz taught science in elementary and secondary schools in three states and served as science supervisor for Omaha Public Schools. In addition to teaching science and mathematics education courses, she was co-director of the HHMI Build a Human Project, education evaluation specialist for the CCHPP infrastructure, Education Team member for Brains Rule! Neuroscience Expositions, and site facilitator for Creighton’s PT3 Grants.

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### About the Community Partners

- Banneker 2000 CEMS (Community in Excellence in Math and Sciences) is based on an agreement with the National Science Foundation to substantially increase student achievement of challenging academic standards in mathematics and science and prepare a greater number and more diverse group of students for advanced studies in science, mathematics, engineering, and technology.

- The Boys and Girls Club of Omaha’s mission is more than shaping lives by helping children develop character and leadership skills and providing children with a safe, clean environment full of caring adults who know how to let children have fun being children.

- Creighton University and its participating schools and departments, including Health Sciences–Multicultural and Community Affairs (HS-MACA), Schools of Medicine, Nursing, Pharmacy, Dentistry, College of Arts & Sciences. Creighton University is a Jesuit institution enrolling more than six thousand students.
annually. It is consistently ranked as one of the finest comprehensive universities in the nation by *U.S. News and World Report* and regularly appears in *Best Buys in American Colleges*.

- The Jesuit Middle School of Omaha offers the young males of Omaha, particularly African Americans, a quality educational opportunity, encouraging them to claim ownership of their lives and develop themselves as responsible leaders.
- King Science and Technology Magnet Center (KSTM) is a student-centered, diverse learning community where staff members collaborate regularly to provide the best environment possible for student learning.
- McMillan Magnet Center, established in 1958, is Omaha Public Schools’ first magnet junior high school featuring special courses in computers and mathematics.
- Metropolitan Community College, founded in 1974, is a comprehensive, public community college that offers affordable and quality education to all residents of Dodge, Douglas, Sarpy, and Washington Counties in Nebraska.
- North High School is a public magnet high school with a specialized curriculum in math, computer science, and engineering technology.
- The Omaha Public Schools Department of School & Community Services’ mission is to provide the resources necessary to contribute to every student’s academic success, social responsibility, and physical and emotional well-being.
- Sacred Heart Catholic Elementary School’s mission is fourfold: (1) to provide a challenging academic curriculum to children in the North Omaha neighborhood that strives to lead students to develop their God-given talents, (2) to provide an environment in which students can grow in Christian love of God and all creation, (3) to foster intellectual growth, and (4) to assist students in their search to find their full human potential.
- Omaha South High School’s mission is to prepare all students to reach their highest academic potential, develop skills in technology, demonstrate creative expressions, and practice respect for others.