8-2023

Exploring the Experiences of Underrepresented Students Pursuing Health-Related Graduate or Professional Programs

Alison Williams
East Tennessee State University

Recommended Citation

Exploring the Experiences of Underrepresented Students Pursuing Health-Related Graduate or

Professional Programs

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A dissertation

presented to

the faculty of the Department of Educational Leadership and Policy Analysis

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Doctor of Education in Educational Leadership

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by

Alison Williams

August 2023

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Dr. Susan Epps, Chair

Dr. James Lampley

Dr. Michelle Lee

ABSTRACT

Exploring the Experiences of Underrepresented Students Pursuing Health-Related Graduate or

Professional Programs

by

Alison Williams

For many years graduate and professional education programs for the health professions have

sought to increase the diversity of their student body to include students from a wider variety of

backgrounds. Increasing the diversity of healthcare providers is an essential component of

addressing inequities in healthcare. However, despite initiatives to increase racial and ethnic

diversity in the health professions, these professions remain largely White and female. Previous

researchers have sought to identify the reasons that racial and ethnic minorities are

underrepresented in healthcare, and the barriers to persistence and success. Little research exists

explaining why men are underrepresented in the healthcare professions, though many healthcare

professions have historically been perceived as caregiving professions, and therefore, as "female

work." The purpose of this qualitative study was to add to the existing body of literature on

underrepresented pre-health students by exploring the experiences of racial/ethnic minority and

male undergraduate students on pre-health paths.

This study included 11 participants who self-identified as intending to pursue a graduate or

professional healthcare program and as African American, American Indian, Alaskan Native,

Hispanic, or male; all were enrolled at one mid-sized, regional university in the southeastern

United States. I utilized semi-structured interviews to investigate the experiences of the

participants. The themes that emerged among the experiences of pre-health students, included

common influences on career choice, what pre-health students believe they need to do to be

competitive, challenges, fears and worries about the future, motivation to persist, resources and

support utilized, and planning (or lack of planning) for alternate career paths.

DEDICATION

For my mom and dad, who gave me everything I needed to become Dr. Williams. And for Dr. Caroline Jackson and Juanita Gray, who taught me how to serve students with passion, empathy, and grace.

ACKNOWLEDGEMENTS

To my twin sister and biggest supporter, Ash Williams, thank you for the endless encouragement (and the many meals you made for me) during the dissertation process.

To my supervisors and mentors, Dr. Lynn Williams and Dr. Jeff Snodgrass, thank you for your support throughout the dissertation process and for creating a work environment in which I felt encouraged and able to take on such a daunting task.

To my friends who paved the Ed.D. path before me, Dr. Tory Street and Dr. Chris Strode, thank you for the advice and encouragement to keep moving forward. There were many, many moments that I would have given up without it.

To my dissertation committee members, Dr. Michelle Lee and Dr. James Lampley, thank you for the feedback, encouragement, and insights you brought to my dissertation review. To Dr. Susan Epps, my committee chair, thank you for your hard work, dedication, honest feedback, and endless draft reviews. You helped me craft a dissertation that I am truly proud of.

To my colleague, auditor, and friend, Dr. Megan Roberts, thank you for being there to listen, for encouraging me, and for believing in my ability to become a leader when I didn't believe in it myself. I am so grateful for your mentorship and friendship.

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Chapter 1. Introduction

For many years graduate and professional education programs for the health professions have sought to increase the diversity of their student body to include students from a wider variety of backgrounds (Nivet, 2010). Increasing the diversity of healthcare providers is an essential component of addressing inequities in healthcare, with a large body of research supporting this assumption (Cooper et al., 2003; Greenwood et al., 2020; Jetty et al., 2022; Kington et al., 2001; Mitchell and Lassiter, 2006; Nelson et al., 2003; Price et al., 2013; Saha et al., 2000; Shen et al., 2018; Smedley et al., 2001; Street et al., 2008; Syed et al., 2013; Weinstein et al., 2017). One reason that increasing diversity in healthcare may help to reduce these inequities is that minority healthcare providers are more likely to practice in underserved areas, thus increasing access to healthcare for underserved populations (Kington et al., 2001; Price et al., 2013; Syed et al., 2013). Additionally, minority patients experience a better quality of care when being treated by race-concordant providers (Cooper et al., 2003; Greenwood et al., 2020; Jetty et al., 2022; Saha et al., 1999; Street et al. 2008).

Nearly all healthcare education programs acknowledge the need for increased diversity in healthcare and their role in making it reality (American Association of Colleges of Pharmacy [AACP], n.d.; American Dental Education Association [ADEA], n.d.; American Occupational Therapy Association [AOTA], 2022; American Physical Therapy Association [APTA], 2021; American Speech-Language-Hearing Association [ASHA], n.d.; Association of American Medical Colleges [AAMC], n.d.; Physician Assistant Education Association [PAEA], 2021). AAMC (n.d.) uses the term "underrepresented in medicine" to identify "those racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the

general population" (para. 3) and states a commitment to ensuring access to medical education and careers for individuals from underrepresented racial/ethnic groups. Other professional organizations for the health professions have similar statements affirming the importance of greater diversity, equity, and inclusion within their respective professions (AACP, n.d.; ADEA, n.d.; AOTA, 2022; APTA, 2021; ASHA, n.d.; PAEA, 2021).

Despite initiatives to increase racial and ethnic diversity in the health professions, these professions remain largely White, with African American, American Indian, Alaskan Native, Pacific Islander/Hawaiian, and Hispanic students disproportionately underrepresented in comparison with the segment of the U.S. population they comprise (AACP, 2020; AAMC, 2021; ADEA, 2019; AOTA, 2018; APTA, 2019; Council of Academic Programs in Communication Sciences and Disorders [CAPCSD], 2020; PAEA, 2021). Men have historically been underrepresented in the rehabilitative health professions, including occupational therapy, physical therapy, and speech-language pathology and are now also underrepresented in medicine, pharmacy, dentistry, and physician assisting as well (AACP, 2020; AAMC, 2021; ADEA, 2019; AOTA, 2018; APTA, 2019; CAPCSD, 2020; PAEA, 2021).

Researchers have sought to identify the reasons that racial and ethnic minorities are underrepresented in healthcare (Alexander et al., 2009; Barr et al., 2008; Freeman et al., 2016; Snyder et al., 2018). One area of research focuses on the "leaky pipeline" of minority students to healthcare program application (Alexander et al., 2009; Barr et al., 2008; Freeman et al., 2016). Many undergraduate minority students begin college intending to apply to medical, dental, pharmacy, physician assistant, physical therapy, occupational therapy, and speech-language pathology programs; a large portion of these students, however, do not persist on a pre-health

path (Alexander et al., 2009; Barr et al., 2008; Freeman et al., 2016). Existing research on the leaky pipeline of pre-health students primarily focuses on pre-medicine and pre-dentistry students and has identified many academic and non-academic factors that contribute to their decline in interest, including difficulty in pre-health coursework, a lack of support from their undergraduate institutions, a lack of opportunity for shadowing and mentorship, financial concerns, influences of friends and family, and their own doubts and questions about their fit for the profession (Alexander et al., 2009; Barr et al., 2008; Freeman et al., 2016).

Little research exists explaining why men are underrepresented in the healthcare professions. However, men are increasingly underrepresented in the total population of undergraduate students, making up only 41% of college enrollees (National Student Clearinghouse Research Center, 2021). The smaller percentage of men graduating from undergraduate programs may explain why fewer men are applying and being accepted to graduate and professional healthcare programs. Additionally, many healthcare professions have historically been perceived as caregiving professions, and therefore, perceived as "female work" (Beagan & Fredericks, 2018; Cech, 2013; Francis, 2002; Litosseliti & Leadbeater, 2013).

Statement of the Problem

In order to increase the diversity of healthcare providers, it is essential to increase the persistence of minority and male students on undergraduate pre-health professions paths. Though some researchers have explored the perceived barriers of pre-health students, they focused on pre-medicine and pre-dentistry paths (Alexander et al., 2009; Barr et al., 2008; Freeman et al., 2016). Additionally, two of the three major studies on the leaky pipeline of pre-health students were conducted exclusively at institutions in California whose students may be culturally

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different from the students at other institutions (Alexander et al., 2009; Barr et al., 2008; Freeman et al., 2016). Furthermore, very little research exists exploring why men are underrepresented in many health professions programs.

Purpose of the Study

The purpose of this qualitative, phenomenological study is to explore the experiences of underrepresented students on a pre-health profession path during their undergraduate years at a mid-sized, regional university in the southeast. Specifically, I will focus on underrepresented students who have indicated that they intend to apply to dental, medical, occupational therapy, pharmacy, physical therapy, physician assistant, and speech-language pathology programs.

Research Question

The following research question will guide my exploration of the "leaky pipeline" of pre-health students:

What are the experiences of underrepresented students who are pursuing graduate and professional healthcare programs?

Significance of the Study

Undergraduate academic advisors of pre-health students, along with other student support personnel, can play a key role in providing the support, information, and resources necessary for underrepresented pre-health students to persist and succeed. I hope to provide a deeper understanding of the experiences minority and male students face on the pre-health path. By understanding the experiences of these students, pre-health advisors can seek to provide better undergraduate academic advisement and support for them. Additionally, though the scope of this

study is limited to students at one regional, mid-sized university, the findings may provide valuable insights for support services and programs for pre-health advisors at other institutions.

Definitions of Terms

For the purposes of this study, these terms are defined as follows:

Pre-health student: Student who intends to apply to a medical, pharmacy, physician assistant, dentistry, occupational therapy, physical therapy, or speech-language pathology program.

Pre-health advisor: Advisor whose focus is helping students prepare for application and entry into graduate and professional healthcare programs. Pre-health advisors are distinct from major advisors.

Pre-health coursework: The required or recommended courses that students take for entry into specific graduate and professional healthcare education programs.

Underrepresented student: Student who falls into race and gender categories that are disproportionately underrepresented in healthcare professions programs in comparison to the proportion of the total U.S. population which they make up. In order to define underrepresented populations, I compared the most recent available information on admitted students from each healthcare field's enrollment data report with demographic data from United States Census Bureau (AACP, 2020; AAMC, 2021; ADEA, 2019; AOTA, 2018; APTA, 2019; CAPCSD, 2020; PAEA, 2021; United States Census Bureau, 2021). For each healthcare profession examined in this study, African American, American Indian or Alaskan Native, and Pacific Islander/Hawaiian, Hispanic, and male students were underrepresented.

Delimitations and Limitations

This study was delimited to students pursing programs in medical, pharmacy, physician assistant, dentistry, occupational therapy, physical therapy, and speech-language pathology. I chose these health tracks because of their similarity in competitiveness, application process, and pre-requisite coursework, which includes science courses.

A limitation of this study is that participants were from a single, regional four-year public institution. Because of this limitation, the results of the study may not be generalizable to pre-health students at other institutions. An additional limitation of this study is the subjectivity of the data gathered from interviews. As a pre-health advisor, it is possible that my own biases and assumptions could have affected my interpretation of the data. In order to mitigate the potential for researcher bias, I engaged in reflexivity, continually examining my beliefs and assumptions during the coding process to make sure they did not influence my findings.

Overview of the Study

This chapter covered the purpose and significance of the study, the specific research questions, limitations, and delimitations of the study. Chapter 2 includes a review of literature related to the research question posed in this study. Chapter 3 details the qualitative methodology used for the study. Chapter 4 contains my findings, including the themes that emerged from the data, and Chapter 5 summarizes my conclusions along with discussion of potential implications and recommendations for future studies.

Chapter 2. Review of Literature

For over 50 years, there have been calls for greater diversity in healthcare to meet the needs of an increasingly diverse U.S. population (Nivet, 2010). Despite the research, strategies, and initiatives aimed at increasing the representation of diverse populations in healthcare, many healthcare professions remain largely White (AACP, 2020; AAMC, 2021; ADEA, 2019; AOTA, 2018; APTA, 2019; CAPCSD, 2020; PAEA, 2021). Additionally, many healthcare professions are predominately female (AACP, 2020; AAMC, 2021; ADEA, 2019; AOTA, 2018; APTA, 2019; CAPCSD, 2020; PAEA, 2021). This chapter begins with a presentation of the research related to the need for diverse representation in healthcare and later explores some of the possible reasons that diversity has not yet been achieved.

The Need for Diverse Healthcare Providers

The U.S. population is rapidly diversifying, with four out of 10 Americans now identifying as a race other than White (Frey, 2020). The U.S. Census Bureau predicted that by 2060, the country's current "minority" populations will make up the majority, comprising 56% of the total population (Colby & Ortman, 2014). Despite the diversity of the current U.S. population, health disparities for minority populations still exist (Weinstein et al., 2017). Members of many racial and ethnic minority groups experience worse health outcomes than their White counterparts; additionally, racial and ethnic minorities are less likely to utilize many health services, including routine and preventative care and treatment for illness (Smedley et al., 2001). Individuals from minority populations experience higher rates of chronic disease, obesity, and premature death in the United States than Whites (Weinstein et al., 2017). Weinstein et al. (2017) also noted that African Americans contract Acquired Immune Deficiency Disease (AIDS)

at much higher rates than Whites, and that Native American, Alaskan Native, and African American populations continue to experience much higher rates of infant mortality.

Disparities in healthcare for racial and ethnic minorities may be explained, in part, by access (Kington et al., 2001; Price et al., 2013; Syed et al., 2013). In addition to lack of insurance and financial ability to seek care, some minority groups may lack physical proximity to healthcare providers because many predominantly minority communities experience a shortage of healthcare providers (Kington et al., 2001). A lack of diversity among healthcare providers may also contribute to these health disparities (Weinstein et al., 2017). In a 2004 report the Institute of Medicine noted that racial and ethnic minority patients receive a lower quality of healthcare than non-minority patients, finding that the lack of healthcare providers of color may be a possible contributor to these disparities (Smedley et al., 2004).

In addition to issues of access, Shen et al. (2018) found that African Americans "consistently experienced poorer communication quality, information-giving, patient participation, and participatory decision-making than White patients" (p. 117-118). The 2021 National Healthcare Quality and Disparities Report of the Agency for Healthcare Research and Quality found that Black, Hispanic, Native American, and Alaskan Native patients received worse care as compared to White patients on approximately 40% of quality measures (Agency for Healthcare Research and Quality, 2021).

The relationship between the patient and healthcare provider can have a significant impact on both the perceived and actual quality of healthcare received by minority populations (Nelson et al., 2003; Street et al., 2008). Nelson et al. (2003) reported that African American and Hispanic patients are more likely to report dissatisfaction with their relationships with physicians

and to perceive poorer quality of care. Factors related to the provider-patient relationship, such as trust and communication style, are thought to be partially responsible for the healthcare disparities experienced by minority populations (Street et al., 2008).

Concordance between the patient and healthcare provider, defined as "a similarity, or shared identity, between physician and patient based on a demographic attribute, such as race, sex, or age," (Street et al., 2008, p. 199) is related to positive healthcare outcomes. Saha et al. (2000) found that minority patients tend to seek out minority physicians who consider their patients' customs and beliefs in their care. Black and Hispanic patients also perceive a higher quality of care from physicians of a concordant race, perceiving that the physician treated them with a higher level of respect, took more time to listen and explain, and were more accessible. (Saha et al., 1999). Street et al. (2008) noted that "patients' trust, satisfaction, utilization of services, and involvement in decision making have been reported higher when the patient and physician share the same race or ethnicity" (p. 199) and that the physician-patient relationship is strengthened when patients see themselves as similar to their physicians. Cooper et al. (2003) discovered that doctors' visits lasted an average 2.15 minutes longer when the patient met with a physician who was race-concordant. Black men are much more likely to seek preventive healthcare services, particularly invasive services, after meeting with a racially concordant doctor (Aslan et al., 2019). Additionally, Greenwood et al. (2020) found that newborn–physician racial concordance is associated with significantly reduced mortality rates for African American infants. In addition to increased quality of care, patient-provider race concordance may lower healthcare costs; total healthcare expenditures were lower among Black, Asian, and Hispanic patients with race-concordant clinicians than those with discordant clinicians (Jetty et al., 2022).

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In addition to increasing the opportunity for patients to be served by race-concordant providers, a more diverse healthcare workforce may serve to improve access for minority and low-income patients (Kington et al., 2001; Mitchell & Lassiter, 2006). Kington et al. (2001) reported that physicians who identify as members of a minority are more likely to practice in underserved areas and have a higher percentage of patients from minority groups than physicians who are White. Mitchell and Lassiter (2006) documented that minority students place greater value on the opportunity to serve vulnerable and low-income populations and view these populations less negatively. Increasing the diversity of healthcare providers, therefore, could play a key role in reducing healthcare disparities for minority populations.

Snyder et al. (2018), revealed that the healthcare workforce is actually becoming more diverse, but that the majority of providers from minority groups is remaining in lower-education, lower-paying positions. Individuals from minority groups are more likely to work in an entry-level position such as a nursing assistant, home health aide, and licensed practical nurse (Snyder et al., 2018, Wilbur et al., 2020). Wilbur et al. (2020) also observed that all minorities except Asians are underrepresented in occupations involving diagnosing and treating medical conditions.

Health disparities have significant social and economic cost to individuals and society (World Health Organization, 2018). A more diverse healthcare workforce may lead to greater access to healthcare for minority populations, more trusting patient-provider relationships, the ability for minority patients to receive care from race-concordant providers, and an overall increase in the quality of care that minority patients receive (Kington et al., 2001; Mitchell & Lassiter, 2006; Nelson et al., 2003; Saha et al., 2000; Street et al., 2008).

Why Minorities are Underrepresented in Healthcare

Despite decades of effort to increase the diversity of the healthcare workforce, people of color remain underrepresented in many healthcare professions (Snyder et al., 2018). Snyder et al. (2018) noted that "several barriers to achieving a more diverse health workforce have been documented, including financial barriers, academic preparation, unwelcoming campus climate, and lack of social and emotional support" (p. 58). The lack of underrepresented minority (URM) students who are admitted to graduate and professional healthcare programs, often referred to as the "leaky pipeline" of students into healthcare programs, is explored in the paragraphs below (Alexander et al., 2009; Barr et al., 2008; Freeman et al., 2016).

Academic Preparation

One contributing factor to the lack of minority students in graduate healthcare programs is the lower graduation rate of minority students from undergraduate programs (Association of American Colleges & Universities [AACU], 2019). While the number of minority students enrolled in college at the undergraduate level has risen, the number of minority students who are graduating from college still lags the number of White graduates (AACU, 2019). Factors contributing to the difficulty of retaining minority undergraduate students include a lack of adequate academic preparation and study skills needed to be successful in college, lack of family guidance and support, lack of minority role models and mentors in higher education, difficulty paying for college, low self-esteem, and lack of societal and social expectations that they will complete college (Amaro et al., 2006; Martin & Mustillo, 2017; Schwartz & Washington, 1999; Seidman, 2005).

Pre-health undergraduate minority students may face additional barriers to success in the form of difficult science coursework (Alexander et al., 2009; Barr et al., 2008; Freeman et al., 2016). Alexander et al. (2009) examined grades in "gateway courses" for health professions programs, such as biology, general chemistry, organic chemistry, and physics and observed that URM students earned significantly lower grades in these gateway courses, even when adjusting for measures of prior academic performance. "[E]ven after controlling for academic preparation and achievement before college, URM college students who begin work toward a science degree are more likely to switch into another field or lose interest than are Asian American and White students" (Alexander et al., 2009, p. 797). Despite many attempts to address achievement gaps for minority students in math and science courses, these achievement gaps have remained persistent over time (Aronson & Dee, 2012; Haak et al., 2011; Harackiewicz et al., 2014; Van Sickle et al., 2020).

Barr et al. (2008) also documented that science courses present difficulties for URM pre-health students, finding that approximately one half of freshmen students who indicate a pre-medical interest in their freshmen year indicated a declining interest in pre-medical studies by the end of their sophomore year, and that the primary reason given for their declining interest was a negative experience in one or more chemistry courses. Chemistry courses, particularly Organic Chemistry, have been found to play a significant role in low career persistence for all students, including underrepresented students (Lovechhio & Dundes, 2002), However, the pre-medical curriculum poses a larger threat to Black and Latinx students who experience the sharpest attrition from the pre-medical path after struggling in these courses (Barr et al., 2008).

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Freeman et al. (2016) revealed that pre-medical and pre-dental students expressed a fear of the standardized tests required for entrance into their professional programs of interest. Students attributed some of their academic concerns to their perception of being inadequately prepared by their high schools for the difficult college curriculum of the pre-medical and pre-dental paths (Freeman et al., 2016).

Academic struggles for URMs often begin well before college, as demonstrated by an achievement gap between minority and White students that can be observed even before kindergarten (Yeung & Conley, 2008; Phillips et al., 1998). Yeung and Conley (2008) observed that "research based on test results from the National Assessment of Educational Progress conducted since the 1970s showed a substantial lag in the achievement of Black students vis-a`-vis their White counterparts" (p. 303). These disparities in academic achievement can be seen before children enter kindergarten and widen as they progress through school and persist into adulthood (Jeynes, 2015; Phillips et al., 1998).

Non-Academic Factors

In addition to barriers related to academic achievement, Lovecchio and Dundes (2002) documented several non-academic barriers to success for Black pre-medical students, including advisement, campus climate, and a lack of motivation. Barr et al. (2008) identified a lack of mentoring and modeling for minority pre-health students as a barrier to success. Freeman et al. also (2016) identified non-academic barriers including a lack of institutional support and resources, financial concerns, a lack of family support, students' questions about their own ability and desire to persist on the pre-health path, and inadequate advanced coursework offered by their institutions as barriers to URM pre-health students' success. Students reported that these

barriers contributed to their declining interest in a pre-health path (Freeman et al., 2016). Barr et al. (2008) discovered that a lack of support from and access to advisors was a key barrier to success for minority pre-medical students, noting that these students may lack knowledge about how to strategically select courses for academic success and how to persist when faced with academic setbacks. Freeman et al. (2016) noted that many minority pre-health students found the pre-health advising system at their institution to be inadequate, describing "feeling lost and wanting to know how to navigate their undergraduate experience to get the most out of it" (p. 990) but feeling that they lacked the resources to understand how to do so. Tucker and Winsor (2013) previously noted the importance of access to quality advisement for minority pre-health students experiencing academic challenges:

> As students struggle with these types of challenges, they could benefit from critical academic interventions or advising that are more conducive to improving their career decision-making, therefore improving their academic persistence. The lack of timely and effective academic advising can make a significant impact on the career persistence of Black students. (pp. 38-39)

Lack of shadowing opportunities is another key contributor to declining pre-health interest. Barr et al. (2008) discovered that having a shadowing or mentorship opportunity with a physician within the first two years of college positively impacted students' level of interest in persisting on a pre-medical path. Freeman et al. (2016) documented that many pre-medical and pre-dental students identify a lack of shadowing opportunities as a major barrier on their pre-health path. Students reported having difficulty finding shadowing opportunities and feeling that their colleges were unable to connect them with clinical shadowing opportunities (Freeman et al.,

2016). Freeman et al. (2016) also discovered that students experienced frequent rejection when they attempted to find shadowing opportunities on their own and that those who were able to find shadowing opportunities expressed concern that they had an inadequate number of shadowing hours to be competitive for professional program application.

Freeman et al. (2016) also revealed that financial concerns are a key factor in students' declining interest in the pre-medical path. Minority students expressed concerns not only about their ability to pay for medical or dental school but about their ability to pay for key steps in the application process including standardized test preparation and fees, application fees, and expenses related to traveling for professional school interviews (Freeman et al., 2016). Some students also shared that working during their undergraduate studies made them less able to become academically competitive than their peers who did not have to work (Freeman et al., 2016). Additionally, students feared the debt they may accrue if they attended medical or dental school (Freeman et al., 2016).

Tucker and Winsor (2013) revealed that social environment has a strong influence on career persistence for minority pre-health students, noting that minority students who persisted on a pre-health path reported significant people in their lives (including mentors in the healthcare field, partners, and family members) who played a role in their persistence. Freeman et al. (2016), however, discovered that the influence of friends and family could impact student persistence in both positive and negative ways. Some students noted pressure from their families to succeed on their pre-health path while others were discouraged by family members and friends to pursue medical or dental school; additionally, students shared that obligations to care for family members often competed with their schoolwork and that their families lacked knowledge

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and understanding of the difficult process of becoming a physician or dentist (Freeman et al., 2016).

Students who begin their college experience at community colleges may face additional barriers to admission to graduate healthcare programs (Talamantes et al., 2014). Talamantes et al. (2014) observed that underrepresented minority students are more likely than White students to attend a community college before transferring to a four-year school and that medical school applicants who began their college experience at a community college are significantly less likely to be admitted to medical school, even after accounting for differences in grade point average and admissions exam scores.

Finally, URM students may face another barrier in the form of their own doubts about their ability and desire to become a physician or dentist (Freeman et al., 2016). Freeman et al. (2016) noted that students were aware of and concerned about the disparity in acceptance rates for minority students as compared to White students to health professions programs, and that they shared confusion about the multiple training steps involved in these careers. Students also voiced concern about their personal abilities to succeed in medical or dental school, citing struggles with time management and study skills (Freeman et al., 2016). Additionally, Freeman et al. (2016) found that students were concerned about what their lives would look like if they were accepted into their professional program of choice, particularly how it would affect their work-life balance, the competitive environment within the health professions, and isolation from their peers who were not accepted. Although medicine and dentistry are typically considered fields with high levels of job security, students also feared having difficulty finding a job, especially in their desired location (Freeman et al., 2016).

Imposter Syndrome, Minority Status Stress, and Stereotype Threat

In addition to the academic and non-academic factors discussed above, underrepresented students face imposter syndrome and minority status stress, which provide an important context for understanding the barriers they may face in gaining entry into graduate healthcare programs (Cokley et al., 2013). Imposter syndrome is characterized as a person's persistent perception of themselves as being incompetent, despite evidence to the contrary (Clance & Imes, 1978). Minority status stress is the stress that students experience related to their minority status and may be caused by exposure to racial discrimination, covert and overt racist educational policies, perceived discrimination, negative stereotypes, racial tension, and cultural incongruity (Cokley et al., 2013). Cokley et al. (2013) noted that imposter syndrome and minority status stress have been associated with poor mental health outcomes, including anxiety, depression, excessive worry, fear of negative evaluation, and diminished self-esteem for ethnic minority groups. In African American undergraduate students, imposter syndrome has been associated with depression, survivor guilt, psychological distress, and decreased self-esteem (Austin et al., 2009). Stereotype threat, or the fear of confirming negative stereotypes about one's group, may cause additional pressure and distress for minority students in evaluative contexts such as academic settings (Aronson, 2002). Additionally, Walter and Cohen (2007) found that minority students are uncertain about the quality of their social bonds and are disproportionately impacted by subtle events that may confirm that lack of social connectedness, thus negatively impacting their sense of potential in academic settings.

Why Students Move Away from Pre-Health Paths

Changing majors and career paths is common among undergraduates, with around one third of students changing their major at some point during college (U.S. Department of Education, 2017). When initially choosing an undergraduate major, students may consider their academic interests, aptitude, the psychological and social benefits of the major, the educational requirements of the major, and employment prospects (Mackenzie et al., 2017). A change in any of these factors, such as students discovering that they do not enjoy or do not excel at the science coursework required for health professions program admission, could result in a change in major or career plans. Additionally, Mackenzie et al. (2017) stated that some students initially choose their major with little consideration of their own aptitudes, interests, and other relevant factors and therefore may lack commitment to their initial major choice.

Astorne-Figari et al. (2019) observed that low grades are related to higher rates of major change, which is consistent with Barr et al.'s (2016) findings that students often lose interest in a pre-health pathway after a negative experience in a chemistry course. When students switch majors, they are likely to switch into majors that "look like them," or in other words into majors that are largely comprised of students who are similar to them in terms of race, ethnicity, and gender (Astorne-Figari et al., 2019). Therefore, the underrepresentation of minority students in the health professions may dissuade students from persisting in undergraduate pathways that lead to health professions careers.

Though major change is a common phenomenon for undergraduates in all ethnicities and fields of study, Barr et al. (2008) observed that students considered underrepresented minorities have a higher rate of declining interest in medical careers during their undergraduate studies than

their White peers. Riegle-Crumb (2019) revealed that major change is extremely common among racial and ethnic minority students in the science, technology, engineering, and math (STEM) majors. Though minority students initially declared STEM majors at the same rates as their White peers, they left these majors at far higher rates (Riegle-Crumb, 2019). Approximately 40% of African American students and 37% of Hispanic students eventually switched out of a STEM major, as compared to 29% of White students (Riegle-Crumb, 2019). In addition, 20% of Hispanic students and 26% of Black students in STEM majors dropped out of college without earning a degree, compared to 13% of White STEM majors (Riegle-Crumb, 2019). Because majors in the natural science are common for undergraduate students pursuing health professions paths, this high attrition rate in STEM majors may contribute to the "leaky pipeline" of minority students into these programs.

Pre-Health Students at Historically Black Colleges and Universities

Despite the struggles of undergraduate institutions to matriculate students into graduate and professional healthcare programs, historically Black colleges and universities (HBCUs) are more successfully preparing pre-health students than predominantly White institutions (Akinson et al., 1994; Gasman et al., 2017). According to Gasman et al. (2017), "although HBCUs only represent 3% of all degree granting institutions in the nation, they represented 17% of the colleges supplying the most African American applicants to medical school in 2013" (p. 582). Gasman et al. (2017) identified the reasons that HBCSs more successfully matriculate students into medical schools, finding that HBCUs devoted more effort to pre-medical training than other undergraduate institutions and were more intentional about allocating resources to pre-medical programs. They also had a proportionally larger number of science majors, stronger affiliations

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with medical schools, and had stronger pre-medical enrichment programs than many historically White institutions (Akinson et al., 1994).

Barriers to Recruiting and Retaining Underrepresented Students

Many graduate and professional healthcare programs note persistent struggles to recruit minority applicants (Alonzo et al., 2019; Coplan et al.,2021; Richburg, 2022; Torres et al., 2021; Wise et al., 2017). Torres et al. (2021) identified several specific barriers to the recruitment of URM students into graduate occupational therapy programs, including rigorous academic requirements for admissions, URM students often coming from educationally disadvantaged backgrounds, and a lack of appeal of a career in occupational therapy for URM students. Wise et al. (2017) identified barriers to recruiting URM students into graduate physical therapy programs, including the following: a lack of appeal of the geographic location of the programs to URM students; competition from other health professions that have historically been more diverse, offered better financial aid and scholarships, and higher earning potential; a lack of promotion of physical therapy as a career option for URM students by school counselors and the media; admissions qualifications that rely heavily on academic metrics (e.g., GPA and GRE scores) and less on noncognitive attributes; a lack of united and coordinated recruitment efforts geared toward URM students; and a student body within PT programs that is not perceived as being diverse by potential matriculants. Collins and Carr (2018) also found that URM students lack knowledge of and interest in careers in physical and occupational therapy. Alonzo et al (2019) observed similar perceived barriers to entry into pharmacy programs for URM students, noting that the high cost of tuition, difficulty obtaining letters of recommendation, feeling

underprepared for interviews, and low undergraduate GPA as the most substantial barriers to applying to pharmacy school.

Richburg (2022) discovered that a lack of knowledge about the profession of speech-language pathology (SLP) is a primary barrier to attracting a diverse student body into graduate SLP programs. Males are less aware of the SLP profession than females prior to entering college, and non-White students are less likely to be aware of the degree program and profession of SLP than their White peers (Richburg, 2022).

Coplan et al. (2021) showed that use of a holistic applicant review process could be an effective strategy to increase the diversity of physician assistant (PA) programs. Use of holistic review, which involves looking at applicants' life experiences and personal attributes in addition to academic metrics, was moderately correlated with a higher percentage of racial and ethnic minority students within PA programs. Coplan et al. (2012) found that the use of GPA and standardized test scores as the only admission criteria, along with a lack of intentional recruitment of underrepresented students, was associated with decreased diversity within PA programs.

Laws Impacting Underrepresented Students in Healthcare

The federal government has attempted to enact legislation intended to increase the opportunity for underrepresented students to pursue healthcare education programs to diversify the healthcare workforce (Allied Health Workforce Diversity Act of 2021, 2021; Cohen et al., 2002). Beginning during the Civil Rights movement of the 1960s, affirmative action programs related to federal Title VII legislation had a positive impact on minority student enrollment in medical schools, with enrollment of minority students peaking in the 1990s; however, since the

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1990s, several Supreme Court decisions related to affirmative action cases have resulted in a decline in matriculants into medical school (Cohen et al., 2002). Recently, the Allied Health Workforce Diversity Act was signed into law, which allows the federal Health Resources Services Administration to provide grants to education programs in order to increase diversity in physical therapy, occupational therapy, respiratory therapy, audiology, and speech-language pathology through scholarships and enhanced recruitment and retention efforts for underrepresented groups (Allied Health Workforce Diversity Act of 2021, 2021; Saffer, 2003).

Men in the Health Professions

Men are also underrepresented in many healthcare professions, including pharmacy, dentistry, occupational therapy, physical therapy, speech-language pathology, and physician assistant (AACP, 2020; ADEA, 2019; AOTA, 2018; APTA, 2019; CAPCSD, 2020; PAEA, 2021). Men are now also slightly underrepresented in medicine, making up approximately 44.4% of matriculants in the 2018-2022 application cycles (AAMC, 2021). The underrepresentation of men in healthcare professions may be explained, in part, by the gender gap in college attendance between males and females. For the last four decades, there has been a dramatic increase in the college attendance rate of females. Women surpassed men in college attendance in 1981 and their numbers have continued to grow (Flashman, 2013). In Fall 2021, men made up 41% of college enrollees (National Student Clearinghouse Research Center, 2021). Because females now represent a substantially larger portion of the undergraduate population, it follows that females will make up a larger proportion of the graduate and professional program population.

Though little research exists on the other possible reasons for the gender gap in graduate and professional healthcare education programs, one possible contributing factor may be the

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perception of healthcare and other caregiving professions as being female work, also known as "gendering" (Beagan & Fredericks, 2018; Cech, 2013; Francis, 2002; Litosseliti & Leadbeater, 2013). Cech (2013) found that students who identify with personality characteristics that are traditionally considered masculine tend to choose careers that are male-dominated, while students who identify with personality characteristics that are traditionally considered feminine tend to choose female-dominated fields. Commonly accepted beliefs about the activities, roles, and personality traits that distinguish men from women place cultural expectations and constraints on what is considered appropriate work for each gender (Francis, 2002). Francis (2002) found that as early as primary school children develop career aspirations that reflect this gender dichotomy, with girls choosing creative and caring professions and boys choosing scientific, technical, and business aspirations.

The phenomenon of professional gendering can be seen in many professions, including teaching and healthcare (Beagan & Fredericks, 2018; Han et al., 2020). More than two-thirds of teachers are women, and research indicates that men are less likely to choose careers in teaching due to its perception as being lower-paying, lower-prestige, and associated with "feminine skills" such as mothering and caring (Han et al., 2020). Beagan and Fredericks (2018) found that perceptions of some careers in healthcare being "women's work" are persistent. For example, though the field of nursing has mounted a decades-long campaign to recruit more males, the profession is still over 90% female (Beagan & Fredericks, 2018). Rehabilitative health professions are especially gendered, and speech-language pathology is one of the most gendered professions, with men making up less than 4% of accepted applicants for SLP programs in the 2019-2020 application cycle (CAPCSD, 2020). The research into why men do not become SLPs

is scarce (Byrne, 2010). Byrne (2010) reported that men and boys have a limited awareness of the profession of speech-language pathology. Litosseliti and Leadbeater (2013) found that women have historically been perceived as caregivers, nurturers, and communicators, and therefore better suited for the speech-language pathology profession. The perception of the career as feminine is reinforced by the fact that the profession is currently female-dominated and most potential students have only been exposed to female SLPs (Litosseliti & Leadbetter, 2013). Beagan and Fredericks (2018) found a similar explanation for the lack of male representation in occupational therapy, suggesting that many jobs are gendered both numerically and culturally (as either "women's work" or "men's work").

Chapter Summary

This chapter included the existing research related to the underrepresentation of racial/ethnic minorities and men in healthcare. Increased diversity within the healthcare professions may lead to better patient outcomes and, therefore, is a goal of many healthcare education programs. Despite a decades-long focus on increasing diversity in the health professions, however, relatively little research exists on the specific experiences and perceptions of undergraduate minority and male students on pre-health paths. The following chapter outlines the methodology for a qualitative study aimed at deepening the understanding of the experiences of these students.

Chapter 3. Research Methods

The purpose of this qualitative phenomenological study was to explore the experiences of underrepresented students on a pre-health profession path during their undergraduate years at a mid-sized, regional university in the southeast. Specifically, I focused on underrepresented students who have indicated that they intend to apply to dental, medical, occupational therapy, pharmacy, physical therapy, physician assistant, and speech-language pathology programs.

Research Design

In this study I employed a phenomenological, qualitative research design using semi-structured, individual interviews to explore undergraduate students' college experience on the pre-health professions path. Phenomenological research seeks to understand a phenomenon or experience of a group of individuals from the perspective of those who have experienced it (Creswell, 2007). The need to gain deeper, more nuanced understanding of the experiences of underrepresented students on a pre-health path supports the use of qualitative methodology. Flick (2018) stated, "The major aim of collecting qualitative data is to provide materials for an empirical analysis of a phenomenon that a study is about" (p. 7).

In-depth, semi-structured interviews were employed as the method of collecting data for empirical analysis in this study and are often the data collection method of choice in phenomenological research (Creswell, 2007). As Creswell (2007) explained, "Individuals are selected who have experienced the phenomenon, and they are asked to provide data, often through interviews. The researcher takes this data and, through several steps of reducing the data, ultimately develops a description of the experience that all individuals have in common" (p. 94).

Research Question

The following research question guided my exploration of the "leaky pipeline" of pre-health students:

What are the experiences of underrepresented students who are pursuing graduate and professional healthcare programs?

Participants

I recruited and conducted interviews with 11 participants for this study. To recruit participants, I asked pre-health academic advisors at a mid-sized, regional university in the southeastern U.S. to send a recruitment email (Appendix A) to students who had self-identified as following a pre-medical, pre-pharmacy, pre-physician assistant, pre-dentistry, pre-occupational therapy, pre-physical therapy, and pre-speech-language pathology path. I incentivized participation by offering a $25 gift card to participants. The email specified that study participants must meet the following criteria:

1. Were currently enrolled at the university.

2. Intended to pursue graduate or professional programs in medicine, pharmacy, physician assisting, dentistry, occupational therapy, physical therapy, or speech-language pathology.

3. Identified as African American, American Indian, Alaskan Native, Hispanic, or male.

To define which race, ethnicity, and gender categories would be included in the participant pool for this study, I examined matriculant data by race, ethnicity, and gender for each healthcare program. Underrepresented populations were defined in this study as any race/ethnicity or gender category that is underrepresented in the healthcare programs as compared to their

proportions in the general U.S. population and for which race/ethnicity information was available at the institution where the research was conducted. For each healthcare profession examined in this study, African American, American Indian or Alaskan Native, and Pacific Islander/Hawaiian, Hispanic, and male students were underrepresented. However, the university where this study was conducted combines the racial categories of Pacific Islander and Asian for student demographic reporting purposes. Because Asian students are not underrepresented in the healthcare education programs being examined and there is no way to identify only Pacific Islander students at the university, that category was excluded from the participant pool for this study.

Data Collection

"If what you need to find out cannot be answered simply or briefly, or if you anticipate that you may need to ask people to explain their answers or give examples or describe their experiences, then you rely on in-depth interviews" (Denzin & Lincoln, 2018, p. 2). To collect data for this study, I conducted semi-structured interviews via Zoom using an interview guide. I chose semi-structured interviews to provide structure, consistency, and focus to my interviews while allowing for flexibility to explore participants' answers. I included probes in my interview guide as I had anticipated the need for follow-up questions within each interview based on what my participants shared.

Conducting virtual interviews made participation more convenient for participants and allowed for easy recording and transcription of the interviews. Interview participants were able to choose a time for the interview that was convenient for them and I encouraged them to choose a quiet, private setting for the interview to protect the confidentiality of their answers. With the

participant's permission, I recorded the interviews on the Zoom platform. I took notes during the interviews to ensure my active listening and to serve as a memory aide for follow-up questions.

Interview Format

Based on Rubin and Rubin's (2005) suggested outline for qualitative interviewing, I developed an interview guide (Appendix B) consisting of a series of main questions and probes. The questions were primarily open-ended. As a semi-structured interview, the questions were intended to create opportunities for participants to share their unique experiences and to prompt follow-up questions based on their answers.

Data Analysis

To analyze my data, I reviewed the interview transcripts generated by Zoom and corrected any transcription errors. Next, I utilized Atlas.ti data analysis in order to code the data. Using the software, I identified themes and categorized pieces of data into those emergent themes. Coding in qualitative research involves both inductive and deductive processes (Creswell, 2014). My coding process began as an inductive process that involved, as Creswell suggested, "working back and forth between the themes and the database until the researchers have established a comprehensive set of themes" (Creswell, 2014, p. 234). After I established themes, I re-examined the data deductively to ensure that I had ample evidence to support each theme (Creswell, 2014).

Researcher's Position

I currently serve as a pre-health professions academic advisor for pre-occupational therapy and pre-speech-language pathology students and am director of an advisement unit that advises pre-physical therapy students. Additionally, I previously served as a pre-health advisor

for other populations of pre-health students, including pre-medical, pre-dental, pre-pharmacy, and pre-physician assistant students. Because of my experiences working with these students, I recognized that I may have pre-conceived ideas and beliefs about what their experiences may be, including potential barriers to their success on a pre-health path.

To mitigate any potential bias in my interviewing and coding process, I utilized an auditor. I asked a colleague involved in academic advisement with previous experience advising pre-health professions students to serve as my auditor. The auditor reviewed my interview transcripts and emergent themes to ensure that my findings were accurate.

Measures of Rigor

Trustworthiness

Credibility, reliability, and confirmability are key measures of trustworthiness in qualitative research (Lincoln & Guba, 1985). Credibility deals with the truth of the researcher's findings and can be ensured through several procedures in both conducting and presenting the research (Shenton, 2004). In this study, I utilized triangulation to ensure the credibility of my findings, including a wide range of participants for my interviews in order to develop a rich and full picture of the underrepresented pre-health students' experience (Shenton, 2004). Additionally, as suggested by Shelton (2004), I employed tactics to ensure the honesty and transparency of my participants, taking time at the beginning of each interview to build rapport and ensure them that there were no right answers to the interview questions. I also conducted member checks after each interview to ensure that my understanding of the participant's experience was accurate (Anfara et al., 2002; Lincoln & Guba, 1985).

Dependability is another measure of trustworthiness in qualitative research that is closely related to credibility and can be ensured by many of the same practices (Lincoln & Guba, 1985). An additional step I took to ensure the dependability of my study was to provide as much detail as possible about my research process in this chapter in order to allow readers to judge the dependability of the study for themselves (Shenton, 2004).

The concept of confirmability involves ensuring "as far as possible that the work's findings are the result of the experiences and ideas of the informants, rather than the characteristics and preferences of the researcher" (Shenton, 2004, p. 72). Miles and Huberman (1994) stated that the researcher's transparency regarding his or her own role, beliefs, and predispositions is key to confirmability. Therefore, I shared my role as the researcher and my process for mitigating potential bias in my research process in the Researcher's Position statement above.

An additional measure that I took to ensure the trustworthiness and confirmability of this study was to practice reflexivity, continually reflecting on my background, culture, experiences, and role, and how they may be influencing my findings (Creswell, 2014). As suggested by Shenton (2004), I engaged in reflective commentary throughout the research process by keeping a journal of thoughts and impressions throughout my interviewing and coding process. Lastly, I kept all interview transcripts, notes, and a detailed description of my coding process to provide an "audit trail" of my research so that others could review my process if needed (Anfara et al., 2002; Shenton, 2004).

Transferability

Transferability, also referred to as external validity, deals with whether the findings of one study can be applied to other contexts (Shenton, 2004). In qualitative research, findings are not necessarily meant to be transferrable to other populations or contexts, but Lincoln and Guba (1985) and Firestone (1993) suggested that researchers should provide sufficient context and details about their study for others in their field to decide for themselves whether the research may be applicable to their situations and populations. In Chapter 3, I have attempted to provide that detail, allowing other higher education professionals to determine whether the finding of my study may be applicable to their work.

Chapter Summary

This chapter contains a detailed description of the qualitative, phenomenological research design of this study, including the data collection method and interview format, participants, data collection procedures, data analysis process, and the steps taken to ensure the trustworthiness of my research. The findings of this research will be presented in Chapter 4 of this dissertation.

Chapter 4. Findings

Introduction

The purpose of this qualitative, phenomenological study was to explore the experiences of underrepresented students on a pre-health profession path during their undergraduate years at a mid-sized, regional university in the southeast. Specifically, I focused on underrepresented students who have indicated that they intend to apply to dental, medical, occupational therapy, pharmacy, physical therapy, physician assistant, and speech-language pathology programs.

The following research question guided my exploration of the "leaky pipeline" of pre-health students:

What are the experiences of underrepresented students who are pursuing graduate and professional healthcare programs?

Data Collection

To recruit participants for this study, I asked pre-health academic advisors at a mid-sized, regional university in the southeast to send a recruitment email (Appendix A) to students who self-identified as following a pre-medical, pre-pharmacy, pre-physician assistant, pre-dentistry, pre-occupational therapy, pre-physical therapy, and pre-speech-language pathology path. The email specified that study participants must meet the following criteria:

1. Were currently enrolled at the university.

2. Intended to pursue graduate or professional programs in medicine, pharmacy, physician assisting, dentistry, occupational therapy, physical therapy, or speech-language pathology.

3. Identified as African American, American Indian, Alaskan Native, Hispanic, or male.

I received 11 responses from students who met the participation criteria and scheduled interviews with them. I conducted the 11 semi-structured interviews via Zoom in April of 2023. With each participant's permission, I recorded their interview on the Zoom platform and used Zoom's transcription feature to transcribe them. I utilized an interview guide (Appendix B) consisting of a series of main questions and probes for my interviews. After I reviewed the interview transcripts generated by Zoom and corrected any transcription errors, I utilized Atlas.ti data analysis to code the data. Using the software, I identified themes and categorized pieces of data into those emergent themes. I provided my auditor, Dr. Megan Roberts, a copy of each coded transcript and this chapter for her review and confirmation that my codes accurately reflected the experiences shared by participants. The auditor certification is in Appendix C.

Participant Profiles

Eleven students met the study criteria listed above and agreed to participate in an interview. Participants' race/ethnicity, gender, and pre-health track are outlined in Table 1.

Table 1

Participants' Race/Ethnicity, Gender. and Pre-Health Tracks

Name	Race/Ethnicity	Gender	Pre-Health Track
Carson	White	Male	Pre-Physician Assistant
Patrick	White	Male	Pre-Medical
Nina	Hispanic	Female	Pre-Physician Assistant
Tina	Hispanic	Female	Pre-Physical Therapy
Alexis	African American	Female	Pre-Speech-Language Pathology
Yúzé	Asian American	Male	Pre-Medical
Iyana	African American	Female	Pre-Occupational Therapy
Aaliyah	African American	Female	Pre-Physical Therapy
Laci	African American	Female	Pre-Speech-Language Pathology
Shanice	African American	Female	Pre-Speech-Language Pathology
Francesco	Asian American	Male	Pre-Physical Therapy

Carson is a White, male freshman student who intends to apply to physician assistant (PA) programs. He is majoring in Biology. He shared that, although no one in his family has pursued a healthcare degree, he has been passionate about helping others since childhood, saying, "It sounds so cliché to be like 'I've wanted to help people', but ever since I was little, I've been super empathetic." He was previously involved in marching band and is currently an active participant in the university's farmer's market leadership.

Patrick is a White, male sophomore who intends to apply to medical school. He is majoring in Health Sciences. His father is a cardiologist. Patrick said, "Growing up he would invite me and my siblings to come into the office with him a lot, and there we'd see a lot of what he's doing, growing as a business and a cardiologist." Patrick hopes to one day own his own practice.

Nina is a Hispanic, female junior who intends to apply to physician assistant programs. She is majoring in Biology and is a first-generation college student. Nina shared that she was often tasked with translating for her Spanish-speaking parents. She said, "I felt like there was always this border of things that I couldn't get across to my parents and I just wanted to eliminate that for anybody who is Spanish speaking."

Tina is a Hispanic, female junior who intends to apply to physical therapy (PT) programs. She is majoring in Health Sciences and is a first-generation college student. She first became interested in physical therapy as she worked with an athletic trainer in her high school. She said, "I thought like that environment was kind of cool, just more of tactile things like working with athletes and healing people."

Alexis is an African American, female freshman who intends to apply to speech-language pathology (SLP) programs. She is majoring in Rehabilitative Health Sciences and is a first-generation college student. She is active in the Black Affairs Association student organization. She was initially interested in education but shifted her plans to speech-language pathology (SLP). She had a cousin who became an SLP and said, "She made a really lucrative career off of that and she has a passion for it. And so, I thought maybe that'd be a nice career choice."

Yúzé is an Asian American, male senior who intends to apply to medical school. He is majoring in Nutrition. He grew up with his grandparents in China and immigrated to the United States. Yúzé applied to medical school this year but was not admitted. He is now planning on enrolling in a master's in clinical nutrition program but will reapply to medical school next year. He is passionate about helping others through both medicine and nutrition, saying, "I really think when you combine nutrition and medicine, you really have the two…that's everything you need."

Iyana is an African American, female freshman who intends to apply to occupational therapy (OT) programs. She is majoring in Rehabilitative Health Sciences. She first became interested in occupational therapy through volunteering in a special education classroom in high school. She said, "I kind of got to see the tools that the students had that were from their OTs and just how much it made a difference."

Aaliyah is an African American, female freshman who intends to apply to physical therapy programs. She is majoring in Kinesiology. She was inspired to become a physical therapist after experiencing an injury while cheering in high school and receiving care from a physical therapist. She said, "He explained everything and it was just like, at that moment I was like, I want to make a difference like this."

Laci is an African American, female junior who intends to apply to speech-language pathology programs. She is majoring in Rehabilitative Health Sciences. She is a non-traditional student who returned to college after several years away from school, and she sometimes struggles to balance school and her other obligations. She said, "I'm married too and in school and in work, so I'm really just trying to soak in all of what I can do to help make myself look as good as I can for that application process."

Shanice is an African American, female senior who has applied to speech-language pathology programs and will begin a program in another state next year. Though she was not admitted to her first-choice program, she was excited to find a school that focused less on her academics and standardized test scores and more on her experiences. She said, "They really wanted the whole person…they want to know who you are as a person and what you've been through, how your experience has shaped you."

Francesco is an Asian American, male sophomore who intends to apply to physical therapy programs. He will be studying abroad in Ireland next semester. He recently went through a period of feeling unsure if his major and pre-health path were the right fit for him. He shared, "Second guessing my potential career in physical therapy has made me think about changing majors and also led to me not to try as hard as I should have been in classes." However, he says he now feels more certain that he is on the right career path.

Findings

In analyzing the results of my interviews, I found the following themes in the experiences of the underrepresented pre-health participants: influences on career choice, what pre-health students feel they need to do to be competitive, challenges, fears and worries about the future, motivation to persist, resources and support, and parallel planning (or lack thereof). Table 2 lists the identified themes and subthemes identified. In the remainder of this chapter, I discuss these themes in detail.

Table 2

Experiences of Underrepresented Pre-Health Students Grouped by Category

Themes	Subthemes
Influences on career choice	"I want to help"
	Personal experience with providers
	Mentor influence
	Love of science
	Perks of the job
To be competitive, I must…	Academic success
	Shadowing, observation, and related experience
	Volunteer/service
	Involvement and leadership
	Research
	Standing out
Challenges	Difficulty in pre-health coursework
	Transition to college
	Time devoted to studying
	First generation status and lack of family support
	Difficulty with shadowing and involvement
	Underrepresented status
	Stress and pressure

Concerns about the future	Finances
	Concerns about not getting into a program
	Standardized tests
	Geographic location of program
	Transitioning to adulthood
	Fears about the program
	Finding a job and work life
Motivation to persist	Desire to help
	Family as motivator
	Related experience as a motivator
	Positive experiences in classes
Resources and support	Professors
	Tutoring
	Advisors
	Student gym
	Support from peers
	Faith groups
Parallel planning	Reapplying or applying to multiple programs
	Shifting paths

Influences on Career Choice

In order to understand the experiences of the pre-health students I interviewed, I began each interview with an exploration of what drew them to their chosen pre-health path. Participants shared that a desire to help, personal experiences with providers, shadowing and volunteer experiences, mentor influence, a love of science, and perks of healthcare careers served as motivators to pursue their chosen healthcare paths.

"I Want to Help…"

The most common reason participants gave for pursuing their chosen career was a desire to help others. When asked what led him to choose physician assistant as his career path, Carson shared, "Ever since I was little I've been super empathetic…I just want to be able to help somebody and be a difference in somebody's life, to just help them be better." Aaliyah noted that helping others was her reason for choosing physical therapy, stating, "I want to make a difference…I want to be that person [who makes] a child feel like, 'Okay, I feel better about the situation that I'm in.'" Laci expressed that she worked through speech issues with a speech-language pathologist as a child and reflected, "As I've gotten older, I've just wanted to help other people, like she helped me." Nina also mentioned helping others as a key motivator and was specifically focused on ways she could help underserved populations as a physician assistant:

> I speak Spanish so I know like when I used to translate for my parents when I was young, when they would go to the doctor, there was always this like barrier that, I feel like obviously in a healthcare setting, I don't know all the words in Spanish, like the right translation. And so, I felt like there was always this border of things that I couldn't get across to my parents and I just wanted to eliminate that for anybody who is Spanish

speaking. I wanted to be the main provider, being able to tell them exactly what's going

on and have them not miss anything.

Yúzé was drawn to help others through healthcare when he experienced a personal loss that he

felt may have been preventable. He described how his grandmother's death inspired him to

pursue nutrition and medicine:

> Well, I have a strong interest in nutrition, mostly because of my grandparents. I grow up
>
> with my grandparents in China, and it was in 2019. My grandma have some health
>
> condition and she passed away. And my dad mentioned if she listen to him, if she eat less
>
> chocolate, eat less sodium, maybe she can have a better health condition. Maybe she
>
> won't pass away so early. So that's why, I used to study computer engineering. That's
>
> when I realized, well, nutrition can probably make change. I can take care of my myself, I
>
> can take care of people I love.

Yúzé also expressed a desire to help others from underrepresented populations:

> [When I first immigrated to the U.S.], I have insurance, but the insurance is very high
>
> deductible. So I'm trying to avoid seeing all the physicians and everything…I hadn't been
>
> to clinic for three years and I was not in the very good condition. And I also wish to help
>
> those people. Those are really underrepresented people. So that's why I said I'm kind of
>
> underrepresented as well. Cause those people, they're not getting help. They're just,
>
> nobody's helping them. Nobody's helping them. So, I wish to have a clinic that I can help
>
> them.

Personal Experience with Providers

Another subtheme that emerged from participants' descriptions of choosing their career paths was personal experience with healthcare providers. As noted earlier, Laci's positive experiences with SLPs in her childhood influenced her career choice. Francesco had a similar experience, reflecting, "I had to do a lot of physical therapy growing up…and I just had a really positive experience there with the people that were working with me." Aaliyah shared:

What drew me to the physical therapy career was that when I was younger and I used to cheer, I was tumbling at a game and tore some ligaments in my leg to where I had to go to physical therapy. And my doctor was just so helpful and he explained it for me as a child to understand. And he just made me feel better than I was at first. He explained everything, and it was just at that moment I was like, I want to make a difference like this. I want to be that person [who makes] a child feel like, 'Okay, I feel better about the situation that I'm in.'

Shanice discussed that family members' experiences with speech-language pathologists influenced her decision to pursue that career path:

My nephew had some trouble with his perceptive and expressive language. So just watching him and the way that he interacted with our family and not meeting those milestones kind of drove me. And then I have a little cousin who was diagnosed with sensory processing disorder. He still goes to see a speech pathologist. So just their experiences…have kind of led me to where I want to be.

Mentor Influence

Another common subtheme that emerged as a key influence on career choice was the impact of a family member, friend, or mentor. Alexis stated, "I knew a cousin that went to [the same university I am attending] for her grad program for SLP, and she made a really lucrative career off of that and she has a passion for it." Patrick was also influenced to pursue the pre-medicine path by a family member, commenting, "My dad's a cardiologist so when going into college, first I wanted to study physics, but…when I moved up here and started living with my dad, he kind of convinced me to go down the medical track."

In addition to family member influence, some students also mentioned mentors who influenced their career choice. Nina noted the impact of a high school teacher:

> I knew I loved biology in high school. I took AP Biology and my teacher, she's one of my favorite human beings, and she made me fall in love with biology and she was the first one to kind of mention the idea of it. She was like, "Well you know, you could go to college major in Biology, if you like medicine." And I was like, "Oh, that would be like a good idea."

Tina mentioned a high school experience with an athletic trainer as impactful on her interest in physical therapy:

> I was in high school, and I did sports a lot. So I was in the athletic trainer's office just hanging out and I asked him what he did for a living and he said, "Oh, I help with athletes during the school day… so I thought that environment was kind of cool, just more of tactile things like working with athletes and healing people.

Iyana spoke of a volunteer experience with special needs students and witnessing the impact of occupational therapists:

> I just volunteered in a special education classroom when I was in high school, and I kind of got to see the tools that the students had that were from their OTs and just how much it made a difference and then I learned more about the profession and kind of realized it would be a good fit for me to work in that realm as well as letting my creative side come out and being in the medical field.

Love of Science

Three participants mentioned their love of science as an influence on their career choice. As noted earlier, Nina mentioned her love for biology as a motivation for pursuing the pre-physician assistant path. Patrick shared a similar love of science, stating, "So first I just have always loved science growing up. I've always had a knack for it." Yúzé echoed that sentiment, stating "I really love science. I really love medicine."

Perks of the Job

A final subtheme that emerged related to' career choice was the perceived benefits of a career in their chosen field, including flexibility and lucrative pay. Alexis shared that the high salary she expects to make as an SLP has influence her choice: "I most definitely want to be able to hopefully pay back student loans and have a lucrative career." Nina described being a physician assistant as, "a secure, stable job, has a very good growing community." Carson described the PA role as "very flexible, specialty wise. Having the option to help in surgery or emergency medicine or just anywhere is really what is driving me towards that." Tina reflected,

"I found why I like physical therapy, because that's healthcare and also you can go to pediatrics, women's health, all that cool stuff."

"To Be Competitive, I Must…

Another theme that emerged from my interviews was participants' perception of what it takes to become competitive for graduate and professional healthcare programs. Each participant expressed that they are currently doing or planning to do a variety of things to get competitive. Participants shared a perceived need to succeed academically, participate in shadowing and related work experiences, complete volunteer work, get involved on campus and take on leadership roles, or participate in undergraduate research. Additionally, six participants mentioned that they need to participate in all or many of these experiences and make sure they "stand out" in the application process.

Academic Success

The most noted "must" before being a competitive healthcare program applicant was a high GPA. Nearly all interview participants shared a focus on achieving high grades. When asked about his understanding of what it takes to become competitive for graduate programs, Patrick replied, "So first off, I feel GPA is number one." Carson stated, "GPA, obviously, you want it to be as high as possible." Shanice commented that SLP programs are looking for "a great GPA." Francesco said he needs, "a high GPA to remain competitive. So…grades, doing well in classes." Aaliyah shared "[I am] keeping my GPA up. Right now, I'm at a 3.5, trying to get a little bit higher than that." Iyana reflected:

> [I'm] just trying to be a good academic candidate. So, trying to do my best in as many of
> my classes as possible and try to become competitive in that way…I feel like there is

some pressure in the sense that I can't really have a, or I don't want to have a class where

I really struggle and drop the ball, because I do want to be the best candidate possible.

Both Nina and Tina expressed a desire to not only meet but exceed competitive GPA standards

for their programs of interest. Nina explained that the average GPA to get into PA programs is a

3.4 but said, "I'm shooting for like a 3.6, up on the higher range." Tina shared, "I'm striving for

3.7 or higher, just because that's the average and my advisors tell me you need to be on that

average. But in my mind, it's like I want to get a 4.0 Anything above a 3.7 is what I'm striving

for." Tina also discussed the need for a high GPA specifically in prerequisite courses for

graduate and professional programs, saying "[In] prerequisites, Bs are okay, but you don't want a

lot, you want to have more As than Bs."

Shadowing, Observation, and Related Experience

In addition to GPA, Alexis, Patrick, Tina, Yúzé, Laci, Francesco, Aaliyah, and Iyana

noted the need to acquire shadowing, observation, or related experience to enhance their

applications to graduate and professional programs. Alexis said, "What I've been thinking about

is observation hours, having at least 75 hours." Patrick noted "[I need] clinical hours. So, getting

experience hands on in the field so that you are better equipped for when you actually go in and

have to do it in real life, real situations, life or death." Tina commented, "They do want those

inpatient observation hours and outpatient observation hours." Yúzé commented that his first-

choice medical school, to which he had applied but not been accepted, emphasized the

importance of related experience: "The most important thing, I think [this institution]

specifically, they focus on your volunteer and your hands-on experience, if you have a good

understanding of medicine, if you know what you're getting to." Laci said she plans to "do more

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shadowing so I can be as competitive as I can." Francesco mentioned "Logging a bunch of

shadowing hours will happen this summer." Aaliyah stated "[GPA and] shadowing hours would

probably be the topmost competitive areas in that field. So, I just have to stay on my GPA and

start getting those shadow hours now." Iyana described:

> Starting early, definitely getting shadowing hours, getting as much experience as possible
>
> is definitely something that I feel like I hear a lot…I want to make sure that I am getting
>
> enough hours and shadowing and just becoming the best candidate. And so that's, that
>
> can be a little overwhelming trying to navigate what directly I feel like I need.

Two participants also noted the importance of having other types of work experience

related to their chosen field. Laci said that **"having different jobs and just seeing different sides**

of healthcare, that being rehab or schools, I feel like that also makes you competitive." Iyana

noted several experiences that she is pursuing or planning to pursue in order to make herself

more competitive for occupational therapy programs, saying, "I'm involved with [a peer

mentorship program for college-aged students with special needs] and just getting some more

exposure, working with people with disabilities as well as I hope to shadow an OT over the

summer. And then I also hope to work at a special education camp this summer."

Volunteer/Service

Patrick, Carson, Tina, and Yúzé mentioned engaging in or making plans to engage in

community service as a way to become a more competitive applicant. Patrick mentioned the

importance of "service hours, kind of helping the community and then being able to talk about

your experience doing that." He said "[A challenge is] just finding service opportunities and

finding one that I can talk about and really bond to, I guess." Carson reflected, "I also volunteer a

lot, with church and stuff and just out in the community as much as I can." Tina shared, "I've been volunteering every semester. I get 40 hours a semester since I've been here and I think that really gives myself some sort of other extracurricular." Yúzé noted that he is volunteering as well, saying "I go to the remote area medical, and I did volunteer over there."

Leadership and Involvement

In addition to shadowing and health-related work or volunteer experience, three participants also shared campus and community involvement and leadership experiences as important, intentional efforts that they are making towards becoming competitive. Carson shared, "Anything that shows leadership I've heard is great." He discussed his previous involvement in marching band as an experience that could be impressive on his application:

> Like marching band, if you have a leadership position, it shows that you can manage time to do marching band, you have the leadership skills to be able to talk to a group and follow or lead them into where you want them to go, or just be able to take the tasks that need to be done and handle them correctly.

Carson expressed that he has taken on a leadership role within a campus organization to enhance his competitiveness, sharing, "Right now I am the treasurer of the farmer's market at [my university], working up to the president or vice president next year hopefully." Laci commented, "I know that [my pre-health advisor and I] have talked about just being involved in extracurricular like clubs…I am hoping this coming semester to be more involved with groups." Francesco also mentioned that he has been told by his advisors that involvement is important: "Primarily what I've been talked to about would be things like studying abroad or campus involvement." Aaliyah noted:

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I would say [I need to] join more clubs, because as much as they are focused about the

school aspect, they're kind of focused about how you interact with people and how well

you do with groups. So I'm trying to join more clubs and organizations on campus… I'm

trying to get in them, but I feel like it would be better if I was a staff in them, like held a

good position in it.

Research

Two participants expressed that they are seeking or participating in research to increase

their competitiveness for graduate and professional healthcare programs. Patrick shared:

Basically, everything else is just having a lot of research and I've been told, I've actually

gone into a few interviews with medical students, and they said that any research you

could get is amazing. So, I started talking to my teachers and I've gotten into a lot of

research already, which is amazing.

Tina also shared that she has participated in undergraduate research, and it has impacted her

ultimate career goals:

I have recently visioned myself in being more of a researcher in physical therapy because

I got into a research opportunity right now and I really enjoy it. So that's the end goal. I

would love to be a part of a research opportunity to help grow the field and figure out

different techniques and readings and literature and just kind of furthering that healthcare

field.

Standing Out

An additional subtheme emerged related to becoming a well-rounded applicant and

standing out in the application process. Participants expressed an understanding that simply

achieving a high GPA wasn't enough, but that many programs would evaluate them holistically; therefore, they need to simultaneously focus on academics, experiences, and find additional ways to "stand out" or show their passion for their field as they prepare for application.

Alexis commented that she needs "a wide range of things on my resume. Service hours, observation hours, and also just having some kind of relevant experience in the field." Francesco shared, "Definitely being well-rounded is something that's been emphasized heavily, being involved in a bunch of extracurriculars, clubs, and then the academics, of course, are important." Nina discussed the importance of "having just a good resume in general, such as clubs and all the [shadowing] hours that we need." Tina reflected:

> I've been volunteering every semester. I get 40 hours a semester since I've been here and I think that really gives myself some sort of other extracurricular, because they do want those inpatient observation hours and outpatient observation hours. But me going into volunteering too, that can help with my application, as well as this research opportunity. I think it also just gives you more experiences and more things to bring to the table. Cause I do know I talked to a physical therapist at [my university] and he said they love the diversity and they love if you can bring something different to the table.

Yúzé noted that, although he had a 4.0 GPA, he thought that he failed to get admitted to medical school on his first application attempt because he was lacking in other areas of the holistic review process:

> Well, based on what I learned, I have good grade, I have very competitive GPA and I still didn't, I still failed to get in the first try. So, I really think they just do an overall review

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on you. They [look at] not just the grade, you also have to think about your personal

statement and your, also your secondary application.

Carson explained "[Doing extracurricular activities] helps with, if it's a biology club, it's like, oh,

well it shows that you like biology, but it's also showing that you can manage time and have

extra things." Carson also expressed the importance of doing more than the minimum

requirements for admission, stating:

If it gives you a recommended time of 25 hours of volunteer, if you only do 25 hours, it's

like, oh, well they only did that for this, which obviously is like, you have to do it. But [I

plan on] going above and beyond…Showing that you're the right person that wants the

job…wants to be able to be accepted because that's what you really want to do and that

you have the motivation to really, really do it, if that makes sense."

Challenges

In describing their experiences as pre-health students, all participants noted challenges

they have faced along the way. Participants reflected on having difficulty in pre-health

coursework, a tough transition to college, time spent studying, their first-generation status or lack

of family support, being one of the few minority students on their path, and stress and pressure as

challenges they face on the pre-health path.

Difficulty in Pre-Health Coursework

A key challenge identified by eight of the eleven participants was having difficulty in

their pre-health coursework. Alexis shared, "I know one of my prerequisites was statistics and

math is not my strong suit, so statistics was definitely tough." Shanice commented, "I will say

some of [the prerequisite courses] have been kind of challenging." Nina shared:

A lot of [the prerequisites] are your basic medical classes such as anatomy, your physics, your organic chemistry, a lot of those. And they're a lot of pressure and for me. Those classes have been really challenging and…sometimes it feels like you don't need them and you're like, 'Oh, will I actually use these later on, being a PA?' But I mean, I understand why we have to take them. It can definitely be very challenging because a lot of people call certain classes weed out classes and it can be really, really challenging going into those classes knowing that this is a class that most people don't pass and they completely change their major. They completely forget about pre-health.

Tina stated:

You do have to go into very intense health classes. That I found out this semester for sure and last semester. [I struggle in] more of the math…it takes a lot for me to figure it out. I'm a little bit of a slow learner, so I have to really dedicate time, especially with those math courses. I took Chemistry and that was a trip. It was very hard.

Laci commented, "I found Audiology probably the more challenging one for this semester. There was just a lot of intricate parts to the Audiology and being online too was sometimes challenging with the assignments." She also noted, "[I struggled in] Statistics too. I really love my teacher and I feel like she was really right there to support us and to help us… I'm not a math person and so she really helped me."

Francesco noted that he has also experienced challenges in his science prerequisite coursework: "I, I could have, could have done more, but I think I've been doing okay…it's definitely, they're very difficult…I'm encountering, for the first time in my life, words I've never hear heard before. So definitely needing to crank down a lot more, but I think I've been doing

okay." Aaliyah noted "I would say, for instance Biology, it's been hard trying to retain all the material that she throws your way because it's a lot of material to go over there and such short notice." Aaliyah also noted that since she is a freshman, she has not yet taken many of her prerequisite courses but feels both excited and apprehensive about the ones she'll take in the future:

> Since it's my freshman year, I don't have much to say about it yet since I'm just taking my gen ed classes. But starting with my sciences I can say it's going to be pretty stressful but also very informative because I'm learning a lot of new stuff that I didn't know before and it's just most stuff is sticking with me, but you have a lot of stuff that just goes in one ear and the other. So yeah, I think it's going to be an interesting ride.

Iyana noted that she has found her science courses challenging but that success, to her, is not based just on grades:

> I would say I've been successful so far. I think it's hard for me because I naturally want to define my success by my grades, but I know that that can be challenging as Anatomy is just a really complicated course. And so my last test that I took, I think I got like an 80 and I was hoping to do better, but I was like, this is success for where I am right now. I feel like I understood as much as I could and I studied hard. And so just kind of trying to balance it with the product of what I get in my grades, but also just understanding the effort I put into it, finding a balance in between those.

Transition to college

Six participants noted the transition from high school to college as one of the key challenges they have faced on their pre-health path. Francesco shared, "In high school I was able

to breeze by a lot easier and never have to study versus some of the topics I'm encountering for the first time in my life." Iyana stated:

> It has been challenging, especially being a freshman, kind of seeing the bump up from high school to the college rigor. I would say just that I have a lot more time which would sound like a good thing, like more time to study, but it's just, it's a whole different dynamic trying to balance, like, is this time really supposed to be for fun or is it actually supposed to be working and studying and all that? And I like to think I'm starting to get the hang of it a little bit more, but that was definitely pretty challenging as far as academically just trying to figure out how much time I need to devote to studying outside of class.

Carson mentioned similar struggles with the transition:

> At that time, I was also just doing Intro to Bio and Intro to Chem. First semester is honestly kind of tough, because just coming out of senior year of high school where most of my classes were pretty relaxed because I had my credits, I was just waiting for graduation basically. So, it was completely having to relearn how to study because I wasn't used to having these long lectures with, I would take like 10 pages of notes per lecture almost, and then have two tests lined up in the same week. So that was really tough, but in the end, it's just learning how to study efficiently and take tests well.

Aaliyah also discussed needing to strengthen her study skills:

> [My challenge] was learning how to actually study, because in high school I really didn't study and I had all As, so it came easier in high school than it is now. Because you're in

college, you kind of have to somewhat teach yourself but also be in class, be focused and actually understand and comprehend what they're telling you.

Tina disclosed that she is concerned that her GPA is lower than competitive for physical therapy programs due to a difficult transition to college:

I'm concerned about my GPA because when I got to school it was really hard for me to figure out studying habits and trying to balance college, living away from home. I didn't really apply myself in high school, so I was having to learn that my first year being in college I had to learn how to study, I had to learn how to take in information efficiently and be able to continue and have that endurance throughout the semester. Freshman year was definitely a rough one for me.

As a non-traditional student, Laci had been out of high school for several years before beginning college but noted similar struggles to adapt to the challenging coursework she was taking:

Well, first, I've been out of school for a long time. I was five years out of school, and so really for me just getting back into the schoolwork, into reading and figuring out online school…I think the first semester was not very good. I feel like I was so overwhelmed I didn't know where to start.

Time Devoted to Studying

In addition to the struggle with transitioning to college, four participants noted the time that they must devote to their studies as a challenge. Patrick noted, "I always study a lot before my exams." Francesco mentioned "spending lots of hours in the library to try to get my grades at a high level" and went on to say that he has spent many "all-nighters" in the library. Carson shared:

Another challenge is just like I kind of already said, but how long you have to put into it. I've been in the library until one in the morning studying for a chemistry and a bio test that are on the same day.

Iyana commented that she has noticed a distinct difference between the amount of time she devotes to studying as compared to peers who are not on a pre-health path saying, "There's a disconnect in how much time we devote to studying and the rigor of the different kinds of classes we're taking."

First Generation Status and Lack of Family Support

Another subtheme that emerged from my interviews was related to being a first-generation college student. Four participants shared challenges related to getting information or lacking connections because of being the first in their family to attend college, though they also shared that they felt excited and motivated by being first-generation students. Three participants also shared that they have a lack of support from their family related to their college plans. Alexis shared, "I'm a first-generation student, so it is kind of hard to do it. I can ask my mom some questions, but sometimes I do have to kind of figure it out on my own, just in general, for college." Nina discussed a similar struggle, noting:

I think the most challenging part was I didn't know a lot coming in. Especially cause I'm a first-gen and so the whole college experience was new to my entire family. So, I had to do a lot of research on my own…It was a little challenging because I didn't know a lot and there wasn't a lot of people in my life who had gone through it so it was hard to get advice and find the best ways to do things. It was a lot of trial and error. The hardest part

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for me was not having a lot of people to relate to and just being able to talk about experiences together."

Nina also shared that she felt scared, excited, and pressured to succeed as a first-generation student:

And just the whole experience of being in college in general was really, it can be scary, but to me it was kind of exciting being the first part of my family to live somewhere else and get all these opportunities and I felt very privileged and lucky to be in this position and so I tried to enjoy any second that I was getting, just learning or seeing things that I'm passionate about. I know for me, getting a college degree isn't just about getting a college degree for myself, it's about my whole family, being able to hopefully retire my parents and them not having to worry about anything and just kind of paying back to them for all that they've done for me and sacrificed. So, I think that's a big one because it adds another stressor I guess, which could be a good thing and a bad thing.

Tina also shared both struggles and triumphs related to being first-generation, stating, "My family does not have any college background, so I'm a first-generation, so I go home, and I tell my mom all about the stuff I learned, and she thinks it's so cool too." She also commented:

I have a lot of friends who their parents are in medical, like they're doctors or other therapists or they have connections within family to see what the healthcare field is like on a deeper level and more of a continuous level. They see how their lives are and what they go through. And I have none of that. So, I have to figure out ways through researching and talking to other physical therapists.

Yúzé shared some unique challenges as both a first-generation student and an immigrant. He noted:

> Well, first of all, I want to say I'm an immigrant. When I come here, I just have to figure out everything by myself. Nobody told me what should I do or what to do. So I don't know how to pay my tuition fee in the first place….As an immigrant, I don't have the local network as other people does. So a lot of pre-med students, they just ask their dad or mom, "Hey, do you know other physicians? Or do you have any friends that work in the hospital or anything?" I don't have those kind of luxuries. So yeah, I think that might be some disadvantages. And so I have to walk into the clinic and ask them. Personally, I don't mind doing that, but if I have that network, it would be very great.

Though Francesco did not mention whether he is a first-generation student, he did reference a lack of support from his parents:

> My parents said if I'd like to go to college, I have to get there on my own. And I know that they'd like for me to finish, but I think that they trust my decision in a lot of different categories and are in a pretty hands-off, laissez fair.

Francesco also shared that, although his parents are hands-off related to his college choices, he does experience pressure to perform well in college from other family members:

> I think a lot of it might be Asian heritage. A lot of my mom's family who are all Korean and did seven plus years of college have pulled me aside and talked about me finishing and how important it was to get a degree. Especially relative to my other siblings who have, not a lot of them out of the five that I have, haven't gone to college.

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Iyana disclosed that, while it is motivating in some ways, expectations from her family can also be stressful for her:

> I think they definitely do motivate me just with the verbal encouragement and things of that nature, but also it is kind of an added layer of stress because they do know my goals and my ambitions and so to some extent I feel like I already kind of told everyone what I want to do, so if I double back, it's a little bit of pressure if I don't follow through with it.

Shanice shared that she lost her mother in high school and relied heavily on her godparents for support, but that they were not initially supportive of her plan to pursue a career that required a graduate degree. She recalled, "So as far as guidance and financials and stuff, my godparents at first were like, 'Let's get you there for four years and get you out.'"

Difficulty with Shadowing and Involvement

Four of my interview participants discussed difficulty in finding time and opportunity for shadowing experiences. As noted earlier, Yúzé discussed the challenge presented by not having a network to connect to for shadowing opportunities through his family. He described seeking out shadowing opportunities on his own: "I talk to at least 15 different facilities and I got three shadowing." Tina discussed the difficulty of balancing shadowing expectations with her need to work outside of school, sharing:

> I had a job in fall semester to get outpatient hours and that worked out great, but during the summer I worked full-time at a preschool and then I also worked during the weekend. So, trying to find that balance. And I also would love to make relationships with the people I observe with, so I don't want to be in a situation where I come like two days and never come back again.

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Shanice worked throughout college and described the difficulties of finding time for involvement in extracurricular activities due to work, commenting, "Getting involved is very, very hard due to work even just studying, focused solely on being a student can make it hard with the time constraints and preparing for other things." She is taking a break from working during her final semester as she completes her capstone project, which requires shadowing. She said, "I've been doing shadowing as a part of the capstone project and it's just been, it's been kind of tough." Francesco also mentioned having difficulty making time for shadowing experiences: "The shadowing hours I've clocked right now are much less than a lot of my peers cause the last two summers have been pretty packed for me with, for family reasons that I've been unable to log any." Nina shared that she has had difficulty finding opportunities to shadow PAs, reflecting:

> Shadowing is probably the biggest [challenge] because it's been really hard for me to find
> PAs that are willing to [let me] shadow. A lot of shadowing that I've done is medical
> doctors, which doesn't really help me in the PA application process, but yeah, it's been
> kind of difficult until recently. I got my CNA this past summer and so I'm hoping that
> this summer when I start working that I will be able to get more in contact with PAs and
> hopefully shadow that way because I know it can be hard, especially since Covid, it's
> been really difficult to reach out and get a reply and actually get approved to shadow.

Underrepresented Status

Three of my interview participants discussed their minority status directly, sharing an awareness of being or looking different than others on their path. Alexis discussed her experiences as an underrepresented student:

Well, last semester, I guess being the only woman of color, black woman of color, in my [pre-health first-year experience] class, it was, I don't know, I guess maybe shocking might be a good word. But yeah, it was really shocking to me. I guess I expected more, I guess more representation. Whenever I do get to meet a person of color on campus that is in the rehab health science college or even just a rehab health science major, I get really excited. And I met someone, I met a person of color, a woman that was black that is a rehab health science major and I was really excited to meet her because that's kind of another support system for me…it's really cool getting to talk to her about things. Cause I feel like we normally have the same experiences or we're talking about the same things, like, "Oh man, like did this happen to you?' So, it is kind of cool to be able to relate to somebody.

Shanice shared a painful experience related to her status as an underrepresented pre-SLP student. She recently went through the application process and was not accepted to her first choice SLP program at the same institution where she completed her undergraduate work. She relayed:

Throughout my four years here, I've noticed that [this institution] is not as diverse as I would've liked, which I know is why you're probably trying to do this because y'all see that there's an issue, but…I had to follow their SLP program [on social media] and I looked at the picture of all their students that were accepted last year and that kind of made me consider it even more. I don't see anyone like me in the program.

Yúzé, who is currently completing a master's degree in nutrition in order to become more competitive for medical school, shared that he is keenly aware of his status as being underrepresented as a male in that program:

I am [one of] the only three males in the nutrition program…during my work, when I talk

to our dietician and she says, we definitely need more males in this area. And it just

makes me feel, it's a little bit, I don't know, a little bit weird cause majority of them are

girls and we don't have the same topics [to talk about] other than study.

Stress and Pressure

Another key subtheme that emerged from my interviews was the stress, pressure, and

feeling of being overwhelmed experienced by pre-health students. Pre-health students are tasked

with not only maintaining a strong GPA, but are also expected to become involved on campus,

take on leadership roles, get shadowing and related experience, and volunteer, among other

expectations. During their interviews, three participants shared their experiences in dealing with

the stress and pressure of being a pre-health student. Carson shared:

I feel like the biggest challenge is definitely all of the requirements and the stress

honestly, because you have to be perfect. Medical school, it's really tough. It puts a lot of

stress on you and I feel like you got to give away more of the social life to really focus on

your grades and focus on a plan to get into medical school…There's so many classes that

stack on top of each other and there's so many things that you have to do to prepare well.

[It takes] a lot of time and a lot of work."

Tina discussed the "what ifs" of being a pre-health student:

There's a lot of challenging things about it. I think it's always those what ifs. Like you

could be in a class that is your strength, and you feel really good about yourself, but then

next semester you know that you have to take, in my case, Physics and I'm not good at

math. So, it's always those what ifs. I'm doing great now, but what if in two semesters

when I have to take Biochem or Physics II, am I going to be able to hold my GPA up? Or like you'll study 40 hours for this test and you're like, what if they don't even ask this question, what if they asked this question that I didn't look at as heavily?

Laci disclosed that she is also experiencing the pressure of the pre-health path, reflecting, "I feel like there is pressure for sure, so at times it can get intimidating, but I'm really just trying to work hard and not let the pressure get to me." She said, "I think the first semester was not very good. I feel like I was so overwhelmed I didn't know where to start." She went on to share that "I'm married too and in school and in work, so I'm really just trying to soak in all of what I can do to help make myself look as good as I can for that application process."

Concerns About the Future

In addition to the challenges they face in the present as pre-health students, participants also expressed concerns about the future. These concerns related both to getting into their program of choice and to their life after acceptance, and they included financial worries, concerns about not getting accepted, fear of standardized tests, geographic location of their programs, transitioning into adulthood, concerns about program rigor, and concerns about finding a job and their work life after graduation.

Finances

The most common concern among my interview participants was related to finances. Tina shared, "I'm very concerned about financial status going into PT school because it's a lot of money." Yúzé commented, "The number one problem is definitely just the budget" when it comes to his concerns about medical school. Nina, who was concerned about her parents having to finance her graduate education, said:

Right now, my parents pay for a lot of my school, so it was very important to me to not

have them worry about more years of paying or worry about more years until I get my

career. That was one of the most important things for me.

Patrick also shared his concerns related to financing his graduate education along with a potential

solution he is considering:

Definitely the funds of it all scares me because I know I'm going to have to be taking out

a lot of loans. But one option that I was definitely considering is doing it through military

because my girlfriend's stepdad is military and he's told me that if I go to military they

could pay it off. So that's one option that I've been thinking about.

Carson discussed finances as a concern as well, saying, "It's the money that just comes with any

PA school really. Am I going to be able to work while also in school to be able to pay bills? So

just a lot of things like that." As noted previously, Shanice's godparents initially had concerns

when she decided to pursue speech-language pathology. She shared that the concerns were

primarily related to the cost:

I think mostly [they were concerned about] money and stuff. I lost my mom back in

2016, so before I even finished high school and just wanting me to—yeah. The time, I'm

sure, but also the money, you'd have to tie that in, but I was like, this is what I want to do.

So yeah. We'll figure that kind of stuff out later.

Francesco shared that he also has financial concerns and is unsure about the financial aid process

for graduate school:

I'm definitely worried about financial aid a little bit because I have a lot of scholarships

for undergrad that I don't think will be applying for graduate schools. So just kind of

getting the monetary means to stay in graduate school.

Iyana discussed her financial concerns:

I actually have a lot just overall worrying about the financial part of it. I would really love

to go to [the university I am attending as an undergraduate], but I know that I have to

have my other options and apply elsewhere. And so just figuring out how to pay for that

and afford for that and get scholarships…I know I'm going to be very invested, as well as

just financially I don't know if this will be something where I'm completely into the

whole time and if I will or will not have time to work outside of the program.

Tina shared a similar concern, stating:

I think the biggest part is the financial part, because PA school can be very expensive,

and I know being a PA student is like a full-time job. I really won't have time to have a

job. And so that's probably the biggest thing.

Concerns About Not Getting into a Program

Another concern shared by four participants was their fear that they would not be

accepted to a graduate or professional program. Carson worried:

The biggest thing is what if I haven't done enough? That's my biggest fear. What if I'm

trying all this but this other person has just done more? What if my motivations just aren't

what they're looking for? With the cliché of just saying that you want to help people, it's

just not quite enough to show what you really intend and why you really want to be in

that program. So that's a big fear.

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Nina revealed similar worries:

> I think the biggest [concern] is standing out and stuff that you can't really stand out on.
> And for me that's GPA or having a certain amount of shadowing hours or working hours,
> stuff like that is kind of what I'm worried about because I feel like the other standing out
> stuff I have, but it can be, I don't know, I feel like you always feel like there's someone
> smarter than you who's doing more work than you. Especially listening to other pre-PA
> students saying, "Oh, I've been working," or "Oh, I've been shadowing this person," or
> "Oh I've been volunteering since like freshman year." It can be really hard to be like, well
> if they're doing that then I should probably be doing that.

Laci shared that she also worries about whether she will be accepted into an SLP program, reflecting, "I've been kind of anxious about not getting in, but I know I can just try my best and be as involved as I can. But that is still in the back of my mind." Though Shanice was recently accepted into an SLP program and will begin it in Fall 2023, she recalled what it was like to worry about acceptance:

> I kind of just prepared myself that there would be the potential that I may not get in
> anywhere. That was really, really scary because you don't really, nobody wants to be set
> back, although it does happen.

Standardized Tests

In addition to financial concerns and concerns about not getting in, three participants shared that standardized tests required to get into their programs of interest were a major concern. Alexis disclosed that "I worry probably the most about the standardized tests I would have to take." Patrick expressed a similar worry, stating, "I'm scared about the MCAT, but I

know if I study, I'll be okay." Shanice had already completed the GRE at the time of our interview and relayed:

> That GRE, I mean, I know that I didn't really do as well as I'd like to. My GRE score really was a big bar. I felt like I was a big barrier for me because everything else, I was like, this is fine. Like this paper's fine, my grades are really good, but this GRE, I'm hoping that this does not outweigh all the other work that I've put in. So that was a big barrier for me, even just preparing for it and taking the exam. I would say that was my main challenge. I had to end up getting a tutor for the GRE and I was crunched for time because I had been studying for it, so I'm not necessarily sure that the tutoring even helped me at that point. And then you think about spending money on a tutor, so it's just, it was just all very frustrating.

Geographic Location of Program

Another subtheme that emerged from the interviews was participants' concerns about where they would attend graduate school. Carson explained that he considers this question often:

> It's like, is staying here in [state] what I want to do? Or is it better to look other places and maybe move and just get a, not new start, but just a new environment on where I want to learn…Moving away, it's like, is that really what I want to do?

Laci expressed a similar concern: "I worry about am I going to get into the program here? Am I going to have to find somewhere else, a different college to go to?" Francesco also discussed location, wondering, "And then the location and all the things that come with that...if I'm apart from family, if I will have to get my own kind of residence; if I need roommates, I don't, I won't know them."

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Transitioning to Adulthood

Three participants expressed concerns about simultaneously having to transition to a more adult lifestyle while transitioning into graduate programs. When asked about his concerns, Carson replied, "Just adulthood in general, I guess, is absolutely a big one." Tina shared similar worries:

You kind of enter more of it being a job, is what I feel, when you enter those big programs. That's now your job so you've got to figure out a place to live, and you're more of an adult. You're not living in a dorm with a roommate and an RA.

Francesco also discussed his concerns about transitioning to a graduate student's life:

I think that balancing a graduate student's life with school is different than the undergrad's life. Having a house, for example, or having an apartment, something apart from campus as you're becoming more of an independent adult can be harder to balance in addition to a course load.

Concerns About the Program

Four participants also shared that they had concerns about how they will perform once admitted to their programs of choice. Iyana said, "I would probably say in the midst of the program, I think just time management. I know it, it's really rigorous and so I don't want to overwork myself." Carson worries about his experience in physician assistant school:

I think burnout is a big one that just immediately just popped up. It's like I've put in these years in undergrad, it's like just continually working. After I meet that initial goal, is my motivation still going to be as driven and still as strong as it is now? I don't want to…I'm

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afraid to have that mindset of, "Well, I've made it, now I can relax," when in reality I

should be sprinting for the finish.

Nina commented:

As far as classes go, I know because PA school is only a short amount of years, it's very,

very fast paced and so I'm kind of scared about the pace, but I think I'll be okay,

especially because of my prereqs. I feel like I'll feel a little better prepared once I'm there.

Shanice shared similar concerns about clinicals:

I have been doing some observation and shadowing, so I've heard a few scary stories

about SLP mentors or supervisors that have kind of just thrown people out there and

allowed them to take over and students, they've been like, "Well, I'm in school, I don't

know exactly what I need to be doing in clinics. This is why you're here." So I think that's

my biggest fear is being thrown out there and not prepared.

Finding a Job and Work Life

Finally, four participants shared worries related to their employment and work life after

completing their graduate programs. Alexis shared:

I think probably the biggest concern if I were to actually get in and then everything go as

planned, probably finding a job placement is where my mind would go next, just because

I would like to be employed after I graduate…After an investment of five or six years, I

most definitely want to be able to hopefully pay back student loans and have a lucrative

career.

Patrick shared a related concern:

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Yeah, so I'm definitely worried about getting into the right study because, I don't know too much about it, but my dad's told me that like cardiology, for example, is really hard to get into even once you get into medical school. So that's one thing that worries me. And then after medical school it's definitely just managing my time and overcoming challenges in the workplace, like finding good pay at a hospital or finding any openings in a hospital and then taking that and switching it into my own business.

Aaliyah also worried about the job search, stating:

After PT school, I feel like it would probably be harder to find a physical therapy job you're looking for…I don't want to be inpatient. I want to be outpatient so I would have to probably find a small little institution that's looking for a physical therapist. But it's so low in demand right now. You have to actually go out and search, especially in the right place.

Iyana also expressed worry about finding a job, sharing, "Of course, after graduating, [I worry about] just trying to find a job. I would hope it's not going to be that hard, but I really don't know."

Motivation to Persist

Based on the challenges and concerns shared by the participants, it is clear that the pre-health path is full of difficult experiences. I asked participants to share what keeps them motivated to persist on their pre-health path despite these challenges. They indicated a desire to help others, family members, and passion for their field fueled by work and volunteer experiences, and enjoyable experiences in classes as motivating factors.

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Desire to Help

In addition to being a theme related to why participants chose their career path, three participants also mentioned the desire to help others as a key motivator to persist on their chosen path. Alexis commented, "I guess something that motivates me is that I'm thinking about at the end of this I'll be able to help somebody." Carson shared a similar sentiment:

At times, I'm like, I could just…switch to business or something. I could do something like that, but it's like I, it's just not as rewarding as I feel like it would be to be able to get in and really help somebody.

Francesco discussed a similar motivation to persist on the pre-PT path, noting, "I really like the idea of helping people at the end of it, being able to work directly with individuals that have problems and being able to see that pain dissipate as we work together."

Family

Five of the participants said that they are motivated to persist on their path by family members. Alexis shared, "I also think that, well, for me at least making my mom proud is something that I really want to do." Tina noted:

I have nine siblings and I'm the only one going to college so I kind of opened this path and I want to do well. I want to show my family that I did well, and I succeeded in college, and I succeeded in the PT path. They always say, "Oh Tina, she's a smart one." So, I kind of want to live up to that and make them proud. My parents motivate me all the time…They're cheering me on every step of the way. I'm a big family girl and I call my mom every day and she's always there. She also motivates me too, because I have to let

her know my test scores. So, it's more of that motivation. Like, I got to tell my mom how I did on that test.

Nina shared that she is motivated to persist by a desire to take care of her family, stating:

The biggest factor [that motivates me] is my parents. They were immigrants from Mexico. So, the biggest thing is being able to pay them back for everything. I know I never will, but in any way. That's the biggest thing for me and especially being someone like a PA who can take care of them physically. That's a big thing for me, because I know in Mexican households it can be…they're very weird about healthcare stuff. They're like, "Oh I'm fine. This will fix it. I don't need medications, I don't need this, I don't need that." And hopefully being a PA and being able to be there for them in that sense…it's a really motivating factor.

Iyana commented that:

Yeah, so definitely my family. When I was sick before I went home, I was talking to my mom all the time. She was just calmed me down over the phone. It was very nice to speak with her…I am fortunate to have a nice background and, and family and friends are motivational and can help me but that's not always the experience of other people who are from underrepresented backgrounds. And so I know that if I did not have someone who is just like my mom who constantly pushing me, I really don't think I would be able to continue with this. And I'm just very, very fortunate to have someone as well as my dad and my siblings as well, but just everybody really helping me and, and kind of believing in me, which allows me to believe in myself. I know that's not everyone's experience, but I am very fortunate to have that.

Aaliyah shared that her supportive family is a motivator, commenting, "My family is very supportive for everything, for me needing anything. They're there to motivate me and help me keep my head on straight and stay focused." But she also noted another aspect of family, stating:

> I am very competitive, especially when it comes to my brothers and my middle brother, he actually attends [another university and he graduates [soon]. And it's just like this competition between us cause he's a Dean's List student, he makes all A's. So now, it's like I have to do that and more.

Related Experience

Two participants shared that recent work/volunteer experiences related to their future profession have served as motivators for them to persist on their pre-health path. Laci described her current situation, saying:

> Right now, I'm working in the schools. I'm working in fourth grade and so I feel like the kids have really been, they haven't even realized that they've been motivating me properly, but I see kids struggle with speech and I just remember being that age and I'm like, "Oh, I can't wait until I can help them and share with them some experiences." I think it's helped me remember at times, this is why you're doing what you're doing. So, I think being in school and seeing the kids is really what pushes me and motivates me every day. To be in that career field.

Iyana also talked about her work, sharing:

> Honestly, getting as much exposure and learning more about my profession oftentimes really motivates me. I know being a [peer mentor for individuals with intellectual disabilities] and just getting to work with the other students with disabilities, it inspires

me and just being able to foster those relationships lets me see glimpses of what it could be like in the future.

Positive Experiences in Classes

Though some participants discussed their pre-health courses were challenging, five also commented that they enjoy what they are learning and are motivated to persist by their classes. Nina shared "[I enjoy] my classes. I'm finding things that you would never think you would like that I have really, really enjoyed." Patrick said, "I've really enjoyed it, especially in the Chemistry and Biology. I enjoy those classes a lot." Shanice noted, "I would say that it's very fun to learn about things that you didn't expect." Tina commented:

> I love the classes. They are by far my favorite part about being at pre-health, just understanding more about yourself and your environment, I love. And my family does not have any college background, so I'm a first-generation, so I go in home, and I tell my mom all about the stuff I learned and she thinks it's so cool too…This year, I took Human Anatomy and now I'm in Physiology, Human Physiology. Those have been by far my favorite classes I've taken…They're super interesting and I just had so many brain click moments that are very rewarding. So I've had good experiences with those classes.

Yúzé noted the science classes that he took on the pre-medical path:

> I am a science guy. I enjoy all kinds of science. I did two Physics and two Chemistry, Organic Chemistry, Biochemistry. And I also did Human Anatomy. I just find them very interesting. When you study chemistry and you study physics and suddenly you think, "Oh, those atoms stuff, they're kind of connected." You can find the connection between two different subjects. Also, like biology and anatomy, you can find there's something

similar between them, and also biochemistry. So, the more you explore, the more interesting, the more common you will find between all these different subjects.

Resources and Support

Participants shared several key resources that they rely on for support, including both formal campus resources and informal support systems. These resources and sources of support include professors, tutoring services, advisors, the university's campus gym, peers, and faith groups.

Professors

Seven participants mentioned the help they've received from their professors as key to their success and persistence. Carson shared, "Professors, especially, have been extremely helpful and extremely kind about like, 'Oh, well I just need a little extra help with this.' And they're glad to help." Carson mentioned a specific instructor:

> The first health class that I took was the Intro to Health Science. I had [Professor A], I think, and she was so helpful. We learned about different paths that you could take, what to do in college, what different places could get different pay or how moving to a different state could completely change what's required and stuff. She was so willing to help with any question that anyone had. So, I think that she was a big booster into how I looked at college and just college life in general.

Tina discussed the importance of building relationships with professors, noting:

> I think if you build a relationship with your professors, that can be very beneficial. And I think that is better than an A. Because some of the professors I've had at this campus inspire me and they motivate me, so I think it's more of that deeper value to it.

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Nina discussed how she interacted with her professors:

> I think the part I use the most, I would have to say, my own professors. I ask a lot of
> questions and sometimes, if I feel close to a professor such as [Dr. B], he's been really
> influential and he's a great person to talk to. So I feel like even stuff such as career
> advice, he's one of the main people.

Yúzé also mentioned the support of his professors, saying, "The professors are nice. Everybody
is a pretty nice to me. They're pretty supportive." Yúzé went on to share an especially positive
experience with his Biology professor:

> I got a great professor who has amazing teaching technique. When I study Biology, she
> says, "[Treat] Biology as English class, you have to remember all the terminology.
> You're just learning all those vocabularies." And it turns out she's correct. As long as you
> know the definition…and especially the more you learn, the more you know, you find
> you can integrate everything together.

Shanice, whose experiences were not all positive, recalled that, "I've just tried to do my best and
if I didn't know I would reach out to my professors. Some were responsive and were like,
'Okay.'" And some were like, sometimes, "Figure it out." Laci also shared that she utilized
professors for assistance when needed, stating:

> The professors were very kind and said, "We are always here. Zoom with us or come and
> meet with us on campus." So, I feel like even though it was challenging, I'm grateful for
> the professors to walk with you through the hard times.

Laci described her Statistics professor, saying, "I really loved my teacher and I feel like she was really right there to support us…I'm not a math person and so she really helped me." Iyana described her support from faculty with:

> So a about a month ago I got really, really sick and so I ended up having to go home and I was out of school for a couple weeks, so I did email my professors and they were all just very, very kind and understanding and allowed me to turn in my work a little bit later.

Tutoring

Another often-utilized campus resource mentioned by participants was the university's tutoring services. Alexis described her experience with tutoring and coaching, saying:

> I was able to go to the tutoring lab for [Statistics]. So, I was able to have a resource to help me. Cause I mean if I hadn't, that would've been really horrible…Last semester when I took that course, I also had an academic coach which was super helpful for me just to have a buddy to talk to and to ask really specific questions.

Nina shared, "Obviously I use some of the tutoring cause I've been there. I've needed it." Tina mentioned, "I definitely utilize the tutoring center. In Chemistry I went there a lot." Carson shared that he uses tutoring and supplemental instruction (SI), or group tutoring, as a support resource, noting, "A big one is SI and tutoring. Those are so helpful. Just having somebody that's sitting in on the class that can also just help whenever you really need it." Iyana shared her strategies:

> [I] pretty much independent study. I have used supplemental instruction for my anatomy class. I haven't been able to go as much this semester, but I went a lot last semester and that really, really helped me out, just trying to learn the format of the class and as well as

learning how to study. I think it kind of helped me this semester where if I don't have as

much time to go, I still know the practices of the instructor who kind of gave me advice

on how to study.

Yúzé said, "In my personal statement, I use [the tutoring center] that was in the library. The

tutoring is very good. I went there three times." Shanice utilized the tutoring center for both

writing help and GRE preparation:

I've used the writing center [in the tutoring center] in the library. I've used that for writing

papers, specifically research papers. I've used them and they've been very helpful, just

helping me through those. And right before I started preparing for preparing for the GRE,

I went down there and consulted with them about that…I will say the [tutoring center]

has treated me very well. And I had no problem being confident, turning in my papers. I

ended up getting good grades. So, I definitely appreciate them.

Aaliyah mentioned that she had benefitted from tutoring through TRIO programs (federally

funded student services programs designed to provide services for individuals from

disadvantaged backgrounds (U.S. Department of Education, 2023)):

That's why I joined the TRIO program so I can understand those concepts. After I learned

those and understood those, it helped me on the test. Even after we took the test or a

certain quiz or something, I'll go back and take a practice test that was on it and I really

see improvement. So it's just letting me know that I'm comprehending the material a little

bit better.

Advisors

Six participants mentioned using advisors, both academic advisors and pre-health advisors, on their pre-health journey. Patrick stated, "I switched from Biology to Health Sciences as my major, and my new counselor was amazing… she helped me get a good schedule." He also described an advisor he had for class, saying:

I had [a pre-health advisor] for my class last semester. And I talked to her in class a lot, especially about setting up a career plan and trying to figure out what to do, what I need to do. But I've mostly just been keeping an eye out for the emails, especially from the pre-health [advisors], and going to a lot of the meetings that they set up I feel is very helpful.

Nina said, "I do use advisement a lot. My biology advisor, she helps me a lot." Nina also utilized pre-health advising services, stating:

I've met with two different ones and they've been very helpful on things such as PA requirements, because I know I felt really stressed at one point, feeling like there's just so many steps and so many things you have to get. And so they were really helpful.

Tina listed resources that she utilizes, identifying "my advisor for PT [and] my academic advisor" on the list. Aaliyah noted, "I have been using my advisement, especially my pre-PT advisement… she has been very helpful throughout the whole process."

When asked about helpful resources, Yúzé also mentioned his pre-health advisor, recalling, "Well, absolutely the advisor. She helped me a lot. Yes, she gave me a lot of good advice." Shanice recalled this positive experience with her academic advisor:

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She stopped me last semester and she's like, 'Hey, you need this class, you're about to graduate, we're going to have to add these hours.' And I'm like, 'Okay, thank you so much for telling me that so I can still stay on my track.' I've had no really big barriers or problems with advisement. I appreciate the honesty, trying to keep me on the right track to move forward with my goals.

Laci mentioned utilizing both her major and pre-health advisor often:

I think right now all I've been using are just a lot of are my advisor that I meet with and [my pre-health advisor] that I meet with and I really appreciate that if I had any questions or concerns, [the advisors] have walked with me through anything that comes up and that's really assuring, especially since I've been out of school for a long time, that just feels like a new territory sometimes. And so I think the advisement team has been really great to help me and I'm looking forward to continuing in the future.

Iyana said, "[I talk with] with my pre-health advisor… she's very nice, very on top of things, which is good cause I get stressed out."

Campus Gym

In addition to professors, tutoring resources, and advising, four participants pointed to the campus's gym as an important resource for self-care and stress management. Patrick stated:

The gym I feel… helps me get a lot of stress out, especially because it's very stressful keeping a 4.0. If you make any little mistake, it's pretty hard. But I love going to the gym and I try to go every single day if I can.

Carson also pointed to the gym as an important resource for stress relief:

The campus life stuff, like the stress relief things are really helpful. Like the [campus

gym]…going, being able to let go and be like, today was really stressful, I just need to go

walk on a treadmill or run or just do something.

Francesco shared, "[I use] the [the campus gym], which I haven't viewed so much as a resource

helping me in academics, but it definitely is in regard to getting some stress out and sweating,

and that's been awesome." Iyana shared a similar experience, commenting, "I go to the [campus

gym] when I feel a little stressed or try to set myself up for a good day, I try to go to the gym and

do a little workout."

Support from Peers

Another significant resource that seven participants mentioned was the importance of

peers on a similar path. Participants spoke to the importance of these peers as both a source of

connection and a support for academic success. Patrick mentioned that he doesn't utilize formal

tutoring through the university but said, "I've just been studying with my peers and that's about

it." Francesco shared that he also studies with peers, stating, "I have a great friend group that I

found at [my university]. Lots of support, lots of study buddies." Tina also mentioned forming

study groups as a support to get through difficult pre-health coursework:

[I get support from] connections with friends. You form study groups. I've met a ton of

friends this year just because we had classes together and we study all weekend together.

So, you build a community too, which is nice…These classes have a lot of information

and the professors tend to throw it all out at you. So, the study groups I think are so

beneficial in the way that what I missed in class, most likely someone in the study group,

that stuck out to them. So just kind of working together and tackling the unit. Tackling

the class together just is so beneficial because you can go home and there's 50 slides of notes that you've got to look at and know and be able to explain. Some things you may be able to explain super easy and some things maybe not, and that could be the opposite for someone else, and then you help each other out.

Carson shared a similar approach in his pre-health courses:

I also have a lot of friends that are in [a pre-health path] that kind of keep me going along, and it's like we're working towards bettering everything… I have friends in each class, and we can go, "Okay, let's go order a pizza, we're going to go to the study room, we're going to sit there for a couple hours and we're just going to knock out these chapters. Community is a big [support]."

Shanice discussed the importance of study partners in her Chemistry course:

Having study partners definitely helped. I know when I had to take Chemistry as a part of the SLP track, I had a lot of study partners…It definitely lifts up a load off of you whenever you have people you can, like, if I don't know this, this friend can explain it.

Iyana noted: "Being around friends who are not in medical professions, or trying to go into pre-health professions, there's a disconnect in how much time we devote to studying and the rigor of the different kinds of classes we're taking." Nina also discussed the importance of using peers as a support system:

I feel like sometimes it helps knowing that we're all struggling. So, it's kind of like celebrating a victory when we all understand something rather than just having someone who knows exactly what they're doing and just them trying to teach you. So, it's a little different, but I enjoy it a lot more.

Faith Groups

A final source of support mentioned by four participants was faith groups. These participants pointed to church and religious communities as a source of comfort and support through challenging times. Carson commented, "Church community is great. I feel like there's always people that will want to come up and just make sure that you're okay." Iyana mentioned "My old small group leader from my home, she'll call me and we'll talk for a little bit." Shanice described her experience:

I attended [the worship service] while I was in [the city the university is located in] and I looked forward each week to just meeting, having the hour, hour and a half, to just step away from homework and meet with other students who all serve a common God. And then my small groups that I have met with outside of [the worship service]…those have been super great. Just, needing to vent to other people, needing prayer, having conversations on how to navigate certain circumstances in life, being resilient and just having that community and that support.

Francesco shared about his faith group:

Church group for sure is [a support]. The subject of calling, for me, is the idea that as a Christian, there is something I'm meant to be doing and something that, potentially, I've been designed for, to do well. And so I think that there's pressure when you use those words, as if there's one career that I have to do. My family and church groups have walked me through that. I can do a lot of different things and still glorify God. So those have been really good conversations and really encouraging in regards to the uncertainty of choosing a path.

Parallel Planning

Even with the utilization of these support systems and resources, not all applicants will gain entry into their graduate or professional healthcare program of choice. Because of this, many pre-health advisors encourage students to consider their "parallel plan"—a well-formulated career plan that they will pursue if they are not admitted into their healthcare program of choice. To better understand their experience as pre-health students, I asked each participant to discuss if they have considered what they will do if they are not admitted to their program of choice. Most participants did not have a concrete parallel plan, although four were able to identify alternate career fields they would pursue.

Reapplying or Applying to Multiple Programs

Seven participants expressed a reluctance to consider a parallel plan or admitted that they had not formulated one. Patrick and Francesco had no back-up plan at all. Patrick stated:

> I really haven't thought about it too much, honestly. I've kind of just been all in and not really holding back, not really thinking of any other options, which I know isn't the smartest. But it's definitely something that I need to think about.

When asked if he had a parallel plan, Francesco replied, "Not concretely enough. I know there's always certain fallbacks you could, you could work at McDonald's, I could work with my dad. But nothing that sticks out as the go-to option if PT school fell through.

Carson, Yúzé, Laci, and Nina said that their plan was to apply multiple times or to multiple programs until they are accepted. Carson explained why he is reluctant to consider a parallel plan, commenting:

I guess part of me wants to say, 'Oh, well I don't want there to be a plan B because I just want to keep trying until it's right.'…Initially if I don't get in, I think my plan B is stay here, try to find a place that I could just get patient hours and just build up more knowledge. [I will] find out what it was that they thought was a flaw, that I didn't get accepted because of that, and be able to better that. I'll just keep trying…It's like, these are what I need to work on, this is what I need to do to be able to jump right back in and be even more competitive. So I guess that would be kind of a plan B.

Yúzé, who was not accepted to medical school on his first application, stated, "I'll just keep applying. I believe if I keep doing it one day, I will get into it and also, I can show them my determination. Hey, I reapply again, again, again. It's time to take me. It's like that." Yúzé did have a plan in case he wasn't admitted:

I will become a registered dietician, so at least I get to do something related to the healthcare and if I didn't get into the medical school next year, I'll just, maybe find a place and do more clinical stuff and just trying to make myself better, study more, and reapply again.

Laci explained her plan:

I think my advisor and me talked about [it]. She said we could look at other colleges that would accept you too. And so that's been a plan B really is, if not [this institution] then, okay, well then where else would accept you? So, I guess that's really the only thing I thought.

Nina said her plan was:

I think if I don't get into the first try, I'll just keep trying. But another path that I've

considered is applying to grad school and maybe getting my master's in something and

then trying again after that to see if I'm still interested in PA or something. But yeah, if

that doesn't work out I've really thought about grad school because I think, I mean, what's

one more degree? Especially in something that I would enjoy and if I ever wanted to go

back and apply to PA school, I could and I would have a more, even more competitive

application.

Shifting Paths

Four participants articulated a parallel plan that did not involve reapplying or applying to

multiple programs, but in shifting career paths. Aaliyah shared, "My parallel plan is athletic

training. Because even if PT doesn't work out, I still love to go to the gym and train people. Just

being in that environment." Tina shared, "I would l think I will go into a master's program and

strive on the strict research PhD path." Iyana considered what a parallel plan might look like:

I am currently minoring in special education. I will be devastated [if I don't get in]. I

want to go on my path that I already have. I have thought of at least trying to maybe go

back to school or see what it would require for me to become a special education teacher,

or maybe go into play therapy, things like that. I have thought about it, but not, I guess, in

a detailed plan.

Alexis expressed interest in pursuing an alternate rehabilitative health program, stating:

I believe my second or my parallel plan is occupational therapy. Just because I am still

really interested in that kind of therapy. And I think it would only add like maybe one or

two more courses to my workload. And so I think I chose that because I am super, super

interested in that still, and it is something still kind of close to what I wanted to do.

Summary

This chapter began with a review of the data collection and analysis process I used in this

study and an overview of the study's participants. The chapter also included themes that emerged

from the study related to influences on career choice, what pre-health students feel they need to

do to be competitive, challenges, fears and worries about the future, motivation to persist,

resources and support, and parallel planning. Chapter 5 will contain conclusions and

recommendations from the study.

Chapter 5. Conclusions and Recommendations

The U.S. population is diversifying rapidly, with four out of 10 Americans now identifying as a race other than White (Frey, 2020). Yet, racial and ethnic minorities remain underrepresented in the health professions (AACP, 2020; AAMC, 2021; ADEA, 2019; AOTA, 2018; APTA, 2019; CAPCSD, 2020; PAEA, 2021). Men are also underrepresented in many of the health professions (AACP, 2020; AAMC, 2021; ADEA, 2019; AOTA, 2018; APTA, 2019; CAPCSD, 2020; PAEA, 2021). In order to increase the diversity of the healthcare workforce, it is necessary to increase the number of underrepresented undergraduate students who choose to pursue a health profession path and are able to persist on that path.

The purpose of this qualitative phenomenological study was to explore the experiences of underrepresented students on a pre-health profession path during their undergraduate years at a mid-sized, regional university in the southeast. I interviewed underrepresented minority and male students who have indicated that they intend to apply to dental, medical, occupational therapy, pharmacy, physical therapy, physician assistant, and speech-language pathology programs. The pre-health participants shared insights into influences on their career choice, what they are doing in order to become competitive for their programs of interest, challenges, concerns about the future, motivation to persist on their pre-health path, resources and support utilized, and their thoughts about what they might do if not accepted to their program.

As noted in the literature review, some research on the experiences of underrepresented racial and ethnic minority pre-health students exists; however, the existing research focuses on pre-medicine and pre-dentistry paths (Alexander et al., 2009; Barr et al., 2008; Freeman et al., 2016). Additionally, two of the three major studies on the experiences of underrepresented pre-

health students were conducted exclusively at institutions in California, whose students may be culturally different from the students at other institutions (Alexander et al., 2009; Barr et al., 2008; Freeman et al., 2016). Furthermore, very little research exists on why men are underrepresented in many health professions programs. The existing research also lacks specific recommendations for higher education professionals who may serve an important role in supporting these pre-health students.

To gather data for this study, I interviewed 11 participants who identified as belonging to one of the underrepresented categories I examined in this study (African American, American Indian, Alaskan Native, Hispanic, or male) and have indicated that they intend to apply to a graduate or professional program in medicine, pharmacy, physician assisting, dentistry, occupational therapy, physical therapy, or speech-language pathology. Based on these interviews, I gained insight into the unique experiences, perspectives, challenges, and motivations of this group of students. In this chapter, I will discuss themes and commonalities identified among the participants' experiences. I will also discuss recommendations based on my findings and previous related research. Finally, I will make recommendations for future study. However, I must note the following caveats before sharing my findings:

1. Because I currently serve as an advisor for pre-occupational therapy and pre-speech-language pathology students and also serve as director of an advisement unit that advises pre-physical therapy students, I recognize the potential for bias, however, I attempted to remain objective in both my interview and coding process. I also had an external auditor review my data analysis to provide an unbiased perspective and ensure that my findings were accurate.

2. I recruited participants for this study from a single institution, therefore, their experiences may reflect a campus-specific or region-specific culture and may not be generalizable to the experiences of students at other institutions.

3. I interviewed 11 underrepresented pre-health students from five pre-health paths. Since the sample size was small, the study may not be generalizable to other pre-health students.

Though these limitations mean that the findings of my study may not be generalizable to all pre-health students, Lincoln and Guba (1985) and Firestone (1993) suggested that researchers should provide context and details about their study for others in their field to decide for themselves whether the research may be applicable to their situations and populations. I have attempted to provide sufficient context and details about my study and participants to allow other higher education professionals to determine for themselves if my findings may be relevant to their work.

Conclusions

In reviewing and coding my interviews, I found commonalities among the experiences of the pre-health students who participated in this study. These commonalities related to reasons for choosing their career path, challenges faced on the path, concerns about the future, motivators to persist, resources and support utilized, and parallel planning. I identified challenges these participants faced that echoed previous research on the leaky pipeline of pre-health students by Alexander et al. (2009), Barr et al. (2008), and Freeman et al. (2016). However, I also heard positivity, resilience, and motivation to persist in their stories.

Choosing a Career Path

In order to fully understand the experiences of underrepresented students on pre-health paths, I began each interview with an exploration of why they had chosen the career path they are pursuing. Five participants shared that they are motivated to pursue healthcare by a deep desire to help others. Carson stated, "I just want to be able to help somebody and be a difference in somebody's life to just help them be better." Aaliyah, Laci, Nina, and Yúzé expressed similar motivations. Relatedly, four participants shared stories of positive experiences they or a family member have had with healthcare providers that inspired them to pursue their chosen career so that they could help others in the same way. Laci, for example, said that she worked through speech issues with a speech-language pathologist as a child and stated, "As I've gotten older, I've just wanted to help other people, like she helped me." Francesco, Shanice, and Aaliyah told similar stories of being inspired to pursue healthcare by personal experiences with providers.

Previous research on minority healthcare providers indicates that they may be motivated to help others, particularly the underserved, as part of their practice; Kington et al. (2001) found that healthcare providers who identify as members of a minority are more likely to practice in underserved areas, and Mitchell and Lassiter (2006) noted that minority students place greater value on the opportunity to serve vulnerable and low-income populations and view these populations less negatively. Indeed, two of my participants, Yúzé and Nina, specifically expressed a desire to serve underserved populations. Nina shared, "I speak Spanish so I know like when I used to translate for my parents when I was young, when they would go to the doctor, there was always this barrier…I just wanted to eliminate that for anybody who is Spanish speaking." Yúzé stated:

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When I first immigrated to the U.S.], I have insurance, but the insurance is very high

deductible…I hadn't been to clinic for three years and I was not in the very good

condition. And I also wish to help those people. Those are really underrepresented

people.

Tucker and Winsor (2013) found that minority students who persisted on a pre-health

path reported significant people in their lives, including mentors, who played a role in their

persistence. My research indicates that mentors may also play a key role in students' initial

choice to pursue pre-health paths. Alexis, Patrick, Nina, and Tina discussed mentors who

influenced them to pursue a pre-health path. Nina reflected:

I knew I loved biology in high school. I took AP Biology and my teacher, she's one of my

favorite human beings, and she made me fall in love with biology and she was the first

one to kind of mention the idea of it. She was like, "Well you know, you could go to

college major in Biology, if you like medicine."

Nina, Patrick, and Yúzé referenced their love of science as a motivator in choosing their

pre-health path. Previous research on underrepresented pre-health students indicates that many

struggle in the sciences (Alexander et al., 2009; Aronson & Dee, 2012; Barr et al., 2008;

Freeman et al., 2016; Haak et al., 2011; Harackiewicz et al., 2014; Van Sickle et al., 2020).

Though many of my participants did report difficulties in their science coursework, these three

participants also described a love of and talent for science that drew them to the healthcare field.

Finally, Alexis, Nina, Carson, and Tina related to the economic and lifestyle benefits of

their chosen careers as key motivators. Alexis and Nina noted salary and job security as the

expected benefits of careers in healthcare, while Carson and Tina discussed the flexibility of

their chosen career paths as appealing.

Challenges on the Path

Each participant in my study was able to name an exhaustive list of things they are currently doing or feel they must do to become competitive for their healthcare programs of choice. One of the "musts" to be competitive mentioned by all participants was the need to succeed academically. However, eight of the eleven participants noted that they had experienced some academic struggles, particularly in their pre-health courses. Aronson and Dee (2012), Haak et al. (2011), Harackiewicz et al. (2014), and Van Sickle et al. (2020) discussed persistent achievement gaps for minority students in math and science courses, and Alexander et al. (2009), Barr et al. (2008), and Freeman et al. (2016) all found that difficult science coursework is a major barrier for underrepresented students on pre-health paths. Barr et al. (2008) documented that science courses present difficulties for URM pre-health students, finding that approximately one-half of freshmen students who noted a pre-medical interest in their freshmen year indicated a declining interest in pre-medical studies by the end of their sophomore year, and that the primary reason given for their declining interest was a negative experience in one or more chemistry courses. Alexander et al. (2009) examined grades in "gateway courses" for health professions, such as biology, general chemistry, organic chemistry, and physics, and found that URM students earned significantly lower grades in these courses, even when adjusting for measures of prior academic performance. Alexis, Shanice, Nina, Tina, Laci, Francesco, Aaliyah, and Iyana discussed their struggles in these courses or their anticipation of struggling in them in the future. Nina shared that she has felt the pressure of the heavy science course load required for her pre-health path, stating, "A lot of them are your basic medical classes such as anatomy, your physics,

your organic chemistry, a lot of those. And they're a lot of pressure and for me." Patrick, Francesco, Carson, and Iyana referenced the large amount of time that they must devote to studying as pre-health students. Carson noted, "[A] challenge is…how long you have to put into it. I've been in the library until one in the morning studying for a Chemistry and a Bio test that are on the same day."

Freeman et al. (2016) found that many pre-health students felt inadequately prepared by their high schools for the rigor of pre-health college coursework, and this finding was supported up by my participants' experiences. Francesco shared, "In high school I was able to breeze by a lot easier and never have to study versus some of the topics I'm encountering for the first time in my life." Iyana, Carson, Aaliyah, and Tina spoke to similar academic struggles as they transitioned from high school to college. Laci, the non-traditional student who returned to college after taking five years away from school, said that she struggled with transitioning to the academic rigor of college as well.

In addition to these academic challenges, three participants noted challenges related to being first-generation college students. Although first-generation status was not a demographic I specifically focused on in this study, 54% of first-generation students are racial/ethnic minorities. (Schuyler et al., 2021). Alexis, Yúzé, and Nina shared that they struggled to find information and get advice related to college as first-generation students. Nina mentioned feeling somewhat isolated as a first-generation student: "The hardest part for me was not having a lot of people to relate to and just being able to talk about experiences together." Yúzé and Tina discussed a lack of connections for shadowing opportunities as a unique barrier that they face as first-generation

students; Yúzé stated, "I don't have the local network as other people does. So a lot of pre-med students, they just ask their dad or mom, 'Hey, do you know other physicians?'"

It is important to note that, although three participants identified barriers related to being first-generation college students, two also shared feeling excited, motivated, and driven by their first-generation status. Nina reflected that she felt privileged to be the first in her family to attend college and feels driven to succeed so she can help her family financially, and Tina discussed feeling excited to share her learning with her family.

Eight participants noted the need to gain job shadowing and healthcare-related experience in order to get competitive for their programs of interest, but four spoke of difficulties in finding the opportunity to shadow. This is consistent with Freeman et al.'s (2016) findings that many URM pre-health students identify a lack of shadowing opportunities as a major barrier on their pre-health path. Freeman et al. (2016) found that students experienced frequent rejection when they attempted to find shadowing opportunities, and that those who were able to find shadowing opportunities expressed concern that they had an inadequate number of shadowing hours to be competitive for professional program application. Yúzé, Tina, Shanice, Nina, and Francesco shared that they had experienced similar difficulties in finding the time and opportunity to pursue shadowing experiences. Yúzé discussed the challenge of not having a network to connect to for shadowing opportunities through his family and discussed frequent rejection when he has reached out to doctors about shadowing opportunities, and Nina also commented that she has had a difficult time finding physician assistants to shadow. Tina and Shanice discussed the difficulty of balancing shadowing expectations with their need to work outside of school. Francesco also

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mentioned having difficulty making time for shadowing experiences due to family stress and obligations.

An additional challenge identified by three of my participants is the stress that comes along with being underrepresented in their fields. The experience of being underrepresented in a major/career path, in and of itself, presents an additional challenge for these students, as they may experience imposter syndrome and minority status stress (Cokley et al., 2013). Alexis, Shanice, and Yúzé mentioned an awareness of being underrepresented in their programs. Alexis discussed her awareness that she was the only African American student in her first-year experience pre-health class and that she has met only one other African American student within her major. Shanice discussed the painful experience of not getting into her SLP program of choice and being aware that there are few minority students who do get accepted to that program, noting "I don't see anyone like me in the program." Yúzé, who is one of only two males in his nutrition program, described feeling somewhat disconnected from his female peers. Indeed, many healthcare professions are gendered and predominately female, possibly because of the perception of healthcare and other caregiving professions as being "female work." (Beagan & Fredericks, 2018; Cech, 2013; Francis, 2002; Litosseliti & Leadbeater, 2013).

A final challenge mentioned by three participants was the stress and pressure of being a pre-health student. Carson discussed thinking that he needs to be perfect to get into medical school, and disclosed that the intense classes he must take on that path often "stack on top of each other." Tina discussed the "what-ifs" of the pre-health experiences, saying she is uncertain that she will perform well enough in future classes to get admitted to physical therapy programs.

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Laci also discussed experiencing pressure and overwhelm on her pre-health path, particularly around trying to balance her school obligations with her family and work responsibilities.

Concerns about the Future

In addition to the challenges, each participant spoke to concerns they have about the future. One commonly noted concern was related to finances. Many URM students have concerns about the high cost of graduate and professional healthcare programs and fear the debt they may accrue through student loans (Freeman et al., 2016). Tina, Yúzé, Nina, Patrick, Carson, Shanice, Francesco, Iyana, and Alexis all spoke about their worries related to paying for their graduate education and paying back student loans. Freeman et al. (2016) and Lovecchio and Dundes (2002) found that URM students may face fears and doubts about their ability to get into health professions programs. Consistent with those findings, Carson, Shanice, and Laci spoke about their fears of not getting into their program of choice.

Freeman et al. (2016) also found that pre-health students fear the standardized tests required for entrance into their professional programs of interest, and three of my participants disclosed that they have experienced this fear of standardized tests. Alexis and Patrick shared that they felt anxious about needing to take those tests in the future, and Shanice had experienced a great deal of stress in preparing for the Graduate Record Exam required for entry into SLP programs and said that her score had been detrimental to her getting accepted into her first-choice program.

Participants also noted concerns about what will happen if they are admitted to their programs of interest. Freeman et al. (2016) and Lovecchio and Dundes (2002) found that URM pre-health students often doubt their abilities to succeed in healthcare programs, and Iyana,

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Carson, Nina, and Shanice all expressed similar fears of their ability to be successful in their programs of choice. Carson, Tina, and Francesco had concerns related to transitioning to more adult responsibilities as they become graduate and professional students. Freeman et al. (2016) also found that URM students have concerns about what their lives will look after graduation from their healthcare program, particularly related to their ability to find a job and achieve a desired work-life balance. Alexis, Patrick, Aaliyah, and Iyana all expressed concern about finding a job after graduation, and Patrick shared worries about managing his time as he enters his career as a physician.

Motivators to Persist

Changing majors and career paths is common among undergraduates, with around one third of students changing their major at some point during college (U.S. Department of Education, 2017). Underrepresented minority pre-health students are at an even greater risk of changing their trajectory, having a higher rate of declining interest in medical careers during their undergraduate studies than their peers (Astorne-Figari et al., 2019; Barr et al., 2008; Riegle-Crumb, 2019). Because of this "leaky pipeline" of URM pre-health students, I was curious to explore what kept my participants motivated to persist on their pre-health paths.

Three participants were motivated to persist by a desire to help others. Carson reflected, "At times, I'm like, I could just switch to business or something…it's just not as rewarding as I feel like it would be to be able to get in and really help somebody." Alexis and Francesco discussed helping other as a motivator to persist as well.

Alexis, Tina, Iyana, Nina, and Aaliyah discussed parents, siblings, and other family members as providing support, motivation, and inspiration. Freeman et al. (2016), however,

argued that the influence of friends and family could impact student persistence in both positive and negative ways; Nina, Iyana, and Francesco each discussed feeling some pressure to succeed on their pre-health paths from family members.

Two participants, Laci and Iyana, expressed that gaining shadowing or related experience had been a key motivator to persist on their path by reinforcing their love for their chosen field. This is consistent with Barr et al.'s (2008) findings that having a shadowing or mentorship opportunity with a physician within the first two years of college positively impacted students' level of interest in persisting on a pre-medical path, and the experiences of my participants seems to reinforce that early shadowing experiences can play a role in persistence for these students. Finally, despite the challenges related to coursework, Nina, Shanice, Tina, and Yúzé discussed enjoying learning new and exciting concepts as one of the reasons they have chosen to persist on their pre-health path.

Resources and Support

Because of the unique challenges and barriers that underrepresented pre-health students face, it is vital that these students have access to resources and support. Barr et al. (2008), Freeman et al. (2016), Lovecchio and Dundes (2002), and Tucker and Winsor (2013) found that institutional resources can play a vital role in students' persistence on pre-health paths. Freeman et al. (2016) noted that a lack of available information and opportunities provided by undergraduate institutions contributes to the declining interest of underrepresented students in pre-health paths. The participants in this study reflected that positive experiences with institutional resources including support from professors, the university's tutoring services, academic and pre-health advisors, and the physical activity center had had helped keep them on

their pre-health paths. Outside of the formal resources provided by the institution, participants also discussed support from their peers, including informal study groups, and faith groups as important sources of support.

Parallel Planning

Because of the competitive nature of graduate and professional healthcare programs, pre-health advisors often encourage their advisees to form parallel plans, or alternative career plans, for what they will do if they are not admitted to their program of interest. Seven participants expressed a reluctance to consider a parallel plan or admitted that they had not formulated one. Patrick and Francesco had no back-up plan at all, while Carson and Yúzé said that their plan was to continue to apply to their programs of interest until they are accepted. Nina also plans to reapply until accepted but has a parallel plan of attaining a master's degree while waiting for reapplication. Laci plans to apply to multiple programs to increase her chances of being accepted but does not have a parallel career plan. Only Aaliyah, Tina, Iyana, and Alexis had thought in detail about alternate career plans they would pursue if they are not accepted to their programs. This finding echoes recent research by Roberts (2022), who found that many pre-health students are encouraged by their advisors to develop back-up plans but do not do so until they reach the point of not being accepted into their programs of choice.

Recommendations for Institutions and Higher Education Professionals

While many URM students begin college on pre-health paths, they often do not persist on those paths due to challenges faced along the way (Alexander et al., 2009; Barr et al., 2008; Freeman et al., 2016). Although my study includes the stories of only a small number of students at a single institution, the experiences they shared may help inform institutional practices related

to supporting underrepresented pre-health students. Based on my findings, I recommend that institutions and higher education professionals build on pre-health students' intrinsic motivations, anticipate and manage academic challenges, connect students with shadowing opportunities, focus on mental health and well-being, build on family partnerships, provide extra support for first-generation students, address students' fears of the future, and be more intentional with students about parallel planning.

An example of the result of increased support for URM pre-health students can be seen at historically Black colleges and universities (HBCUs). HBCUs are more successful at preparing pre-medical students for acceptance into graduate programs than predominantly White institutions (PWIs) (Akinson et al., 1994; Gasman et al., 2017). Gasman et al. (2017) found that HBCUs are more intentional about allocating resources and developing programs to support pre-medical students, including creating clear pathways for course choices for pre-medical students, providing tutoring for all first- and second-year students, and providing early MCAT preparation. This finding, in combination with the results of my study, suggests that intentional, focused effort in supporting underrepresented students on pre-health paths can make an impact on their persistence and acceptance into their programs of choice.

Exploring and Building on Intrinsic Motivations

Though Alexander et al. (2009), Barr et al. (2008), and Freeman et al. (2016) identified many barriers and challenges for undergraduate pre-health students, they did not identify and explore what may motivate these students to persist. My participants are motivated to pursue healthcare careers and to persist despite challenges for deeply personal and meaningful reasons. They have a desire to help others overcome challenges and regain health, and several were

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inspired to pursue their careers by personal, life-changing experiences with healthcare providers.

Additionally, the participants are motivated to persist by the desire to make their families proud.

Academic and pre-health advisors should take time to explore with pre-health students what their

motivations are and should discuss, reinforce, and remind their advisees of these motivators

during challenging times.

Anticipating and Managing Academic Challenges

Underrepresented pre-health students face many academic challenges, particularly in

difficult math and science coursework required on their pre-health paths (Alexander et al., 2009;

Aronson & Dee, 2012; Barr et al., 2008; Freeman et al., 2016; Haak et al., 2011; Harackiewicz et

al., 2014; Van Sickle et al., 2020). URM pre-health students may also feel underprepared by their

high schools for the rigor of the pre-health path (Freeman et al., 2016). Participants in my study

shared personal experiences that echo these findings, discussing their struggles in math and

science courses, their difficulty transitioning to college, and the challenges that come with taking

multiple science courses simultaneously. Institutions and higher education professionals should

proactively anticipate and address these challenges. Participants discussed benefitting from using

university tutoring services, therefore undergraduate institutions should consider strengthening

and expanding tutoring services, particularly for math and science courses. They should expand

support for freshman students as they transition to the rigor of college. This support could

include workshops and academic coaching focused on study skills and time management. Pre-

health advisors should intentionally connect URM pre-health students with university tutoring

services early in their academic career.

Freeman et al. (2016) found that URM pre-health students fear the standardized tests

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including the Graduate Record Exam (GRE) and the Medical College Admission Test (MCAT), required for entrance into their graduate programs. Therefore, university tutoring centers may want to increase opportunities for students to learn about and prepare for these standardized tests.

Several participants discussed the importance of peer support and peer study groups on their pre-health journeys. Advisors, professors, and other student support personnel should be intentional about creating connections and opportunities for students to form these study groups. Additionally, since some participants discussed the difficulty of taking multiple science courses simultaneously, advisors may want to be strategic about spreading out these courses, when possible, for underrepresented pre-health students.

Connecting with Shadowing and Related Experience

Opportunities to shadow healthcare professionals and gain related work experience are vital for undergraduate pre-health students as they are often required for entry into graduate and professional programs. Additionally, early experience with shadowing may motivate students to persist on pre-health paths (Barr et al., 2008). However, many pre-health students have difficulty finding opportunities to gain shadowing experience (Freeman et al., 2016), including those in my study. Institutions should consider creating community partnerships with healthcare providers which provide pre-health students, particularly those who are under-represented and may not have connections in the healthcare field, shadowing opportunities. Additionally, institutions should consider building community-based experiences, such as shadowing, into the curriculum for classes taken early on the pre-health path, such as first-year experience courses for pre-health students.

Mental Health Resources

Three study participants spoke of experiencing stress related to being a pre-health student. They were overwhelmed with difficult courses and with the extracurricular activities they need to engage in to be competitive for graduate and professional programs. Additionally, racial and ethnic minority students who are underrepresented at their institutions or within their majors may experience additional stress related to their minority status (Aronson, 2002; Austin et al., 2009; Cokley et al., 2013; Walter and Cohen, 2007).

Academic and pre-health advisors should be mindful of the burden of stress placed on pre-health students by the many requirements they are seeking to meet in order to become competitive for their programs of interest. They should regularly check in on their students' mental wellbeing and stress level and refer to mental health resources, as needed. Additionally, participants mentioned the campus gym as a key resource for stress management. Institutions could consider expanding offerings related to mental health and stress management through the physical activity center. Mental health workshops or events geared specifically toward pre-health students may also be beneficial as they may help these students connect to others who can relate to the unique struggles they are facing.

Building Family Partnerships

Minority students who persist on pre-health paths often report having significant people in their lives, including family members, who played a role in their persistence (Tucker & Winsor, 2013). However, Freeman et al. (2016) found that the influence of family can impact student persistence in both positive and negative ways. Some students feel pressure from their families to succeed on their pre-health path, while others are discouraged from pursuing these

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paths by family members and friends; additionally, students may have obligations to care for family members that compete with their schoolwork and may have families that lack knowledge and understanding of the difficulty of pre-health paths (Freeman et al., 2016). Alexis, Tina, Nina, Iyana, and Aaliyah spoke of feeling motivated to pursue their pre-health paths by encouragement from their families, while Francesco, Iyana, and Shanice spoke to experiencing a lack of support or additional pressure to succeed from their families. Regardless of whether it is positive or negative, it is clear that families play a key role in pre-health students' experiences. Institutions should consider building stronger, more intentional partnerships with the families of pre-health students, including providing educational events about what the experiences and expectations for their pre-health students will be and how they can best support these students.

Additional Support for First Generation Students

Freeman et al. (2016) found that a lack of available information, experiences, and opportunities provided by undergraduate institution contributes to declining interest in pre-health paths. While each of my participants shared positive experiences with university resources, including professors and advisors, Alexis, Nina, Tina, and Yúzé discussed the challenges of having to learn how to navigate college and solve problems on their own as first-generation college students. Pre-health advisors should be mindful of the unique challenges that first-generation students on pre-health paths face and should discuss first-generation status with advisees. They should pay careful attention to gauging the amount of information regarding college and pre-health paths their first-generation students have and what additional information they may need. Advisors should also proactively connect these students to support resources for first-generation students, such as TRIO programs. Finally, advisors should be aware that first-

generation students may not have the connections for shadowing opportunities that students whose parents attended college may have and should be proactive in helping them connect with shadowing opportunities.

Addressing Concerns for the Future

Participants discussed fears and "what ifs" related to their future as graduate students as additional sources of anxiety on their pre-health paths. Freeman et al. (2016) found that pre-health students have major concerns about how they will finance their graduate education and fear having to take out student loans to do so. URM pre-health *s*tudents also have concerns about their abilities to succeed in graduate and professional healthcare programs, citing struggles with time management and study skills (Freeman et al., 2016; Lovecchio & Dundes, 2002). My participants echoed these concerns, with nine sharing that their biggest fear related to pursuing their chosen program was how they are going to pay for it. Four participants also worried about what the program itself will be like and if they will be able to succeed in it. Undergraduate pre-health students may benefit from more early information and transparency about the graduate program experience. Institutions should consider offering workshops to undergraduate students about options for financing graduate education, including non-loan options such as graduate assistantships and scholarships. Additionally, undergraduate pre-health advisors should partner with graduate programs to offer information sessions, workshops, and student panels about what they can expect from their graduate program experience.

Intentional Parallel Planning

A final recommendation based on my findings is related to parallel planning. Because graduate and professional healthcare programs are competitive, many pre-health advisors discuss

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the importance of having a "plan B" or parallel plan for what alternative career the student may pursue if they are not admitted to their program of choice. However, discussions with my participants revealed that most did not have a well-formulated parallel plan. Seven participants discussed that they had not considered a parallel plan or were reluctant to consider one, as doing so seemed like it was opening up the possibility of failure. Two participants, Iyana and Alexis, had specific parallel plans, but they were not well-researched; Alexis spoke of shifting to the pre-occupational therapy path, which she believed would only add one or two additional prerequisite courses but would actually add several, and Iyana discussed becoming a special education instructor but admitted that she had not researched the requirements to do so. Pre-health advisors should put additional focus on having honest conversations about the importance of a parallel plan and should help students understand additional, less competitive options for careers related to their interests. Additionally, advisors should continue to work with students each semester until they have a specific, well-reasoned parallel plan formulated and know precisely what their next steps will be if they are not admitted into their graduate program of choice.

Recommendations for Further Study

While this study contributes to the literature on the experiences of underrepresented pre-health students, it was limited to a single institution and to 11 participants and may not be generalizable to all pre-health students or institutions. Therefore, I make the following recommendations for further study.

A similar study focusing on the experiences of underrepresented pre-health students should be replicated with a larger sample size. Further studies should include students from multiple institutions from a wide variety of geographic locations and should also include a

variety of institution types, including community colleges, private institutions, and historically black colleges and universities. Future researchers may also want to explore the experiences of first-generation, economically disadvantaged, and LGBTQ students. Additionally, this study focused primarily on students who had not yet applied to their graduate or professional programs, and therefore we do not yet know if they will persist on their pre-health paths or gain entry into their program of interest. Further study could focus on students who have already applied and received admissions decisions and may differentiate between the experiences of students who are ultimately successful on their pre-health path and those who are not.

In June of 2023, the U.S. Supreme Court issued a ruling that will prevent colleges and universities from considering an applicant's racial or ethnic background in admission decisions (AAMC, 2023). The Association of American Medical Colleges (2023) predicts that this ruling may further decrease the diversity in the health professions. I recommend further research into how this ruling impacts the experiences, challenges, and motivation to persist of underrepresented students on health professions paths.

Closing

This chapter contained the findings of my exploration of the experiences of pre-health students, including commonalities related to their reasons for choosing their career path, challenges faced on the path, fears and worries about the future, motivators to persist, resources and support utilized, and parallel planning. The chapter also included recommendations for institutions and higher education professionals based on these findings and made recommendations for future research. It is my hope that this study contributes to the limited body of literature on the experiences of underrepresented pre-health students and may ultimately make

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a small impact in leveling the playing field and ensuring that students from all backgrounds are

supported in their pre-health journeys.

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APPENDICES

Appendix A: Recruitment Email

Hi [Name],

I am the Director of Student Success for the College of Clinical and Rehabilitative Health Sciences and a student in the Educational Leadership doctoral program at ETSU. I am conducting a research study that explores the experiences of underrepresented students (including underrepresented minorities and men) who are on a pre-health professions path. I am looking for students who would be willing to participate in a brief Zoom interview to tell me about their experiences. The interview should take less than an hour. You will be compensated for your participation with a $25 Amazon Gift Card.

Study participants must:

1. Be currently enrolled at the University
2. Intend to pursue graduate or professional programs in medicine, pharmacy, physician assisting, dentistry, occupational therapy, physical therapy, or speech-language pathology
3. Identify as African American, American Indian, Alaskan Native, Hispanic, _**or**_ male.

Participation in this study is voluntary. If you meet the inclusion criteria listed above and are interested in participating or have any questions, please email me at williamsam3@etsu.edu or give me a call at 423-439-5052.

Sincerely,
Ali Williams, Ed.S, NCC
Director of Student Success
College of Clinical and Rehabilitative Health Sciences
East Tennessee State University
Lamb Hall 436
423-439-5052
williamsam3@etsu.edu

Appendix B: Interview Guide

1. What healthcare program do you intend to apply to?
2. Why did you choose this career path?
3. What is your understanding of what it takes to be a competitive applicant for the _____ program?
4. Tell me about the things you are doing to become a competitive applicant for the _____ program.
5. Tell me about your experience as a pre-health student.
6. What motivates you to persist on this path?
7. What are your experiences in your pre-health coursework (courses you are taking because they were a prerequisite for your healthcare program of interest)?
   a. What does it mean to be successful in these courses?
   b. Tell me about how you feel you are doing in your courses.
8. Tell me about any resources, services, or support you are using.
9. What resources or support outside of the university have been helpful? Tell me about that/them?
10. What concerns, if any, do you have about applying to your program?
11. What concerns, if any, do you have about completing your program if you are accepted?
12. Have you identified a parallel plan for what you will do if you are not accepted into your program of choice? If so, describe it.
13. Are there any questions that I haven't asked that would help me understand what it's like to be a student on a pre-health path?

Appendix C: Auditor Certification

The audit of Ali Williams' interviews with underrepresented students on pre-health paths and what is presented from them in Chapter four is complete. I found everything to be accurately represented and the process for determining how to present the results to be sound.

Megan Roberts
_____
Dr. Megan
Roberts
April 25,
2023

VITA

ALISON WILLIAMS

Education: Ed.D. Educational Leadership, Higher Education Concentration,

East Tennessee State University, Johnson City, Tennessee,

2023

Ed.S. Educational Leadership, Counselor Leadership

Concentration, East Tennessee State University, Johnson

City, Tennessee, 2018

M.A. Counseling, Higher Education Concentration, East

Tennessee State University, Johnson City, Tennessee,

2011

B.S. Human Services, East Tennessee State University, Johnson

City, Tennessee, 2009

Professional Experience: Director of Student Success, College of Clinical and Rehabilitative

Health Sciences, East Tennessee State University,

Johnson City, Tennessee, July 2021-Present

Academic Advisor, College of Clinical and Rehabilitative Health

Sciences, East Tennessee State University, Johnson City,

Tennessee, January 2021-July 2021

Academic Counselor, Office of Medical Professions Advisement,

East Tennessee State University, Johnson City,

Tennessee, October 2018-December 2020