

Empty Seats: Attracting Black and Latinx Male Students to the Medical Pipeline

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A number of complex factors can be associated with barriers that cause Black and Latinx male students who are enrolled in a prehealth major to miss pipeline program opportunities. For some students' associated barriers in education can create missed opportunities that range from low grade point averages to the lack of sponsorship as well as other valid reasons that are supported in literature (Thomas et al., 2011). So how can we attract Black and Latinx male premedical students for pipeline programs and fill empty seats with their presence? In this study, I seek to understand how high achieving Black and Latinx male premedical students succeeded barriers to demonstrate academic achievement and how they became knowledgeable about pipeline programs. Thus, this study will review advising, peer mentoring, marketing and recruiting as three target areas that may influence students' decisions to apply and matriculate into premedical pipeline programs.

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1.0 Chapter 1

A commitment to increase diversity in medicine is a challenge that many in medical education are working to resolve. One intervention that is consistently mentioned throughout literature is the idea of pipeline programming (AAMC, 2015; Bouye & Williams, 2016; *Jacob*, 2015; Strayhorn, 1999). Supplemental training through pipeline programming can increase knowledge and skills for racial and ethnic minority student groups (Katz, Barbosa-Leiker, & Benavides-Vaello, 2016). Pipeline programs motivate students to excel in science majors and can create a reliable pathway into medical school for students who are determined to achieve that goal (AAMC, 2015; Bouye & Williams, 2016). The School of Medicine offers such pathways for students from racial and ethnic minority groups, one of which is the Summer Premedical Academic Enrichment Program (SPAEP). The program prepares its participants for careers in medicine and research.

While educational opportunities exist at the medical school, one issue persists: Black and Latinx male premedical students apply to premedical pipeline programs in fewer numbers than their female counterparts (AAMC, 2015; Gallegos, 2016; Laurencin & Murray, 2017). This issue presents a discouraging, and complex reality.

Program administrators and faculty strive to understand how to recruit Black and Latinx male students who are interested in pursuing a career in medicine and to determine best methods for sharing information about enrichment programs. To ensure information is reaching the targeted population, an intentional recruiting and marketing plan would be beneficial for enrichment programs like SPAEP, which includes a strong online presence. However, to achieve the desired

outcome we need to learn more about contributing factors that cause the low number of applications for Black and Latinx male premedical students.

This study utilized the facilitation of structured interviews and a survey to gain insight on sustainable methods of interaction for this targeted group of students. My intentions were to learn how to encourage Black and Latinx male premedical students to apply to SPAEP in greater numbers.

1.1 Definitions

The below selection of phrases and their descriptions have been researched to provide common word usage as best described by some of the nation's leading health-conscious organizations and higher education institutions. These word choices are commonly used when attempting to unfold issues surrounding racial and ethnic minority student populations as it relates to pipeline programming. These phrases will be applied throughout this document.

The Leaky Pipeline - In the field of medical education, the pipeline can describe a pathway to educational opportunities for racial and ethnic groups. However, barriers in education may cause racial and ethnic groups to abandon the pathway and their interest in medicine (AMA, 2014). Abandoning the path represents a leak in the pipeline that leads to medical education.

Pipeline Programming - Katz et al. (2016) accurately define this term as such: "The pipeline refers to programs at all levels of education intended to target, enroll, and support to graduation certain students, usually underrepresented students including minority, low income, and women, with the goal of increasing their representation in certain fields" (p. 1).

Underrepresented in Medicine - Underrepresented in medicine (URiM) is a term widely used in the health sciences field. The term refers to racial and ethnic minority groups who traditionally lack representation in medical education and in the medical workforce (AAMC, 2014).

1.2 Overview of the Problem

Racial and ethnic minority student groups have the potential to benefit from premedical pipeline programs (Vassar, 2015; Watson, 2015). Program administrators labor to seek out students who are interested in health-related careers to provide opportunities that will inspire them to imagine science and technology differently through experiential learning, mentoring, and dialogue. Attempts are made to address philosophical approaches that would dismantle fear of what may appear to be a difficult subject in education that can actually yield exciting, long-term opportunities (Oyewole, 2001). Additionally, the ability to market pipeline programming in a manner that will attract students is worth discovering.

The School of Medicine is working to provide educational opportunities for racial and ethnic groups. However, the challenge is to address noticeable differences in the low matriculation rates of Black and Latinx male students for premedical pipeline programs. The number of Black and Latinx male students in these programs is significantly lower than Black and Latinx female students who apply and are accepted (Gallegos, 2016; Oyewole, 2001; Vassar, 2015). Statistical results of this trend are also recognized in admissions outcomes for medical schools (Sullivan Commission, 2004; UPSOM Fact Book, 2020; Watson, 2015).

Three major national reports specifically bring attention to the issue of the dearth of Black males in medicine. Authors Cato Laurencin and Marsha Murray published a report titled “An American Crisis: Lack of Black Men in Medicine” regarding the subject in the *Journal of Racial and Ethnic Health Disparities* (2017). Next, in 2003, the *Sullivan Report on Diversity* focused its concentration on the inequality of diversity in the healthcare workforce. Finally, the Association of American Medical Colleges (AAMC) produced a powerful report titled “Altering the Course: Black Males in Medicine,” in which the authors depict an array of issues relating to Black males in medicine and expressed the positive effects of pipeline programs and mentoring (AAMC, 2015). Even still, with attention focused on the lack of Black males in medicine, this issue continues to be a national concern for all racial and ethnic minority male students (AAMC, 2015; AMA, 2014; Vassar, 2015).

Moreover, concerns that have been identified in national reports prompt us to act responsibly and immediately to enroll and retain talented students. The ability to develop an effective recruiting and marketing plan and online presence would be advantageous to ensure students receive information about enrichment programs. If not, we risk losing qualified participants (Jacob, 2015). Thus, promoting the SPAEP pipeline program to Black and Latinx male students would be a worthy and necessary move toward upholding the mission to train racial and ethnic minority groups for careers in medicine and research.

Matriculation into medical school for high achieving Black and Latinx male scholars is obtainable. However, they comprise a low percentage in the applicant pool. This disheartening reality raises concern nationally among many medical institutions, research centers, and affiliated medical communities. Summer premedical enrichment programs, particularly those that offer guaranteed admittance, are designed to provide durable pathways that aid in solutions to increase

enrollment for this group of learners. It is, therefore, necessary to explore whether a strong marketing plan, the role of advising, and peer mentoring will encourage participation for early assurance programs like SPAEP.

1.2.1 Accreditation Liaison Committee on Medical Education Goal 3.3

The medical community is concerned with the low numbers of racial and ethnic groups who are in the medical workforce (Vassar, 2015). Recruiting initiatives and pipeline programming act as drivers that motivate institutions to ensure racial and ethnic groups are enrolled in the medical academy (Callahan, 2019; Oyewole, 2001; Watson, 2015). Assessing the above-mentioned targets will also work towards upholding the Liaison Committee on Medical Education (LCME) accreditation Standard 3, Goal 3.3 for diversity initiatives (LCME, 2016).

The LCME governing body is strategic in its nationwide approach to regulating diversity initiatives among leading medical institutions. The LCME Goal 3.3 encourages institutional support to increase diversity initiatives which includes pipeline programming. This is a significant procedure that medical institutions seek to enforce to ensure a successful accreditation assessment (LCME, 2016).

1.2.2 The Critical Need for Funding

The National Institutes of Health (NIH) provide funding for institutions to operate pipeline programs that train students in research (Hurtado et al., 2009; NIH, 2007). The ability to acquire appropriate funding is significant to maintaining tools and resources such as staff and labs that are

necessary to keep programs operational and to manage recruitment and retention efforts for science-based programs.

Summer premedical enrichment programs are competitive on a national level and students with the highest grade point averages and other medically related experiences are earnestly pursued to fill limited seats within any given academy. Academic enrichment programs that offer financial incentives are in a better position to attract participants and increase the number of racial and ethnic groups in medicine and research (Hurtado, 2007). Financial incentives and resources motivate retention and persistence among racial and ethnic minority groups (National Academies Press, 2011).

1.2.3 The Impact of Pipeline Programs

A myriad of published articles and reports can be found to address the impact of pipeline programming. Reports demonstrate the value of implementing pipeline programs to youth in K-12 and the importance of role models at an early age (Weiner & Stacy, 2018). Dr. Dale Okorodudu, founder of Black Men in White Coats, encourages his colleagues to reach back and provide mentorship and guidance to Black male students who wish to pursue a career in medicine (Callahan, 2019). The pipeline program in medicine is about inspiring and training the next generation of physicians.

The AAMC produced an impressive report titled *Altering the Course: Black Males in Medicine*, which provides a comprehensive and well-articulated description of academic interventions to increase the number of racial and ethnic groups in medicine (AAMC, 2015). One of the results found in the report prompted this statement: “Engagement in premedical and research pipeline programs was noted as a significant factor in the success of all students of color, including

black males...and programs [such as SPAEP], were highlighted as necessary to increasing diversity in the health professions, especially for Black men” (AAMC, 2015, p. 13).

The Journal of Healthcare Science and Humanities (Bouye et al., 2016) is in favor of pipeline interventions as these types of enrichment programs can greatly influence medical school matriculation rates and produce a greater representation of Black and Latinx doctors in the medical workforce. The impact of pipeline programs is multidimensional to inspire academic success.

1.2.4 The Value of Medical Pipeline Enrichment Programs

A former SPAEP student, Anthony Kulukulualani, was featured in a 2015 article titled “AAMC Report Examines How to Increase the Pipeline of Black Men Entering Medical School” published by JAMA (Jacob, 2015). In his interview with Julie Jacob, Dr. Kulukulualani addressed challenges during his premedical undergraduate experience as he made decisions, devoid of any support from advisors, regarding courses to take for the premedical track. He then gives credit to his involvement in SPAEP and other pipeline programs to demonstrate their effectiveness in offering individual support that includes the benefit of advising and mentoring (Jacob, 2015; Oyewole, 2001).

1.2.5 The Value of Black and Latinx Male Medical Practitioners

The Kelly report, *Health Disparities in America*, emphasized the importance of combating health disparities for racial and ethnic minority populations. The report supports the necessity to train Black and Latinx students for work in regions where these populations suffer greater incidence of health-related disparities (Bouye et al., 2016; USDHHS, 2001; Black Caucus Health

Braintrust, 2015). This reality is perceived in communities where primarily Black/African American males are more inclined to visit physicians who look like them and have the capacity to empathize with the narrative of their medical history, than to labor with the idea of explaining every facet of their life to physicians from non-racial and ethnic groups (Jacob, 2015).

Once every 10 years the US Department of Health and Human Services releases its agenda for addressing the nation's health disparities. The *Development of the National Health Promotion and Disease Prevention Objectives for 2030* is currently underway to provide another description of health disparity and its impact on the nation (Office of Disease Prevention and Promotion, 2020). Medical institutions can directly impact outcomes for under-resourced communities by recruiting and training talented Black and Latinx students along with White students to work with this population.

In a landmark report made in 2004 by the Sullivan Commission titled the *Sullivan Report*, findings reiterate the importance of training racial and ethnic students for the healthcare workforce to help combat health inequalities in populations where people are medically underserved (The Sullivan Commission, 2004). Training that begins with premedical pipeline programming to place students on the path to success is a critical step in the process. This report presents a powerful rationale for the need to increase the matriculation rates of racial and ethnic minority groups in academic medicine to prepare them for careers in the health sciences.

In the below graph, the AAMC illustrates trends for the next three years that urge the medical community to strive toward creating a more inclusive medical workforce for the betterment of society (AAMC, 2020). The need is great to recruit, train, and retain Black and Latinx male students to pursue a career in medicine and research.

The sixth annual study, *The Complexities of Physician Supply and Demand: Projections from 2018-2033*, was conducted prior to the rise of COVID-19 for the AAMC by the Life Science division of IHS Markit, a global information company. This analysis, conducted in 2019, includes supply and demand scenarios and was updated with the latest information on trends in healthcare delivery and the state of the healthcare workforce, such as data on physician work hours and retirement trends. (AAMC, 2020, p. 1)

Table 1. Projected Physician Shortages by 2033

Medical Areas	Shortage Range
Primary care	Between 21,400 and 55,200 physicians
Nonprimary care specialties	Between 33,700 and 86,700 physicians
-- Surgical specialties	Between 17,100 and 28,700 physicians
-- Medical specialties	Between 9,300 and 17,800 physicians
-- Other specialties (i.e., pathology, radiology, psychiatry)	Between 17,100 and 41,900 physicians

1.3 Problem of Practice

The lack of Black and Latinx males in medicine has been a topic of conversation for many years among medical educators as well as those who work in science-based research fields and in the medical workforce (AAMC, 2015, 2016; AMA, 2015; Oyewole, 2001; Watson, 2015). In recent years, ongoing models of various interventions to mitigate racial and gender-based disparity in medicine have formulated tutoring strategies, mentoring, and enrichment programs (Bouye &

Williams, 2016; Jacob, 2015; Strayhorn, 1999; Vassar, 2015). These interventions have great potential to introduce students to role models in medicine who can inspire positive outcomes to increase and retain talented students from racial and ethnic groups in medical fields.

My goal is to increase interest by 50% in the summer premedical enrichment program among Black and Latinx male premedical students who seek to become physicians. The program, which has been in existence for over four decades, has historically averaged a greater percentage of female participants that matriculate than males. It is necessary to influence motivation and encourage enrollment by their sophomore year for a program that focuses on strengthening skills and increasing scientific knowledge. These targets were also recognized by the American Association of Medical Colleges (AAMC) in their report *Altering the Course: Black Males in Medicine*. The report framed recommendations to guide and encourage medical institutions to develop pipeline programs that train and promote racial and ethnic groups for advancement in medical education (AAMC, 2015). It is important to first understand how to gain the interest of racial and ethnic groups, inform them of existing opportunities, and encourage them to apply to pipeline programs.

Three interrelating themes were reviewed for the study, one of which directly explores methods to develop a solid marketing strategy that will attract Black and Latinx male students to the program. Questions regarding a strategic marketing plan probed for reasons that may hinder students from applying to the program. Next, the study searched for ways to foster relationships among the Office of Diversity, Equity, and Inclusion and undergraduate advisors as well as existing peer mentor groups on campus. An analysis of peer mentors considered the idea of mentoring to help recruit students for SPAEP by disrupting misconceptions about the process to prepare for medical education and what students can expect when they reach that goal.

SPAEP has, by and large, labored to attract and enroll Black and Latinx male students in its program. The program targets students from racial and ethnic groups to prepare them for medical education by broadening their scientific capacity through supplemental training and encouraging active lifelong learning. It is worth noting that SPAEP has never strived to specifically recruit male students or female students, as it accepts qualified applicants regardless of their gender identity. However, the recurrence of Black and Latinx males who apply are few. Research demonstrates the shortage of Black and Latinx males that matriculate into medical school and who are in the medical workforce (AAMC, 2014; AMA, 2014). This undesirable trend is one that the program administrator is striving to understand.

1.3.1 Partnerships

The Office of Diversity, Equity, and Inclusion has been in existence at the university for more than four decades. Over the course of time, strong and meaningful relationships were developed among departments and entities that joined the mission to increase diversity in medical education and in the workforce. The robust list of partners includes the Office of the Vice Dean, Office of Admissions, Office of Health Sciences Diversity, UPMC Medical Center, School of Medicine faculty, university undergraduate science faculty, researchers, past and present summer program students, university undergraduate advisors—both general advising and health professions advising—and administrators.

Thus, invaluable partnerships allow SPAEP to secure teaching, mentorship, research opportunities, and educational guidance. Summer program participants are better prepared for the rigor of medical education because of the support they receive from our partners. It is undeniable

that partnership involvement strengthens the programs' ability to accomplish tasks that bear social and ethical responsibility.

1.3.2 Research Setting

This study occurred at the University of Pittsburgh School of Medicine (UPSOM). UPSOM is the primary location for all SPAEP program operations, and it allows participants direct access to the medical school, the university campus, and the city. Engaging participants in the medical school environment, allows for a unique and exceptional learning opportunity that connects participants with faculty, medical students, staff, and researchers in a nationally recognized educational environment which includes access to hospital facilities. Program participants have articulated their gratitude of being accepted into the program and learning at a major research institution with a rich history of success in education, medicine, and research.

The University of Pittsburgh School of Medicine is one of seven colleges in Pennsylvania that offer medical degree programs. The UPSOM received over \$528 million in NIH support (UPSOM, 2018) and is known world-wide for advancements in medicine due to researchers such as Jonas Salk for his discovery of the polio vaccine; Bernard Fischer, a pioneer in breast cancer research; and Thomas Starzl, who orchestrated the first human transplant. At present, the UPSOM and UPMC are on the cutting edge for developing a vaccine to combat SARS-Cov-2 (the novel coronavirus) according to Pitt Wire Health (University of Pittsburgh, 2020). These are some of the great medical advances that have occurred on our campus.

The institution's rich history helped to position it as one of the leading medical and research institutions in the country (US News, 2020). That status allows UPSOM to be sought after by undergraduate students who seek careers in medicine and research. It also challenges the institution

to remain engaged in advanced, state-of-the-art curriculum and necessitates its teaching faculty to prepare better practitioners and scientists as well as to engage in social issues that affect the overall health of our society and culture (UPSOM, 2020).

The UPSOM is committed to excellence and improving its environment by engaging in diversity and inclusion initiatives that help to increase racial and ethnic groups in medicine. In 2020 the UPSOM accepted 149 students. The overall gender ratios reveal 46% male, 54% female, and 16% from racial and ethnic groups with 13% male and 7.4% female. These numbers fluctuate yearly and represent trends that are not unique to UPSOM but common across the nation (AMA, 2015; Vassar, 2019). There is, however, an urgency to increase the number of Black and Latinx males who enter medical school, and national attention on the issue has been afforded to meet this challenge (AAMC, 2015; Sullivan Commission, 2004).

The number of Black and Latinx males entering our institution has slightly improved over time but is still gravely low. One way to promote diversity at the academy and address the concern of Black and Latinx male presence is through the premedical early assurance program (UPSOM, 2020). The UPSOM maintains an active program that targets students from racial and ethnic groups. However, the lack of applications from Black and Latinx males is troubling for program managers that work to enroll this targeted group.

1.4 Overview of the Study

The purpose of this study was to determine how advising, marketing, and peer mentoring impact results for Black and Latinx male premedical student applications for SPAEP. My goal was to understand where the premedical pipeline is leaking that restricts recruitment of Black and

Latinx males for SPAEP. I hoped to gain insight that will guide recommendations to develop a reliable recruitment plan.

A review of advising considers how Black and Latinx male premedical students are engaged and encouraged along their undergraduate career. It is necessary to gain knowledge regarding their engagement with academic advising to determine if students are receiving guidance to find programs like SPAEP. If challenges exist between advising and students, how do Black and Latinx male students find support that will prepare them to meet the academic requirements for pipeline programs? Supportive advisors can greatly impact student success and their ability to learn about programs like SPAEP.

Next, securing mentors for Black and Latinx male students in K-12 through college has been an ongoing challenge. While it is common knowledge that mentoring is beneficial, an exploration of how peer mentors impact progress for premedical students is important to learn. Additionally, it is equally important to understand what Black and Latinx male students expect from this type of engagement. The study considered if peer mentors are an untapped resource that can offer sustainable support and promote programs like SPAEP.

Finally, the role of recruiting and marketing is essential to pipeline programming to attract and encourage a diverse body of students. Acquiring information about marketing strategies to promote SPAEP to Black and Latinx male premedical students will broaden our understanding of approachable models that appeal to them. It would be of great value to know how they wish to receive information and what they desire in a premedical enrichment program.

2.0 Chapter 2

2.1 Background of the Problem

We have limited knowledge about why Black and Latinx male premedical students apply to premedical pipeline programs in such low numbers. The problem of practice presents a challenge to discover methods that will attract Black and Latinx male students for premedical pipeline programs. We seek to matriculate a greater representation of Black and Latinx males into the premedical pipeline and increase their presence in medical institutions (Laurencin & Murray, 2017).

The scarcity of Black and Latinx males in medicine is alarming and efforts are underway to combat what is recognized as a leaky pipeline which diverts their pathway to successful outcomes (Barr et al., 2008; Freeman et al., 2016). The impact of increasing the numbers of Black and Latinx males in medical education through pipeline programming is significant. Such focused initiatives can reinforce their determination to become world changers who aim to eliminate health disparities which lead to poor health outcomes for medically underserved populations.

2.2 The Impact of the K-12 System and Its Effects in College

Research that recommends introducing STEM programs and medical science to youth at an early age was validated in an article published by *Pre-Premed*, titled “Pipeline Efforts Steer Elementary School Students into Medicine” (Weiner, 2018). Youth that are devoid of proper

exposure and opportunities to medical science fields, that can propel them to the next level, continue to be ill-prepared (Weiner, 2018; Kuenzi, 2008; Southeast Comprehensive Center, 2012).

Nonetheless, higher education leaders continue to work to close the gap by investing in after-school pipeline programs (Vassar, 2015). While effective learning modules offer exposure to various health career pathways (AMA, 2016; Weiner, 2018), several limitations may exist that are common in racial and ethnic communities. Limitations are evident with regards to the lack of STEM education for youth in grades K-12, securing mentors, finding pipeline opportunities, and the complexity to sustain committed parental support for program involvement on an ongoing basis. Parental support is essential for K-12 students among all racial and ethnic backgrounds.

Sandra Oyewole, in her report titled *Sustaining Minorities in Prehealth Advising Programs: Challenges and Strategies for Success*, notes the “pervasive inequities in education leave many underrepresented minority students ill prepared for the rigors of advanced education” (2001, p. 1). Those pervasive inequities in education that begin in K-12 learning environments may be further identified in higher education by the lack of advising, mentoring, low self-efficacy, and motivation.

This report examined potential areas in education that may hinder matriculation into premedical pipeline programs for Black and Latinx male students. A review of advising, peer mentoring, and marketing was studied to determine if these areas directly impacted academic outcomes and pipeline involvement of Black and Latinx male premedical students. Feedback from Black and Latinx male students is necessary to understand their point of view regarding their premedical education experience.

2.3 Literature Review

2.3.1 The Leaky Pipeline

The leaky pipeline phenomenon for racial and ethnic minority groups was described in literature as a theoretical paradigm that has been a popular topic of conversation for years. The phenomenon describes the effects of a disrupted pathway for racial and ethnic groups who pursue careers in the health profession (AMA, 2014). It also draws attention to the urgency of eliminating barriers in education that would cause students to withdraw from undergraduate health science programs as examined in several peer review articles (AMA, 2014; Barr et al., 2008; Freeman et al., 2016; Jacob, 2015; Katz et al., 2016).

The negative effect of leaks in the pipeline has long-lasting implications among racial and ethnic student groups, as the nation is in dire need for greater representation of diversity within the medical workforce (AAMC, 2015; Jacob, 2015). The implications of losing students who are in pipeline programs present a complex situation for institutions that are committed to investing in enrichment programs that encourage racial and ethnic groups to pursue careers in medicine and research (Vassar, 2015).

Literature that provides practical applications to stop the pipe from leaking involves mentors in medicine and challenging flawed advising that perpetuates dissatisfaction with one's educational experience (Barr et al., 2008; Callahan, 2019; Sánchez, 2013). Additionally, the institutional development of sustainable pipeline programs that enhance scientific activity and proficiencies and offer a clear pathway into the academy is of great value (Strayhorn, 1999).

2.3.2 Support Systems

What we know today about student academic support systems is that they are not all fool proof in meeting the needs of students (Katz et al., 2016; Oyewole, 2001). Theoretically, what we hope to see on college campuses is general advising and pre-health advising offices that are adequately staffed with team members who receive and share information about science-based opportunities with students (Shields, 1994). We also hope that Black and Latinx students are treated in a manner that will promote academic achievement. However, all too often counterproductive comments are made regarding mistrust in advising offices and a lack of support systems that result in unsuccessful outcomes for students, primarily those who come from racial and ethnic minority groups (Freeman et al., 2016; Oyewole, 2001).

In a study conducted by the Journal of the Association of American Medical Colleges, it was suggested that one of the contributing factors that lead to a declined interest in premedical studies for racial and ethnic minority students is due to negative experiences with advising coupled with poor experiences with science courses overall (Barr et al., 2008). Advisors can potentially bridge the gap between students and course instructors by encouraging students to meet with instructors at the onset of academic difficulty with a particular course. However, if there is a lack of or mistrust in advising, these two culprits can create undesired results (Barr et al., 2008).

Similarly, in a study published by the National Academy of Sciences, Oyewole (2001) held academic institutions accountable for inequities in education that exacerbate problems that lead to the lack of racial and ethnic groups who seek medical education, given the fact that too many of them become derailed during their undergraduate years. In fact, Oyewole also described a faulty advising system along with the mix of other challenges students face. Challenges that compound a faulty support system were identified as a need for financial support, a lack of mentoring,

assistance with rigorous science courses, and support for feelings of inadequacy that follow the emotional toil that faulty support systems can have on a student's overall experience (College Board, 1999; Oyewole, 2001). If one hopes to see an increase in medical school matriculation rates as well as an increase in the medical workforce among racial and ethnic populations, institutions must be intentional in developing meaningful and supportive systems for its students. Likewise, medical institutions must act to strengthen their ties to undergraduate advising offices and equip them with information and resources to help promote opportunities in medicine and science.

2.3.3 Research for Premedical Students

SPAEP is intentionally structured to include a significant level of research opportunities in its program design. However, students who arrive from non-research-based institutions can be challenged with the task of learning the skills necessary to engage in research. These students have a desire to learn and are excited for the opportunity, but they may not have had any significant amount of research experience prior to attending the program.

In a study titled "Diversifying Science: Underrepresented Student Experiences in Structured Research Programs" scientific discovery was described as essential to students who are interested in matriculating into a medical research institution (Hurtado et al., 2009). Investigators for the study found research to be a method that attracts students to enrichment programs as it allows for connection to principal investigators for personalized mentoring and to build self-confidence in their ability to understand scientific principles (Hurtado et al., 2009; Kinkead, 2003; Lopatto, 2004). Participants are excited to join in research projects and they work well in those settings when given the opportunity. The need to increase the underrepresentation of racial and

ethnic groups in biological sciences and research is connected to targets that address weighty health disparities that are prevalent in medically underserved communities (Hurtado et al., 2009).

Structured enrichment programs like SPAEP are significant to building self-confidence and motivation through the process of encouragement, affirmation, mentoring, and guidance (Oyewole, 2001). Premedical enrichment programs aim to increase success rates for students who seek advanced education in the health professions and research (AAMC, 2015; AMA, 2014).

2.3.4 Medical School Matriculation

Navigating medical school admissions procedures is a daunting and challenging process for many Black and Latinx students. And there are several perceived barriers to consider for medical school admissions requirements that applicants from racial and ethnic groups must face. A study reported in the Journal of the National Medical Association found that common barriers that students mentioned were undesirable MCAT scores and the lack of role models and faculty from racial and ethnic groups (Agrawal, Vlaicu, & Carrasquillo, 2005).

The AAMC provided an online tool that outlines the cost of the medical school admissions process (AAMC, 2020). MCAT preparation courses and study guides are costly and most Black and Latinx students cannot afford to take advantage of those types of learning materials that provide concepts to prepare them for the exam (AAMC, 2020). These circumstances only create further drawbacks for Black and Latinx students. The MCAT exam is significant to the admissions process. Undesirable scores can result in students having to retake the exam, thereby adding additional stress and financial burden to their situation. The burden of financial insecurity is further escalated when students factor in the cost of traveling for admissions interviews. The overall process is costly, as is medical school tuition (AAMC, 2021).

Medical schools must continue to invest in enrichment and early admissions programs that offer racial and ethnic minority student groups opportunities that prepare them to become qualified applicants (Vassar, 2015; Strayhorn, 1999). An aggressive and sustainable plan to recruit and retain racial and ethnic minority students will help to stabilize matriculation rates (Vassar, 2015). This responsibility motivates our response to the issue of declining numbers of Black and Latinx males in medicine.

2.3.5 Study Design for Premedical Pre-Admissions Programs

A study in the Journal of Academic Medicine to predict matriculation rates into medical school reviewed summer premedical pre-admission programs for racial and ethnic minority students (Strayhorn, 1999). The study assessed student success within the first three years of medical school to determine if involvement in premedical programs provided any greater academic performance outcomes (Strayhorn, 1999). This study is an excellent resource for demonstrating the complexity and importance of designing programs that adequately prepare students for medical education.

3.0 Chapter 3

3.1 Study Design

The purpose of this study was to understand how advising, peer mentoring, marketing, and recruiting contribute to the low number of applications from Black and Latinx male premedical students for the Summer Premedical Academic Enrichment Program (SPAEP). Two objectives for the study are: (1) to intentionally recruit and market SPAEP (2) to build relationships with Black and Latinx male premedical students, mentors, and advisors.

The data analyzed the perspectives of Black and Latinx male study participants regarding their journey to medical school and general thoughts about what they need to succeed. It was important to gain knowledge about the types of enrichment programs pursued, why those programs were of interest to them, and how they searched for enrichment programs like SPAEP.

3.2 Research Questions

1. How do advisors help Black and Latinx male students find pipeline programs that would provide them with training to prepare for medical school?
2. What can peer mentors do to help Black and Latinx male premedical students navigate their way through an undergraduate experience?
1. How do Black and Latinx male premedical students seek information about enrichment programs (internet, advisors, family/friends)?

3.3 Methodology

3.3.1 Research Study Samples

The study utilized a series of one-on-one structured interviews with 12 Black and Latinx males consisting of nine current undergraduate students, one resident doctor, and two successful practitioners. I assessed common characteristics in responses to open-ended questions. Interpretation was based on comparable data to maximize the assessment and validity of the study and understand student experiences (Creswell, 2016).

Study participants were asked by email or contacted by phone to participate in the study. Each study participant was scheduled to meet with me during the summer of 2021. The targeted group was selected for the study to learn of their experiences, understand how Black and Latinx males select premedical enrichment programs, and what attracted them to SPAEP. Study participants were reliable sources to answer three significant questions for the study. The first question will help to assess how advisors encourage Black and Latinx male premedical students to apply to premedical enrichment programs. The second question is designed to determine if their view of support from peer mentors is beneficial. The third question will attempt to analyze how they seek premedical enrichment programs.

3.4 Analysis of the Data

An analysis of the data allowed me to review research findings to understand what attracts Black and Latinx male students to premedical pipeline programs and the challenges they face to

find the right program. I explored three fundamental areas as potential contributors to the lack of SPAEP applications from Black and Latinx male students in the areas of advising, peer mentoring, marketing, and recruiting.

I applied a mixed-methods approach to facilitate the evaluation of findings from the interviews and survey. The rationale for using a mixed-methods approach was that it allowed data to be collected in real time and categorized for later use (Creswell, 2016). In this study I organized the qualitative findings and the quantitative results collectively.

A qualitative research methodology was used to create codes and gather themes from one-on-one structured interviews with male participants. The qualitative data was coded and reviewed using an Excel spreadsheet. Research questions presented during the interview were presented to each study participant who gave accounts of their experiences that added credibility to the stewardship of ethical practices for this initiative. Pseudonyms were provided to each of the study participants.

Study participants were provided information regarding the structure for the interviews prior to the start of the meeting. Follow-up meetings were not required. The Zoom platform was used to record conversations that were stored on a secured work laptop computer. Documentation of each Zoom recorded conversation and all accompanying handwritten notes were sorted and used to compile data and gather comments that related to the three research questions. I recorded, transcribed, and coded the meetings.

Three research questions were grouped into categories to streamline the coding process. All questions followed the same prioritization scheme (e.g., interview and survey) according to the topics and appeared in order as: 1) advising, 2) peer mentoring, and 3) marketing and recruiting.

A connection to each theme that emerged from the findings could demonstrate the significance of each interrelated research question and how it contributes to the problem.

First, responses relating to academic support and the dissemination of information and resources were analyzed to gather common themes among the study group. Study participants were able to interpret and answer all the questions from our in-depth interviews which strengthen needed outcomes (Guest, MacQueen, & Namey, 2012). Uncommon themes that reflected differences between the study participants, as it relates to their connection with advising offices, were also considered. The recordings and my handwritten notes were reviewed to ensure all the perspectives and themes presented with each verbal response were captured (Creswell, 2016). Responses to the advising question were used to compile recommendations to improve academic support and the information that is shared by undergraduate advising offices.

Next, I searched for themes regarding peer mentoring to enlighten my understanding of the perceived value of peer mentoring for this targeted group. I also looked for uncommon themes that may have surfaced based on the study participants' experiences with mentors. The number of students from racial and ethnic groups that experienced some form of mentoring, whether prior to or during college, was compared across the group. This comparison was analyzed and completed during the final segment of questions for each study participant. Information that was collected can be used to encourage the role of peer mentors as work continues to develop this form of support system.

Finally, responses regarding marketing and recruiting required additional labels during the coding process to consider all possible variables that were identified during the interview (Center for Disease Control, 2013). A comprehensive assessment of in-depth questions made certain that the necessary amount of data was collected during the coding process. Information that was

gathered regarding marketing and recruiting may support strategies and the composition of various materials to attract Black and Latinx male premedical students.

I followed a dedicated transcription schedule to gather data immediately after each interview. I created a unique code consisting of letters and numbers for each study participant. The interview questions were open-ended, whereas the survey provided multiple choice and yes/no type questions. Modifications to the questions were made in advance to ensure study participants were able to adequately respond as needed (Guest, MacQueen, & Namey, 2012).

Then, a quantitative methodology was used to assess perceived early interventions in science, academic preparedness and support that may encourage interest in premedical pipeline programs. Study participants were informed to expect a link to the survey by email after the interview. Results from the survey were gathered using the Qualtrics software platform that was reformatted in Excel and transferred into a word document. The survey presented 24 questions that could be completed in less than five minutes and were compartmentalized into five sections that correlated with the qualitative information to allow for a cohesive review of all the data. Study participants were asked to answer survey questions in these areas: participant background, advising, mentor support, marketing and recruitment, and participant perspectives.

For the study, six (50%) of the participants were from Black/African American descent and six (50%) from Latino descent. Responses in the survey reveal three (27%) of the study participants were first-generation learners as seen in Table 1. In addition, Table 1 also shows their interest in science as nine out of 11 (82%) choose biology as their academic major. A review of participants' narratives to medical education is included in Appendix E.

Table 2. Participant Background Information

Demographics	N	%
Black/African American	6	50%
Latinx	6	50%
First Generation College Student		
Yes	3	27%
No	8	73%
Undergraduate Major		
Biology	9	82%
Chemistry	1	9%
Medicine	1	9%
No	0	0%

A reasonable timeframe for completing the interviews and analyzing the responses was a maximum of three months. The Zoom platform was recommended by the Institutional Review Board (IRB) as an effective software tool to facilitate this process. Information was stored on a secured laptop computer. A significant amount of time was given to assure the questions were thoroughly examined, coded, and systematically cataloged.

3.5 Reflexivity

3.5.1 Research Role

My assumptions regarding the problem of practice are influenced by professional experience with this targeted group and point directly to the study questions. When considering assumptions to test theories, the application of the Plan-Do-Study-Act model was implemented. This learning model advanced my technique to conduct interviews and gather general knowledge to questions about the lack of Black and Latinx males in the SPAEP application pool. Results

gleaned from those initial findings were useful to develop strategies to market the program appropriately.

To maintain equitable practices regarding the questions that were presented to study participants, I focused on following a structured interview format. It was important to learn as much as possible from the study participants. Therefore, remaining committed to the interview protocol was essential to allow an equitable reflection of responses among all participants.

Developing a solid structure of support and resources for Black and Latinx male premedical students was guided by the mission of Diversity, Equity, and Inclusion (DEI). I referred to the DEI mission statement which supports efforts to diversify the academy by recruiting and retaining qualified applicants, which is also the goal for this study. Adhering to the mission assures focused consideration to recruiting Black and Latinx male premedical students for the SPAEP pipeline program (University of Pittsburgh Medical School, 2021).

3.6 Reciprocity

Establishing relationships with Black and Latinx male premedical students will promote trust and allow us to provide instruction regarding their academic performance and progress. An effort to initiate ongoing interactions with undergraduate advisors and provide them with relevant material for distribution is needed. At the conclusion of this project, I hope to provide strategies and practical advice to assist other program administrators in their work to prepare Black and Latinx male students for medical education. Ongoing initiatives will also involve designing a contact survey form for advisors that will be used to create a database of pre-health advisors across

the country. This too will strengthen relationships and encourage the promotion of SPAEP through a reliable network.

3.7 Research Epistemology

Acknowledging the impact that advising and peer mentoring have on Black and Latinx male premedical students along with the necessity to nurture relationships can encourage positive guidance and academic achievement. When consideration is given to the satisfaction or dissatisfaction that Black and Latinx students have with advising offices and the lack of mentoring, these differences along the path of their education can obstruct the process for pipeline programming, thereby creating a leaky pipeline effect (Freeman et al., 2016; Jacob, 2005; Katz et al., 2016). Advisors are in a prime position to actively engage Black and Latinx students about all possibilities for a future career in medicine and without negatively affecting their will to succeed (AADS, 1999; Oyewole, 2001). Students should also work to keep the lines of communication open with advisors to acquire opportunities that will add value to their learning outcomes. Medical schools can help facilitate these types of interactions.

However, it is unclear if undergraduate advisors have the bandwidth to meet and provide mentorship resources to Black and Latinx students. Ongoing conversations to foster positive relationships between the advisors, peer mentors, and Black and Latinx students should provide a noticeable improvement with recruiting and marketing medical pipeline programs.

The undergraduate pre-health advisors and general college advisors work in positions that are a vital component to understanding why Black and Latinx males are not taking advantage of premedical pipeline programs. Advising and peer mentoring are primary considerations for this

study, as they can address student needs throughout their undergraduate career. It is important to know where the breakdown is occurring with the targeted group. Therefore, developing a platform to connect advising with the medical school to provide marketable material about SPAEP, coupled with peer mentoring can only benefit desirable outcomes.

3.8 Limitations of Study

Two limitations of the methodology were considered. The small number of current and past Black and Latinx male students in the SPAEP program was the reason for this study. Therefore, the first limitation was to ensure an adequate sample size of the targeted group to maximize conclusions. Next, the study considered the role of advisors to encourage Black and Latinx male students to actively pursue premedical pipeline programs. However, an inquiry of advisors to gain their perspective on the topic was not pursued. Confirmation regarding the amount of premedical pipeline information that advisors receive to inform their advisees is undetermined.

4.0 Chapter 4

4.1 Introduction

This chapter will review comments from the interviews and results from the survey. Study participants were asked to provide feedback on the role of advising, peer mentoring, marketing, and recruitment to determine if improvement in those areas support pipeline program applications. The value of assessing potential causes for the low number of Black and Latinx male premedical students that matriculate in pipeline programs will influence how we reshape efforts to recruit them for these opportunities.

4.2 Advisor Support and Information Sharing

Two themes emerged from responses regarding participant's interactions with advisors to acquire information about summer enrichment programs. The first theme to emerge focused on general encouragement to support premedical pipeline programs. The second theme targets the accessibility of premedical program information that is made available to students who seek supplemental training through science-based enrichment experiences.

4.2.1 General Encouragement for Premedical Pipeline Programs

During the interviews I asked questions to assess how advising offices help to promote premedical pipeline programs to Black and Latinx students. More than half of the study

participants felt that they received some level of encouragement to apply to premedical pipeline programs. Study participants responded to having conversations with their advisor about joining summer programs. The participants who received support stated that they were encouraged by their advisor to pursue various types of programs that would provide fundamental training experiences for premedical learners. For example, one of the participants shared that his advisor was encouraging and provided students with information about various pipeline programs and internships as he states:

So, I won't say I felt any pressure to go to an enrichment program or not to go to an enrichment program, but really just making sure that I had the information about what I could gain out of that opportunity was something that my advisor did for me.

In addition to advisors encouraging premedical enrichment programs, roughly half of the participants commented that they were likewise encouraged by their advisor to continue with their premedical studies. These students met early with their advisor and receive pertinent information for programs like SPAEP. And less than half of the participants answered that they were in some way discouraged by an advisor to continue their premedical major. An indicator of student success is associated with academic support.

Participants that did not receive encouragement to pursue summer premedical enrichment programs commented that they did not have any real support and had to figure things out on their own. Moreover, a few participants commented that they did not talk to their advisors often, thereby suggesting that available resources may have been underutilized as indicated by one of the study participants as he recounts:

It may have been available. I didn't take advantage of it because it didn't need it. I was already kind of aware of the program when I enrolled in college ... The other side of that is I don't think that there were [enrichment opportunities] many. I went to a small school.... and I know that there weren't any specifically directed toward minority students ... I was a science major so there were research opportunities available, but none specifically for people interested in medicine.

4.2.2 Accessibility of Premedical Program Information

Pertinent feedback shared by study participants regarding information that is accessible or unavailable from advising offices were counterintuitive to the previous question about advisor encouragement to participate in premedical pipeline programs. When asked about information that is readily shared or the lack of information found in advising offices that promote programs like SPAEP, more than half of the study participants stated that information is not shared and unavailable. Most of the study participants described finding out about SPAEP through a mentor, or family friend, but a greater majority searched online exclusive of any assistance from advisors. The consensus was that one must take the initiative to be intentional about pursuing opportunities that would maximize their learning and development. One study participant speaks to this fact as he states:

They really don't have information on these types of programs. They send out emails every once in a while, but it's mostly for programs that are related to the school and not opportunities that

are elsewhere. ... So, a lot of it is kind of left to the individual student to kind of be the one that looks for that information as opposed to here's the information.

However, advising structures at some institutions are prepared to provide students with information during their freshman year. Additionally, some of the advising offices that study participants described send information via email portals and engage students at various meetings. Participants that did receive information about enrichment programs were also among the group that revealed having early encounters with their advisors. One of the study participants shared comments made by his advisor as he states:

The general advisor came in knowing that I wanted to go into medical school. I was majoring in biology and at that point they were like you seem good, you're on the right track, do you need help finding anything, just know that you can contact me whenever you need help finding anything.

In summary, findings from the interviews demonstrate efforts made by advisors to encourage and inform students of premedical enrichment programs. During the interview a few of the study participants acknowledged that some advisors do engage premedical students regarding their desired career path in their freshman year and have systems in place for receiving and disseminating material to their advisees. Moreover, students who take the initiative to search and find program opportunities can share that information with their advisors to benefit other students.

4.3 Peer Mentor Support and Guidance

Peer mentoring was the strongest and most in-depth point of conversation with each of the study participants. Two significant themes developed regarding peer mentoring. First, study participants stated the value of having something in common with their peer mentor combined with someone they could look up to were important factors. The second theme that emerged from the group's assessment was the value of support and guidance that peer mentors offer.

Study participants described positive experiences with peer mentors, and some acting as a peer mentor to others. Survey results illustrate eight out of 11 study participants (73%) did receive peer mentor support in college, and seven out of 11 (64%) indicate their connection with peer mentors occurred during their freshman year as revealed in Table 2. Additionally, during the interviews, some study participants disclosed finding peer mentors in prehealth clubs or by befriending an upperclassman. Table 2 also shows how mentors can strengthen participation with prehealth clubs as seven out of 11 indicate their involvement with a club that may receive information about resources and opportunities. These interactions can signify the student's commitment to engage in science and medicine due to their involvement and connection with mentors.

Finally, as discovered during the interviews, the effectiveness of mentorship emerged as one of the most meaningful aspects for student interest in medicine leading to involvement in premedical pipeline programs. Overall, study participants recognized the influence peer mentors must "guide them in the right direction," by providing information and resources.

Table 3. Peer Mentor Support

Categorization	N	%
Peer Mentor Support Received in College		
Yes	8	73%
No	3	27%
First Encounter with Peer Mentors		
Freshman Year	7	64%
Sophomore Year	2	18%
Junior Year	0	0%
Senior Year	0	0%
None of the Above	2	18%
Prehealth Club Member		
Yes	7	64%
No	4	36%
Accessible Information within Prehealth Clubs		
Pipeline Enrichment Programs	0	0%
Mentoring	2	20%
Research Opportunities	0	0%
All of the Above	5	50%
None of the Above	3	30%

4.3.1 Commonality with Peer Mentors and Admiration for Knowledge

The idea of peer mentors as influencers to encourage Black and Latinx males to join premedical enrichment programs was explored. Peer mentors were described as meaningful to students' academic process as they are considered trusted advisors, supporters and individuals who could provide a sense of belonging by creating community among the group. A common theme that emerged was that peer mentors are individuals whom they "have something in common with" and "someone to look up to." It is important to note that study participants did not have a specific preference for male or female peer mentors as they spoke positively about what peer mentors offer in general.

Overall, study participants expressed a comfort level with peer mentors as they are close in age and are relatable based on characteristics and similarities such as academics, first-generation learners, race, social class, and gender. A supporting comment from a study participant states:

So, in terms of finding stuff I think mentors actually help a lot, especially when you share a lot in common with them. ... I was a mentor for other Hispanic students, I think that helps to have that in common just being underrepresented whether Hispanic or Black... Overall, having a mentor that's a little above you that has done one of those programs helps.

4.3.2 Benefits of Peer Mentors

Many of the study participants thought peer mentors could provide more information about premedical enrichment programs than an advisor based on their personal premedical journey. Benefits premedical learners look forward to receiving from peer mentors are a supportive community, resources for study material, information about enrichment programs and research and volunteer opportunities, information about their medical school experiences and assistance with the medical school application process. One of the study participants provided an example of these benefits by stating:

Having a peer mentor for medical school really helped just so they can walk you through the process of getting accepted into medical school. They can give you a lot of different advice that a lot of other people can't give you, especially since they just went through the application cycle of getting into med school. So there's

definitely a lot of input from medical school students that you can't necessarily get from other people.

While study participants shared positive responses regarding peer mentors, one participant described his experience as a peer mentor that was not favorable. Though he stated his appreciation for peer mentors and even his mentor, he also expressed difficulty with meeting the demands of school and mentoring, then not having a sense of support by faculty can be challenging and trigger burnout.

4.4 Effective Marketing and Recruiting Plans

Marketing and recruiting efforts were evaluated to determine if those themes were a factor for the lack of applications from Black and Latinx male premedical students. The two themes that surfaced from the inquiry were to establish program ambassadors, as well as to modernize the website to include the program package. These themes considered methods that study participants found to be beneficial to attract and increase the Black and Latinx male student presence in programs like SPAEP.

Study participants indicated social media as a best method to market and recruit premedical enrichment programs as indicated in the Table 3 from the survey. The survey exhibits a perceived value in shadow and mentorship opportunities, which also indicates greater student engagement in science and medicine. The program location was the least limiting factor for the summer enrichment experience as 10 out of 11 study participants indicated that location was not a disqualifier when applying. However, nearly half of the study participants experienced barriers with the program application process, which indicates an area of improvement as three out of 11

(27%) participants experienced barriers finding program information and two out of 11 (18%) found barriers with all the categories listed.

Table 4. Marketing and Recruiting

Categorization	N	%
Reasonable Stipend Amount for a Summer Program		
\$1,000	0	0%
\$1,200	1	10%
\$1,500	5	45%
\$2,000	5	45%
Program Location Limiting Factor		
Yes	1	10%
No	10	90%
Barriers to Application Process		
Finding Program Information	3	27%
Accessing the Application	0	0%
Letters of Recommendation	0	0%
Application Deadlines	0	0%
All of the Above	2	18%
None of the Above	6	55%
Attractive Marketing Tools		
Social Media	1	10%
Email Blast	0	0%
Advisors	0	0%
Student Run Organizations	0	0%
All of the Above	10	90%
None of the Above	0	0%

In addition to the survey questions, an additional two questions asked study participants to rank what they thought were important program expectations. Study participants responded in sequential order to demonstrate the most important expectation of an enrichment program to the least. Shadow opportunities were the greatest expectation, followed by mentorship, research, and activities. The second question allowed study participants to rank the program package. Study participants ranked housing as their number one program package choice, then stipend, meals,

length of program, location (city and state) and travel as the least important factor in a program package.

4.4.1 Program Ambassadors

Study participants provided specific suggestions regarding methods to market and recruit for the program. Their thoughts were to allow current and past male SPAEP participants to become ambassadors for the program and to specifically engage Black and Latinx high school students and premedical students at the start of their freshman year. Study participants considered the positive effect that males who were previously in the program, “diverse men who looked like them,” could offer. One of the study participants commented:

So, I think the best way to market it is trying to get more males like people who have already been in programs, like myself ... and other people that have been a part of this program to kind of market it. Teach or show underrepresented males that this is an opportunity for them.

Study participants associated the idea of introducing premedical pipeline opportunities to youth in K-12, but strongly promoting SPAEP to high school students as a method to increase interest. A suggestion from one of the study participants states:

I would start in high school you got to attract kids from high performing high schools that you know are going to go off to college all over the country and let them know that somewhere over the course of their matriculation you want them to apply to this programYou know you are the average of the people you're around so

more likely than not whoever they're around, they're also high achievers... So, they ought to reach back after they've gone through the program and get more people to the program that are in their circle that look like them.

4.4.2 Emphasizing the Program Package

In addition to engaging scientific instruction at a nationally recognized research institution, study participants thought that broadly communicating details about the program and its benefits might draw the interest of Black and Latinx premedical male students. Details about the program that study participants thought would be of interest are, shadow and research experiences, professional development, faculty meet and greets, medical student mentoring, and waiving the MCAT to state a few.

Study participants recommended the utilization of various social media platforms that could be implemented for immediate results. Recurring suggestions were to promote SPAEP on multiple education outlets; developing content that specifically highlights Black and Latinx males who are currently in the program as well as the success of alumni, and to display the school's diverse community. According to one study participant:

Just to see the success of students going through the program and their background stories. ... Like when I heard my mentor's story, I'm like all right, that inspires me. Just to here one of the alumni's background... and his whole outlook on life ... I'm like yeah, I can do it, you know, that cleared that imposter syndrome. Yeah, if he did it, I know I can do it.

Marketing and recruiting methods to attract Black and Latinx male premedical students were thoroughly reviewed and adequately exhibited in the survey. Study participants provided useful information regarding ideas that attract Black and Latinx male students to science-based programs and their approach to finding the resources and information they need. The concept of program ambassadors meeting with Black and Latinx students in K-12 and college was a thoughtful method to expose the program to students that need encouragement. Likewise, study participants found value in program packages and the use of social media to enhance marketing and recruiting.

4.5 Efficacy of a Premedical Pipeline Program

Study participants' feedback in this segment include supplementary reflections that were expressed during the interviews regarding the efficacy of the SPAEP program. First, alumni experiences provide insights on how the program increased their preparation for medical school. Then, study participants provide their opinions on the program's performance and areas for improvement.

4.5.1 Program Alumni Experiences

I queried the three practitioners in the study who are program alumni to learn how SPAEP benefited them in their career. Each practitioner responded to having received a great deal of support while in the program. The dean of diversity programs, SPAEP program instructors, and

teaching faculty that were associated with the institution provided support to them. By establishing these networks, participants found a sense of belonging and developed lifelong relationships.

The program offers basic medical sciences instruction through didactic lessons, shadow and research opportunities that are designed to supplement their undergraduate experience. The practitioners found such core lessons in sciences to be beneficial in determining the area of medicine and research that fit their future aspirations. Each of these study participants stated that they were appreciative of the help they received with the medical school admissions process. This sentiment was confirmed by one participant that stated:

I think it enhance my admission to the program... I now felt really comfortable that I had a place a home, even though I wasn't even in medical school yet, but I got to medical school and felt right at home in that office [diversity programs]... I thought it was very important, instrumental to my success, particularly the first year and it definitely made me feel at home and feel like I was wanted at the institution. I didn't just show up as a single entity on an island, trying to figure out who had my interest at heart. I already knew that when I came in, because of my relationships.

4.5.2 Program Merit Review

Study participants felt the SPAEP program does a good job to recruit Black and Latinx males into the program. Participants mentioned the support they received from program instructors and faculty. They each viewed SPAEP as a great opportunity.

The theme of “someone who look like them” reemerged as they presented thoughts about the opportunity to connect with racial and ethnic faculty. Study participants' exploration in medicine and faculty connections received positive feedback. Comments pertaining to close interactions with faculty whether by shadow and research opportunities, or lectures and didactic lessons were meaningful and provided a level of sponsorship that was needed. In addition to faculty connections study participants appreciated connecting with their cohort stating that lifelong friendships have been developed due to the program. One of the study participants recounts:

I think SPAEP is actually doing a great job. ... I think not only myself but seeing other males that have been in the program I know we're like really grateful for this opportunity. ...it kind of created a chance for us to create this bond where we've been able to encourage each other...so not just being a part of a program and having the opportunity, but also being able to bond with other black males and say like oh, we can do this together. And it kind of creates that friendship and that sort of that feeling that we can do this. I feel like it's not just the opportunity but it's, I guess an unintended effect that it has on everyone that like you know, this is a possibility.

In summary, study participants reflected on the program and the supplemental training that they received. The program provided a method for participants to test their calling to determine if science and medicine were the right career choice for them. Study participants commented on the mentorship they received from people who “look like them,” and the opportunity to build relationships with faculty, staff, medical students, and their cohort. Overall, study participants

thought the enrichment program adequately prepared them for medical school and a career in science and medicine.

5.0 Chapter 5

5.1 Overview

This chapter will review study findings and provide implications and recommendations for administrators to consider as they look for solutions to recruit Black and Latinx male premedical students to participate in premedical pipeline programs. This study examined potential barriers that may inhibit Black and Latinx male premedical students from applying to premedical pipeline programs. Research acknowledges the scarcity of Black and Latinx males in medicine as a national concern and many health-related institutions are seeking ways to increase diversity in healthcare (AAMC, 2015; AMA, 2014; The Sullivan Commission, 2004; Vassar, 2015). Likewise, increasing the number of racial and ethnic groups in medicine is also considered to be a moral imperative. The significance to recruit and train this targeted population is needed and many believe that pipeline programs provide a reliable approach to help broaden students' learning outcomes by offering supplemental instruction. However, it has been recognized that Black and Latinx male students are less likely to apply and matriculate into premedical pipeline programs, thus compounding the situation to recruit and train this needed population of caregivers.

5.2 Summary of Findings

Throughout this study three target areas were addressed as possibilities that may hinder pipeline program applications from Black and Latinx male premedical students. Consideration to

determine if the leak in the pipeline was caused by limitations in the areas of advising, peer mentoring or insufficient marketing and recruiting. As a program administrator for a premedical pipeline program, I assessed the situation by conducting structured interviews along with a survey that engaged 12 male study participants who have or had participated in a pipeline program. This study probed nine high achieving premedical students and three practitioners to figure out what motivated their commitment to medicine, and the types of interactions they needed to become successful, and how they discovered the pipeline program.

5.2.1 Advising Resources and Encouragement for Black and Latinx Male Premedical Students to Join Pipeline Programs

Many study participants strongly believed that by extending a sense of optimism and affirmation within the context of quality advising is vital to expanding growth and opportunities. Proper advising can fundamentally impact how informed students are with regards to premedical pipeline programs and internships whether during the school year or during the summer. Supportive advising structures are sought after by students from racial and ethnic groups in general. As described by the study participants, they look forward to arriving at college and finding someone to guide them, to affirm them and provide information about additional resources that will lessen the burden of not knowing what to do and not knowing where to turn for answers.

It was determined in this study that advising experiences were common among some of the study participants as they recounted being supported and encouraged by an advisor in some capacity to pursue a career in medicine. However, it was interesting to learn that a few study participants found advice and guidance from either their parents' friends who were employed at the medical school, or by meeting key personnel at a health professions school that encouraged

them to participate in health science programs. Participants who took advantage of their encounters with university personnel felt they significantly benefited from those connections and positive relationships which is an indication that engagement with the medical community is what they need.

We sometimes hear of encounters between students and advising offices that are discouraging through comments made or the lack of information that negatively impacts students' outlook and their ability to meet their target goals which is also reflected in literature (Oyewole, 2001; Shields, 1994). While literature suggests that advising is key to students' awareness of information (Oyewole, 2001), this study discovered that advisors do attempt to share information and build relationships by engaging students early in their college career. And when students need information to help them to make informed decisions about their career goal, the availability of needed information is essential.

The significance of sharing information about pipeline programs to influence student decisions for careers in science fields was examined in recent research that agree with my findings (Villarejo, et al., 2017). Pipeline programs fuel curiosity and enhance participation from racial and ethnic minority groups that can lead to medical education and research (Villarejo et al., 2017). Prehealth schools must provide advisors with lists of pipeline programs and research or shadow opportunities to help prepare Black and Latinx male premedical students for their journey ahead.

5.2.2 Peer Mentor Guidance and Support to Encourage Black and Latinx Male Premedical Students to Join Pipeline Programs

Questions regarding the role of peer mentors sought insight on participant perspectives concerning the value of mentors. All the study participants felt strongly about the need for mentors

and were encouraged to give back to the next generation and nurture Black and Latinx students who are interested in medicine as a career. Study participants reflected on the lack of role models and mentors throughout their education. They identified mentoring as a significant benefit for students in grades K-12, as well as undergraduate students and were motivated to support this group of students based on their experiences. The consensus among study participants was to engage K-12 early to motivate their interest in medicine thus increasing diversity in the field. The lack of mentoring greatly affects Black and Latinx male students because they do not have anyone to look up to and to help answer questions about the field and help them overcome obstacles that would impede their progress.

As a program administrator I am aware that Black and Latinx male premedical students have trouble finding research and shadow opportunities that would help to build their scientific knowledge and resume. Guidance to obtain these types of opportunities will aid Black and Latinx male premedical students for the medical school application process. Most medical research institutions prefer students that matriculate into their institution that have received some level of training in these areas. By incorporating a programmatic approach to the issue, we know premedical pipeline programs can help to mitigate areas where they lack experience by providing students with shadow and research opportunities (Villarejo et al., 2017). But students need to know where to find such programs, or at least have an opportunity to discuss options with someone that they trust and is knowledgeable about their journey.

Study participants accredits peer mentors for their assistance with study strategies, support with the medical school application processes and general information that can help them gain the sponsorship they need to be successful. And they agreed that shared experiences among peer mentor groups help to build trusting relationships that may not be achieved in traditional advisor

and advisee settings. Peer mentors are expected to, in some way, help bridge the connection for Black and Latinx students that may be disconnected from advising support and other meaningful resources that affirm their future goals. Students from racial and ethnic groups feel a sense of empowerment and belonging from peer mentors with whom they can relate to (Afghani et al, 2013). And students thrive when teamed with peer mentors (Thomas, B., Manusov, E., Wang, A., & Livingston, H., 2011).

Participants addressed the need to have peer mentors who look like them, and someone to connect with that can provide guidance for the medical school application process. This type of integrated support system helps Black and Latinx male premedical students to prepare for their next steps which were thought of, by the study participants, as invaluable to their overall process. Study participants appreciated seeing how their future could unfold as many of them believed supportive role models could show them that a career in medicine can be accomplished. All the study participants agree that peer mentors are vital to enrich the experiences of Black and Latinx premedical male students and to encourage them to search and apply for programs like SPAEP.

Therefore, based on what study participants shared, peer mentoring is an approach that seemingly facilitates positive outcomes for learners. As institutions consider new approaches to maximizing learning outcomes for racial and ethnic learners, allowing peer mentors to become part of the learning team could enhance their experience.

5.2.3 Marketing and Recruiting to Attract Black and Latinx Male Premedical Students to the Medical Pipeline

Attracting Black and Latinx male students early in their academic journey to make them aware of enrichment programs is significant to increase retention rates in science and medicine

and fill the medical pipeline. It was evident that study participants thought marketing and recruiting efforts should be designed to allow prospective medical students to recognize diversity within our institutional landscape that is inclusive. A variety of marketing strategies were suggested that included updates to the websites to demonstrate how diversity looks within our programs and at the institution. As stated by study participants, a strong representation of individuals that look like them with images and narratives that resonate to their individual experiences would attract Black and Latinx males and develop a greater pipeline into medicine.

Suggestions made by study participants provided a variety of ideas to accomplish marketing through social media that can be effective. Interestingly, the SPAEP program does promote their suggestions on its website. Those same suggestions are what attracted most of them who admitted to searching for summer enrichment programs online. The idea for program ambassadors to share information about pipeline programs with male premedical students and youth in K-12 were mentioned to suggest that they too can become medical students and medical professionals was a key point made by most of the study participants. Comments were made that social media and general outreach would allow prospective applicants to review comments made by current students and alumni. It would also help prospective applicants to consider how mentorship, sponsorship, advising, and other resources through programs like SPAEP will help them advance to the next level.

Study participants thought the best way to market and recruit for the program to make it attractive to Black and Latinx males premedical students and youth in K-12 was by engaging them with something tangible such as in-person visits and meaningful dialogue, videoclips and testimonials. There were no direct solutions to marketing and recruiting as study participants provided a variety of workable suggestions.

5.3 Implications

Premedical enrichment programs can influence a student's decision to study medicine (Villarejo et al, 2017). There are health science schools and research institutions that try to align their resources to meet the academic challenges that Black and Latinx males face, to sustain pipeline programs that stimulate a learner's career choice through exploration. Premedical pipeline programs support student experiences and goals in an attempt to supplement what they need through academic exposure, clinical experience, and didactic lessons. Providing supplemental instruction through programming to students who pursue science careers produces higher grade point averages in certain science subjects as confirmed in research (Villarejo, et al, 2017).

Throughout the study it was apparent that Black and Latinx males require interaction with someone that looks like them, who can lead the way and make their path clear. This is not an unusual philosophy. When we consider how the dominant culture benefits from being in environments that are designed for their success with individuals who look like them, this concept is simply a reality. A few participants from the study shared their sentiments regarding the feeling of not having any support. Black and Latinx male premedical students need advocates and to be affirmed and connected to individuals who share similar experiences (Afghani, et al, 2013).

Advising, marketing, and recruiting that would help support pipeline programming is linked to the sharing of information to encourage academic achievement and involvement in programs. Several targets were identified and will be discussed that frame how information is received and shared. Identifying how to get information to students and knowing what marketing tools they use will elevate our efforts to disseminate information. Finally, learning how to target Black and Latinx male students with information in a manner that is impactful and productive were also considered.

While information sharing is a key factor to discovering how it impacts Black and Latinx male premedical students to apply to premedical pipeline programs, study participants also addressed the importance for advisors to be aware of additional opportunities such as shadow and research along with guidance to securing those positions. Much effort goes into advising and sharing relevant information is a key component to their work, in addition to affirming them by disbanding negative myths of who they are and supporting what they can accomplish.

Mentorship was viewed by all the study participants as a significant value to their academic process. In addition to recognizing the value of peer mentors for themselves, study participants were sensitive to their role to mentor the next generation by providing them with the resources they need going into college STEM majors. Pivotal moments in mentoring can make a difference in a young scientist's journey as limited exposure to the field is a known hindrance and mentors can help to accommodate certain academic situations. Students from racial and ethnic minority groups gain knowledge from mentors that provide honest dialogue about their experiences, both positive and negative. Study participants recognized the value of shared narratives by their mentors that help them prepare for their transition into medical school.

Racial and ethnic minority students want to be informed about opportunities. Suggestions made by the study participants to initiate the program ambassadors and update the website will be beneficial. As suggested during the interviews, this population of students would appreciate having support with personal statements, entrance exam preparation material, shadow and research opportunities and information about premedical pipeline programs. As program administrators and institution leaders, we must seriously take note of the fact that students from racial and ethnic groups need information, guidance, and resources. We must be intentional to support high achieving Black and Latinx male premedical students, to meet them where they are, generate

worthwhile dialogue, and supply them with mentors and information that will inspire them to apply to premedical pipeline programs that will benefit their development. By the account of the study participants, these are the areas that attract them to premedical pipeline programs and encourage them to pursue a career in medicine and research.

5.4 Recommendations

Interfacing with students early greatly benefits premedical students by demonstrating a commitment to recognize their accomplishments, support their career choice and their future success (Afghani, et al, 2013; Villarejo, et al, 2017). Supporters can help students to envision their future by exhibiting our interest in their success and encouraging them to focus academically, as enrollment in health professions schools is competitive. New students entering college should have some idea of what to expect as a premedical major upon entry into college and provided methods that would create encounters to connect them with individuals who are insightful and committed to their success.

Advising officers are expected to be the singular resource and reference for all students regardless of their academic major. However, it will benefit academic institutions to invest in creating additional jobs that are designed to specifically work with students from racial and ethnic groups (Weissman, S., 2021). Advising structures can be vastly different for each individual institution and some offices simply do not have the bandwidth to address all the necessary interactions of students from racial and ethnic groups. I would recommend creating a faculty position, or designated liaison, to work within the Office of Diversity, Equity and Inclusion to specifically advise racial and ethnic premedical students. This position would complement the

work that we do in the field. As a program administrator, I think it is best for students to receive information from professionals who are insightful and committed to their academic achievement.

Thus, by increasing collaboration between health science schools, general advisors and premed advisors, a strong model can be developed to provide accessible information for both advisors and students alike that will enhance outcomes for the learner. A manageable model would include a greater utilization of peer mentors as study participants commented on the value of peer mentors and further commented on their support to reach back and help the next generation of learners. It is evident that our decisions and opportunities are influenced by the people who surround us, therefore it is necessary to connect Black and Latinx male students with people that they look up to who are knowledgeable about their journey.

Additionally, the design of a formal peer mentoring program that would connect undergraduates with upperclassmen and medical school students upon arrival of the students first year. Mentors are available on campus but connecting them to students that are in need of their support can be challenging. The medical school and other health science schools can collaborate to prepare lists of mentor groups, shadow, research, and enrichment programs to distribute to students that seek those opportunities. This model will require a collective effort that will produce great benefits for students in the end.

As a researcher I could not generalize about all premedical pipeline programs. More investigation needs to take place with visits at other institutions to meet with students to understand if they think similarly or have had similar experiences with advising, mentoring, marketing, and recruiting.

5.5 Conclusion

Discoveries in this study reveal the need for an ongoing commitment by institutions to amplify opportunities to work with students of diverse backgrounds and to connect them to populations within the institution to strengthen the pipeline to medical school. Likewise, as a program administrator who works with premedical pipeline programs one of my goals is to get Black and Latinx male students excited about pipeline programs and encourage them to use the opportunity as a conduit to reach the next level.

High achieving Black and Latinx premedical students are capable, open to learning and inspired to succeed. If we want to understand perspectives from the current generation, we must engage in ongoing dialogue to understand what's important to them, how they want to be approached, and what they need to be successful. This knowledge will inform our work and help to build broader, stronger marketing and recruiting objectives.

This study confirms the need for consideration to train Black and Latinx male premedical students through pipeline programs to prepare them for the work they will face in the academy. But this work extends beyond the academy and into the medical workforce. Our society will benefit from their presence as this group of individuals are needed to work with medically underserved populations to eradicate health disparities and barriers in education. One study participant acknowledged the system as a social problem that creates the dearth of Black and Latinx males in medicine, while others recognized the multifactorial and complicated reasons that surround the issue such as inadequate support systems (e.g., education or social), and mentoring youth in racial and ethnic minority communities (Thomas, et al, 2011). Based on the study participants' knowledge of the issue, all were psychologically motivated with an unrelenting quest to succeed in medicine, to be role models and to serve others.

It is imperative for administrators that work with medical pipeline programs to remain in close contact with advising officers to provide them with information to successfully promote pipeline opportunities to Black and Latinx students. The objective to increase the medical workforce with Black and Latinx practitioners, which calls for leveraging resources and developing partnerships between medical schools and undergraduate premedical advising offices to unite and offer customized learning strategies. We can begin to see results when health sciences schools' team up with individuals who can connect their offices with students that are interested in programs that they offer. Advisors, supporters, and sponsors all play a unique role to positively impact the lives of students from racial and ethnic groups by investing time, resources, and encouragement.

Appendix A Interview Script

Introduction

You have been selected to speak with me today because you have been identified as someone who can share your thoughts about medical pipeline enrichment programs and how advising and peer mentoring have or have not played a part to motivate interest from the Black and Latinx male perspective. My research project will focus on what Black and Latinx male students need and want in an enrichment program. My study does not aim to evaluate your grades and exam scores. Rather, it is to learn about marketing strategies that will help to improve program outcomes that are designed to enroll Black and Latinx males into the program.

Interview Format

The purpose of this research is to determine the reason(s) for a recognizable lack of Black and Latinx male applicants that enroll in the premedical pipeline program. For this reason, I will be hosting individual meetings with Black and Latinx male participants. Each individual meeting will last no longer than one hour. During the meetings participants will be asked about, advising, peer mentors, marketing and recruiting.

There are no risks associated with this project, nor are there any direct benefits to you. To facilitate the note-taking process, our conversation will be recorded via Zoom. All responses will be kept confidential. Information gathered from the meetings will not be shared in a manner that will directly identify any of its participants. Your participation is voluntary, and you may withdraw from the project at any time. This study is being conducted by Rhonda White, who can be reached at medical@univ.edu. Thank you for agreeing to participate.

Appendix B Recruitment Email

Personalized Formal Salutation,

I am writing to request your support as I complete my doctoral degree this summer. My dissertation is regarding the lack of Black and Latinx males in the medical pipeline. I specifically target the low numbers of male participants in programs like SPAEP. Since you have participated in SPAEP, I am hoping that you would be available for a discussion about this specific topic within the next week if possible. The discussion will last no longer than one hour. Additionally, a brief survey will follow to produce quantitative findings on the subject matter.

Please let me know if you are willing to speak with me. I am available for a discussion any day and time including weekends.

Regards,

Rhonda

Appendix C Interview Protocol

Background

1. What inspired you to want to become a doctor?

Probe Question

- a. Tell me about your K-12 education and experience and how it did or did not influence your decision to be a doctor.
 - b. Tell me about any supporters (parent, counselors, teachers) during your K-12 education that helped you with your decisions to becoming a doctor? What did they do to encourage you? Was there a specific event that occurred? Tell me about the event?
2. Tell me how you learned about the SPAEP program and why you decided to apply?

Advising

3. Were you ever discouraged by an advisor or instructor to discontinue your premedical major?

Peer Mentoring

4. Tell me about your thoughts on having a peer mentor.

Probe Question

- a. In what ways would you or would you not benefit from peer mentoring?

Marketing

5. Tell me ways in which SPAEP can be more appealing to Black and Latinx males to get them to apply to the program?

Probe Question

- a. Where would you suggest that we market the program so more Black and Latinx males can become aware that it exists?

Student Perspective

6. There is currently a shortage of Black and Latinx males in medicine. What are your thoughts regarding this issue?

Probe Question

- a. How does this awareness influence your decisions to continue in a medical career?
7. Tell me what solutions you think would address the shortage of Black and Latinx men in medicine? What do you think needs to happen?

Probe Question

- a. How do you think SPAEP is doing in its efforts to getting Black and Latinx males to matriculate into medical school?

Alumni Question

1. What difference did SPAEP make in your career?
 - a. Tell me your experience getting into medical school based on your involvement with the program.
 - b. Tell me if you thought the program was helpful or not and why?

Appendix D Survey Protocol

Background

1. Are you a first-generation college student?
 - a. Yes
 - b. No
2. What is your major?
List _____
3. Do you have a family member or close friend that is in medicine or a health professions career?
 - a. Yes
 - b. No
4. Do you think your high school science and math courses adequately prepared you for college science and math?
 - a. Yes
 - b. No
5. Did you shadow a physician in high school?
 - a. Yes
 - b. No
6. Did you have a mentor in high school?
 - a. Yes
 - b. No
7. Who talked to you about college and how to choose a major?
 - a. Parent
 - b. Counselor
 - c. Mentor
 - d. Family Friend

The Role of Advising

1. Do you have an advisor?
 - a. General Academic Advisor

- b. Prehealth Advisor
 - c. Both
 - d. Neither
2. Did your advisors and professors talk to you about joining summer programs?
- a. Yes b. No
3. What courses do you think are potential barriers that students experience?
- a. Biology
 - b. Organic Chemistry
 - c. Reading
 - d. Math
 - e. All of the above
 - f. None of the above
4. Do you seek help when experiencing difficulty with assignments?
- a. Yes b. Somewhat c. No
5. Where do you seek support?
- a. Advisors
 - b. Professors
 - c. Mentors
 - d. Family
 - e. Friends

The Role of Peer Mentoring

1. Have you ever received support from a peer mentor while in college?
- a. Yes b. No
2. When did mentoring occur?
- a. Freshman Year
 - b. Sophomore Year
 - c. Junior Year
 - d. Senior Year
 - e. None of the Above
3. Are you a member of a pre-health club?

- a. Yes b. No
- 4. Does the club receive information about the following?
 - a. Pipeline enrichment programming
 - b. Mentoring
 - c. Research opportunities
 - d. All of the above
 - e. None of the above

The Role of Marketing

- 1. What you do you think is a good stipend amount for a seven-week program?
 - a. \$1000
 - b. \$1200
 - c. \$1500
 - d. \$2000
- 2. Was Pittsburgh a limiting factor in your decision to accepting the program?
 - a. Yes b. No
- 3. Did you experience any of the below barriers when applying to premedical enrichment programs?
 - a. Finding program information
 - b. Accessing the application
 - c. Letters of recommendation
 - d. Application deadlines
 - e. All of the above
 - f. None of the above
- 4. What marketing tool can we use to attract Black and Latinx males?
 - a. Social media
 - b. Email blast
 - c. Advisors
 - d. Student run organizations
 - e. All the above
 - f. None of the above
- 5. Rank your expectations for the program from most important to least important?
 - a. Shadow
 - b. Mentorship
 - c. Research

- d. Activities during off hours
6. Rank the following from most to least important:
- a. Stipend
 - b. Location (city and state)
 - c. Travel allowances
 - d. Housing
 - e. Meals
 - f. Length of program

The Role of the Student

1. Does the lack of diversity in learning environments affect you?
- a. Yes b. Somewhat c. No
2. Do you feel a sense of responsibility to help other males like yourself find enrichment programs such as SPAEP?
- a. Yes b. Somewhat c. No

Appendix E Study Participant Narratives

David is a rising college senior who learned about the SPAEP program from a student at his college who was attending the program. He was motivated to apply because of the program option to waive the MCAT exam. David indicated that he was inspired by medicine from an early age, along with his involvement with other STEM programs and volunteering. He also accredits early exposure to medicine to his mother, a nurse practitioner. David commented that by engaging volunteer opportunities he was exposed to individuals within his community that also motivated him to the work of “servicing others”. David has a strong interest in science with a “love for biology and studying the human anatomy”. During his K-12 experience, David had an opportunity to participate in pathway program in high school but did not have a direct connection to medicine during that time. He stated that his outlook on the dearth of Black and Latinx males in medicine is “discouraging”, but he recognizes the importance of helping the next generation to flourish in the field by engaging them through mentorship opportunities.

Mark learned about the SPAEP program by researching for a summer internship online with his father. Mark is a recent college graduate, who will be heading into his first year of medical school. He was inspired to study medicine by his pediatrician. Due to the bond, he had with his pediatrician, Mark developed a strong appreciation for the field of pediatric medicine, as he stated, “...I would always see him [pediatrician] and think, this is what I want to do, you know I love working with kids... I want to give children a better childhood than I had especially through medicine, and so he was, I think the main inspiration for me.” When asked about his perspective of the lack of Black and Latinx males in medicine, the issue created a stronger ambition for Mark

to “beat the odds”, and to encourage other Black and Latinx male students to work hard and achieve their goal.

Steve is a rising college senior who resides in a rural area in the Midwest. Steve’s motivation for wanting to learn more about medicine comes from his observations of health disparities within his community, of which he states, “is very medically underserved”. To learn more about his community, Steve began to shadow a physician to witness firsthand the compounding disparities such as language and socioeconomic barriers. However, Steve was inspired to study medicine because of his participation in a medical pathway program that his high school offered. The program piqued student’s curiosity by exposing them to various medical environments and physicians. Steve found the SPAEP program by searching the AAMC website and mentioned the program to his supportive faculty advisor. The advisor encouraged him to apply by stating, “it’s a very good opportunity if you get accepted into Medical School”. Steve’s response for a solution to the lack of Black and Latinx males in medicine centers around the importance of showing youth that they can be successful in the field.

Peter is a successful practitioner. He was inspired to become a doctor at an early age and displayed a natural attraction to science as he was “just was fascinated with the human body and how it worked”. His interest in science and wanting to help people led him to medicine. Peter received early exposure to health sciences through his mother, who was a nurse practitioner. However, he states that his K-12 experience “was in no way responsible for his chosen career” as he found his experience during that time to be more discouraging than encouraging. He reflected on his K-12 years being void of supporters, he could not find anyone who looked like him, nor was there anyone available for a conversation about the field of medicine. Peter learned about SPAEP as an undergraduate student. With a persistence to learn about the medical school

application process, he ventured into the medical school diversity programs office, where he met the dean of the program who encouraged him to apply to SPAEP. He accredits much of his success in medical school to her mentorship and sponsorship. Peter shared his thoughts concerning the lack of Black and Latinx males in medicine and provided possible solutions for youth that involve mentorship and engagement from individuals who look like them.

Aiden is a current college graduate who will be embarking on his first year of medical school in the fall. Aiden participated in another pipeline program prior to SPAEP where he met students from various health professions that “shared the same immigrant background”. Through his online searches he found the SPAEP program and immediately thought of the program as “a gem” ... “it’s a wonderful program and it alleviates the worries that minorities have specifically waving the MCAT”, of which he thought to be a significant and attractive program feature. Aiden was inspired to become a doctor based on multiple factors. His interest in science developed during college while initially pursuing an interest in nursing. As a first-generation immigrant, his parents urged him to pursue nursing instead of becoming a doctor. Based on his cultural background, he understood his parent’s perspective that was heavily influenced by years of medical training in addition to the large education debt they found to be nearly impossible to repay. He became motivated by the challenge and drew upon his strengths in science to pursue medicine. One of Aiden’s perspectives to address the lack of Black and Latinx males in medicine is to extend outreach programs and mentorship to first generation students and align them with individuals who share similar academic and cultural backgrounds.

James is a rising college senior who was inspired to become a doctor through personal encounters with physicians and visiting the hospital during his childhood years. Those encounters created his interest in medicine. However, James received an introduction to medicine through a

high school program, as well as other programs in various higher education institutions, where he was able to take college classes and work at a prominent research center. Those experiences inspired him. He further described his frustration regarding the lack of support throughout his education. James learned about the SPAEP program from a student at his institution and states how grateful he was to receive an opportunity to join the program commenting that, “it was a very big thing to just be students who even applied to an internship were actually able to start getting opportunities”. James’s thoughts regarding an approach to improve the lack of Black and Latinx males in medicine is to “show them that they can do it.”

Jackson is a current incoming first year medical student who received information about SPAEP from his mentor, a former SPAEP program student. Jackson was motivated to develop his interest in medicine by witnessing the disparities that exist in his city as he states, “Overall, just seeing the hurt of my city... and seeing the lack of health care in minority areas”. He also recognized the lack of Black and Latinx male and female doctors, and the difficulty that the Black community have faced over time due to the injustices within the healthcare system. Encouraged to give back to the community he states, “...just having a connection and building it with the community is what drew me to medicine”. Jackson knew that he wanted to be a doctor as a small child, but the idea became more solidified during high school where he discovered an interest in math and science. He described an encounter with his high school teacher who attempted to discourage him by stating that he should pursue other careers. Determined, he states, “...but it also gave me an outlook, because that's how the world is, like they don't want you to succeed.” However, he commented that other high school teachers were very supportive of his academic accomplishments. Jackson states that his outlook on the dearth of Black and Latinx males in

medicine creates a desire in him “to go harder” to achieve his goal and to extend mentorship to other racial and ethnic minority groups that choose to pursue a career in medicine.

Andrew is a rising college senior who found the SPAEP program by searching online. He was exposed to advanced science courses and pipeline programs during high school through educational opportunities that were offered. While in college he was again guided toward programs that were offered to first-generation students and students with lower income. Those college programs provided lists of summer internships to students. Based on those lists, he decided to continue searching for programs and discovered SPAEP. Andrew found his inspiration in medicine by a firsthand account of his parent’s illnesses and the power physicians have to share information and to provide a cure. Referring to his observations with doctors and his parents’ condition he speaks of these defining moments as such, “just being with the patient during like some of the most difficult times of their life it’s like a powerful opportunity, it’s something that I really wanted to aspire to do...”.

Carl is a first year resident student who was exposed to medicine during his participation in a medical magnet program in high school. The magnet program provided an opportunity for him to work as a pharmacy technician. From that experience he realized he did not want to become a pharmacist. He was primarily influenced by his parent’s encouragement to aim high coupled with his awareness of language disparities in healthcare that hinder racial and ethnic populations. Carl found SPAEP online as he was searching for programs that would help strengthen his application to medical school. He was further motivated to join the program by a family member, who is a physician, that lived in proximity to the university. That family member offered him extended shadow hours when the program finished. Carl specifically looked for programs that offered research and shadow experience, “SPAEP actually provided some integrated shadowing

opportunities, and it was just overall, it was much better for like what I needed...”. Carl recognizes the issue with the lack of Black and Latinx males in medicine should be addressed nationally and suggested mentoring and guidance for youth as solutions to improve outcomes.

Jonathan is a successful practitioner who became inspired to study medicine at an early age. While not having anything specific to point towards as the single factor for wanting to become a doctor, it was what he wanted to do from childhood. He did know, however, that he did not want to become a businessman based on conversations that he had with his father. His parents were promoters of education and his main supporters. Jonathan attended private school during his primary education where the expectation for students was for them to attend college. Friends of Jonathan’s parents played a role in his development as he transitioned into college. His mother’s friend, who worked at the medical school and was a leader in student affairs, encouraged him to join SPAEP. “Through my educational process I also had a little bit of luck with people, you know it's only later that you realize that you have people pulling for you.” Jonathan acknowledged the dearth of Black and Latinx males in medicine as a “multifactorial and complicated” issue and suggested the idea of “keeping youth in school, early engagement, and having [racial and ethnic] representation” in medicine as a method to help resolve the issue.

Logan is a rising college junior who found SPAEP by searching online with his father. He is inspired to study medicine by his father who is a physician. At one point Logan’s father tried to discourage his interest in medicine because of the complexity of the field. But Logan continued to grow his interest in biology and anatomy. It was then that his parents began to encourage him to study medicine and to potentially become a surgeon. Logan began to shadow and became involved with research and volunteering which further ignited his passion as he states, “And just being with patients and calling them on the phone through hospice and everything, I think that all

of those experiences just merged together.” Logan commented that the lack of Black and Latinx males in medicine “pushes me to want to do more to help others” He also recognized the need to continue developing pipeline programs such as SPAEP and offer shadow and volunteer opportunities that would benefit Black and Latinx students.

Thomas is a rising college junior that has been impacted by doctors that he encountered through sports injuries. He recognizes the significance of doctor, patient relationships by stating, “People have somebody that they can trust that they feel like isn't just there you know, looking at them as another patient, but actually getting to know them as a person, and seeing what works best for them that's important and caring for their health issues”. Thomas found enrichment opportunities during high school to participate in internships and was assigned to work on a nursing unit. That experience helped him to know that he did not want to be a nurse, but that he was motivated to work in the hospital setting. Thomas received support from his high school guidance counselor who pushed him to do better when things seemed difficult. He also mentions his family as great supporters that encourage him to strive to be his best. He found SPAEP by searching for summer premedical programs online. Thomas acknowledged the importance of “seeing doctors that look like you, are meaningful”, and available mentorship opportunities work in tandem to help close the gap on the dearth of Black and Latinx males in medicine.

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