

**Historically Black Colleges and Universities' Mentorship of Health Profession Students:
A Content Analysis Exploring the North Carolina Health Careers Access Program**

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Abstract

The medical profession, as well as allied health careers, in the United States continues to experience a lack of diversity in terms of the number of African Americans practicing in these fields. This work highlights a postsecondary program developed to increase the population of Black physicians and health care workers throughout the nation: the North Carolina Health Careers Access Program. Data from this study centers upon multi-year evaluation reports and journaling. Mentoring serves as the conceptual framework in interpreting content analysis of these reports and the current program director's reflective notes. Recommendations for practice center upon mentor training and cultivating stronger program mentoring relationships between students, faculty, and staff.

Keywords: mentoring, mentor model, HBCU, medical school admission, health careers

Introduction

Historically Black colleges and universities (HBCUs) emerged to meet the education and training needs of traditional African American students previously excluded from higher education in the United States. These postsecondary institutions became centers of higher learning that both educated and prepared group members to be contributors to their communities and the nation, and emphasized contributions their communities made (Cantey, Bland, Mack, & Davis, 2011; Gasman, Nguyen, & Conrad, 2015). This paper describes the North Carolina Health Careers Access Program (NC-HCAP) at a historically Black college and university (HBCU) located in North Carolina. The NC-HCAP program prepares minority students in science, technology, engineering, mathematics (STEM) and pre-health fields to be more competitive applicants when applying to medical schools, graduate and professional programs. The purpose of this study centers upon offering a potential model for similar mentoring efforts via review of the program history and outcomes of the featured initiative.

Literature Review

Research suggests that cultural environments employing a nurturing, supportive, family-like atmosphere supports the academic and personal growth of students which contributes to student academic success (Kendricks, Nedunuri, & Arment, 2013). HBCUs have cultivated this kind of environment and, as a result, have emerged as leaders in professional development and matriculation of students into the health professions (Li, 2007). According to the U.S. Census Bureau (2017), minorities comprised approximately 40% of the population of the United States: Blacks/African Americans (13.3%), American Indians (1.3%), and Hispanic Americans (17.8%). However, they account for merely 16.8% of the nation's registered nurses, less than 10% of Doctor of Pharmacy enrollment, and approximately 9% of the physician workforce (Carter, Powell, Derouin, & Cusatis, 2015; Tejada, Parmar, Lang, & Ghogomu, 2015; Nivet & Castillo-Page, 2017). In other words, African American, Hispanic American, and American Indian professionals collectively represented less than 20% of professionals in the health sciences fields (Valentine, Wynn, & McLean, 2016). While these numbers highlight the disparity in representation between the population of historically marginalized communities in the United States and the population of health care providers from (and for) these communities, it has been noted that HBCUs play an integral role in preparing professionals from these communities for medical and health related service (Burrelli & Rapoport, 2008; United Negro College Fund (UNCF), 2008; Gasman and Arroyo, 2014;; Gasman & Nguyen, 2016).

Mentoring, or transferring professional knowledge, skills, attitudes, and social capital from one generation or person to another, has long served as an effective vehicle for educating and preparing people for future careers (Davis, 2010). Rampton (2016) outlined several benefits of having a mentor, including that mentors serve as trusted advisors who provide information and knowledge, create necessary boundaries for protégés, and provide an unfiltered opinion of protégé ideas. He also suggested that mentors benefit protégés by sharing their experiences to improve upon and areas to avoid, to encourage progress, and to stimulate personal and professional growth. Finally, mentors sponsored protégés by connecting them with personal and professional networks, thereby offering their knowledge, skills, and achievements (Rampton, 2016).

Mentoring has been found to be particularly critical in the development of trainees, junior faculty, and early career investigators from under-represented backgrounds working in academic research, medicine, and related disciplines. Pololi and Knight (2005) found that

mentoring contributed to an individual's career development and personal growth in all fields of study and facilitated junior faculty developing personal, academic, and career management skills, as well as a collegial network. They further found that mentoring in academia helped junior faculty acclimate to their new environment by avoiding practices that lead to burnout, while providing an effective means by which departments may address institutional and departmental needs for faculty retention and success (Pololi & Knight, 2005). Malmgren, Ottino and Nunes Amaral (2010) revealed that, in terms of professional performance, both protégés and mentors benefit from the mentoring relationship, with protégés more likely to rank high in their performances ratings, receive higher salary, and promotions. Eby, Allan, Evans, Ng and DuBois (2008) investigated mentoring relationships among youth in academics and in the workplace, paying specific attention to whether the relationship between mentoring and individual outcomes were modified by the type of mentoring relationship. They found that larger amounts of validity were detected for the academic and workplace mentoring compared to youth mentoring (Eby et al, 2008). Mentoring programs improved job placement and student retention rates, engaged alumni, and provided an enriching college experience. Universities and colleges with good mentoring programs ensured that mentors were knowledgeable, effective, and had experience within diverse contexts, enabling them to offer support and assistance to meet the needs of novices (O'Brian, 2014).

Historically Black colleges and universities hold an extensive history of admitting and mentoring students from underserved and underrepresented communities (Gasman & Nguyen, 2016). HBCUs were the first minority serving institutions established in the United States, founded to provide access to quality education for Black students. While HBCUs enroll students from all ethnicities, the constant throughout their 150 year collective history has been students' desires to be taught by mentors coming from the same backgrounds, experiencing the same challenges, and holding success in their fields of study. Undergraduate and graduate students have benefited from HBCUs and mentorship relationships available there by engaging in opportunities and developing meaningful relationships with colleagues (2016).

Existing best practices

Chickering and Reisser (1993) suggested seven vectors of student identity development that encourages practitioners to incorporate co- and extra-curricular initiatives with curricular learning to educate the whole student (as cited in Patton, Renn, Guido, & Quaye, 2016). Practices that promote access and affordability, academic achievement, as well as social and professional development were found to encourage persistence and graduation from undergraduate institutions (Gasman & Arroyo, 2014). Mentoring has proven central to these practices. Faculty, professional staff, and administrators at HBCUs across the nation have mentored students towards a more critical understanding of their curricular and social experiences, guided career plan development using those experiences, and successful introduction to their chosen professions (Griffin, 2012; Turner, Fries-Britt, & Snider, 2015).

HBCUs have been leaders in developing and implementing best practices to prepare students from historically marginalized communities for careers in the health sciences. Three HBCUs (Howard University, Xavier University of Louisiana, and Spelman College) were among the nation's top ten undergraduate feeder institutions for African Americans applying to medical schools in the United States (Association of American Medical Colleges [AAMC], 2016). These universities combined academic, social, and financial support with intrusive advisement, professional development, preparation for standardized professional school entrance exams, internships, and varied mentoring initiatives.

Howard University has been home to a combined bachelor's and medical degree program. As such, undergraduate students in the pre-medical program, identified as medical students, were mentored by medical school faculty and students on a consistent basis. Early identification with the professional community built student confidence and a sense of belonging (Howard University, 2017). Faculty and medical school student mentors provide targeted individual and group reviews as well as tutoring, where they encourage and supervise students' academic skills and co-curricular enrichment activities (undergraduate research, shadowing, and internship experiences, among others). Of Howard's 126 Black participants, 111 applied to medical school (88%). Howard's medical school applicants represent 2.1% of all Black applicants to US medical schools (AAMC, 2016).

Likewise, Xavier University of Louisiana utilizes formal faculty mentoring and informal peer mentoring to promote student success and secure standing as the nation's third highest supplier of Black medical school applicants (AAMC, 2016). Xavier faculty collaborated on a uniform set of freshman chemistry and biology courses and developed an early alert system to inform advisors and faculty of students who might benefit from additional support in their core prerequisite courses. Xavier faculty provided supplemental instruction for students in course work and in Medical College Admission Test (MCAT) preparation. Additional contact through supportive instruction external to the traditional classroom served as the foundation to formal mentoring relationships. Further, faculty collaborated with professional advisors and coordinators to provide intrusive advising and step-by-step guidance in the development of a medical school application portfolio (including personal statements and faculty recommendations, mock interviews, and a final review of medical school application materials). In addition, a supportive student environment has been fostered through collaboration within a cohort model that includes peer mentors, thereby facilitating peer-to-peer learning and encouraging students to share responsibility in everyone's success (Hannah-Jones, 2015). Xavier's commitment to mentoring recently produced 84 Black medical school applicants out of 91 students. Xavier achieved a 92% rate of medical school application from that year's cohort representing 1.6% of all Black applicants to US medical schools.

Spelman College, a women's college, was the nation's fourth largest supplier of African American applicants to US medical schools in 2016, with 76 total Black applicants and 1.5% of all Black applicants to US medical schools (AAMC, 2016). Spelman mentors coordinated and promoted introduction to the medical field through visits to healthcare facilities and professional schools; professional and paraprofessional training; and a health shadowing program (Spelman College, 2017). Spelman has also been intentional about coordinating recruitment fairs, campus visits, and lectures from medical school recruitment personnel. Mentors exposed students to academic enrichment activities including undergraduate research and professional school application workshops. Additionally, Spelman integrated the intrusive advising and supplemental academic instruction necessary to support students in establishing goals and preparing students to be competitive in medical school application process (Spelman College, 2017).

This literature review suggests that the following are among the best practices employed by HBCUs to prepare students for medical school admission: a purposeful, goal-directed, close-knit academic community; intrusive advising; intensive test preparation; intentional preparation for the medical school application process; and mentoring. The mentoring component is especially crucial for the following reasons:

1. It guides students in their preparation for the academic discipline and professional training;
2. It inculcates students in a community of scholars and practitioners;
3. It celebrates students' accomplishments.

The following section discusses strategies employed by the featured initiative, the North Carolina Central University's (NCCU) North Carolina Health Careers Access Program (NC-HCAP), to prepare under-represented minority students to be competitive applicants for graduate and professional programs in the health professions.

Significance of the Study

In recent years, getting into medical school has become more competitive. An application surplus exists in medical school admission, with not enough colleges or universities to keep up with the demand (Med School Admissions is Getting Too Competitive, 2015). Over the years, the first author has had students with 4.00 GPAs score in the top percentile on the MCAT, apply to sixteen or more medical schools, and not get an interview. This proves particularly concerning and significant given America's physician shortage of doctors of color (under-represented racial minorities). Given the desperate need for increasing high quality health care in communities of color and unique medical and cultural characteristics that inform their degree of well-being, the need of more culturally sensitive doctors and health care providers of racial minority backgrounds is critical. This paper explores the program history and outcomes of one initiative seeking to address the nation's need for more Black doctors and health care professionals: The North Carolina Health Careers Access Program.

Background of the Study

Dr. Cecil G. Sheps, a former physician at the University of North Carolina Chapel Hill in Chapel Hill, North Carolina (NC), reviewed the state of North Carolina in 1971 and realized the state had physicians, but a shortage of physicians of color. This shortage was mainly in the rural and inner-city areas. Dr. Sheps knew that there had to be a solution. As he brainstormed and discussed this situation with several colleagues, he developed an idea of how to address the shortage. Sheps targeted minority and disadvantaged students to pursue health professions as career options. He wanted students to be prepared academically to be competitive applicants when applying to medical school and other health related graduate and professional programs. This was the origin of the North Carolina Health Careers Access Program (NC-HCAP), formally the North Carolina Manpower Development Program (Beecham-Green, 2011). The program has been in existence for more than 40 years on the campuses of the University of North Carolina at Chapel Hill in Chapel Hill, Elizabeth City State University, University of North Carolina at Pembroke, and North Carolina Central University in Durham.

The Director of the Health Careers Center manages the North Carolina Health Careers Access Program in the NCCU Health Careers Center. The goal of the NC-HCAP is to increase the number of under-represented and disadvantaged minority students pursuing careers in health professions. Furthermore, it seeks to prepare students to be academically competitive applicants when applying to medical and other health related graduate and professional programs. In preparing students, NC-HCAP offers:

- a. mentoring;
- b. academic and health career counseling;

- c. health science seminars;
- d. informational sessions/workshops;
- e. graduate program seminars;
- f. professional tests prep courses;
- g. test-taking tips;
- h. shadowing opportunities;
- i. tours/site visits to health facilities/medical schools;
- j. special presentations;
- k. conferences;
- l. study abroad;
- m. international experiences;
- n. internships;
- o. job placement;
- p. other health related educational resources and materials.

Once students enroll, advisors in University College send a list of students interested in careers in the health professions to the Health Careers Center. An e-mail is prepared and sent to students providing information about NC-HCAP.

In 1988, the director of NC-HCAP on NCCU's campus wanted students to have clinical experiences in an area of their health profession's interest. She contacted numerous healthcare facilities but found it difficult to locate agencies that were willing to accept undergraduate students for clinical shadowing experiences. Determined not to give up, the director contacted the Director of Duke University Hospital and Human Resources (DUH&HR). She explained her situation and what she wanted her students to experience. During this conversation, she also mentioned establishing a partnership with DUH&HR to provide clinical summer internship opportunities for NCCU students. Students interested in medicine and other health related areas would be eligible to apply for the internship based on certain criteria. Research confirms that it is necessary for students interested in health professions to understand first-hand the day-to-day life of physicians and other health care professionals. Clinical shadowing experiences are one of the most important components in preparing students for careers in the health profession (Johnson, 2011). The NC-HCAP director felt that adding this resource would increase students' probability of being more competitive applicants when applying to graduate/professional programs. Johnson (2011) holds that to be a competitive medical school applicant a student must shadow a doctor at least once. He also recommended shadowing more than one doctor if possible to give the student different perspectives (Johnson, 2011).

A partnership was developed between NCCU and DUH&HR. The DUH&HR director was successful in contacting eight willing preceptors (teachers or instructors) willing to participate in the program and supervise the NCCU undergraduate interns. As a result, in 1988 the Clinical Work-Study Summer Health Program (CWSSHP) - now the Clinical Health Summer Program (CHSP) - began, and continues today (Thorpe, 1989). Thus, the academic resources, mentoring and the Clinical Health Summer Program comprises the North Carolina Health Careers Access Program.

Students interested in a career in the health professions complete a profile on their first visit to the center, providing contact information, major, and career aspirations. Names are included on the program listserv. Staff inform students of opportunities of their interest when the center receives them. E-mails pertaining to health professions, recruiting events, internships, jobs/fellowships, lectures, seminars, scholarships, and other health related opportunities are e-

mailed to students on the list (Thompson-Rogers, 2016). The director provides academic and career counseling to all students interested in medicine and other health related careers. Students interested in a career in the health professions are given a checklist for preparing for medical school/health careers. The list is separated by classifications, beginning with what criteria are required by students during the freshmen, sophomore, junior, and senior year to stay on track when preparing for medical school or other health related professions. All race and ethnic groups are enrolled in the program.

The director of the NC-HCAP, who is also the University Pre-Health advisor, works with students preparing for graduate level health professional programs in medicine, dentistry, physical therapy, occupational therapy, optometry, physician assistant, and other health-related careers. The role of the University Pre-Health Advisor is to guide students on their paths to medical school and other health related programs. Most universities that have a pre-health advisor also have an advisory committee that works closely with the Center and students. Committee members craft letters for student applicants and send it to the pre-health advisor. The letters are combined with the pre-health advisor's letter to formalize the committee letter. A committee letter from the pre-health advisor provides an all-inclusive description of the applicant's professional development and preparation. The letter also includes the student's perspectives and experiences. Medical School Admission Committees sometimes prefer and/or require a committee letter. The committee letter gives the admission committee an overall evaluation of the student from a group of professionals that know him or her. The letter provides a detailed and precise assessment of the candidate. The committee letter carries an official endorsement from the college or university. This letter is only provided to students with specific criteria (Nimonkar, 2017).

Mentoring components of the North Carolina Health Careers Access Program

The North Carolina Health Careers Access Program has several mentoring components: formal staff-to-student mentoring relationships, peer-to-peer mentoring relationships, formal professional mentoring relationships through the Clinical Health Summer Program, and informal mentoring relationships. The formal staff - to - student mentoring relationship is a function of the University College. Staff in the University College train the mentors. Mentoring programs can be formal or informal. Formal mentoring programs have specific goals and purposes, while informal mentoring is unstructured without goals and are based on personal needs as they develop (Ross-Sheriff, Edwards, & Orme, 2017). Students who mentor other students receive community service hours for their participation. NCCU requires all students to complete 125 community service hours, which is mandatory before graduation. Mentors associated with NC-HCAP are trained by staff in the Health Careers Center. The following describes the mentoring programs in detail.

Formal staff-to-student mentoring relationships

As students enroll at NCCU, advising for freshmen begins in University College the first two years of matriculation. University College is an academic success and enrichment department that works with students to cultivate and enhance academic performance as they transition through the first two years of their academic programs. Student engagement sessions, test-taking skills, stress management, time management, how-to-study, tutoring, and supplemental instruction are offered during this phase. Formal staff-to-student relationships normally begin during the first advising visit or once students receive a permanent advisor. The students meet with this same advisor for two years, unless the advisor discontinues employment, transfers to another position, or the student changes majors. University College advisors schedule appointments to meet with students during the semester. These advisors keep a close

relationship with their advisees/ protégées to make sure the students retain good grade point averages (GPA) are attending classes, and are making use of resources if additional assistance is required, such as tutoring. For students receiving an early warning grade (grade below a C), the advisor contacts the student and discusses a plan to bring up the grade before the end of the semester. Other alternatives might be to advise the student to drop the course if the advisor feels the load should be reduced or the student feels it would be in his/her best interest to drop. Once students complete the years in University College they transition to the department of their major where they are provided an advisor within the department. Departmental advising will be provided to students until graduation, unless the student changes majors.

Peer-to-peer mentoring relationships

The Health Careers Center implements peer-to-peer mentoring relationships. The purpose of this program is to provide guidance and positive influences to first-year students. The program began in August 2015 and was implemented by the NC-HCAP director. Students are asked if they would like a peer mentor once they register with the Center. Peer mentors are juniors with the Center who have registered to be a mentor and are assigned to first time freshmen or transfer students. Normally the match is with two students in the same or similar disciplines. During freshman matriculation, the junior mentor supports and encourages the freshman protégée in his/her academic and personal growth. As relationships continue, the mentor becomes a friend as well as a role model to the protégée. Mentors assist with study skills, improving social skills, and setting career goals. The mentor also takes on other roles when mentoring. For instance, listening to the protégée's problems and making recommendations when needed. One of the most important objectives of the mentor is assisting the protégée with acclimating to college life (Malmgren, Ottino, & Nunes Amaral, 2010). Mentors are asked to meet with the protégée twice a week for two hours or more. Since its inception the program has had 53 mentors and 45 protégée participate. Mentors and protégée provide assistance to the Health Care Center during special projects. Students receive community service hours for assisting the Center.

For peer-to-peer mentoring, the mentor or protégée has the option to continue the program during the sophomore year and keep the same mentor, who will be a senior. The relationship follows the same process for that academic year. The mentor/protégée can withdraw from the program at any time without consequences. Sometimes, protégées would like to change mentors. This request is permitted. Some of the protégées who have been mentored register to be mentors when they become juniors and provide the same support that they received from their mentors. This continuous cycle supports incoming NC-HCAP freshmen through their first two years of enrollment at North Carolina Central University and prepares the protégée to support incoming NC-HCAP freshmen during their last two years of enrollment as a mentor (Thompson-Rogers, 2016).

Professional mentoring relationships

Professional mentoring relationships exist between the director of NC-HCAP and the students with profiles registered with the Health Careers Center. The director mentors students by assisting them with making positive choices academically, taking ownership of their responsibilities, cultivating life skills, developing core values, appreciating diversity/good peer relationships, and assisting in graduate college preparations, all of which reflects the purpose and mission of the North Carolina Health Careers Access Program.

The director normally mentors 175 to 215 students each academic year. Students have a close relationship with the director. The consistent increase in the number of students applying to participate in NCCU's NC-HCAP indicates this program's success. With specific reference to

the mentoring component of the program, participants mention the following academic and personal development milestones as benefits of the program via evaluations: increased self-confidence; more objective and intentional views of their future; increased positive attitudes; development of practical skills; increased employability; enhanced academic and study skills; improved grade point averages and academic achievement; improved chances of application to medical and professional study; and focus on their career aspirations. Professional development mentoring components, such as career building workshops, seminars, and lecture attendance, reportedly improved participants' comprehension, interviewing skills, communication skills, critical thinking, problem solving, and soft skills (Thorpe, 1988).

The Clinical Health Summer Program

Another component of NC-HCAP mentoring lies within the Clinical Health Summer Program. The Clinical Health Summer Program (CHSP) comprises a seven-week experiential learning opportunity provided to eight eligible students. Eligibility is based on students enrolled in a health science or health related degree seeking program at NCCU. Applicants must have a 2.5 minimum grade point average, and have completed biology, chemistry, and math with at least eight credit hours. Finally, students must be members of a racial group that is under-represented in the health professions (i.e., African American, Native Americans, Hispanic/Latinos, and Pacific Islanders) or from educationally or economically disadvantaged backgrounds. Student interns work at Duke University Hospital/Duke University Health Systems or at a private practice in the Raleigh-Durham area for six weeks under the supervision of a licensed healthcare professional in medicine, dentistry, optometry, podiatry, public health, nursing, health administration, allied health, or veterinary medicine (as a preceptor). CHSP students are exposed to various medical procedures based on their field of interest (i.e., neurology, physical therapy, pediatrics, cardiology, oncology, dermatology, urology, and endocrinology). The seventh week consists of professional development activities including work on resumes, personal statements, presentation skills, soft skills, and interview skills. During this final week, they also attend field trips and scheduled science, technology, engineering, and mathematics (STEM) and science, technology, engineering, arts, and mathematics (STEAM) seminars. The program culminates with a ceremony where interns provide presentations on a topic of interest to them during their internship.

The CHSP assures that interns acquire experience, knowledge, skills, professional judgement, and remain interested in pursuing careers in the health profession (Thompson-Rogers, 2016). Indicators of success for this component of the program include the eagerness of interns, preceptors, and Duke University Medical System's interest in expanding the program. For instance, the Duke University Medical System requested that the internship be extended beyond six weeks and that the numbers of interns be increased. In addition, many interns have been invited to continue the internship, volunteer, apply for employment, and/or offered other opportunities (Thompson-Rogers, 2014). During site visits at placement agencies, preceptors and their co-workers have complimented the effectiveness of the program and the professionalism of the interns (Thorpe, 1988). Preceptors further support the program and its interns by writing recommendation letters for graduate and professional programs and providing ongoing mentoring. The annual report for academic year 1989-1990 noted that seven of the students participating in the Clinical Health Summer Program planned to continue their education and pursue a degree in the health profession. One student graduated and gained employment with Duke University Medical Center (Thorpe, 1988).

Informal mentoring relationships

The third mentoring phase is the relationship between students and faculty, staff, alumni, and student organizations. Some students who enroll at NCCU have a pre-existing relationship with a mentor. These mentors could be faculty, staff, alumni (K-12 teachers), sorority members, church members, boys and girls club staff, staff working with summer NCCU STEM and STEAM programs, or programs in neighboring communities. Students may request that the Center match them with a mentor or students may seek their own mentors (Thompson-Rogers, 2014). The staff employed by the NC-HCAP work with students by providing resources to assist in achieving success in their academic programs.

Medical and health related graduate and professional matriculation

Annual reports offer a historical view of activities associated with the Health Careers Center and the NC-HCAP. The 1989–1990 Annual Report notes the acceptance of six students into medical programs, one into a dental program, and one into a pharmacy program for the 1989–1990 academic year. Thorpe (1988) indicates that this was an increase from previous years. Further indication of NCCU's NC-HCAP success is the occurrence of past participants who return to NCCU to assume tenured positions in the College of Arts and Sciences, where the North Carolina Health Career Access Program takes place (Thompson-Rogers, 2014).

Methods

Evaluation results from program reports serve as data for the study's content analysis of documents from 1989 to 2016. The population comprised undergraduate program participants. In addition, journal notes from the current director of the featured program contributed to understanding the history and effectiveness of the initiative. The concept of mentorship served as the conceptual framework used to view and interpret the data, as well as to form recommendations. The constant comparative method of data analysis was employed. Triangulation of data took place in terms of the use of both program reports and reflective journaling. In addition, the use of reports from multiple years offers triangulation in terms of time, thereby strengthening the study.

Results

Since its 1989–1990 annual report, the NC-HCAP program continues to show progress. For instance, over the last five years, the student retention rate [shown in Table 1] rose from 69.2% in 2009 to 80.6% in 2015. The rate has not met the projected goal, but continued to increase 2009 - 2015, yet dropped to 77.7% in 2016.

Table 1: Retention rates, 2009-2016 (freshman to sophomore year)

Cohort	Rate	Goal
2009	69.2%	70%
2010	67.7%	78%
2011	71.5%	79%
2012	73.2%	80%
2013	73%	80%
2014	79.8%	82%
2015	80.6%	82%
2016	77.7%	82%

Data collected by the College of Arts and Sciences further reveal that 34 students were admitted to graduate and professional programs and 247 students completed internships. The following academic year, 2013–2014, 40 students were admitted to graduate and professional programs and 221 participated in internships. In the 2014–2015 academic year, 45 students were admitted into graduate and professional programs, while 103 were involved in internship opportunities. In 2015–2016, 42 students were admitted to graduate and professional programs, with 99 students completing internships. Finally, during the academic year 2016–2017, 22 students were admitted to graduate and professional programs and 118 students interned (Wilson & Nwosu, 2017). Mentoring contributed to this success as noted in personal communications to the current program director.

Discussion

While the data suggest benefits to program participation, they also note areas of improvement in terms of the mentoring component of the featured initiative. While some sources advocate mentoring relationships held between protégés and mentors who share ethnicity and cultural experiences (Davis, 2010), the presumption is often that position and professional experiences are sufficient preparation for practicing professionals to support and guide novices. Yet formal mentors must be trained and engaged in practices that make mentoring relationships successful, and in fact mutually beneficial.

In addition, institutions should recruit Black faculty in STEM fields, which may encourage confidence and, ultimately success of Black students via validation from experiencing instruction and guidance from a faculty member possessing the same race. Historically Black colleges and universities hold strong records in producing STEM undergraduates who pursue graduate and professional degrees. This record has resulted in HBCUs being included among the top twenty institutions awarding science and engineering bachelor's degrees to Blacks from 2006 to 2010.

Conclusion

While the target program discussed in this work realized success via increased numbers of Black students entering medical and health training programs/ careers, work in the area must continue. The under-representation of members of marginalized groups of color in all health

professions continues to exist today (AAMCNEWS, 2017). Though significant progress has been made through the contributions of the NC-HCAP, students are still faced with multiple challenges presenting barriers to successful navigation of the medical career trajectory. For instance, some students struggled with attaining MCAT and Graduate Record Exam scores which make them eligible to enter medicine and other health-related graduate and/or professional programs. This reflects the dearth of rigorous science and math curricula in a significant number of traditional K-12 schools in the U.S. and a lack of resources and training for K-12 STEM educators serving minority populations.

The lack of representation of native speaking, under-represented ethnic groups among STEM faculty in higher education presented another challenge for program participants of this study. For instance, during program evaluations, students mentioned difficulty in understanding the accented English of some foreign born faculty members as a barrier to learning (Thompson-Rogers, 2014). However, these language barriers might be remedied via multifaceted modes of sharing information from the mentor. Overall, mentoring at HBCUs is essential to insure students' successful navigation of their academic journeys, professional development, and eventual careers in medicine and allied health professions. Recommendations for practice center upon further cultivating program mentoring relationships between students, faculty, and staff at HBCUs.

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