Walden University

College of Health Sciences

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Tolulope Oyelowo

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Abstract

Complementary and Alternative Medicine Careers Following a Science Academy for Underrepresented Minority Students

by

Tolulope Oyelowo

MS, New England College, 2009

BA, University of Minnesota, 1986

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

November 2018

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Abstract

Minority groups experience disproportionately worse health outcomes. An identified solution is to increase the number of minorities providing healthcare in their own communities. Primary care complementary and alternative medicine (CAM) providers are a potential resource. Many investigators have demonstrated the efficacy of science-based pipeline programs for increasing the roles of students in allopathic health professions. Whether these programs influence matriculation of minorities into a CAM university is unknown. The main purpose of this study was to gain an understanding of a pre-college science academy at a CAM university and determine whether the experience increased interest in and motivation for CAM careers. It was also important to learn more about what factors may facilitate or impede minority student matriculation in a CAM university. In this phenomenological study, a mixed purposeful sampling strategy was used to select 9 students who had participated in a science academy at a CAM university. Individual in depth, semi-structured, interviews were conducted and analyzed using a process of inductive analysis. The results indicated that barriers to college matriculation included cost and the complexity of the process. The desire to elevate status steers some minorities who use CAM modalities as their indigenous health practice, towards high prestige allopathic careers. Participation in the science academy increased interest in and utility of CAM, but did not change preconceived career choices. These results contribute to the existing literature and can enrich social change initiatives by increasing the number of minorities providing healthcare in their own communities, and further understanding of the factors that influence underrepresented minority career choices.

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Dedication

I dedicate this book to the children of God whose circumstances I hope to influence with this work.

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Acknowledgments

I wish to acknowledge with gratitude those who have encouraged, mentored and shepherded me along this journey. My family and friends more often than not, one and the same; who would I be without you, my mentor and dissertation chair Dr. Diana Naser, my students past and present, and my committee members Dr. Naa Solo Tettey and Dr. Patrick Tschida. Thank you. I am grateful for you.

And to the author of all knowledge. Jesus Christ my Savior and Lord. Alleluia

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Chapter 1: Introduction to the Study

Introduction

Low back pain has been identified as the condition that causes more global disability than any other condition (Hoy et al., 2014). This is a significant public health issue that affects all ages. Back and neck pain cause significant financial burden and medical costs (Vassilaki & Hurwitz, 2014). Together, back and neck pain are second only to heart and stroke in terms of total medical expenditures in the United States and are the most common reason for visits to primary care practitioners (Vassilaki & Hurwitz, 2014).

Health disparities exist in terms of access to care and outcomes of care for a myriad of conditions, including neck pain, low back pain, and other musculoskeletal conditions (Office of Disease Prevention and Health Promotion (ODPHP), 2014). Chiropractors are primary care complementary and alternative medicine (CAM) practitioners whose primary focus of care encompasses low back pain, neck pain, and other musculoskeletal ailments (American Chiropractic Association, 2017). While many chiropractors practice in rural and other underserved areas, the demographics of the chiropractic profession do not reflect the demographic breakdown of the United States, and enrollment of minorities in chiropractic programs is not consistent with the projected changes in demographics across the country (Johnson & Green, 2012; U.S. Census Bureau, 2014).

Science-based pipeline programs such as science academies have demonstrated efficacy for increasing the roles of students in allopathic health professions (Myers, DeHart, Dunn, & Gardner, 2012; Perchura, 2001; Winkleby, 2007). The problem is that while it is known that science-based pipeline programs increase matriculation into allopathic universities, it remains unknown whether these programs influence matriculation of minorities into a CAM university.

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The main purpose of this study was to gain an increased understanding of a pre-college science academy experience at a CAM university and determine whether the experience increased interest in and motivation for CAM careers among minority students. It was also important to learn more about what factors may facilitate or impede matriculation in a CAM university for minority student participants in a science academy.

The study could improve health outcomes for minority populations. Minority groups experience disproportionately worse health outcomes than their majority counterparts along several indices. An identified solution is to increase the number of minorities providing healthcare in their own communities. This can be facilitated as more minorities matriculate into universities and pursue healthcare careers. Minority CAM providers who are also primary healthcare practitioners are a uniquely positioned group, thus far unidentified to help bridge this gap. This chapter includes the background of this research study, problem statement, purpose of the study, research questions; an overview of the theoretical framework and the nature of the study, as well as definitions, assumptions, and limitations of the study.

Background

Low back pain is a global public health burden. According to Hoy et al. (2014), low back pain causes more global disability than any other condition. Low back pain affects all demographics, including children, adults, and the elderly (Bener, Dafeeah, & Alnaqbi, 2014; Roy, Shaw, & Beattie, 2014). The burden of low back pain is expected to increase as the geriatric population increases (Hoy et al., 2014).

Disparities exist regarding the incidence of low back pain. African Americans and Hispanics in the military have higher incidences of low back pain than Caucasians and Asians (Knox et al., 2012). Comorbidities such as overweight and obesity disproportionately affect

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minority populations (Office of Disease Prevention and Health Promotion (ODPHP, 2014). These conditions increase the risk of low back pain (Shiri et al., 2010). Individuals over the age of 65 with lower education who are female and African American experience a higher incidence of disability and pain (Jarvik et al., 2014).

Chiropractors are CAM practitioners whose educational training prepares them to function in the role of primary healthcare provider (American Chiropractic Association, (ACA), 2017). Chiropractors are also specialists in natural/noninvasive care of low back pain and other musculoskeletal ailments. Increasing the numbers of chiropractors practicing in rural and minority communities may help to increase healthcare accessibility to the underserved.

Currently in the United States, there are 17 chiropractic training universities (Johnson & Green, 2012). Minority student enrollment in these chiropractic colleges across the United States is less than 10% (Johnson & Green, 2012). This is in sharp contrast to the demographic makeup of the population in the United States, which is changing such that current minorities are already the majority in a few states and projected to be the majority in all states by 2043 (US Census Bureau, 2014).

Increasing the pool of minority students in health care training institutions has implications for addressing health disparities (ODPHP, 2014). Minority students who graduate from chiropractic colleges overwhelmingly practice in minority communities (Wiese, 2003). Increasing the pool of minority students in chiropractic schools further has implications for addressing the national and global burden of low back pain.

Research has documented some of the factors that impact matriculation and retention of minority students in health profession programs. Among the facilitators identified are exposing minority students at the high school and middle school level to the health professions (Beacham,

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Askew, & William, 2009), developing a comprehensive pipeline program to develop students for health professions (Curtis, Wikaire, Stokes, & Reid, 2009), student participation in science or college preparatory programs (Crump, Ned, & Winkleby, 2015), academic role models (Crump et al., 2015), and enhancing math and science skills while still enrolled in high school (Noone, Carmichael, & Chiba, 2009). Barriers include admission criteria such as selection tests which favor standardized scores over factors such as resiliency (Griffin & Hu, 2015; Hunter, Kinney, & Inglehart, 2015), socioeconomic status predisposing to low socio-cultural self-efficacy (Griffin & Hu, 2015), cost of education and other financial concerns (Dibaise, Salisbury, Hertelendy, & Muma, 2015). Additional studies are reviewed in the literature review section in Chapter 2.

Precollege science academies have proven successful for minority student matriculation into health professions such as the pharmacy profession, medicine, agricultural sciences and dentistry. The problem is that while it is known that science academy pipeline programs increase matriculation into allopathic universities, a gap in knowledge exists because it is unknown to what extent these types of programs influence matriculation of underrepresented minorities into a CAM university. Further, the factors that impede or facilitate matriculation into a CAM university have not been documented in the literature. This research is needed to understand what the facilitators and barriers are with regard to a CAM university, and specifically if and how a pipeline program such as a science academy impacts matriculation of underrepresented minorities into a CAM health sciences university.

Problem Statement

Although the number of minorities in the United States is increasing, the enrollment of underrepresented minorities (URMs) in chiropractic colleges remains flat at ~10% (Johnson & Green, 2012). Increasing the pool of minority students in healthcare training institutions has

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implications for addressing health disparities (ODPHP, 2014). Minority students who graduate from chiropractic colleges overwhelmingly practice in minority communities (Wiese, 2003). Specifically, increasing the pool of minority students in chiropractic training universities has implications for addressing health disparities and the national and global burden of low back pain.

Facilitators and impediments to URMs entering allopathic medicine and traditional medical professions have received considerable attention in the research. Individual factors such as members of some minority populations distrust of the system adversely affect matriculation into medical institutions. Community and systems factors such as socioeconomic status, college education costs, availability of mentors, and admissions criteria can also impact matriculation. Because the focus of research thus far has been on allopathic medicine, it is unclear if the facilitators and barriers for URM matriculation into a CAM university are the same as those identified for URMs into allopathic medicine or other conventional health profession training institutions.

Complementary and alternative medicine is on the rise, and some CAM practitioners have training comparable to other primary healthcare providers. It is unknown if or how a pipeline program such as a science academy impacts matriculation, or what factors facilitate or impede matriculation of URMs into a CAM or other health sciences university. I sought to understand these factors and examine if the research demonstrating the efficacy of a pipeline program such as a science academy for increasing URM interest and matriculation into other professional studies programs holds true for a CAM university.

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Purpose of the Study

This study sought to influence URM matriculation into CAM universities as a mechanism for mitigating health disparities caused by a lack of healthcare providers serving URM populations. The purpose of this qualitative study was to explore the factors that facilitate and/or impede matriculation for URM student participants in a CAM based science academy pipeline program, and describe the influence that pipeline programs can have on the career choices made by URM students. The URM experience as it pertains to a CAM university was investigated through a phenomenological approach.

Research Questions

The research questions for this study were as follows:

RQ1: What are the factors that facilitate or impede matriculation for URM student participants in a CAM based science academy?

RQ2: How do participants in a pipeline program at a CAM university make career decisions?

RQ3: How do CAM pipeline programs influence students regarding careers in CAM?

Theoretical Framework

This qualitative study was based on Banduras social cognitive theory (SCT) and Lent, Brown and Hackett's social cognitive career theory (SCCT). Bandura (1977) posited that learning occurs in a social context with dynamic reciprocal interactions between the person, the environment, and behavior. He later expounded on the theory in 1986 with the addition of self-efficacy as the underpinning of learning, and named this the SCT.

SCT proposes that an individual's behavior is learned by observing others (Bandura, 1977; Bandura, 1986), and is a dynamic process of self-regulation. Further, behavior is

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influenced by and influences personal factors such as cognition and environmental factors such as access to role models and mentors. Undergirding the behavior is self-efficacy.

Personal factors such as self-efficacy and cognition are influenced by environmental factors such as access. URMs who have strong role models, particularly those in higher education, who can help prepare the individual for college stressors are perhaps more likely to consider a career in healthcare. Conversely the individual without strong role models may not see himself or herself in the role, and depending on levels of self-efficacy, may opt out of higher education. Environmental factors such as URM exposure to a profession may, according to the SCT, increase motivation to pursue the profession such that as students observe and learn from motivated and successful CAM professionals and students, their interest in CAM careers may increase.

SCCT is grounded in Bandura's social cognitive theory. SCCT explores how individuals develop and implement career choices. The SCCT lends clarity to the impact of societal roles, culture, gender, genetics, life experiences, and other environmental factors on career choices. Lent, Brown, and Hackett (1994) developed the SCCT to explain the role of self-efficacy, personal goals, and outcome expectations on career choice. Self-efficacy may be enhanced by adversity; such that the URM who has overcome significant life obstacles begins to understand that the skillset for a chosen career is not that different from the skillset required to cope with significant life challenges. According to SCCT, as an individual matures from childhood into adolescence and adulthood, they become increasingly cognizant of the factors that incentivize and deter personal success. This process occurs based on personal accomplishments, societal and cultural norms, the internal environment (i.e. how the individual feels emotionally and physiologically because of an action, interaction, or accomplishment), and direct and indirect

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observation of others. This dynamic process enhances self-efficacy and influences career choices.

The choice of a CAM profession for a URM would require some exposure to the profession, either from personal experience or the experience of others. The URM must also believe that he or she has the capacity and cognitive ability to succeed in the profession and that the profession will improve their circumstance. SCT and SCCT may facilitate understanding of the choices and challenges of the students who participated in the science academy as well as provide the foundation for the research questions. Further discussion of the theoretical basis for the study is presented in Chapter 2.

Nature of the Study

A phenomenological study is a type of qualitative research that describes the common meaning for several individuals regarding their lived experiences of a concept or a phenomenon (Creswell, 2013). The science academy students participated in a weeklong experiential learning at a CAM university, followed by yearlong mentoring by CAM students and faculty. This is the phenomenon under study. A qualitative phenomenological approach was taken to enable a deeper exploration of the experiences of the students during and following the academy, as well as facilitate understanding of the influence of life experiences on the subsequent career choices of the science academy students.

The study used the Factors Influencing Pursuit of Higher Education Questionnaire (FIPHE). The FIPHE questionnaire was developed by Harris (1998) to gather information on several factors thought to affect an individual's decision to pursue higher education. These factors include parental influence, extended family support, peer support, locus of control, relative functionalism, the glass ceiling effect, financial aid, mentors, role models, and general

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preparation for college. The FIPHE was used to solicit preliminary data from the 243 former students of the Summer Science Academy. From the pool of responses, students from first generation college or minority backgrounds were identified. The phenomenological study approach further explored these students' experiences to enhance understanding of how the science academy influenced their career choices. Telephone and/or in-person interviews were conducted with the participants. Sources of information or data included the FIPHE Questionnaire, the Biology Undergraduate Scholars Program National Institutes of Health (BUSP-NIH) Career Path Survey, and taped recordings of video and/or audio interviews of study participants. The BUSP-NIH survey was developed by Villarejo et al. (2008) in order to facilitate understanding of the influences guiding career choices of minorities.

Definitions

Complementary and Alternative Medicine (CAM): A group of diverse medical and healthcare systems, practices, and products that are not generally considered part of conventional medicine (National Center for Complementary and Alternative Medicine [NCCAM], 2017).

Conventional medicine): Also called western or allopathic medicine, as practiced by holders of M.D. (medical doctor) and D.O. (doctor of osteopathic medicine) degrees and allied health professionals such as physical therapists, psychologists, and registered nurses (NCCAM, 2017).

Chiropractic health care: A healthcare profession that focuses on disorders of the musculoskeletal and nervous system, and the effects of these disorders on general health. Chiropractic care is used most often to treat neuromusculoskeletal complaints, including but not limited to back pain, neck pain, pain in the joints of the arms or legs, and headaches (American Chiropractic Association (ACA), 2017).

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Chiropractor: Chiropractors or chiropractic physicians practice a drug-free hands-on approach to healthcare that includes patient examination, diagnosis, and treatment. Chiropractors have broad diagnostic skills and are also trained to recommend therapeutic and rehabilitative exercises as well as provide nutritional, dietary, and lifestyle counseling (ACA, 2017).

Underrepresented Minorities (URMs): African Americans/Blacks, American Indians/Alaska Natives, Asians, Native Hawaiian/Pacific Islander and Hispanics/Latinos who have historically comprised a minority of the U.S. population (NIH, 2016).

Assumptions

The assumptions inherent in this study were that participants in a pre-college science academy are inclined to pursue higher education and may have some knowledge or interest in CAM. The participants at the time of matriculation into the academy were all minors and required parental consent to participate. It is feasible that the participation of the minor student was driven in part or whole by the parent. Another assumption was that participants accurately recalled their experiences and influences. Finally, it was assumed that respondents were honest in their responses to questions and the responses accurately reflected the respondents' beliefs.

Scope and Delimitations

Inclusion/Exclusion Criteria

The purpose of this study was to identify the impact of a science academy at a CAM institution in terms of facilitating careers in CAM. Not included in this study are data from student participants in science-based pipeline programs at non-CAM institutions. Further research into other CAM institutions indicated that this type of program was unique to this university. Thus, participants were selected from one program at one university.

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The study was limited to high school students in a CAM program. The students in the CAM program were selected from Minneapolis and St. Paul and surrounding suburbs in the Twin Cities. Because the participants came from a primarily metropolitan area, the study may not be generalizable to students from rural communities. Further, the study was limited to participants in the science academy who completed a full cycle. Only those students who participated in the academy for the full week were included in this study. It is conceivable that less than full exposure to CAM careers may have had some future impact on students' decision making. Finally, the participant selection was limited to those who responded within two months of solicitation.

Theoretical Framework

SLT and SCCT were selected because the focus of this research was on career decision making, and these theories are well tested. CAM colleges remain predominantly Caucasian, and thus the theory of minority student participation in predominantly white colleges and universities (Gonzalez, 2000) was considered for this study. However the theory of minority student participation in predominantly white college has been used primarily with Chicano students. This theory was not selected for this study because participants in this study hailed from a broader array of ethnicities and cultures.

Research Questions

Several undergraduate programs offer survey courses in CAM and while it would be interesting to identify to what extent participating in a CAM course while pursuing an undergraduate education facilitates interest in CAM, it was not the focus of this study. Another interesting idea would have been to place focus on the extent to which a science academy in a CAM institution improves overall interest of URMs in science and math and other Science,

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Technology, Education, and Math (STEM) careers. The research questions in this study pertain primarily to interest in CAM careers following a pipeline program at a CAM university.

Limitations

The study was limited to participants in a pipeline program at a CAM university. Minor student participation requires parental or guardian consent; consent implies some degree of support and advocacy. Support and advocacy are significant environmental factors that are not consistently available to all URMs. The findings of this study are therefore not generalizable to pipeline programs in other areas or all URMs.

Researcher Bias

The researcher served as the director and developer of the science academy and this may have compromised the responses provided by the students and engendered researcher bias. Further, the researcher is a URM in CAM, and this may have influenced interpretation of the findings because of ethnocultural empathy. The recording of all interviews mitigates in part this bias because this allowed for repeated reviews. The findings were evaluated by a neutral third party, further ensuring that the interpretation of the data was consistent with what was stated by the participants.

Selection Process and Environmental Factors

The selection process was limited by the length of time between when the academy was in effect and the time when the study was conducted. Participants were known to be relatively transient, and as such factors such as changes in contact information (Facebook accounts, address, email accounts, cell phone numbers) influenced the selection process and participation. This study employed additional social media outlets such as LinkedIn as a mode to contact potential participants. An added limitation of this study is that over the course of time,

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participants likely experienced other environmental factors such as other mentors that may have influenced education and/or career choices.

Significance

Pipeline programs are an effective strategy for matriculating URMs into health professions. It is a responsibility of training institutions to facilitate matriculation and timely graduation of providers who can serve their own communities. To the extent that chiropractic and other CAM colleges and universities can increase outreach to diverse communities and engage and enroll URMs, the number of practitioners available to serve in underserved communities increases. Health disparities exist in part because there are not enough URM health care providers serving minority communities. This study seeks to impact this social justice issue by understanding the experiences of URM adolescents participating in a CAM university pipeline program and explaining the factors that facilitate or impede matriculation into a health services university.

Summary

Health disparities continue to exist in the United States. Minorities experience poorer health outcomes and overall lower quality of healthcare. The burden of neck and low back pain is a significant national and global health issue. Chiropractors are primary healthcare practitioners with expertise in conservative nonsurgical management of neck and low back pain. A means of mitigating health disparities for this population is to ensure that underserved communities have access to practitioners in their communities. The chiropractic profession is uniquely positioned to meet this need, except that diversity within the profession does not reflect diversity in the United States, and URMs are significantly underrepresented in chiropractic

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training institutions (Johnson & Green, 2012). Chapter 2 will provide a review of the literature regarding the factors that affect matriculation into allopathic training institutions.

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Chapter 2: Literature Review

Introduction

The demographic makeup of the population in the United States is changing such that current minorities are already the majority in a few states (U.S. Census Bureau, 2012). It is projected that within the next 40 years, current minorities will be the majority across the United States (U.S. Census Bureau, 2012). Health disparities continue to exist in terms of access and utility of health services among minority populations (ODPHP, 2016). Of the options that exist to address health disparities, one involves bridging this gap by increasing the numbers of practitioners who will offer services in minority communities. The educational training of some practitioners of CAM prepares them to function in the role of primary healthcare provider. This suggests that CAM practitioners may be uniquely positioned to bridge the lack of access to a health provider component of the gap in health disparities.

Chiropractors are CAM practitioners whose educational training prepares them to function in the role of primary healthcare provider (Erwin, Korpela, & Jones, 2013). Chiropractors are also specialists in natural/noninvasive care of low back pain and other musculoskeletal ailments. Increasing the numbers of URM chiropractors practicing may help to increase the roles of practitioners available to serve in underserved and minority communities.

As in many other health professions, enrollment of minorities in CAM programs is low (Johnson & Green, 2012). Specific to the chiropractic profession, minority student enrollment in colleges across the United States is less than 10% (Johnson & Green, 2012). Christensen, Kollasch, and Hyland (2010) found that the demographics of doctors of chiropractic in the United States by race breaks down as follows: 0.9% Black, 1% Hispanic, 0.4% Native American, 2.6% Asian, 10.2% other, and 84.9% White. This contrasts sharply with an estimated

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2050 United States population make up of 15% Black, 24% Hispanic, 8% Asian, 51% Caucasian, and 2% American Indian (United States Census Bureau, 2017). With regard to gender, in 2009, the chiropractic profession was comprised of 77.6% males and 22% females (Johnson & Green, 2012).

Moy and Bartman (1995) observed that minority patients were more than four times more likely to receive care from non-white physicians than non-Hispanic white patients. Low income, Medicaid, and uninsured patients were also more likely to receive care from nonwhite physicians (Moy & Bartman, 1995). This suggests that increasing URM practitioners will increase care delivery to minority patients, and supports the value of increasing the number of minority practitioners in CAM professions.

Health disparities exist in terms of access to care, as well as outcomes of care for a myriad of conditions including neck pain, low back pain, and other musculoskeletal conditions (ODPHP, 2014). Pipeline programs have demonstrated efficacy in increasing the rolls of students in allopathic health professions (Andersen et al., 2010; Myers et al., 2012; Perchura, 2001; Winkleby, 2007). The problem is that while it is known that science academy pipeline programs increases matriculation into allopathic universities, it remains unknown whether like programs influence matriculation of minorities into a CAM university.

The main purpose of this study was to gain an increased understanding of a pre-college science academy experience at a CAM university and understand whether the experience increases interest in and motivation for CAM careers. It would also be important to learn more about what factors may facilitate or impede matriculation in a CAM university for minority student participants in a science academy. This chapter will include the literature search strategy,

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theoretical foundation, the literature review related to the key variables, and summary/conclusions from the review.

Literature Search Strategy

The primary databases used were PubMed and CINAHL. Both PubMed and CINAHL included search criteria, which restricted the literature to published between 2007 and 2016. ProQuest was accessed through the Walden University Research Center. CINAHL was accessed through Northwestern Health Sciences University's library database. The search terms used in both databases were the same and included various combinations of the following: *Minority*, *minority enrollment*, *increasing diversity*, *summer science academy, science academy, health career, chiropractic, complementary and alternative medicine, manual therapy, underrepresented, matriculation, health careers, learning theories*, and *theories on learning*.

ProQuest was used to search through dissertations published between 2002 and 2016. The most valuable information was gleaned from using the *terms chiropractic, science academy, complementary and alternative medicine, underrepresented and minority youth.* However, the search strategy was broad and included various combinations of the following terms: *summer science academy, science academy, minorities, underrepresented, matriculation, health careers, manual therapy, complementary and alternative medicine, and chiropractic*. Google, and Google scholar were used to search for articles on SLT, SCT, and SCCT.

The search strategy confirmed that there is a gap in the literature as pertains to complementary and alternative medicine practices, and specifically chiropractic practices. While there are numerous articles on clinical outcomes following CAM therapies, there are few articles about the educational implications and role of diversity in academic institutions that train CAM

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providers. There are also few articles that discuss the impact of a science academy on matriculation into a CAM university.

Theoretical Foundation

This research was based on Bandura's SLT and SCT. Bandura (1971) stated "In the social learning system, new patterns can be learned through direct observation or by copying the behaviors of others" (p. 3). SCCT was developed by Lent, Brown and Hackett (1994), and is grounded in Bandura's SCT. SCCT explores how individuals develop and implement career choices. Lent, Brown and Hackett (1994) identified three pillars of SCCT: self-efficacy, outcomes expectations, and goals. These pillars are used to explain how basic academic and career interests develop, how educational and career choices are made and how individuals achieve success in educational and occupational pursuits. SCCT says that the interaction of these variables with the individual's environment shapes the career trajectory.

Bandura's SCT places emphasis on self-regulation and motivation. Grounded in SLT, SCT suggests that people can learn by observing others and new behaviors can be learned by simple observation. Bandura (1986) suggested that for learning to occur, a person must attentively observe a behavior and subsequently use imagery and language to retain and reproduce the behavior. Motivation to acquire and reproduce a behavior is either facilitated or hindered by positive or negative reinforcers.

A positive reinforcement such as achieving the goal could result in increasing self-efficacy. This self-regulating process occurs in three steps. The first is self-observation where the individual can regularly observe the behavior or behaviors as they occur. The second is self-judgment or self-evaluation and the third is self-response, which is evaluation of the outcomes within the context of goals, which may hinder or facilitate subsequent efforts (Bandura 1989).

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Negative re-enforcement is that the negative behavior is discarded and a positive behavior strengthened when the individual observes punishment or a negative result as a consequence of a negative behavior.

Fundamental to the social cognitive theory is the idea that all aspects of the theory are undergirded by self-efficacy, and as such self-efficacy is the most important component of success. Notwithstanding, self-efficacy can be that of the individual, or a group. An individual's self-perception of success could be intricately related to a group's perception of success.

Components of Self-Efficacy

According to Bandura (1986) and Maddux (2009) there are five components to self-efficacy: Mastery experience - direct experiences in which the individual has attained success. Vicarious experiences - a product of observation. Verbal persuasion - positive affirmation from those held in esteem, emotional health (positive emotions enhance self- efficacy, negative emotions deter), and imaginal experiences – (Imagery) – if it can be visualized, it can be accomplished.

Mastery experiences require exposure and tenacity. Success builds self-efficacy, failure undermines self-efficacy. Vicarious experiences are formed as we observe our role models and others we respect and admire succeed in their endeavors. "If they can – I/we can." Verbal persuasion must be authentic and genuine; however, if we hear from those who have some influence over us including parents, teachers, and coaches that "we can", we are more likely to believe that we can, and that strengthens self-efficacy. Further we are motivated to persist and persevere through troublesome circumstances. Emotions and physiology are motivators in that when we feel up, we also feel empowered, when we feel down or depressed, we are less motivated. Imaginal experiences require that we can see ourselves accomplishing the task.

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Bandura has suggested that "mastery" is the most important determiner of self-efficacy. Self-efficacy (i.e., one's perceived abilities for success in each task) acts as a filter between the person's prior achievement or ability and his/her subsequent behavior (Bandura, 1986).

Self -efficacy and culture. Collectivistic cultures affirm the value of the group over the value of the individual and promote the view that people are best when they are a part of a community. Being a part of a group guarantees protection, community, safety; and a sense of belonging. Group identity is valued over individual identity Oettigen (1995). Individualist cultures focus on the self. An individual's success is valued over the success of the community. In individualistic cultures therefore, the individual looks primarily at their needs, and the needs of the immediate family (Oettigen, 1995).

Self-efficacy from the lens of culture implies that the youth from individualistic societies would build self-efficacy from their individual performance, while individuals from collectivistic cultures would build self-efficacy, on the individuals' achievements but also on the achievements of the group (Oettigen, 1995). Children in individualistic cultures focus their self-appraisal of efficacy on personal performance attainments, and may be more in tune with their emotions. Youth from collectivistic cultures develop self-efficacy because of evaluation of in-group members and may use emotions more strategically. Ultimately, youth from collectivistic cultures may be lower in self-efficacy than those from individualistic cultures (Klassen, 2008; Oettigen, Little, Lindenberger, & Bates, 1994).

If self-efficacy acts as a filter, then it could be postulated that self-efficacy could become a hindrance to success if the cultural value system is collectivistic and does not for example value higher education. O'Neil, Mancini and DeGraff (2016) suggested that what is gained from community connections exceeds that which is gained from the individual connection. Translated

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this implies that the individual with high individual self-efficacy may choose to avoid higher education for example because it goes against the group expectations and the cost of losing the community empowerment is too high.

Self-efficacy in adolescence. The time of adolescence is a time of physical growth and tremendous energy. It is also a time of tremendous change, and a period when self-identity is being formed and shaped. It stands to reason that factors that inform the adolescents' self-efficacy can significantly influence short and long-term goals and aspirations.

How to optimize the physical and psychosocial changes and channel the high energy away from risky behaviors and along the path of high motivation is the subject of much study. One approach is experiential learning, which involves adventure, and is known to have favorable impact on the adolescent's growth and development (Tsang, Hui & Law, 2012). Another is youth physical activity, which is also shown to enhance self-efficacy (Voskuil & Robbins, 2015).

Self-efficacy and process. The ability to function effectively is dependent on factors such as time management. Self-efficacy alone does not uniquely qualify the individual for success in career aspiration, choice and execution; and it is possible that there are circumstances when a person's self-efficacy is not matched with their capabilities, resources or competence. For self-efficacy to conclude as performance, there is a process. This process includes behavioral and cognitive factors such as goal selection, motivational factors such as clarity, and affective factors such as arousal threshold (Tsang, Hui & Law, 2012). Individuals with high self-efficacy are more proactive in selecting and creating physical and social environments that match their perceived capabilities and resources (Tsang, Hui & Law, 2012).

Hughes, Galbraith, and White (2011) determined that self-efficacy and competence are not independent and that individuals with the best chance for success are those with high self-

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efficacy and high competence (Figure 3). However, self-efficacy is not static (Bandura, 1994) and is constantly informed, energized, or depleted as individuals interpret former and current experiences. Therefore, tenacity and perseverance through hardship (sports activity, family circumstances, sociocultural factors, discrimination, and poverty) that results in some success can serve to reinforce/energize self-efficacy.

Self-efficacy and modeling. Stone, Levett-Jones, Harris, and Sinclair (2010) demonstrated that because of motivation by peers and other professionals, nurse's self-efficacy for writing research improved. Modeling resulted in increased motivation, confidence and capacity for research and writing scholarly articles. Perry (2009) further confirmed that modeling and affirmation supports and enhances excellence in clinical nursing practice.

These studies suggest that modeling enhances performance. To the extent that an individual is interested and motivated for a profession, modeling can make them better at what they do. What these studies do not address is if observation of success in another individual is sufficient to create interest or motivate for a specific career choice.

Oliver (1993) demonstrated that in a population of youth ages 6 – 11, observation resulted in learning, which resulted in changed behavior. Oliver also noted that SLT could be used to determine outcomes, and observed that absent immediate application, learning does occur by observation (Oliver, 1993). This affirms Banduras premise that observation provides a guide for action (Bandura, 1977)

Self-efficacy is the foundation for choice, effort and persistence; and as goals are attained, self-efficacy increases (Bandura, 1986). Self-efficacy is defined by Redmond (2010) as the belief that one can accomplish a task. As it pertains to career choices, Hackett and Lent, (1992) suggest that self-efficacy is predictive of career choice and performance. As it pertains to

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health professions careers, self-efficacy is associated with increased interest levels for rural medicine and rural medical career intent (Isaac, Walters, & McLachlan, 2015), and increased interest for psychology careers (Bocanegra, Gubi, & Cappaert, 2016),

SCCT

Lent, Brown, and Hackett (1994) developed the SCCT out of the SCT to elucidate the impact of societal roles, culture, gender, genetics, life experiences and other environmental factors on career choices. SCCT addresses the triad of self-efficacy, personal goals and outcome expectations and their impact on career choice. As individuals mature from childhood into adolescence and adulthood, they become increasingly cognizant of the factors that incentivize and deter personal success. This process occurs based on personal accomplishments, societal and cultural norms, the internal environment (i.e. how the individual feels emotionally and physiologically because of an action, interaction, or accomplishment) and direct and indirect observation of others. This dynamic process enhances self-efficacy, and heavily influences career choices.

Success is experienced if the individual perceives personal success and valuable remuneration from the effort. Fewer barriers facilitate an increase in interest in the career, significant barriers decrease interest. Fundamental to the SCCT is that outcomes are governed by both internal factors (self-efficacy) and external factors (exposure, and environmental facilitators and barriers).

Byars-Winston and Fouad (2008) and Ewers (2014) affirmed that the process of developing a career aspiration involves exposure in the form of role models and schooling; and environmental factors such as peers and family. Within the context of career aspirations, Ewers (2014) and Lent et al. (1994) elucidated the importance of the mentoring experiences in increasing career aspirations. This according to Ewers (2014) is especially important for

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students from underserved and minority communities, as they may lack the necessary exposure to role models within a profession (Ewers, 2014).

The quality of the mentor and the quality of the mentorship experience is positively linked to desired outcomes. These include high self-efficacy, higher expectations and significant impacts on the career pathway. Integrated into the most successful mentor models is skill building, and professional development activities. However, the mentor qualities with the most significant results for increasing self-efficacy and placing students on the career path included a clear demonstration of interest, being available, providing constructive feedback, and offering advice and guidance. Mentors are critical to shaping students' awareness of opportunities (Blanchard et al., 2015).

Glatz and Buchanan (2015) suggested that parental self-efficacy declines during the child's adolescent years. As such soliciting mentors outside of the natural boundaries of the home are important components in building self –efficacy and career pathways. College students have been identified as a valuable resource, however within the context of the populous for this study, the mentors were often from different socioeconomic, cultural and ethnic backgrounds than their mentees. Training and opportunities for discussion and reflection on diversity are therefore critical (Ghee et al., 2016).

Self-efficacy and early work experiences are important factors in career planning of high school students (Creed, Patton, & Prideaux, (2007), in increased career interest to work in underserved and rural communities (Isaac, Walters, & McLachlan, 2015) and in long term adolescent career planning and exploration (Rogers & Creed, 2011). Garriot, Flores and Martens (2013) concur that self-efficacy is an important factor in career planning, however they suggest that early work experiences and exposure do not mediate for barriers such as social class

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differences. Proximal contextual support in and of itself has less influence on career choices than level of interest. Level of interest, (which may inform early work and co-curricular experiences), may according to Garriot, Flores and Martens (2013) mediate for social class differences, in a way that proximal contextual support does not.

Banduras SCT suggests that an individual's behavior and behavioral outcomes are learned by observing others (Bandura, 1986). As it applies to this research, the theory implies that as students observe and learn from motivated and successful CAM professionals and students, their interest in CAM careers increases. If the students' interest in CAM careers increases, an observation should be that the students will consider, and potentially matriculate into a CAM university. Within this context, Lent, Brown, and Hackett's, SCCT facilitates understanding of other factors that may impact a student's decision to attend a CAM university (Lent, Brown, & Hackett, 1994).

Prior researchers have tested these theories on minority students in environments such as an agricultural science camp (Ortega, 2012) and middle school (Hiller, 2012). Both researchers observed increased motivation for selected careers because of observation and mentorship. However, while Ortega (2012) noted that hands on learning and modeling increased motivation for careers in agricultural science and other STEM professions; both Hiller (2012) and Ortega (2012) found that absent self-efficacy, and inherent interest in the subject, and acquiring content knowledge there were limits to career participation.

Key Variables

CAM and Health Disparities

According to the CDC (2016), more than 25% of US adults reported having 2 or more chronic conditions. People with multiple chronic conditions have a high prevalence of CAM use

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(CDC, 2016). Chronic conditions disparately affect minorities and those in underserved communities (ODPHP, 2016), and are a significant contributor to the health disparities observed in the United States (CDC, 2016).

Of the many options that exist to address health disparities, one is cost savings, another is bridging the gap by increasing the number of practitioners who will offer services in minority communities, and a third is ensuring that those in rural communities have access. Herman, Poindexter, Witt, and Eisenberg (2012) noted cost savings in the use of some CAM therapies for conditions such as breech presentation in pregnancy, neck pain, low back pain, and hip fractures in nursing home residents. Other researchers have noted a prevalence of CAM utilization by people living in rural communities (Shippee, Schafer, & Ferraro, 2012) and African Americans who have experienced discrimination in mainstream medicine (Wardle, Lui, & Adams, 2012).

Low Back Pain and Health Disparities

Health disparities continue to exist in access and utility of health services among minority, rural and historically underserved populations (ODPHP, 2016). Specific to low back pain, disparities exist in the incidence of low back pain (Knox, Orchowski, & Owens, 2012), patient satisfaction (Chibnall & Tait, 2005), geography (Trask, McCrosky, & Lawson, 2014), and occupation (Knox et al., 2012). African Americans and Hispanics in the military have higher incidences of low back pain than Caucasians and Asians (Knox et al., 2012). Co-morbidities such as obesity disproportionately affect minority populations (ODPHP, 2016), and concurrently increase the risk of low back pain (Shiri et al., 2010). Canadians living in rural communities and Aboriginals are disproportionately afflicted with low back pain (Bath, Trask, McCrosky, & Lawson, 2014), and individuals over the age of 65 with lower education who are female and African American experience worse disability and worse pain (Javik et al., 2014).

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Low Back Pain as a Public Health Issue

Low back pain is a global public health burden. According to Hoy et al. (2014), low back pain causes more global disability than any other condition. Low back pain affects all demographics, including children, adults, and the elderly (Bener, Dafeeah, & Alnaqbi, 2014; Roy, Shaw, & Beattie, 2014). The burden of low back pain is expected to increase as the geriatric population increases (Hoy, 2014).

Managing Low Back Pain with CAM

Approaches to health care that do not use medicine as a primary source of prevention are gaining in popularity (National Center for Complementary and Alternative Medicine (NCCAM), 2007). According to NCCAM (2007), 38 percent of adults report using Complementary and Alternative Medicine (CAM) practices. CAM practices are used to treat conditions such as neck pain, back pain, general musculoskeletal injuries, asthma, respiratory, and cardiovascular problems (NCCAM); however low back pain remains the most common condition for which individuals seek help from CAM practitioners particularly chiropractors (Schneider, Murphy, & Hartvigsen, 2016). Furthermore, research suggests that spinal manipulation significantly reduces pain sensitivity (Bialosky et al., 2014) thereby limiting the need for narcotics and other addictive drugs.

Perception of CAM Modalities in Minority Adolescents and Youth

To understand motivation for a CAM career amongst minority populations, it is important to understand perceptions of CAM professions among adolescents from minority and underserved populations. CAM usage is a form of exposure. Exposure/familiarity enhances the likelihood that the profession will be considered when choosing a career.

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According to Barnes, Bloom, and Nahin (2008), CAM use in children and adolescents is increasing. Sixteen percent of adolescents aged 12 – 17 use CAM modalities, including 13% of White children, 8% of Hispanic children, and 6% of Black children. Children whose parents had higher education levels, children whose parents used CAM, children with multiple health conditions, and children whose families delayed conventional care because of cost were the highest uses of CAM modalities (Barnes, Bloom, & Nahin, 2008). Further, the two most common therapies used by children and adolescents are natural products, and chiropractic and osteopathic medicine (Barnes et al., 2008).

Positive attitudes towards CAM usage are most prominent in females and are typically because of prior usage (Murthy, Sibbritt, & Adams, 2015). The ability of the practitioner to develop therapeutic relationships with the adolescent and possess relatable traits enhanced CAM utility (Patterson & Arthur, 2008). Among minorities, prior usage of CAM, or therapies that conform to cultural norms align with positive perception of CAM (Hernandez-Reif et al., 2015; Patterson & Arthur, 2008; Robinson & Lorenc, 2011; Steinsbekk et al., 2011; Zhang, 2011).

Enrollment in Chiropractic Colleges and the Problem of Access

Specific to the chiropractic profession, there are 17 chiropractic-training universities in the United States (Johnson & Green, 2012). Minority student enrollment in chiropractic colleges across the United States is less than 10% (Johnson & Green, 2012). This is in sharp contrast to the demographic makeup of the population in the United States, which is changing such that current minorities are already the majority in a few states (U.S. Census Bureau, 2014) and projected to be the majority in all states by 2043 (U.S. Census Bureau).

Prior research demonstrates that minority students who graduate from chiropractic colleges overwhelmingly practice in minority communities (Wiese, 2003). Increasing the pool of

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minority students in health care training institutions has implications for addressing health disparities (ODPHP, 2016). Increasing the pool of minority students in chiropractic has additional implications for addressing the national and global burden of low back pain.

Facilitators to Matriculation of URMs into Health Colleges/Universities

Prior researchers have attempted to understand and codify the factors that impact matriculation and retention of minority students in health professions programs. Among the practices identified as important are reaching minority students at the high school and middle school level (Beacham, Askew, & William, 2009; Henderson, Williams, & Crowshoe, 2015; Holden, Berger, Zingarelli, & Siegel, 2015) developing a comprehensive pipeline (Curtis, Wikaire, Stokes, & Reid, 2009; Winkleby, Ned, & Crump, 2015), and enhancing math and science skills while still enrolled in high school (Noone, Carmichael, & Chiba, 2009).

Pipeline programs. Pipeline programs such as a pre-college science academy have proven efficacy for matriculating minorities into academic programs that train the health care workforce (Perchura, 2001; Winkleby, 2007). Pre-college science academies have proven successful for minority student matriculation into health professions such as pharmacy (Godin et al., 2015; Myers, DeHart, Dunn, & Gardner, 2012), medicine, (Henderson, Williams, & Crowshoe, 2015; Larson, 2011; Winkleby, 2007), agricultural sciences (Ortega, 2011) and dentistry (Andersen et al., 2010).

To the extent that these programs are successful, what they have in common is exposure to the identified profession. Weaknesses of several of the programs lie in what constitutes success. With disparate definitions, success in some was defined as increased interest or aptitude for the professions, for others as matriculation into the college, and for some completion of the program. Few of the programs set clear benchmarks for numbers or percent of students who

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would matriculate into or graduate from the health professions program. To the extent that there is success in attaining the goal of matriculation, key tenets of pipeline programs that train for the health care workforce include credit accumulation, parental support, the length of the program (Foster & Savala, 2012) and social capital (Palmer & Maramba, 2015).

Social capital. Social capital defined as social relations that have productive benefits may be attained through multiple venues including parental support, peer mentoring, and community surrogates. Programs such as upward bound and educational talent search which focus on helping students learn more about college are, according to Palmer and Maramba (2015), just as significant as focused pre-college programs such as a science academy. Most significantly, the programs that facilitate matriculation and success in college are those that teach students how to access and succeed in college (Palmer & Maramba, 2015).

Within the context of social capital, one must also include factors such as family and community attitudes toward college. Family expectations according to Dyce, Albold, and Long (2013) are clearly woven with self-efficacy. The level of confidence that parents and the larger community in which the student is engaged have that higher education has benefits in uplifting the individual or the community is a concurrent and significant factor in matriculation. Specific to URMs these are key constructs as parental support or lack thereof can serve as the determining factor for college matriculation and graduation (Stout, 2015). Worth noting, is that parental self-efficacy tends to decrease during the adolescent years (James, 2008; Van Campen & Romero, 2012). These determinants can however, according to Palmer and Maramba (2015), be mitigated by surrogates (other relatives, peers, mentors, community advocates, and tutors) and preparatory institutions with the right organizational culture.

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Organizational culture. In his examination of charter schools that successfully matriculated URMs into college, King (2008) found some key tenets. These organizational cultures teach effort as a path to success, create safe spaces such that physical and emotional safety is expected, set and support high expectations, model trust, challenge and inspire. This supports the notion that there are individual, community, and systems targets that enhance self-efficacy, and facilitate success as defined by matriculation into a higher education institution. Specific to health professions, the components of colleges and universities that facilitate URM enrollment include student diversity organizations, minority programs, and financial support (Harris, Lewis & Calloway, 2012). Faculty role models, program reputation and location add value; however, these factors apply to all students, not just the URMs (Harris et al, 2012).

Barriers to Matriculation of URMs into Health Colleges/Universities

There exist individual, community, and systems deterrents to matriculation of URMs into higher education. It is unclear whether any of these are the primary factors. What is clear is that the systems are interrelated.

Individual Constraints

At the individual level, self-efficacy, competency, and financial burdens are key constraints. The length of time required to complete the education, lack of support from family members and peers, and absence of role models are added constraints (Gold, 2010; Stout, 2015). Somewhat unique to the URM are factors that evolve around culture and historical bias. The sense that some careers are not welcoming of certain groups or that certain professions are the sole auspice of a specific gender or race, can serve as a deterrent (Harris, Lewis & Calloway, 2012; Tucker, 2015; Washington, 2013). Perception of one's own ability may further be influenced by results on standardized aptitude tests and personal struggles with course content

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(Figueroa, 2014).

Socioeconomic status remains the most significant barrier to education and it is a factor that persists even when higher education degrees are obtained (Crawford & Erve, 2015). Compounding the barriers is the fact that earnings of college graduates from higher socioeconomic backgrounds significantly exceeds those of individuals who have attained comparable degrees but come from lower socioeconomic backgrounds (Crawford & Erve, 2015; Gonzalez et al., 2010). Within the context of self-efficacy, this is an added constraint.

Community Constraints

At the community level, subpar high schools result in lower competency of the student particularly in the sciences and math (Atuahene & Russell, 2016). Institutional policies that rely heavily on quantitative assessments such as GPA and standardized tests such as the MCAT are known to disproportionately adversely impact URMs (Harris, Lewis, & Calloway, 2012). As these tend to make up a significant component of institutions in the health sciences, one could surmise that the playing field per se is not level. Compounding these are factors that are known to deter matriculation, such as the lack of student diversity and absence of minority engagement programs at health professions colleges (Harris et al. 2012; Lisk, 2003; Tucker, 2015).

A critical mass of minority students on a university/college campus serves several purposes. These include facilitating a sense of belonging and enhancing cultural competency across all facets of the university. Increasing cultural competency at all levels enhances the student/practitioners' ability to provide culturally sensitive health care (Gabard, 2007). Therefore, the lack of diversity on the campus, not only impacts the URM, but also students in the majority. Translated this means that absent a culturally competent health services workforce,

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culturally sensitive health care is compromised, ultimately resulting in minority populations receiving less than optimal health care services, and propagating health disparities.

Systems Constraints

Reductions in education funding and escalating tuition costs are systems level constraints that continue to pose undue stresses on the URM (Figueroa, 2014; Harris, Lewis, & Calloway, 2012; Loftus & Duty, 2010). Unfortunately, efforts to decrease this burden by allocating specific funds to institutions to support minority enrollment or utilizing affirmative action measures to increase the number of URMs often encounter backlash to what are deemed as special accommodations for the URM. These take the form of anti-affirmative action law suits or funding restrictions (Nagatsuka, 2008). There remains contention over the reasons behind, and solution to, the reality or perception of the unique challenges encountered by the URM; and the ongoing back and forth of funding and legal issues is an added challenge to even the most progressive institutions.

Summary of Facilitators and Barriers to Matriculation of URMs into Health College/Universities

The research on the issue of college matriculation is abundant and complex. As it pertains to increasing diversity at college campuses, some researchers suggest the need to consider more qualitative approaches in admissions criteria such as demonstrable ability to overcome adversity (Harris et al., 2012). Others advocate for additional funding to health services universities, and some advocate for specific K-12 programs to target this discrepancy (Pretlow & Wathington, 2014; Simms, 2010). Still others like Setari and Setari (2016) have proposed that the solution has less to do with individual and community factors, and more to do with systems factors such as a nationwide recession. Setari and Setari (2016) found that minority

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enrollment in higher education increased during the recession as job prospects decreased. Clark (2014) described the individual's upbringing and self-efficacy as playing the most significant role in academic success and described summer bridge programs as having value if they affirm what is being learned at home. Mentorship, and specifically the type of mentorship is critical. The mentor model according to Clark should exclude remediation, and focus instead on mentor interaction, and acknowledgement of success at the individual level. Hodge (2014) affirms the value of mentoring, particularly with African American males but suggests that self-determination and locus of control are primary. Chandler-Melton (2016) affirms Clark's findings that family background and self-efficacy, as well as teacher and peer influence are all critical components; and Sims (2010) supports Setari and Setari (2016) by confirming that earning college credit in high school increases graduation rates in college

Funding matters are complex. Increased funding would normally imply better programs, and more outreach to support the URM student. However, although the premise has been proven correct in some colleges and universities, the converse is the case in others. For example, state sponsored universities according to Jaquette and Curs (2015) reacted to cuts in funding by increasing out of state enrollment. Consequently, those who can afford to pay more (typically not the URM) gain access while those who cannot, do not. Further, as demonstrated by Hillman, Tandberg, and Gross (2014), in states where students were given vouchers to help to mitigate the cost of college, URM enrollment declined. Confounding factors included a national recession. As previously noted, according to Setari and Setari (2016), higher education enrollments increased during the recession as jobs declined. Ultimately, there is no disagreement that a discrepancy exists. Where there is disagreement is in what causes the discrepancy, and how to resolve this challenge.

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Facilitators and Barriers of URM matriculation into CAM Universities and Colleges

Due to the lack of research on the topic of facilitators and barriers of URM matriculation to CAM universities and colleges, I relied heavily on trade journals. Specific to the complementary and alternative medicine professions, I could uncover two studies that addressed the impact of a precollege experience such as science academy on college matriculation (Crawford & Erve, 2015; Evans, 2006). These studies however pertained to osteopathic schools. Osteopathy, historically considered an alternative or complementary profession, has in recent years been considered mainstream, and is increasingly placed under the umbrella of conventional medicine. Facilitators and barriers are consistent with findings from allopathic health professions institutions.

Individual Factors

Facilitators to matriculation in a CAM university that appear unique to CAM professions include provider autonomy, synergy with one's own expressed health beliefs and the health beliefs expounded by the profession; and personal experience with the profession (Wiese, 2003). In many cases students who chose CAM careers have themselves had a personal experience with the profession that affirmed the value of the modalities within the health care context (Wiese, 2003). The premise of individual and community uplift and the desire to give back to the community are added motivators and concepts confirmed by Gabard (2007), Grumbach and Mendoza (2008), and Harris, Lewis, and Calloway (2012). Parental self-efficacy and career aspirations may however confound this premise, as parents of URMs may steer their children away from CAM choices due to the perception that these may prove to be added barriers to upward mobility within the context of other held beliefs such as attaining the full status ascribed to for example, a medical doctor (Barfield et al., 2011).

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An interesting observation is that some URMs who have a distrust of conventional medicine due to historical events, such as the Tuskegee syphilis study are more likely to choose CAM professions (Wardle, Frawley, Steel, & Sullivan, 2016). Complementary and Alternative Medicine (CAM) practices may not carry the baggage of distrust left over from these historical events. In addition, there exists the premise that these are minority professions within mainstream medicine and as such there may be a different level of understanding and empathy for the minority student (Wiese, 2003).

This, according to Wiese (2003), is an incorrect assumption. The findings suggest that regardless of the status of the profession as an outlier or mainstream practice; challenges that pertain to support, acceptance, and racism persist (Wiese, 2003). Minority practitioners training in minority professions institutions find according to Wiese that the struggles are perhaps compounded due in part to some of the constraints that burden minority (and mostly private) institutions. In fact, to be an URM within a minority profession may place undue additional burdens on the student practitioner (Smith, 2002).

Findings from studies conducted on various CAM professions reveal that most CAM providers are in private/solo practice (Ang & Wilkinson, 2013; Längler & Zuzak, 2013). The reasons provided for solo practice include that solo practice provides opportunity to practice on their own terms. Solo practice allows the provider to practice without the added burden of implicit bias and overt racism that may be encountered in a larger network such as a hospital setting. Lack of opportunities to practice in larger networks and systems and lack of information about what other practice models exist are compounding factors (National Board of Chiropractic Examiners (NBCE), 2015; Wiese, 2003).

Community Factors

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The conundrum of the minority institution is a topic of interest because CAM institutions also struggle with the additional challenges of recognition, acceptance, and identity, which manifests in practical terms around costs. Minority institutions or minority programs within larger universities struggle with factors such as endowments, alumni support, competing priorities, and other funding issues. The ability to parse off scholarships for URMs is complicated by factors such as the overall student debt load, and the push back from majority students who are themselves concerned about the ability to pay back student debt. Ultimately this translates to fewer resources available to support URMs, diversity initiatives and other minority programs.

Systems Factors

Federal and state laws. There is a lack of consistency on the scope of chiropractic practice. Federal and state laws dictate the scope of chiropractic practice and these vary from state to state (Chang, 2014). Most states permit chiropractors to practice as primary health care practitioners (Chang, 2014; NBCE), 2015); this includes performing physical therapy procedures and dispensing nutraceuticals. A handful of states also permit chiropractors to perform minor surgery, phlebotomy, and dispense pharmaceuticals (Chang, 2014; NBCE, 2015). All states permit the chiropractor to perform spinal manipulation to treat back pain (Chang 2014; NBCE, 2015).

Insurance. Insurance carriers are signing on to provide CAM services. However, much of the research suggests that CAM utility remains in the realms of upper socioeconomic classes and Caucasians (Whedon & Song, 2012). Individuals with dispensable income are more likely to, in addition to their health care premiums, pay out of pocket for CAM health care services (Whedon & Song, 2012). Further in government sponsored programs such as Medicare, which

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caters to the elderly, utility of Chiropractic care, a Medicare funded CAM therapy is primarily male and Caucasian (Whedon & Song, 2012).

Perception of CAM among allopathic physicians. Perception of CAM while changing significantly within the public realm remains a challenge as many health care professionals do not fully understand the models of CAM usage, and CAM modalities do not fit nicely into the established protocols for research. Much of the research in health care efficacy is centered on randomized clinical trials, where one modality is compared to a placebo. Within the CAM realm this poses challenges as these mostly hands on techniques do not lend themselves neatly to a control group. The mere act of placing hands on the hurting is a therapy in and of itself. While many researchers have documented changing views among allopathic providers with regards to CAM, (Emmerton, Fejzic, & Tett, 2012; Murthy et al., 2015; Nate, Griffin, Christianson, & Dusek, 2015; Steel et. al, 2014); lack of understanding persists and hampers referrals between and within conventional and complementary health professions (Emmerton, Fejzic, & Tett, 2012; Murthy, Sibbritt & Adams, 2015; Nate, Griffin, Christianson, & Dusek, 2015; Steel et. al, 2014). This translates into inconsistencies with patient referral patterns. In a program such as Medicare, which relies on medical referral or co-management with CAM providers, this translates to fewer referrals, and access to CAM practices favoring those who can afford to pay out of pocket (Whedon & Song, 2012).

CAM beliefs among URMs. The paradox is that the health care practices of many indigenous peoples (who are also often the URM) is consistent with many CAM practice beliefs of holistic health. One example would be the synergy between and within environmental health, and the innate capacity of the human body for self-healing (Zhang, 2011). The lack of trust in health systems that stems from abuses within the system such as in the Tuskegee syphilis study

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has served to draw some minority populations to complementary and alternative medicine practitioners, while simultaneously cause others to view with suspicion these formerly non-mainstream practitioners (Zhang, 2011).

Medicare and chiropractic utility. Within government systems such as Medicare, very few minorities use chiropractic services. Ninety six percent of chiropractic users are White with just 1- 2% being Black and other races comprising less than 1% (Whedon & Song, 2012). This contrasts with the findings from George (2014) which indicated that among minority populations in the United States, there is an increased interest in and desire to use CAM practices (George, 2014). The reason for this discrepancy is yet unknown but postulated to hinge on factors such as access, bias, and distrust.

Bias and distrust Chapman, Kaatz, and Carnes, (2013) and Oliver, Wells, Joy-gaba, Hawkins, and Nosek (2014) determined that all else being equal, conventional providers are less likely to refer minority patients for additional services. In addition, if minority patients are because of distrust, self-selecting out of conventional care, and their ability to utilize a CAM practitioner requires referral from conventional practitioners, the ability of minorities to access CAM practitioners and use systems level insurance sources such as Medicare is limited. Bias and distrust thereby impact access and utility on multiple levels.

Chiropractic utility in the United States/Medicare. The utility of chiropractic care varies across the country with highest utility amongst Medicare participants is in the northwest and lowest in the southeast (Whedon & Song, 2012). Of note is that the areas of highest utility are the areas with the broadest scope of chiropractic practice (Chang, 2016). Also of interest is that the state with the highest utility of chiropractic practice among Blacks is Iowa (Whedon & Song, 2012). The first documented chiropractic adjustment was performed in Iowa, and was said

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to restore hearing to an African American man (Palmer, 1910).

Summary of causes for disparities in chiropractic utility amongst URMs

Insufficient outreach to minority communities, lack of racial diversity within the profession, discrimination by chiropractors, and lack of cultural competency among chiropractors have all been suggested as some of the additional reasons for the disparities in chiropractic utility among minorities (Whedon & Song, 2012). There exists however almost universal agreement that there is a need to buttress the capacity of the CAM presence in minority communities. As is well documented, minority populations are growing and health disparities disproportionately affect minority populations suggesting that unless something is done, health disparities will continue to grow.

Summer Science Academy Pipeline Program

The summer science academy was formed to encourage and motivate minority, low-income, and at-risk youth to go to college (NWHSU, 2008). The science academy was a four-year (week long program). Students were permitted to participate from the summer preceding 9th grade through the summer preceding 12th grade; and return each year for up to four years. Students learned about the academy through word of mouth, minority organizations, recommendations from middle and high school principals, science and math teachers, siblings, friends, and their places of worship.

The summer science academy was based on the premise that if human science and basic science courses are presented in an experiential and didactic manner, youth will engage and learn (Allan, 2014; Greene, Lee, Constance, & Hynes, 2013; Wright, 2008). As a consequence, motivation levels to pursue further education could increase. Science academy students were

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actively mentored for enhancing their likelihood of attending college. The university's graduate students working as peer mentors served as role models for younger students.

It was postulated that confidence building for students during the week of the science academy would occur in large part through success in learning experiences and positive interactions with faculty, mentors, local celebrities and the other students. In addition, it was surmised that confidence building would occur, as students were encouraged to become leaders and active participants in their high school science and math programs by sharing information they learned with their classmates. Specific components of the academy that were posited to enhance college matriculation included faculty engagement, mentor support and a positive learning environment. Deficiencies in the academy structure that might influence college matriculation included parental support, access to other health professions and the length of the program.

Conclusion

A gap in the current literature exists on the nature and impact of current recruitment and retention efforts in swelling the roles of minority and underrepresented students in CAM. This research will attempt to fill a portion of that gap by identifying to what extent a pre- college summer science academy experience, at a CAM university, motivated students for careers in CAM. As researchers seek to understand what factors facilitate and impede matriculation into a CAM university, we grow the body of knowledge that could ultimately result in increasing the numbers of minority practitioners who can provide care in minority communities; ultimately relieving the burden of health disparities, and increasing health and wellness for all.

Specifically as it pertains to the global burden of low back pain, chiropractors are uniquely positioned to impact this health care challenge. Minority enrollment in chiropractic

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colleges is not on par with growth of minority populations in the United States. Allopathic health professions have found pipeline programs such as a science academy to be of value in increasing minority representation at health professions universities. This research attempts to elucidate the effect of a science academy pipeline program on matriculation rates of minorities in CAM and Pre-CAM programs and identify facilitators and impediments to matriculation. The methodology used in the research is discussed in detail in Chapter 3.

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Chapter 3: Research Method

Introduction

The purpose of this qualitative study was to explore the factors that facilitate or impede matriculation in a CAM university for URM student participants in a CAM based science academy pipeline program, and describe the influence that pipeline programs can have on the career choices made by URM students. The URM experience as it pertains to a CAM university was investigated through a phenomenological approach using case study and comparison data. The implications for positive social change include enhancing URM matriculation in CAM universities as a mechanism for fulfilling the need for more healthcare providers serving minority and other underserved populations.

A review of the current literature indicated that there is much evidence detailing the role of pipeline programs in matriculating URMs into allopathic health professions. There is a significant relationship between mentoring and experiential programs. The current literature fails to describe the role of pipeline programs for matriculation of URMs into non-allopathic medical professions.

In this chapter, I include an overview of the study design and rationale and within this context describe the theoretical assumptions. The subsequent sections cover data collection, ethics and validity, and a discussion on the role of the study participants, my dual role as both the researcher and the director of the science academy, and issues of validity. Finally, I conclude this chapter with the process of data analysis.

Research Design and Rationale

Quantitative research relies on large sample sizes and random sampling (Creswell, 2013). Quantitative research therefore minimizes bias through the selection process by controlling for

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confounders (Creswell, 2013; Patton, 2002). Quantitative research was not appropriate for this study because the sample size of science academy participants is small and limited by access. While enrolled in the academy, the students were mostly minors living with parents or guardians. The students experienced a high level of student mobility from unstable housing that posed an ongoing challenge in locating the students from year to year. These students, now adults, have moved on in their lives. Because of the additional factors such as willingness to participate, and ability to recall, quantitative research was not selected.

Qualitative research involves purposeful sampling or criterion based sampling to gain an in-depth understanding of the identified phenomenon (Creswell, 2013). Patton (2015) described qualitative inquiry as serving multiple functions, which include "illuminating meanings, studying how things work, capturing stories to understand peoples' perspectives and experiences, elucidating how systems function and their consequences for peoples' lives, understanding context, identifying unanticipated consequences, and comparing cases to discover patterns and themes" (p. 13).

As it pertains to this research, a qualitative approach using both in-depth case study and comparison of cases was the selected method. A case study using a phenomenological approach was used to help understand student experiences and perspectives; a case comparison was used to compare the differences and similarities between students who pursued higher education, particularly CAM/healthcare careers, and those who did not. The FIPHE questionnaire was used to identify the students who were asked to participate in one-to-one interviews and focus groups.

The following research questions guided this study:

RQ1: What are the factors that facilitate or impede matriculation for URM student participants in a CAM based science academy?

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RQ2: How do participants in a pipeline program at a CAM university make career decisions?

RQ3: How do CAM pipeline programs influence students regarding careers in CAM?

Role of the Researcher

I conceived the Summer Science Academy in response to my observations that minorities remained underrepresented in CAM careers. I served as the director and curriculum coordinator for the academy for several years, and was a member of the selection team that decided what students would attend the academy. On occasion, I taught a class offered by the academy. I am also a URM in a CAM profession.

In my role as observer for this research study, there is capacity both for bias and for enhanced understanding. Mauthner and Doucet (2003) implied that a researcher's choice for research study is based on assumptions, and these assumptions should be recognized and named. Researchers choose what they want to research based on certain assumptions. Thus, personal reflection, transparency, and accountability are integral components of all research, especially qualitative research.

As someone who knew many of the students, I had my own preconceived ideas regarding those who would likely pursue higher education and those who would or could thrive in CAM careers. These assumptions were based on my personal biases, the cultural lens through which I viewed the students, and what I knew of their participation in the classroom, their home environment, and their past educational achievements. Further, as I myself am a URM in a CAM profession, my life experiences could influence my perceptions of the facilitators and impediments to a CAM profession for URMs.

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A "qualitative interview is a project of making meaning" (Bondi, 2013, p. 9). Qualitative research requires the researcher to ponder and reflect on the data collected so as to find the meaning in the data (Hunter et al, 2002). It therefore stands to reason that in making meaning, authenticity and trust are critical factors. Prior researchers have described the distrust with which many minorities (particularly African Americans) view the health environment and particularly research practice. Kennedy, Mathis and Woods (2007) suggested that the distrust was caused by the previous experiences of African Americans with the health care system. Schim, Vallerand, Hasenau, and Robinson, (2014) concluded that lack of cultural familiarity is a contributor to distrust of the health environment and Shoff and Yang, (2012) suggest that the distrust was caused by lack of health access and housing instability.

Racial empathy has benefits in research; within the context of minority or marginalized communities, Schim, Vallerand, Hasenau and Robinson, (2014) have intimated that when research participants and patients are familiar with the researcher trust of health systems and processes may be enhanced. Further George, Duran and Norris (2014) have suggested that racial empathy enables culturally sensitive dialogue. I therefore postulate that my role as former director and a URM could potentially enhance trust because the research participants know me and those who are also URMs may perceive a level of mutual understanding.

Westmoreland (2001) suggested that leveling the power dynamic between researcher and research subject is an important component of qualitative research because it enables authentic conversations between researchers and research subjects. Thus, to enhance participant comfort in telling their story, mitigate for bias, and improve internal validity, the following strategies were implemented. All interviews were audio-taped and direct quotes used when appropriate. Participants were provided with multiple opportunities to refuse to participate. Authenticity and

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frankness were introduced at the onset as the primary goals of the interview. An iterative questioning approach was taken through rephrasing of the questions. A semi-structured/unstructured interview style was used. Efforts to level the power dynamic included introducing myself on a first name basis. Participants were invited to review the results and the summaries of their in-depth interviews. A case comparison supplement was included as a component of the research design. The case study was designed using a phenomenological approach. Non-participating peers were invited to review the data, and the data from the FIPHE was triangulated with the case study and case comparison data.

Methodology

Sampling Strategy and Participant Selection

In selecting the participants for the study, I considered a variety of sampling strategies including convenience sampling, and purposeful sampling. The rationale for considering convenience sampling centered on initial concerns about the ability to locate the former science academy students. However, convenience sampling was not an acceptable strategy for this research because while enabling ease of access, it is subject to sampling error, and selection bias, has low credibility and minimal generalizability (Creswell, 2013).

Purposeful sampling according to Patton (2015) enables optimization of resources by placing the spotlight on an individual or individuals who can provide in depth information that is germane to the topic (Patton, 2015). Within the context of this study; and acknowledging that the study participants historically have a history of high student mobility, participant selection criteria included availability and accessibility. In addition to locating students, added criteria included interest in participating in the study, ability to complete the screening questionnaire,

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willingness to reflect on their experiences during and since the science academy, and the capacity and ability to describe those experiences to the researcher.

I selected a mixed purposeful sampling strategy: criterion sampling to ensure that all cases selected met the pre-established criteria; and stratified purposeful sampling to enable case comparison of the sample within the sample. Finally, participants were chosen because of their ability to provide information based on their experiences and because they were willing and able to participate in the research.

Students participating in the science academy between the years of 1997 and 2007 were the cohort from which the students interviewed for this qualitative study were recruited. I sent out notices to the last known address and email account of each of the 243 former science academy students inviting them to participate in the study. (Appendix B). In addition, I posted information about the study on both the Science Academy Facebook page and Linked-In. The posts (Appendix A) described the study, encouraged participation, and provided an email address and phone number to call if they had further questions. Because of known high student mobility, and the time that had elapsed since the academy, I had anticipated a 10% -15% response rate.

The Factors Influencing the Pursuit of Higher Education (FIPHE) questionnaire, (Appendix F) was subsequently mailed, and emailed to all the students for whom contact information was available and valid. The mailing included the consent form. As anticipated, there were very few responses from the questionnaire.

From the pool of respondents, all participants meeting any one of the following pre-established criteria were selected. The pre-established criteria were underrepresented minorities, from first generation college families, had pursued higher education, had not pursued higher education, were from a majority background, pursued a health care career, pursued a health

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career in CAM, completed a minimum of one offering (one summer) of the science academy, pursued more than one offering (had attended two or more summers) of the science academy.

There is a point of diminishing returns in qualitative study with regards to sample size, and thus the sample size in a phenomenological study should be limited to 3 – 10 participants; and a maximum of 4 – 5 for a case study approach (Creswell, 2007). Guetterman, (2015) describes a point of saturation in qualitative research as the point where no new themes emerge. For these reasons, the maximum sample size for this study was 10 participants.

Instrumentation and Data Collection Procedures

Creswell (2007) describes the data collection process in a qualitative study as a continuous cycle that involves locating the site or the individual, gaining access and making rapport, purposefully sampling, collecting data, recording information, resolving field issues and storing data. Further, Creswell (2007) describes the need for four basic types of information – observation, interviews, documents, and audiovisual materials. For this study, I interviewed each participant, who had signed a consent form. The only incentive to participate in this study was the offer of a paid meal before, during or after the interview.

Each interview was scheduled for 45 minutes. However, the actual timing of the interviews varied from 45 minutes to 90 minutes as determined by the participant's direction of conversation. The interviews were in depth, semi-structured, and audiotaped. All interviews were conducted using Skype or FaceTime.

The face-to-face approach was selected to allow for observation of nonverbal cues such as facial expressions of joy or sadness and to note changes in body language that could provide cues to other areas of significance. The interview guide, (see Appendix C) was the foundation of the interview however the questions evolved based on the participant responses. The semi-

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structured style of interviewing enabled the participants to direct the conversation so that the focus was on areas that they deemed important. I forwarded the interview summaries to all participants to allow for review and the opportunity to check and correct for factual errors.

I concluded the qualitative interviews with a 45-minute focus group session using the focus group questions (see Appendix B). Participation in the focus group was optional to protect participants who wished to remain anonymous. The focus group served the purpose of enabling further understanding of the research questions.

Synchronous online focus groups are demonstrated to be as effective as in-person focus groups for participation and observation (Stewart & Shamdasani, 2017). As one of the participants was out of the country, it was necessary to use a synchronous online focus group. The video conferencing platform Zoom was selected.

Summary of Timeline for Instrumentation and Data Collection Procedures

Phase 1 comprised an introductory letter mailed and emailed to the 243 students who participated in the academy and concurrently posted on LinkedIn and Facebook. Phase 2 comprised the FIPHE survey and the consent form mailed and emailed to all students who responded to the request to participate and who responded with interest to the Facebook and LinkedIn posts. Phase 3 comprised respondents invited to participate in one on one interviews and a focus group.

Semi-structured interviews (See Appendix B) were used during the focus groups to provide a more holistic understanding of the phenomena of interest (Hanson, Balmer & Giardino, 2011). This manner of interviewing according to Gill, Steward, Treasure & Chadwick, (2008), and Britten (1995) defines the areas that need to be explored and provides flexibility for the participant and the researcher to pursue unanticipated thoughts or ideas in more

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detail. A semi-structured inductive approach was used for the interviews and focus group sessions; an inductive approach was also the approach to coding the data (Creswell, 2007). The data was hand-coded.

Transcripts of the initial audiotaped interviews were derived from the transcription software Temi. The interviews were recorded using the app Microphone. I compared the audiotapes to the transcribed information and verified and/or corrected any factual errors. The transcripts of the interview were emailed to the participants.

I reviewed information from the participant's science academy files including grades on assessments, end of year evaluations of the academy, and application materials, which in some instances included an application essay. The application essays provided insight into the participant's goals at the time they enrolled in the science academy, including college aspirations. Consent for chart/file review was included in the application materials for the science academy (Appendix D).

Following data coding, within each category, I employed a self-reflective process. The process involved asking myself the questions – What surprised me? What intrigued me? What disturbed me? This process, according to Saldana (2009) enables the researcher to further understand their assumptions, positionality, and assess tensions between values and beliefs.

Instrumentation

FIPHE

The FIPHE Questionnaire (see Appendix F) developed by Harris was the preliminary screening and participant selection tool. This 92-item questionnaire, modified by Harris and Halpin (2002), has reliability estimates of 0.66 to 0.9 for the nine FIPHE scale scores. The original factor analysis was conducted on data from 509 college students. The focus of this

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survey was on URMs and its value for this research lies in the fact that it addresses both the academic and the socialization factors that impact URM matriculation into higher education. These include self-efficacy, locus of control, parental and family influence, peer influence, the glass ceiling, overall general preparation for college and financial aid; all factors that are known to influence URM participation in higher education.

BUSP NIH Career Paths Survey

I used a modified version of the BUSP-NIH Career Path Survey (see Appendix H) developed by Villarejo et al. (2008) as the basis for the semi-structured interviews. For many URMs the barriers to higher education include socialization into the academic community, capacity to navigate systems as first-generation college students, and institutional support or lack thereof (Ovink & Veazey, 2011). This instrument has been used in intervention programs that address both the academics and the socialization concerns (Ovink & Veazey) and to assess the efficacy of programs that encourage minority undergraduates to choose science careers (Villarejo et. al, (2008). The survey was modified to include careers in CAM. (See permission in Appendix G)

Research questions and instruments used for each question are as follows:

RQ1: What are the factors that facilitate or impede matriculation in a CAM university by URM student participants in a CAM based science academy? The FIPHE questionnaire facilitated participant selection. The Career Paths Survey enabled determination of the career paths and elicited the facilitators and barriers to pursuit of career choices. The focus group enabled triangulation of the data.

RQ2: How do participants in a pipeline program at a CAM university make career decisions? The Career Paths Survey was used to determine the career paths and elicit the factors

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that influenced career choices. Semi Structured Interviews enabled further exploration of the influences on career choices. The one – to one interviews and focus groups enabled deeper exploration and understanding of the participants experiences in choosing a career.

RQ3: How does a science academy as a CAM pipeline program influence students for careers in CAM? The Career Paths Survey defined the career paths and elicited the factors that influenced career choices. The semi-structured interviews and focus groups furthered exploration of the influences on career choices. The FIPHE questionnaire augmented the data.

Data Analysis Plan

The data analysis plan was based on the inductive model described by Hatch (2002), which begins with pieces of evidence and then pulls them together into a meaningful whole. The process involves nine steps. Step 1 is to read and re-read the data, identify frames of analysis and categorize the frames of analysis into the levels of specificity within which the data will be examined. If the analysis is undetermined, rough parameters can be placed on how to start looking closely at the data. The analysis must begin with a solid sense of what is to be included in the data set.

Domains were created based on the semantic relationships discovered within the frames of analysis. Domains are categories organized around relationships that can be expressed semantically. Categories of meaning or domains that reflect relationships represented in the data were developed.

Strict inclusion (X is a kind of Y). Spatial (X is a place in Y), cause-effect (X is a result of Y). Rationale (X is a reason for doing Y), location for action (X is a place for doing Y). Function (X is used for Y), means-end (X is a way to do Y), sequence (X is a step in Y), attribution (X is a characteristic of Y).

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The next step was to identify salient domains, assign them a code, and put others aside. A data reduction process that enabled a narrowing of the focus of the analysis followed. Each domain was assigned a roman numeral and a capital letter to each included term, followed by a reflection on whether the identified relationship could be linked to other domains discovered in the data.

The data was again reread to refine salient domains, and their location and ensure that they were supported by the data. Deductive reasoning was employed to decide if the hypothetical categories identified held up. This was followed by a search for counterevidence.

An analysis of the domains followed to identify any new relationships, additional domains, or other ways to organize the information. This was followed by a search for themes across the domains and a systematic comparison to identify how the domains all fit together and what was similar or different about the domains. Visual formatting and summary statements enabled the creation of a master outline expressing relationships within and among domains. Excerpts from the data that supported the outline were selected and specific and powerful quotes starred.

Issues of Trustworthiness

A purpose of research is to enlighten and provide information that others can build upon. This requires that the research is trustworthy and has attended to accepted standards for quality. To ensure trustworthiness, this research utilized the following recommendations from Creswell (2013), member checking, triangulation, thick description, and reflexivity.

Reflexivity

The purpose of reflexivity according to Liamputtong (2010) is to cause the researcher to examine their own deep-seated views and develop an understanding of how these views

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influence the research process. I am a URM in a CAM profession. This research sought to understand the factors that impact URM matriculation into CAM universities. Reflexivity was therefore an essential component of this research.

In reflecting on the facilitators and impediments experienced by URMs in CAM professions, I relied on the work of Weiss (2003), which I found to be consistent with my personal observations. However, Weiss describes URM experiences as students in a CAM university, and as practitioners of CAM modalities in the field. The focus of this research is on URMs identified as possibly having an affinity for CAM professions, who did or did not choose to pursue their aspirations. In my self- reflection process, it became clear that a key rationale for the second research question - How do participants in a pipeline program at a CAM university make career decisions? was that I wanted to understand if the experiences described by Weiss; which reflected my personal experiences were also reflected by other URMs in CAM.

Field Notes and Bracketing

I took extensive field notes during the interview process, and used them to build self-awareness of preconceived assumptions; a process that according to Roulston (2010) adds credibility when reflexivity and action are inherently connected. In addition, I kept a separate bracketing journal as a mechanism for keeping my biases in check. The journal noted the topic of discussion and what I perceived as my bias on that topic. I chose not to share my personal experiences with my interviewees as I assumed that my experiences could influence their responses and their interpretation of their experiences.

Thematic Analysis

I employed Hatch's inductive protocol, which uses a thematic analysis during data analysis (Hatch, 2002) to identify where patterns emerge. This was followed by a master outline

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to express relationships between and within domains (Hatch, 2002). Themes according to Boyatzis (1998) help organize data and may facilitate interpretation of aspects underlying the phenomenon.

Member Checking

The purpose of the focus group session was to ensure that the interpretation and summaries of the data were consistent with the intentions of the participants' statements. Each participant was able to view and edit their one to one interview summary to ensure that the information was consistent with their intentions. The interview summary data was triangulated with the quantitative information provided on the FIPHE questionnaire. Finally, the focus group session highlighted the emergent themes and provided an opportunity for participants to discuss and build on the themes.

Peer Review

I selected a peer reviewer to further review each phase of, and the conclusions drawn from the thematic analysis. Using guidelines from Tuckett (2005), the reviewer was selected based on their prior experience in CAM, and their expertise as a former peer reviewer, and dissertation reviewer. A summary of my perceived biases at the onset of the research and identified through the bracketing process are provided in subsequent chapters.

Ethical Procedures

Each participant received and was asked to sign a consent form. Informed consent was obtained following the standards established by the Institutional Review Board (IRB) at Northwestern Health Sciences University (NWHSU), and the IRB at Walden University. Consent was obtained through email with the statement "I consent" and affirmed prior to the in-depth interviews. In keeping with the NWHSU IRB guidelines, I verbally reviewed the purpose

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of the research with each participant. I read (out loud) the portion of the consent form that states that participation is voluntary, and could be terminated at any time; including during or after the interview prior to publication of the research.

Participants were informed that they could remain anonymous and reminded that the research is in partial fulfillment of a doctorate in philosophy from Walden University. Participants were also informed that risks involved in participating in this study included the loss of anonymity if they chose to participate in the focus group phase of the research. Participants were informed that all the data from the research would be stored in locked cabinets in my office and on a password protected laptop. Data would be destroyed after 5 years. The peer reviewer colleague who reviewed the thematic analysis; and the data transcription service would have access to the de-identified data.

It was understood that the time commitment and the timing of the interviews may have occurred during lunch breaks or after hours, such as during normal dinner hours. The meal incentive was primarily a reimbursement for costs associated with participation, and was not a recruiting strategy for participating in the study. There was no need for reimbursement for local transportation or parking costs associated with the study.

Participants were informed that they could exit the research process at any time prior to publication with a written notice sent directly to the researcher. A written notice was selected as the exit strategy because of the cultural context. Cross cultural studies reveal that a clearly stated and agreed upon exit strategy mitigates for some of the cultural misunderstanding that can accompany cross cultural research (Haintz, Graham, & McKenzie, 2015).

The goal of the research was to conduct an in-depth case review/case comparison of the participants' career choices and life trajectory and from this information seek to understand the

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facilitators and impediments to the pursuit of higher education CAM careers. Further I attempted to understand to what extent a science academy pipeline program influenced subsequent career choices. Participants were advised that information gleaned from the study could provide insight into how to revive and improve the science academy program.

Summary

This chapter describes the methodologies used to examine the factors that facilitate or impede matriculation of URMs into higher education and specifically complementary and alternative medicine (CAM) careers. Using a phenomenological approach to case study and case comparison, in depth interviews were conducted with former science academy students. The semi-structured interview design permitted the participants to tell their own story (Tindall, Smith, Flowers & Larkin, 2009), and enabled new themes to emerge. Data analysis procedures were predicated on the inductive process described by Hatch (2002).

The responses from the FIPHE questionnaire informed participant selection, and was subsequently triangulated with the information gleaned from in-depth interviews and the focus group. The population for this research is defined as URMs who at the time of participation in the summer science academy perhaps had inclination for a CAM career. The participants at the time of this study had either fulfilled or not fulfilled their career goals. This study was conducted with Institutional Review Board (IRB) permission. Walden IRB # 01-29-18-0197229 and Northwestern Health Sciences University IRB # TAO 162-12-17. A discussion of the observed themes follows in Chapter 4.

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Chapter 4: Results

Introduction

The purpose of this study was to gain an increased understanding of pre-college science academy experiences at a CAM university. I sought to understand whether the experiences increased interest in and motivation for CAM careers. It was also important to learn more about what factors may facilitate or impede matriculation in a CAM university for minority student participants in a science academy.

A well-documented strategy for improving health outcomes is to increase the number of practitioners providing health services within minority communities. This study sought to understand the impact of a pipeline program for matriculation into non-allopathic health care fields identified in this research as CAM. Because some of the CAM professions provide a level of education equivalent to that of a general practitioner, matriculating more URMs into CAM programs is a mechanism for addressing health disparities by increasing the pool of healthcare providers serving minority and other underserved populations.

This chapter summarizes the findings from in-depth interviews and a focus group conducted with former students of a science academy at a CAM university. The following research questions guided the study:

RQ1: What are the factors that facilitate or impede matriculation for URM student participants in a CAM based science academy?

RQ2: How do participants in a pipeline program at a CAM university make career decisions?

RQ3: How do CAM pipeline programs influence students regarding careers in CAM?

Setting

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The science academy was a weeklong experiential learning opportunity for high school students primarily from minority and first generation college families. Held at a CAM university, this mentor based program was offered at no cost to the students for one week in the summer. Students could attend for up to 4 years starting the summer preceding high school and ending during the summer preceding 12th grade. Students in the CAM programs at the university mentored the science academy students. Mentors (the graduate students) and mentees (the science academy students) partnered for the weeklong intensive program. The mentor called the mentee once a month for a year following the weeklong intensive to check in, build rapport and trouble shoot.

The curriculum had a human science focus and culminated with a hands on day of exposure to CAM therapies. This qualitative study was designed to explore the factors that facilitate or impede matriculation in a CAM university for URM student participants in a CAM based science academy pipeline program, and describe the influence that a CAM based pipeline program can have on the career choices made by URM students. URM experiences as they pertain to a CAM university were investigated using a qualitative phenomenological approach. The phenomenological approach was taken to enable a deeper exploration of the experiences of the students during and following the academy, facilitate understanding of the influence of life experiences on career choices, and elicit the common meaning for several individuals regarding their lived experience of this phenomenon.

The original intent of the study was to use the FIPHE Questionnaire as the screening tool, and select only students who expressed interest in or were pursuing health professions, science, pre-CAM, or CAM related programs. It became clear, however, that very few students had actually pursued pre-CAM or CAM related professions. As anticipated, tracking this population

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of students who had a history of high student mobility was a challenge. Therefore, all students who responded, consented and met the study criteria ($n = 9$) were included in the study. Consent was recorded after receiving an email response stating, "I consent."

I used the online transcription service Temi. All the interviews were conducted using Skype or FaceTime. Three of the interviewees were out of state, two were out of the country, and four were in state.

Demographics

A total of nine former students participated in the interviews. Three self-identified as African American (one as African/African American), two self-identified as Hmong/Asian American, one self-identified as Chinese American, and three self-identified as European American (See Table 1). Participants ranged in age from 19 to 27 with a mean age of 23. Five of the participants were female and four were male. Years in college at the time of the interview ranged from 1) to 6 with a mean of 3 years.

Table 1

Demographic Characteristics of Participants

#	Pseudonym	Age	Race	Gender	First Generation	Years in College	Field of Study	In college
9	Kim	19	Caucasian	Female	No	2	Research/Undecided	Yes
8	Bo	24	Asian (Hmong)	Male	Yes	6	Public Health	No
							Medicine	No
7	Mike	25	African American	Male	Yes	4	Math/computer	No
			(African)				science	
6	Kayla	23	Asian (Vietnamese)	Female	Yes	5	Veterinary medicine	Yes
5	John	22	Caucasian	Male	Yes	2	Criminal justice	No
4	Steve	21	Caucasian	Male	No	4	Math	Yes
3	Mary	27	African American	Female	Yes	1	Undecided/PA	No
2	Jill	25	Asian (Hmong)	Female	Yes	4	Public health	No
1	Sally	24	African American	Female	Yes	2	Elementary education	No

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Data Collection

Participant recruitment involved letters and emails to the last known contact of all former science academy students, followed with Facebook and LinkedIn searches. An introduction letter was sent to the last known mail and email addresses of the 243 students who had attended the academy. The introductory letter provided an overview of the study, a copy of the FIPHE questionnaire, and the consent form. A stamped addressed envelope was included. There were no responses generated from the mail. An email version of the same letter was sent to email addresses on record. The email included a link to the SurveyMonkey version of the questionnaire. Twelve responses were generated from this approach, and of the 12, four consented to participate in the study and met the study criteria. I followed this with a Facebook search of each of the students and when identified as the participant, sent them a message inviting them to connect with me and participate in the study. Two former students connected on Facebook but did not consent to participate in the study. A LinkedIn search generated responses from an additional 15 students, and six of these students consented to participate in the study and met study criteria; however, one subsequently withdrew, citing time constraints. A total of nine in-depth interviews were conducted on either FaceTime or Skype.

I requested a Skype or FaceTime number from all consenting participants and set up a date and time for the interview. I called all the individuals at the agreed upon time and began the interview by reminding them that they could decide to remove their consent at any time, and could decline to answer any of my questions. I also reminded individuals that the interview would be recorded and that the transcription service and I would have access to the content of the interview. They were invited to ask any additional questions at that time and were informed that they would be provided a transcript of the interview for their review. All interviews were

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conducted in English, and each interview lasted from 45 – 75 minutes. Each interview was guided by a set of questions (see Appendix C and Appendix H). The interviews were recorded on two audio recording apps, Temi also a transcribing software package and Microphone an audio recorder. Because some of the students were living overseas, internet connectivity was an added consideration and in some cases Skype video interviews were switched to Skype audio interviews to enhance audio clarity during the conversation.

Following the interviews I prepared summary statements to describe what I perceived as the essence of the interview and my overall perceptions of the interview and interviewee. The recordings were emailed to the transcriptionist service and returned within a few hours. I downloaded the transcript into a word file and reviewed and edited the file while listening to the recording. The transcripts were subsequently e-mailed to the participants to assess for accuracy. I corrected all requests for edits and changes to factual errors.

Data Analysis

I elected to hand code the responses. For this I read and re-read the transcripts three to four times and then using a highlighter color coded for themes. I used both the inductive and interpretative model described by Hatch (2002). An inductive model begins with pieces of evidence and then pulls them together into a meaningful whole. Interpretive analysis gives meaning to data by situating the researcher as an active player in the research (Hatch).

Inductive Analysis

I read and re-read the data to identify frames of analysis and the level of specificity within which the data would be examined. I created domains based on semantic relationships discovered within the frames of analysis. I identified salient domains, assigned them a code, and put others aside. I reread the data, and refined the domains. I analyzed within

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the domains to look for a different way to organize new domains, new relationships and new links, or themes across domains, and for how things fit together. I concluded by creating a master outline and selecting data excerpts.

The purpose of the interpretive analysis was to give meaning to the data, and situate myself as an active player in the research. I made inferences, attached significance, developed insights, extrapolated, refined and drew conclusions. The process was as follows. I read the data for a sense of the whole. Reviewed identified reformulated and recorded my impressions. I reread all summaries and memos and interpretation and developed the big picture. I reread the data coding the places were interpretations were supported or challenged. I wrote a draft summary focusing on communicating the explanations, insights, conclusions, lessons or understandings from the analysis, reviewed the interpretations with the participants and wrote a revised summary.

I developed the coding categories as I read the transcripts and identified salient domains, several of which were coalesced and subsequently refined. I re-read the data to ensure it was supported by the domains and searched for evidence to counter my conclusions. The domains were subsequently subcategorized under the research questions.

Evidence of Trustworthiness

The purpose of research is to enlighten and provide information that others can build upon. Specific to this study it is important for minority enrollment into the fields of complementary and alternative medicine that the research is trustworthy and has accepted standards for quality. To ensure trustworthiness, this research utilized the following recommendations from Creswell (2004), member checking, triangulation, thick description and reflexivity.

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Process for Credibility

The credibility of this study was verified through member checking and triangulation. Member checking involved participant reviews of their interviews. Each participant viewed and edited their one to one interview summary to ensure that the information was consistent with their intentions; edits and corrections were made as requested. The interview summary data was triangulated with the information provided on the FIPHE questionnaire and the information gleaned from the focus group.

Process for Transferability

Transferability according to Lincoln and Guba (1985) is about ensuring that the data provided enables others to make a judgment about transferability or generalizability. I provided participant statements, a summary of context and my experiences during the process. This approach enables a deeper understanding of the phenomena, and thereby enhances transferability.

Process for Dependability

To ensure dependability, each interview was recorded on two devices which enabled a return to the original interview for clarification. The interview transcript was reviewed by the participants. Participants provided permission to record when they signed the consent form, and again at the onset of the interview.

Process for Confirmability

Confirmability was addressed in this study through reflexivity and thick description. This study includes detailed transcripts from the interviews, and each interview was recorded enabling crosschecking for content and intent. The purpose of reflexivity according to Liamputtong, (2010) is to cause the researcher to examine their own deep-seated views and develop an

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understanding of how these views influence the research process. I am a URM in a CAM profession. This research seeks to understand the factors that impact URM matriculation into CAM universities. Reflexivity was therefore an essential component of this research.

I took copious field notes during the interview process, and used them to build self-awareness of my preconceived assumptions; a process that according to Roulston, (2010) adds credibility when reflexivity and action are inherently connected. In addition I kept a separate bracketing journal as a mechanism for keeping my biases in check. The journal noted the topic of discussion, and what I perceived as my bias on that topic. I identified the bias as an area where I restrained from chiming in on the interviewee's responses due to a shared experience. Once the interview began I adhered to the interview questions (except to ask for clarification), and refrained from discussing shared experiences, although there were several.

Results

As I read and re-read the transcripts it was clear to me that I would need to assess the impact of my personal beliefs and life experiences on my interpretation of the student's responses, I would also need to reflect on how their prior knowledge of me, their experience at this camp, and their appreciation for the science academy camp influenced their responses to the questions. I therefore studied each interview carefully for contradictions to the coded domains and identified areas where I felt I held biases in my interpretation of the data. Following is a summary of the themes and responses categorized by the research question. The interpretation of the data is discussed in Chapter 5.

Results - Research Questions

RQ1: What are the factors that facilitate or impede matriculation for URM student participants in a CAM based science academy?

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This question was answered by evaluating the facilitators and impediments to enrolling in university and the facilitators and impediments to pursuing a CAM career. Because none of the participants had at the time of the interview enrolled in a CAM university, a subcategory asking about why they attended the academy was added to understand the students motivators. It was also important to elicit their views on CAM practices. Data was gathered from the Factors that Influence the Pursuit of Higher Education questionnaire (Appendix F), the Career Paths Survey (Appendix H) the open ended questions on the interview guide (Appendix C) and the focus group questions (Appendix B).

Corresponding interview questions included: What are the pros and cons of a college education, what do you know about CAM, what do you think about CAM, would you consider a career in CAM? what do you know about chiropractors, what do you think about chiropractors? why did you attend the academy? what does the word minority mean to you? what are your goals? what are your family's goals? on a scale of 1-10 how would you rate the value of a college education, and why?

Reason for attending the academy. The reasons for attending the academy included self motivation/self efficacy (n=8) a general love for science (n=9) participants were drawn to a program that didn't involve additional costs (n=6), and was relatively convenient to access (n=7). All had an adult in their life as a motivator (n=9). Several had an interest in becoming doctors or pursuing alied health careers (n=8).

***Self-Motivation/Self-Efficacy*.** Participants described being self driven to improve themselves. P2 - I think honestly, especially coming from an immigrant background, it was a great way for me to continue my education over the summer and it was something that my parents did not have to pay for, that I was able to kind of access on my own. P3 - I like to be

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busy in the summer and it was a good idea to sign up - I like to stay busy so I signed up for everything. P5 – I wanted to do something different, something that would be fun during the summer rather than just sitting around and wasting time. Learn different things, and how different things work within the body and just kinda expand my knowledge.

Love for Science. Participants shared an affinity for science. P9 - Science and math were always my favorite subjects in school, and I just remember writing the essay and I had so much fun with that essay. P6 - What attracted me; the activities, and the mentorship that you get from the program, things that revolved around science and I love the subject of science

Accessibility. Convenience, accessibility, and affordability were essential components for some of the students. P1 - It was racially diverse, accesible. For those kind of programs, you kind of expect to put in a lot of money for it and bring your own food, but that wasn't the case so that made it really accessible for me because if I had to provide any of those things, I doubt I would have been able to attend. P2 - It was something that my parents did not have to pay for, that I was able to kind of access on my own.

Significant Adults. Significant adults were instrumental in encouraging the students to attend the academy. P7 – The science teacher gave me the application and told me to apply, so I did. P8 – My chemistry teacher told me about this opportunity and I thought like, I like science, why not, and like I wasn't doing anything during the summer, like that sounds kind of cool….so I don't know like my teacher you know probably saw that like this seems like a program that I could do well in, I think I was a pretty high achiever as an eighth grader and she probably saw that I was different but also shared the same academic promise as my peers maybe.

Interest in becoming doctors or pursuing other health careers. For personal reasons or as driven by parents, several participants were considering premed or other health care related

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careers and the academy was seen as a mechanism to prepare for the health career. P1– When I was younger, I wanted to be a doctor. P9 – I had really wanted to go into medicine when I was younger. I wanted to be a surgical oncologist. P7 - I briefly considered maybe doing something like, premed I guess I didn't know what I wanted to do. P8 – My parents had been cleaning hotel rooms and didn't want that for me – it's a joke that I have like I really had the option of being like an engineer, a lawyer or a doctor. I was like well I guess I kind of like science. I was like alright I guess I am going to be a doctor. P2 - So growing up my father always kind of pushed me to become a nurse.

Facilitators for attending university. Facilitators for pursuing college/university included financial stability, and being a minority. For first generation college and minority students, the primary reason for attending university was to elevate the family status through income. Therefore financial stability was linked to parental expectations. P7 – The objective of going to college was having a high entry income. My parents wanted something more for me than what they had. P6 – Being a first generation college student, my parents definitely emphasized a lot on getting a great education because that is one of the main things that will help you get a good job once you get your degree. P8 – My parents saw like wow this is the land of opportunity, and those who have education are those who have more opportunity and more comfortable lifestyle.

Minority status meant they stood out, which was instrumental in providing opportunities for participants to be noticed, and to apply for and receive grants and scholarships to help finance college education. P2 – I earned a Questbridge National College match scholarship my senior year of high school and that scholarship is in particular for high achieving low-income background students. And so because I earned that scholarship, the college gave me a full ride

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for four years. P8 – I just applied to any and all the scholarships that I could. So I started writing my story and I guess it really resonated with people. If you have good grades, good test scores and a good story. Gosh people really just want to help you. P6 – I would say I have a had a positive experience with being a minority, because I am different and I like being different and I feel like I get noticed more because I am different. I feel like just being a minority, I think a lot of other doors have opened for me.

Facilitators for pursuing CAM careers. The students did not identify any facilitators for pursuing CAM careers. They opined that facilitators might have been scholarships to attend a CAM institution and the trajectory from high school to a CAM university clearly articulated. Some already had a background with CAM, however others did not recognize at the middle/high school level that a CAM career was a different path than an allopathic career. The science academy was a facilitator of CAM utility for their health care needs, but not for CAM as a career.

Barriers to Attending University. Common themes that emerged as barriers to attending university included minority status (n=3), the cost of higher education (n=7), and the lack of parental assistance (n=6). Minority status was perceived through the lens of others i.e. participants opined that they were perceived differently and treated differently. P8 – I think of representation of like one group being larger than the other and one group being more represented than the other, and the minority is the other, less in number, less in size, less in representation. P7 – Well one of the things that I noticed when I moved here. I noticed that the teachers treated me and students that looked like me very differently than they treated other students. Coming from a majority black country, I had never had that experience. It was as if they were looking for excuses to punish the minority students.

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Cost of Higher Education. Most participants (n=8) expressed concern about the cost of higher education, and the challenges of either working while attending college, or being saddled with student loans. P1 – Financial aid is always the biggest factor. P7 – When I think of what I had to go through. I worked nights for the four years I was in college. Sometimes I would work all night and then have to go and take an exam in school. I got a few grants that basically covered books and a few small loans but I had to pay for the rest by myself. P8 – I saw the sticker price and thought like wow. P4 – So if you are not sure what you want to do initially, going to college and spending $20,000 - $40,000 a semester or year is not a good way to try to figure out what you want to do. P3 – So I can't pay back my student debt and that is catching up with me and it is due, but I still don't have a job that uses my degree – sometimes I think it (college and university) is a waste of time. Because some people they can work their way up and don't have a lot of debt from student loans and stuff.

Lack of parental assistance. An added challenge for the students was that while their parents expected that they would attend college, the parents were often unable to help facilitate or support the college experience. P7 - I mean my parents didn't know what an AP course was or what college prep or what the college requirements were. Those were all things I had to figure out by myself. I mean my parents, maybe, the sort of atmosphere in the house is that college is something that is expected. You know, while they pushed me to go to college, I would say that the support that I got from them while I was in college was fairly minimal because they just didn't have the ability to support me financially or anything like that. P2 - But having immigrant parents means that they don't really understand the institutions in the US and the educational system so they don't really know to push me to pursue the international affairs degree versus a public policy degree. Right. They just want me to have a masters though they

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don't really know what that means. P8 - My parents were too busy. Yeah. Working and they could only say so much of like, you know, go to school, like work hard. But my parents didn't know what that, meant there was no way in which they could provide support. Like they couldn't help with any homework. So, I think my brothers fell into the wrong crowd and were unable to go to college, and then my parents, it was funny like they're kinda like alright like look at your brothers and don't do what they did. We don't know what you should do, but we know what you shouldn't do so I took that mantra with me.

Barriers to CAM. Barriers to CAM careers included lack of early knowledge about the professions in CAM (n=6), cost of higher education (n=8), impact of long held cultural beliefs on pursuing CAM careers (n=4), and pragmatism (n=7). Minority status was perceived both as a facilitator and as a barrier. A facilitator for college education (n=4) and a barrier for career advancement (n=3).

Views on CAM practices. Overall participants remarked that at the time of participation in the academy they did not have a clear understanding of CAM practices as a separate but interrelated component of the health care system. Nor did they care. Few of the students (n=2) were aware that CAM professions did not fall under the umbrella of allopathic medicine, and fewer were aware (n=1) of the professions in CAM. Several (n=5) thought that they had learned about CAM practices too late. P7 – It is difficult to become something if you don't know it exists. P6 – I remember taking those quizzes on career choices in elementary and middle school. And those quizzes on career choices never showed chiropractic. P3 – What do I know about chiropractors –well not a lot, I know they can readjust stuff and help with back pain.

The Assimilation Complex. An interesting domain that emerged was the

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internal struggle of the minority students whose families used CAM practices (n=3), and the dichotomy this presented as they attempted to assimilate into a majority culture. For example as P8 opined. I also think about my experience just like growing up, like the regimen or medicine that my mom always had. And like I guess like I've also like come into this social awakening, so if I am a little too blunt please excuse me. I think about the name too like complimentary or alternative, and seeing like, like growing up, like in a Hmong household like that was just completely normal to me. And so like Western medicine I think has a way with that, like something is normal. And then the other thing is just like alternative, which I think really marginalizes others, makes other forms of medicine like othering. So I think that's also why I also like resonated with a science academy because they just thought like, oh, like this makes sense because that's what my people do anyway, you know, and probably is like what, like, like most of the world did. So it's funny how I thought it was so mind blowing, but at the same time like it was in my family and culture for so long. So I guess those are my initial thoughts like alternative medicine being named as alternative says something implicitly as to what is supposed to happen and what is optional or like not as valuable.

Similar thoughts were articulated by P2 who said, I grew up watching my mother perform acupuncture on my father, and I think too, part of the complex of being a child of immigrants too is that you know I felt embarrassed by that, not comfortable that it wasn't the western approach to things. Obviously trying to balance my identity as an American as well. But I think kind of seeing people who I admired, so the mentors of the program who were pursuing careers in these fields and I think it kind of gave validation to alternative medicine.

This group of participants demonstrated low interest for pursuing a CAM degree. None of the participants had enrolled in a CAM university and none intended to do so as of the time

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when these interviews were conducted. These students had chosen to participate in the academy because they were high self-efficacy students who enjoyed science and were seeking opportunities to expand their knowledge. Participation in the academy was not predicated on any prior knowledge or interest in CAM. Barriers for enrolling in a CAM based university included timing of first exposure to CAM, social desirability, lack of exposure while in undergraduate studies, and adult mentors.

RQ2*:* How do participants in a pipeline program at a CAM university make career decisions?

The corresponding interview questions were what are your educational goals? what are your current priorities in life? what are your family's priorities? what is it like to be a minority? what were your plans after graduating from high school? what were your plans when you attended the academy? what is your dream job? how important is education to you?

Respondents identified the following factors as contributing towards their chosen career decision. Valued adults (n=9) including parents and family members (n=8) and teachers (n=6) pragmatism; as in the need to pursue careers with high income potential (n=5), personal interest (n=9), college prep programs such as Upward Bound, Mock United Nations, the Science Academy, and Multicultural excellence that provide mentorship, guidance and practice opportunities (n=5), trial and error (n=8), the desire to improve perceived injustices (n = 5). Minority status was described as an added hurdle for career advancement (n=3).

Parents/Family/Adult mentors. Valued adults were instrumental guides in facilitating career decisions. P6 - Through asking questions to my sister so she's helped me a lot, through my education. And she definitely recommended a degree within the science field, so I took a lot of things into consideration. P2 – The first time I ever gave a presentation was at the science

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academy and I got really positive feedback. I think that kind of gave me the confidence to pursue mock trials in high school because I knew that I was good at public speaking.

Teachers. Concurrently, teachers played a significant role in guiding participants along their career paths. P4 - I had a few faculty advisors who are really, I consider like my math parents really, yeah. It was like, almost like the first time I met them they were like, we see that you have this passion, this fire in you and we can see you doing good things for mathematics. Have you considered grad school before? I didn't know it until someone had told me I should. P8 – I got motivated from a teacher who said you know you could do that. So I took the leap and said OK, sure. I didn't know anything else but I saw validation so I thought why not try it?

Pragmatism. For the participants, the career had to serve the purpose of improving their circumstance and providing a sense of stability. P8 – And then also being poor, I didn't have much to depend on but gosh if I memorized what DNA stood for, no one can take that away from me. I can actually help people by listening to them and like holding the title of whatever it means to have an MD. P6 – But I really thought hard about it when I was thinking what my primary interest was in, I believe that having a science degree seemed to be more of a good back up plan when I thought about this rather than music. P7 – You have to chose something that will allow you to level up otherwise what is the point. It has given me oppurtunities that were not given to my parents. P4 – It would be fun, it would pay well and afford me opportunities that many other jobs wouldn't.

Trial and Error/Luck. Some simply fell into their careers including P7 - I didn't know what I wanted to do. I think that's kind of why I ended up as a math major, double major in math and economics because they are very broad. So I started working in the research institute at the U of M in the aerospace engineering department and as part of that I had to write a lot of computer

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programs and I realized that I really enjoyed it and it was something that I was actually really good at and it just became slowly became something that I could potentially do full time. P3 - I didn't know what direction I was going in because I was like working at Wal-Mart and all kinds of customer service jobs. I didn't find anything that I really loved until I started working at a daycare. P2 – I kind of thought I was going to go to law school, and in fact I think it was kind of like an accident that I ended up working in public health right now. I participated in a summer internship where I spent the summer in Guatemala working in microfinance and I haven't looked back.

Personal interest/circumstances. Some pursued long held areas of interest. For example P5 - I have always had a drive for a law enforcement. Two of my uncles are police officers, and I wanted to pursue that carreer as well. So I studied criminal justice there. Ive always wanted to be a marine since I was in like middle school. And finaly told myself I had to do it. P9 - I had really wanted to go into medicine when I was younger - like years, it was mostly around just I think the primary motivation was the fact that my mom had been sick for most of my childhood.

Mentorship programs. Mentorship programs were pivotal for all the students and provided oppurtunities to observe and model other young adults, including minorities navigate a variety of systems. Further these programs provided safe spaces for the students to practice- fail, practice - learn new skills; and be mentored as they acquired new skills. P2 - Kind of being able to break out of the cycle of poverty - right; where I was able to benefit from resources like the science camp or college prep programs that allowed me to kind of get out of that. And seeing minorities in leadership like you leading the science camp. P7 - I was involved with like clubs in school like a debate team like Model UN, like mock trial and other things like that. And the

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people that participated in those activities were typically in the top 10 percent of the classes. They were all like very smart people. So I would basically just do whatever they did. Like if I heard that they were going to sign up for AP classes then that is what I did. If I heard that they were going to do like the PSAT or something then that is what I would do to. I figured I'd just do this like a job where people seem to like know how this all works like just do what they were doing.

The Desire to Change the Status Quo. Students expressed a desire to become change agents. P2 - I want to be able to say that I have done my part to make sure that I've paid it forward and made sure that I increase access to fair economic opportunities for other people like my family and me. P5 - So becoming a police officer like would be great for me, but it's also great for the community because you're helping out the people and I'm not just looking to go arrest somebody, but maybe you see a couple of kids playing basketball in the street and you can go join them and shoot around with them, kind of get that community oriented policing, say hey, we're not just out to harass you guys and whatever, but we're also here to let you know that we can have a good time. P4 – So one of my goals is with getting my PhD, is to be able to use what I know to improve the world somehow. I don't know what that somehow is going to be yet, but that is kind of like my main life philosophy. P8 – So I see my life in that facet of giving back and hopefully changing the structures that have applied since the dawn of colonization.

Minority Status. Minority status was perceived as an added burden to career advancement. P3 – It means we don't have the same opportunities as a white person. Sometimes it's kinda hard because there is some racial profiling, but then you don't know when it is and when it is not. It is just difficult because like I have interviewed for a few things and I got beat out by like a bunch of like white people. So you know, I got my degree, I am perfectly qualified

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you know, so sometimes, I don't know why I didn't get stuff and then that comes to mind like I am African American and like I can do a way better job. But sometimes people don't know how smart and creative I am. P7 – Whenever I start a new job I feel like I have to work twice as hard just to prove that I deserve it.

Participants in this pipeline program made career decisions based on personal interest, parent/adult mentor influence, the need to improve social injustices, social desirability, trial and error and the desire for high privilege careers. The primary purpose of the career was to level up thus enabling improved conditions for self and family. The second purpose of a career was to improve society. The majority of participants stated an obligation to contribute to positive societal change.

RQ3: How does a science academy as a CAM pipeline program influence students for careers in CAM?

This pipeline program influenced utilization of CAM modalities, but did not influence the study participants for careers in CAM. The themes that emerged were that career trajectories were pre-determined prior to attending the program (n=7), career choices needed to be pragmatic, i.e. career choices had to serve the purpose of elevating their financial status in society and participants did not know enough about CAM careers to accurately evaluate this need (n=6), CAM modalities are not mainstream and in order to influence social injustices as they perceived them, they needed to influence from within which means participating within the predominant health care systems (n=3), first exposure to the viability of a CAM career occuring as a high school student was too late (n=4), CAM courses are not components of core undergraduate curriculum thereby impacting the ability to continue to explore CAM modalities

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while in college (n=4), personal discomfort with certain aspects of CAM (n=3), and participants had found their passion in other professions(n=7).

The corresponding interview questions asked were, what are your educational goals? what are your current priorities in life? what are your familys priorities? what is it like to be a racial minority? what were your plans after graduating from high school? what were your plans when you attended the academy? what is your dream job? what are the pros and cons of a college education? what do you know about CAM? does your current (or previous) school offer any CAM courses? what do you think about CAM? would you consider a career in CAM? Why/why not?

Career choices predetermined prior to attending the program. The career choices were predetermined prior to attending the science academy, thus the academy was a means of bolstering knowledge not a means of self discovery. P6 - My mind interest was veterinary medicine at the time. So when I graduated high school I already had the mindset where I was going to get my degree in animal science and go through to vet school. P9 -I had really wanted to go into medicine when I was younger - like years. P5 - Well I've always had a drive for a law enforcement. Two of my uncles are police officers and I wanted to pursue that career as well. It's always interested me watching crime shows and even serial killer documentaries, things like that, trying to learn from the behavior and what could cause someone to have that kind of mental breakdown.

Career choices needed to be pragmatic. Career choices had to serve the purpose of elevating their financial status in society and participants did not know enough about CAM careers to accurately evaluate this need. P2 - So growing up my father always kind of pushed me to become a nurse. Yes. I think especially because my parents, were not really given the

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opportunity to have formal schooling. They really instilled in me that getting an education was the means to financial freedom. P6 - Being a first generation college student, my parents, definitely emphasized a lot on getting great education because that's one of the main things that will help you get a good job once you graduate with the degree. P8 - I think for my parents especially because they never had education and they came here and they saw like wow this is the land of opportunity and those who have education are those who have more opportunity and more comfortable lifestyle. They had been working manual labor their whole lives... And so they really pushed me to pursue education.

Perception of CAM as a career. CAM modalities were not perceived as mainstream, therefore in order to influence social injustices as they perceived them, they needed to influence from within; thus participating within the predominant health care systems was perceived as necessary. Further in order to gain the desired societal prestige, participants felt they needed to be aligned with traditional careers. P2 - I grew up watching my mother perform acupuncture on my father and I think too, part of the complex of being a child of immigrants too is that, you know, I felt embarrassed by that or are you were not comfortable that it wasn't the western approach to things. Obviously trying to balance my identity as an American as well. But I think kind of seeing people who I admired, so the mentors of the program who were pursuing careers in those fields and I think it kind of gave validation to alternative medicine. P8 - I think my passions really do lie in like traditional western medicine and I think they're like, I, I just want to be in that hospital setting and really want the ability to work within that system because I think it is in that system which I can really, it is the system that I want to change, I don't think CAM is gonna allow me to do that additionally, like it sucks, but I think society just, I want to push policy and I don't think that society would value, the words that I say if I was in, a CAM field,

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which is unfair, but I think there, there is unfortunately like a power imbalance and I want to get that power so that I can kinda dismantle it and really, you know, spread it out. Right now that is where my heads at.

Timing of the first exposure to CAM. First exposure to the viability of a CAM career occuring as a high school student was too late. The exploration of careers for minorities and first generation college students begins in grade school. With parents encouraging them from childhood to seek careers that will elevate the family status. Ideas were formed early and it was clear that creating the mental space to consider a career at the high school level that many did not know existed as a legitimate career option was challenging. P6 – I remember taking those quizzes on career choice in elementary and middle school and those quizzes on career choice never showed chiropractic. P7 – You cant be what you don't know. P2 - You can't be what you don't see.

Personal discomfort with aspects of CAM. The factors that draw students with a science interest may be somewhat inconsistent with the needs of a CAM professional. CAM professions are mostly hands on. For several of the participants, enjoying science experiments did not necessarily imply they would enjoy the essentials of some CAM careers. For example the hands on approach used by most chiropactors or the physical closeness to patients utilized by massage therapists was out of the comfort zone of some of the participants as was the concept of fine needle insertion as used by acupuncturists. Further some participants were uncomfortable with aspects of CAM. P1 - I'm still not entirely sold on the energy healing, but I've heard good things about it. Massage. I like helping people, but I don't think I want to be that close to people….. And I guess that's the same thing for chiropractic too. P4 – I think it is a valid way to pursue health, there are parts of it that I may not personally agree with.

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CAM in undergraduate schooling. CAM courses are not core comoponents of undergraduate education, and may not be available in college health services. P8 - I don't think my college had any CAM program, but I guess I didn't do any in-depth research, but I would, I would be very, very surprised if they had it. P9 - Going to the school's health centers here, I would be the one to say would it be beneficial if I did try and go find these to go and like try these things that you guys don't provide here, and they would say, yes you could but be a little skeptical. P4 – We have like music therapy. I don't know exactly. We have therapeutic and leisure, education and recreation Yes I guess technically we would have some, we have like yoga classes and pilates and qigong classes that are electives that you can take to fulfill your health and wellness requirements.

Exposure to CAM professions at this pipeline program did not motivate this group of participants for a career in CAM. All acknowledged greater awareness and understanding of CAM therapies as a result of attending the academy. Participation in the academy increased subsequent utility of CAM therapies as a health care choice for the majority (n=5) of participants.

CAM Utility

Most of the students (n=7) had sought out CAM therapies for personal care. P8 - Yeah. So I, in 2012 I was diagnosed with ankylosis spondylitis, so I, yes, I was diagnosed with that, and I was recommended to go to the chiropractor because it could maybe help and I was like super, super stiff. I never got my back adjusted like that before. So that was like awesome to just have that experience, and it was funny, like the chiropractor, he was like, OK, like this is like what chiropractic is and showed me like a picture of the spinal cord and I just kind of, I was smiling to myself like, hey I know this already. Yeah. P9 - Well particularly last year I had a leg

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injury that formed scar tissue around a nerve and the nerve got pulled up like through my leg and it was going into my lower back and I had previous injuries to my lower back from soccer, in that same sort of area. So I had been limping for months and I went through five months of physical therapy and it was just like I had a lot of very, very stiff in my lower back and it was just very painful. And so I finally said like, OK. Let's try something else. So I went to a chiropractor over the summer and the first ...it was kind of funny because the first time that I went, like he had cracked the lower part of my spine, I felt floaty; I was just very, very excited to be moving around, I couldn't sit still because it was like dad - dad, I can walk and it doesn't hurt. I am not limping and see how even it is - and he says yeah you sure they just cracked your spine and didn't give you something extra. It was definitely something where it's kind of interesting who knows about what medicine practices; because in the color guard community, which is how I had originally gotten the leg injury, I had multiple teammates who did utilize acupuncture or chiropractic work for like what happened to…like deal with the stresses on, you know, their bodies that incur over that activity; where going to the schools health centers here, I would be the one to say would it be beneficial if I did try and go find these to go and like try these things that you guys don't provide here, and they would say, yes you could but be a little skeptical. But given that I had these teammates who are like, oh yeah, I had the same or similar injuries and this is what actually fixed it for me. It was definitely something where it became legitimized in my mind that this is a very viable and sought after treatment method that I should be asking about and looking into. P4 – I am taking yoga – So I know from our leisure activities at the academy that yoga is a good way to kind of calm the body and mind. I use breathing techniques and grounding techniques at night to help me fall asleep when my brain is just going going, or like before a test. P1 - Oh, it's a God send, its blessing… I got into two car accidents last year and it

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was massage therapy and chiropractic stuff that really got me back on my feet and ultimately the knee surgery, but it was a good healing in between.

Intergroup Differences

It is worth mentioning that there were some differences between the groups. This cohort of Caucasian students were more familiar with college matriculation processes than either their African American or Asian American counterparts. African American students described greater financial burdens and Asian American students described more issues with identity conflict. All groups described psychosocial stressors.

African/American participants included P7 who described for four years working all night and then having to attend school all day in order to finance his education. P1 had a young family and described the added challenges of parenting while pursuing education. P4 who during college came to terms with a history of abuse described the emotional challenges that ensued and resulted in her failing and being dismissed from college.

Asian American participants included P2, who described conflicts with being labeled minority and underrepresented, terms she did not ascribe to herself, but terms that were ascribed to her by the larger population. P8 described conflicts when his counterparts at his elite university made assumptions about his expertise in subjects considered the domain of people of his race and ethnicity.

The Asian American students all had some experience with CAM therapies as a component of indigenous practices. Some described the experience of observing their indigenous practice being taught at a western university as affirming. However they opined that because it was a traditional practice, they did not perceive that it would afford the prestige they sought as a college graduate.

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Summary

This chapter summarized the data collection processes used to elicit information from students who had participated in a science academy pipeline program at a CAM university. Using a phenomenological approach to case study and case comparison; in depth interviews were conducted with nine former science academy students. The interview design permitted the participants to tell their own story and enabled new themes to emerge. Data analysis procedures were predicated on the inductive and interpretive processes described by Hatch, (2002).

The first research question explored the factors that facilitate or impede matriculation in a CAM university by URM student participants in a CAM based science academy. Facilitators included self-motivation, a love for science, minority status, accessibility/convenience, motivation to pursue health care related careers, and adult mentors. Barriers included views on CAM practices, minority status, cost of higher education and an assimilation complex. All of the participants expressed an appreciation of the value of a university degree.

The second research question focused on how participants in a pipeline program at a CAM university make career decisions. The participants overwhelming cited valued adults including parents, family members and other mentors as guiding their career decisions, however; as many, cited trial and error in the ultimate choice for career. College preparatory programs provided guidance, the necessary know how and safe spaces to practice some of the skillsets required for the college matriculation process.

The third research question sought to understand the extent to which a science academy as a CAM pipeline program influenced students for careers in CAM. None of the participants had pursued a CAM career. Most of the participants had (and continued to) utilize CAM

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services. All who had used CAM services attributed their use of the practice in part to the exposure at the academy.

In this chapter, I also discussed evidence of trustworthiness. Through the use of thick description, audio recordings, member checking and reflexivity, I sought to enhance dependability, transferability, confirmability and credibility. In Chapter 5, I provide the interpretation of the study findings and address the limitations of the study and the implications for social change.

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Chapter 5: Discussion, Conclusions and Recommendations

Introduction

Health disparities exist in terms of access to care and outcomes of care for a myriad of conditions, including neck pain, low back pain, and other musculoskeletal conditions (ODPHP, 2014). Chiropractors are primary care CAM practitioners whose focus of care encompasses low back pain, neck pain, and other neuromusculoskeletal ailments (American Chiropractic Association, 2017). While many chiropractors practice in underserved areas, the demographics of the chiropractic profession do not reflect the demographic breakdown of the United States, and enrollment of minorities in chiropractic programs is not consistent with the projected changes in minority majority demographics across the country (Johnson & Green, 2012; U.S. Census Bureau, 2014).

Pipeline programs such as a science academy have demonstrated efficacy in increasing the roles of students in biomedical careers (Myers et al., 2012), and medical and dental schools (Perchura, 2001). The problem is that while it is known that science-based pipeline programs increase matriculation into allopathic universities, it remains unknown whether these programs influence matriculation of minorities into a CAM university. The main purpose of this study was to gain an increased understanding of pre-college science academy experiences at a CAM university and determine whether these experiences increase interest in and motivation for CAM careers. It was also important to learn more about what factors may facilitate or impede matriculation in a CAM university for minority student participants in a science academy.

I used a phenomenological approach to enable a deeper exploration of the experiences of the students during and following the academy. This approach facilitated understanding of the influence of life experiences on career choices, and the common meaning for these individuals of

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their lived experiences of this phenomenon. I interviewed nine former Summer Science Academy students using Skype or FaceTime. All interviews were audio recorded, transcribed, and reviewed for accuracy. The data was analyzed for themes by using both the inductive and interpretative models described by Hatch (2002). A key finding was that career trajectories are formulated early and influenced by family expectations. Traditional high privilege careers are sought after because they provide opportunities for improving oneself, one's community, and society at large. To consider nontraditional careers such as careers in CAM, earlier exposure is needed, and a clear trajectory from high school to CAM college graduation needs to be articulated. The cost of higher education is a significant barrier as is the lack of parental knowledge regarding guiding students through the college matriculation process. I found that participating in the CAM pipeline program did not influence this group of participants for maturation into a CAM university. In this chapter, I interpret the themes described in Chapter 4 and discuss these themes within the context of the current literature and conceptual framework described in Chapter 2. I conclude with a discussion of the limitations of the study, the implications for social change, and recommendations for future research.

Interpretation of Findings

In analyzing *RQ1*, facilitators and barriers that affected matriculation in a CAM university for URM student participants in a CAM based science academy included timing of first exposure to CAM, social desirability, level of exposure while in undergraduate studies, self-efficacy, cost of higher education, and adult mentors. Participants demonstrated low interest in matriculation into a CAM university. At the time of first exposure to CAM at the science academy, career trajectories for some students had been initiated and participation in the academy did not change these aspirations. Although all of the participants had at some point

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enrolled in a higher education institution, none had enrolled in a CAM university. I also sought to understand why this group of students had participated in a pipeline program at a CAM university because I had assumed that students who attend a CAM-based science academy had some interest in a CAM career.

A key findings was that these were students with high levels of self-efficacy who enjoyed learning and had an affinity for science. The science academy provided them an opportunity to learn with other students who shared a love for science. Participation in the academy was not predicated on any prior knowledge or interest in CAM. Several did not know enough about CAM at the time of participation to understand that CAM is a separate and distinct professional career choice, and participation in the academy did not influence prior professional aspirations.

There were several described barriers for enrolling in a CAM-based university including first exposure to CAM, social desirability, exposure while in undergraduate studies, and adult mentors steering towards more traditional careers. At the time of the first exposure to CAM at the science academy, career trajectories for some students had been initiated. Further, students were unclear about the trajectory from high school or college to a CAM university. This was not emphasized during the academy, nor advanced during undergraduate studies. Participants sought high-prestige, high-income, and traditional careers and did not perceive CAM careers as fulfilling this need. Minority participants had been steered towards high-prestige traditional careers by parents and adult mentors.

Because all of the participants had gone to college, but none had enrolled in a CAM university, I thought it was important to understand the facilitators for matriculating into any university. The facilitators included high self-efficacy, the desire to level up, family aspirations, scholarships, minority status, and knowledge acquisition. Participants who had endured

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displacement from their country of origin said that education was something that could not be taken from them. This was true for participants who were first and second generation immigrants, some of whom, though they themselves had not suffered displacement, had heard growing up about their parents' experiences of loss of home, country, and community. Further, parents had instilled in the participants a need for a college education as a mechanism for getting ahead. The dichotomy was that some parents did not necessarily know how to achieve this goal; they just understood that those who appeared to get ahead had a college education. Accomplishing this goal necessitated student/participant self-efficacy.

As a consequence of a combination of minority status and excelling in high school, some participants had been granted access to scholarships that covered the costs of university education. These participants described standing out in part because of their minority status. There were however differences between Asian American and African American students. Asian American students were more likely to have been granted full scholarships, while African-American students, when awarded, received partial scholarships and grants that covered the costs of incidentals or books but not tuition.

The primary barrier to college education was cost. However, several participants highlighted the lack of parental know-how as an added barrier. The minority students had little or no parental support for navigating the educational system, particularly the admissions processes for colleges and universities. Five participants described having to figure out the college admissions process on their own.

The findings of this study are consistent with Miller and Cummings (2009) who said that career trajectory begins in early childhood and students either from parental motivation or perceived self-efficacy begin to process their career aspirations early. Although Miller and

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Cummings also suggested that these aspirations can be influenced at several child developmental stages, exposure to a career is essential and according to Magnuson and Starr (2000) should begin at an early age. In order for the students to include the CAM therapies within their aspirational framework, they would have had to have earlier exposure of CAM as a viable career choice, much earlier than high school.

All participants described the cost of education as a significant barrier. This is consistent with Crockett (2014) and Burgos (2015) who suggested that providing scholarships to deserving students is an effective mechanism for diversifying the health services work force. Minority and first generation college students may not have access to parental financial support, and may have limited choices to fund education. These include to incur significant debt, or apply and hope to receive scholarships and grants (Dugger et al., 2013). These students carry an added obligation to contribute to the family income thus incurring additional debt becomes a barrier (Dugger) that may steer towards carriers where the return on investment is known.

For all minority students, there was a gap in the know-how between the college aspiration and the college matriculation process. Robb, Dunkley, Boynton and Greenhalgh (2007) said that many minority students have knowledge gaps in the college matriculation process including when and what is required for the process. The minority participants in this study used observation, modelling and mentorship programs to fill this void.

In analyzing *RQ2*, the factors influencing how participants in this pipeline program at a CAM university make career decisions included personal interest, parent/adult mentor influence, the need to improve social injustices, social desirability, trial and error and the desire for high privilege careers. The primary purpose of the career was to level up thus enabling improved

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conditions for self and family. The second purpose of a career was to improve society. All the participants felt an obligation to as stated by P3 "make things better in the world."

All of the participants described parental influence as motivation for higher education, and several described considering heavily their parents (or adult mentors) desires for a career when that had been articulated. Parental support according to Flores and Obrien (2002) predicts career choice prestige and career aspiration. The participants desire for high prestige careers were intricately connected with what had been described as the atmosphere in the home; that is a sense that they could and should do well. Participants felt obligated to live up to expectations.

At some point in their search for a career, the majority of the participants had discovered their passion. For P2 it was as a consequence of a study abroad program. For P8 it was in beginning his career for social justice that he discovered that he wanted to have the level of influence that his parents had envisioned for him, and in so doing changed his career to medicine. For P7 it was in a work-study program that he discovered he had a skillset suited for his ultimate career choice. For P4 it was because adult mentors told him he was really good at his subject and should pursue it. P1 went from job to job and finally while working in a day care center discovered she loved working with babies and toddlers. P6 found her passion early and was never dissuaded, P3 and P9 are still searching but have identified the field of interest.

The dilemma of the gaps in knowledge identified by Robb, Dunkley, Boynton and Greenhalgh (2007), is highlighted in P1 who had concluded her academic career and was now in the work force. The chosen career field had thus far not enabled her to level up. P1 –"I thought this career was going to make life easier, and here I am with my college degree and in my job, I am getting passed over for promotions by people who don't have a degree. Everybody says go

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to college go to college but here I went to college and now I have debt and am still not able to pay my bills."

Participants were also motivated in career choice to improve the circumstance for others. Consistent with Kirshner (2005) a component of youth development is moral reflection about one's surroundings. Ingrained into the thoughts of this group of participants was a sense of belonging. This sense of belonging facilitated social justice initiatives and opportunities to use either the chosen career or the skill sets developed while pursuing the career to improve opportunities for others. Akira et al (2017) suggest that youth desire to impact social change is synonymous with protected and affirming spaces that allow them to take risks. All participants had chosen careers that would allow them to improve the world and the majority concurrently described a home environment that was both affirming and safe.

In analyzing *RQ3*, which was to understand how a science academy as a CAM pipeline program influences students for careers in CAM, I found that this science academy did not influence the participants for CAM careers. Although the participants in this study had self-selected CAM choices for personal health care needs, they did not select for careers in CAM. Participation in the academy had increased understanding of CAM therapies. All the participants who had subsequently elected CAM therapies for personal care (n=5) described the science academy experience as having informed that choice.

Flores et al. (2007) suggest that non- traditional career efficacy is predicted by acculturation level and parental support. A finding that is supported by Deenanath (2014) and Soria and Stebleton (2013) particularly with first and second-generation immigrants. The pursuit of non-traditional careers is frequently reserved for second-generation immigrants and URMs who have a parent who pursued a non-traditional career (Flores et al., 2007).

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The theoretical construct on which this study was based was Banduras social learning theory (Bandura, 1977) and Lent Brown and Hackett's social cognitive career theory (Lent Brown & Hackett, 1994). Bandura (2002) suggested that a child's perceived efficacy (academic, social and self-regulatory), and parental self-efficacy will influence the academic and career trajectory. Lent Brown and Hackett (1994) described three influencers of career choice. These are self-efficacy, outcomes expectations and goals.

For many of the participants, although there was parental support for pursuing college education, the parental know-how to support the pursuit was absent, as were the financial resources to pursue education. Students had to chart their own course in order to fulfill the parental and personal aspirations. This meant trial and error in a process that required and enhanced self-efficacy. For example, P7 said that he didn't have any help in figuring it out, so he had to figure it out himself. "I just copied what the smart students did. If they said they were going to go and register for an AP course, I registered for an AP course. If they said they were going to participate in Mock United Nations, I participated in Mock United Nations. If they were going to register to take the ACT, I registered to take the ACT." P8 had a similar experience. He described his parents' approach in this manner "well my parents basically said just don't do what your brothers did we don't know what you should do, but we do know what you shouldn't do. So I had to figure it out on my own, and I did."

These examples highlight Bandura's (1997) definition of self-efficacy as the belief in one's ability to succeed in a specific situation, or the belief in one's ability to accomplish a task; and affirm Lent, Brown and Hackett's (2007) social cognitive career theory's emphasis on personal goals. Personal goals according to Lent, Brown and Hackett are contextual and speak to the intent to pursue a course of action based on a relationship between the individual (self-

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efficacy), the goal and the environment. The environment according to Lent, Brown and Hackett can act both positively and negatively, and can be both objective and subjective.

The path taken by several of the participants further highlights observation as a key construct in learning; another tenet of the social cognitive theory. For several of the students, the absence of adults who could guide their decision making processes meant they had to rely on observation, as in the case of P7 observation of how to do things right (positive reinforcement), and the case of P8 observation of what not to do (negative reinforcement). Consistent with Bandura (2002), observing the consequences of other actions influenced and guided the chosen career path.

Perhaps due to necessity, these were all high self-efficacious students whose career paths were motivated by outcomes expectations. All participants in this study were seeking career paths that would provide some reward. Rewards included financial stability, status, and the need to further social change. The goals were self-described, but heavily influenced by parental expectations of high prestige.

The fact that none of the participants had pursued a career in CAM disconfirms the premise of the Social Cognitive Career Theory (SCCT), in that exposure did not engender the desired career choice. With minority students, Flores and O'Brien (2002) suggest that there are additional factors to be considered. The choice of traditional and non-traditional careers according to Flores and O'Brien (2002) is influenced by parental support, non-traditional career self-efficacy, acculturation, feminist attitudes and barriers. Specific to non-traditional career interests, Flores et. al (2002) have also suggested that the three-outcome variable described by Lent, Brown, and Hackett (1994) are not supported. A significant barrier was that most of the

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participants did not know if and to what extent a non-traditional career such as a career in CAM would enable leveling up.

Participants had selected traditional careers that enabled a positive societal impact. The science academy provided exposure to CAM therapies; the interactions with the mentors and the respect they felt toward mentors and teachers increased their understanding of CAM therapies. The outcome was validation of CAM as a choice for health care, but not as a choice for a professional career.

Limitations

This study was limited by sample size, study design, response bias and investigator bias. The sample size consisted of nine participants. The nine participants made up a small percentage of the number of students who attended the science academy. It is possible that this sample was not representative of all the former science academy attendees, or of minority and URM populations. The non-random sampling strategy limits generalizability. The length of time between participation in the academy and the timing of this study engenders recall bias and my role as former director of the science academy and researcher possibly engendered response bias. Finally, as I am a minority practitioner in a CAM profession an added limitation is that despite efforts to mitigate for personal bias, the possibility exists.

Recommendations for Research

Further studies should investigate the identity complex of the minority students as it pertains to their traditional health care methods for both conflict and synergy with CAM careers. The fact that the indigenous health care methods are taught as professions in western medicine was affirming for participants however the quest for high prestige careers caused some to shun pursuing a CAM career. This dichotomy is worthy of further investigation.

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The generational impact of immigration on career choice is another area worthy of research. With this group of URMs among the first generation immigrants the burden of assisting parents and family members out of poverty was high, as was parental influence for traditional and prestigious careers. It would be important to understand if this burden persists generationally or if second, third and fourth generation immigrants are at liberty to pursue non-traditional career options.

There is a dearth of research on URMs in CAM professions. Further areas of research would include assessing the lived experience of URMs in CAM colleges and universities. As these individuals are the ambassadors to their communities on the subject of CAM, it would be important to understand what aspects of their experiences are affirming, where there are areas that need improvement and what can be done to enhance their experience.

Any research on how CAM universities and colleges are addressing diversity would benefit the professions. Examples include methods of recruiting URMs, and retention strategies. Evaluating opportunities for collaboration in teaching and clinical care as a method of enhancing diversity and increasing access is worthy of research. This might involve research to determine mechanisms for integrating CAM into indigenous communities and members of URM groups and other indigenous communities as curriculum advisors.

This research focused on one program in one area of the country. Further research on perceptions, facilitators and barriers in other areas of the country is warranted. It would be important to understand if there are regional differences in the perception and utility of CAM therapies among minorities.

Finally the model used at the NWHSU science academy was unique in that it consisted of a one week intensive on campus immersion experience followed by year-long mentoring by

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CAM students. Further research on the efficacy of this method is warranted. Research on other models for pipeline programs to include the length of time of exposure at the university, and the value of the mentorship components is also warranted.

Recommendations

This study evaluated the influence of a science based pipeline program at a CAM university for careers in CAM. The findings of this study can contribute to the knowledge base of URMs in CAM professions. Further this study explains some of the facilitators and barriers to matriculation into university and specifically to a CAM based university for URMs.

Career trajectories begin early in childhood. It is therefore essential that CAM careers are introduced at a young age. Many K-6 schools offer career exploration days. CAM institutions should consider participating in these events. Further, CAM institutions should work to ensure that all standardized assessment/career exploration tools used by students include the CAM professions as an option, and ensure that national and international databases on job reports include and accurately reflect CAM professions.

Research has noted a gap between career aspirations and the knowledge for college matriculation. This study affirms that gap. Higher education institutions and especially CAM institutions should articulate and disseminate the trajectory from high school to a CAM career, and assist students who wish to follow that trajectory. To encourage diversification of the workforce, CAM institutions should consider providing financial support for students from minority populations who have a strong foundation in science and wish to pursue CAM careers.

Medical colleges should consider offering CAM programs and degrees as components of core curriculum. As it is, the foundational curriculum for medical school is consistent with the foundational curriculum for chiropractic school. Given the cost of higher education this

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approach would maximize resources and enhance integration of health care. This can be accomplished in partnership with CAM institutions.

Exposing young adults and adolescents to CAM through a mentorship program at a CAM university is an effective mechanism for increasing understanding and utility of CAM. CAM institutions are encouraged to duplicate programs like the science academy so as to enhance understanding of CAM therapies and increase the choice for CAM careers in the next generation. Further, CAM institutions should consider research studies on a variety of mentorship models, including perhaps experiential components to the CAM student curriculum. CAM students can mentor the next generation by participating in science fairs in middle school, assisting K-12 science teachers or engaging in service projects. These field experiences provide both mentorship and exposure absent the costs of the on-campus university experience. The efficacy and efficiency of these types of initiatives is worthy of investigation.

Implications for Positive Social Change

The potential positive social change impact of the study could be to improve health outcomes for minority populations. Minority groups experience disproportionately worse health outcomes than their majority counterparts along several indices. An identified solution is to increase the number of minorities providing health care in their own communities. As more minorities matriculate into universities and pursue health care careers, the pool of minority providers who can provide care in minority communities increases. CAM providers who are also primary health care practitioners are a uniquely positioned group, thus far unidentified for this task.

There is a saying that a chain is only as strong as its weakest link. Within the context of nations, that would mean that a community or country is only as strong as the weakest

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individual. Large segments of people and communities in the United States continue to experience significantly worse health outcomes than their counterparts of different race, ethnicity and socioeconomic status. One mechanism for mitigating for these disparities is to increase the number of practitioners from URM backgrounds who are providing health care in their own communities. To do this the number of URM practitioners in health care institutions must increase. Specifically to complementary and alternative medicine (CAM), some CAM practitioners have training sufficient to that of a primary health care practitioner. These professions are an untapped resource to help mitigate for health disparities.

Previous studies have indicated that pipeline programs are an effective strategy for matriculating URMs into the health professions. It is a responsibility of training institutions to facilitate matriculation and timely graduation of providers who can serve their own communities. To the extent that chiropractic and other CAM colleges and universities can increase outreach to diverse communities and engage, enroll and graduate URMs, the numbers of practitioners available to serve in underserved community's increases.

Policies that enable URMs to accommodate or waive the cost of higher education will contribute to URM matriculation. Concurrently CAM training institutions should continue to develop mechanisms to enhance the recruitment and retention of URMs. This study sheds light on some of the factors that impact URM matriculation into a health services university.

Conclusion

A CAM-based science academy pipeline program was evaluated to understand the extent to which exposure to CAM in high school, participation in CAM programs and mentorship by CAM students would increase matriculation of URMs into CAM colleges and universities. URM CAM alumni are shown to overwhelmingly deliver health care in URM communities

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(Wiese, 2003). The social change implications are to increase the number of practitioners from URM backgrounds who are providing care in their own communities as a means of mitigating for health disparities.

Although participation in this pipeline program did not influence pre-established career aspirations, participants overwhelmingly developed an appreciation for CAM and CAM utility among participants increased. In order to contribute to the resolution of this social justice concern, CAM training colleges and universities must continue to work to diversify their student population by implementing strategies that enable and encourage URM students to enroll in CAM training institutions. It is my hope that this study informs those decisions.

CAM training institutions must work to matriculate and graduate URMs so as to increase the workforce of practitioners available to serve/practice in underserved regions. It has been said that health is wealth. If this is a correct statement, all nations should prioritize efforts to improve the overall health of all citizens. This means taking advantage of all available resources to ensure that the underserved receive a minimum standard of health care.

The findings of this study suggest that the cost of higher education is a significant barrier. Stakeholders may wish to consider avenues to enable URMs to cover the costs of education in exchange for providing health care to underserved populations. Specifically public and private stakeholders could consider trading the cost of graduate education for a guarantee of service to the underserved. Federal funding agencies may also want to evaluate funding allocation to URMs shifting perhaps away from loans to grants and scholarships.

There is a stigma associated with CAM careers among some minorities who use CAM modalities as their indigenous health practice. This issue is complex because while there is pride of ownership and the indigenous health practice, there is a desire to elevate status. This desire

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subsequently steers away from the indigenous practice as a career choice and towards high prestige and allopathic health careers. As stated previously this is an area of further research that might be of interest to the National Institutes of Health and other research funding agencies.

The path from high school to college matriculation is complex. For URMs and first generation college students, navigating this path is an added burden because it is a path they frequently have to navigate on their own, absent parental guidance. It is my hope that the findings of this study, will contribute to the knowledge base of URMs in CAM and the facilitators and barriers to higher education and CAM careers. Ultimately the goal is to ensure that bright minds who can serve their communities are not precluded or excluded from the education that will enable them to do so.

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References

Ahn, H. S., Usher, E. L., Butz, A., & Bong, M. (2015). Cultural differences in the understanding of modelling and feedback as sources of self-efficacy information. *British Journal of Educational Psychology*, *86*(*1*), 112-136. doi:10.1111/bjep.12093

Allan, D. (2014). Dealing with disaffection: the influence of work-based learning on 14–16-year-old students' attitudes to school. *Empirical Research in Vocational Education and Training*, *6*(*1)*. 1-18. doi:10.1186/s40461-014-0010-4

Allan, R. & Ungar, M. (2014). Resilience-building interventions with children, adolescents, and their families. In S. Prince-Embury & D. H. Saklofske (Eds.), *Resilience interventions for youth in diverse populations* (pp. 447-462). New York: Springer.

American Chiropractic Association. (2017). Key facts about the chiropractic Profession. *ACA Today.* Retrieved from https://www.acatoday.org/Patients/Why-Choose-Chiropractic/Key-Facts

Andersen, R., Carreon, D., Davidson, P., Nakazono, T., Shahedi, S., & Gutierrez, J. (2010). Who will serve? Assessing recruitment of underrepresented minority and low-income dental students to increase access to dental care. *Journal of Dental Education, 74*(*6*), 579-592.

Atuahene, F., & Russell, T. (2016). Mathematics readiness of first-year university students. *Journal of Developmental Education*, *39*(*3)*, 12-20, 32.

Baldwin, A., Woods, K., Simmons, M. (2006). Diversity of the allied health workforce: The unmet challenge. *Journal of Allied Health*, *35*(*2*), 116-120.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(*2*), 191-215. doi:10.1037//0033-295x.84.2.191

www.manaraa.com

Bandura, A. (1986). Fearful expectations and avoidant actions as coeffects of perceived self-inefficacy. *American Psychologist*, *41*(*12)*, 1389-1391. doi:10.1037//0003-066x.41.12.1389

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, *44*(*9*), 1175-1184. doi:10.1037//0003-066x.44.9.1175

Bandura, A. (1989). Regulation of cognitive processes through perceived self-efficacy. *Developmental Psychology*, *25*(*5*), 729-735. doi:10.1037//0012-1649.25.5.729

Bandura, A. (2002). *Self-efficacy in changing societies*. Cambridge, UK: Cambridge University Press.

Barfield, J., Folio, M. R., Lam, E., Zhang, J. (2011) Factors associated with enrollment in allied health education programs: development of a predictive scale. *J Allied Health*, *40*(*2*), 82–89.

Barnes, P. M., Bloom, B., & Nahin, R. L. (2008). Complementary and alternative medicine use among adults and children: United States, 2007. *PsycEXTRA Dataset.10 (12*), 1-23 doi:10.1037/e623942009-001

Bath, B., Trask, C., McCrosky, J., & Lawson, J. (2014). Demographic and health characteristics of rural- and urban-dwelling Canadians with chronic back disorders. *Spine*, *39*(*23*), 1960-1968. doi:10.1097/brs.0000000000000561

Beacham, T., Askew, R., & William, P. (2009) Strategies to increase racial/ethnic student participation in the nursing profession. *Association of Black Nursing Faculty Journal, 20*(3), 69-72.

www.manaraa.com

Bener, A., Dafeeah, E. E., & Alnaqbi, K. (2014). Prevalence and correlates of low back pain in primary care: What are the contributing factors in a rapidly developing country? *Asian Spine Journal*, *8*(*3*), 227. doi:10.4184/asj.2014.8.3.227

Beth Perry, R. (2009). Role modeling excellence in clinical nursing practice. *Nurse Education in Practice*, *9*(*1*), 36-44. doi:10.1016/j.nepr.2008.05.001

Bialosky, J. E., George, S. Z., Horn, M. E., Price, D. D., Staud, R., & Robinson, M. E. (2014). Spinal manipulative therapy-specific changes in pain sensitivity in individuals with low back pain. *The Journal of Pain*, *15*(2), 136-148. doi:10.1016/j.jpain.2013.10.005

Blanchard, S., Judy, J., Muller, C., Crawford, R. H., Petrosino, A. J., White, C. K. Wood, K. L. (2015). Beyond blackboards: Engaging underserved middle school students in engineering. *Journal of Pre-College Engineering Education Research (J-PEER)*, *5*(*1*), 1-24. doi:10.7771/2157-9288.1084

Bocanegra, J. O., Gubi, A. A., & Cappaert, K. J. (2016). Investigation of social cognitive career theory for minority recruitment in school psychology. *School Psychology Quarterly*, *31*(*2*), 241-255. doi:10.1037/spq0000142

Bondi, L. (2013). Research and Therapy: Generating Meaning and Feeling Gaps. *Qualitative Inquiry, 19* (*1*) 9-19. doi.org/10.1177/1077800412462978

Boyatzis, R. (1998). *Transforming Qualitative Information: Thematic Analysis and Code Development.* Thousand Oaks, CA. Sage Publications.

Britten, N. (1995). Qualitative interviews in medical research. *British Medical Journal*, *311*(*6999)*, 251–253.

Broom, A. F., Kirby, E. R., Sibbritt, D. W., Adams, J., & Refshauge, K. M. (2012). Use of complementary and alternative medicine by mid-age women with back pain: a national

www.manaraa.com

cross-sectional survey. *BMC Complementary and Alternative Medicine*, *12*(*1*). doi:10.1186/1472-6882-12-98

Burgos, E. (2015). Experiences of Newcomer Youth in the Home Environment. *Electronic Thesis and Dissertation Repository*. 2711. https://ir.lib.uwo.ca/etd/2711

Byars-Winston, A. M., & Fouad, N. A. (2006). Metacognition and Multicultural Competence: Expanding the Culturally Appropriate Career Counseling Model. *The Career Development Quarterly*, *54*(*3*), 187-201. doi:10.1002/j.2161-0045.2006.tb00151.x

Callender, A. (2006). Recruiting Underrepresented Minorities to Chiropractic Colleges. *Journal of Chiropractic Education*, *20*(*2)*, 123-127. doi:10.7899/1042-5055-20.2.123

Chandler-Melton, J. (2016). *Factors that impact african american high school equivalency (HSE) students' pursuit of higher education* (Order No. 10128090). Available from ProQuest Dissertations & Theses Global. (1798888517). Retrieved from https://ezp.waldenulibrary.org/login?url=https://search-proquest-com.ezp.waldenulibrary.org/docview/1798888517?accountid=14872

Chao, M. T., Wade, C., & Kronenberg, F. (2008). Disclosure of Complementary and Alternative Medicine to Conventional Medical Providers: Variation by Race/Ethnicity and Type of Cam. *Journal of the National Medical Association*, *100*(*11*), 1341-1349. doi:10.1016/s0027-9684(15)31514-5

Chapman, E. N., Kaatz, A., & Carnes, M. (2013). Physicians and Implicit Bias: How Doctors May Unwittingly Perpetuate Health Care Disparities. *Journal of General Internal Medicine*, *28*(*11*), 1504–1510. http://doi.org/10.1007/s11606-013-2441-1

www.manaraa.com

Chibnall, J., & Tait, R. (2005). Race differences in diagnosis and surgery for occupational low back injuries. *The Journal of Pain*, *6*(*3*), S68. doi:10.1016/j.jpain.2005.01.269

Christensen MG, Kollasch MW, Hyland JK. Practice analysis of chiropractic, 2010. A project report, survey analysis, and summary of the practice of chiropractic within the United States. Greeley, CO: *National Board of Chiropractic Examiners*; 2010.

Clark N (2014). Health educators and the future: lead, follow, or get out of the way. *Health Education Behavior, 41*(*5*), 492-8.

Crawford, C., & Erve, L. (2015). Does Higher Education Level the Playing Field? Socio-Economic Differences in Graduate Earnings. *Education Sciences*, *5*(*4*), 380-412. doi:10.3390/educsci5040380

Creed, P. A., Patton, W., & Prideaux, L. (2007). Predicting change over time in career planning and career exploration for high school students. *Journal of Adolescence*, *30*(*3*), 377-392. doi:10.1016/j.adolescence.2006.04.003

Creswell, J.W., Hanson, W.E., Clark Plano, V.L., Morales A. (2007). Qualitative Research Designs: Selection and Implementation. *Counseling Psychology*. *35 (2)*:236–64.

Creswell, J.W. (2013). Qualitative inquiry and research design: Choosing among five approaches (3rd ed.). Thousand Oaks, CA: Sage.

Creswell, J. W. (2015). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (5th ed.). Boston, MA: Pearson.

Crockett, E., (2014). A research education program model to prepare a highly qualified workforce in biomedical and health-related research and increase diversity. *BMC Medical Education*, *14(202),* 1-10.

www.manaraa.com

Crump, C., Ned, J. & Winkleby, M.A. (2015) *Advances in Health Science Education* 20 (2), 457 - 466. https://doi.org/10.1007/s10459-014-9540-6

Curtis, E., Wikaire, E., Stokes, K., & Reid, P. (2012). Addressing indigenous health workforce inequities: A literature review exploring 'best' practice for recruitment into tertiary health programmes. *International Journal for Equity in Health*, *11*(*1)*, 13. doi:10.1186/1475-9276-11-13

Davis, M. A., Sirovich, B. E., & Weeks, W. B. (2009). Utilization and Expenditures on Chiropractic Care in the United States from 1997 to 2006. *Health Services Research*, *45*(*3)*, 748-761. doi:10.1111/j.1475-6773.2009.01067.x

Dennanath, V. (2014). *First-generation immigrant college students: an exploration of family support and career aspirations*. (Order No. 1565226). Available from ProQuest Dissertations & Theses Global. (1615868215).

Dibaise, M., Salisbury, H., Hertelendy, A., Muma, RD. (2015). Strategies and perceived barriers to recruitment of underrepresented minority students in physician assistant programs. *Physician Assistant Education*. *26(1*): 19-27. doi: 10.1097/JPA.0000000000000005

Dreer, L. E., Weston, J., & Owsley, C. (2014). Strategic Planning for Recruitment and Retention of Older African Americans in Health Promotion Research Programs. *Journal of Health Disparities Research and Practice*, *7*(*2*), 14–33.

DuBois, D. L., & Hirsch, B. J. (2000). Self-Esteem in Early Adolescence. *The Journal of Early Adolescence*, *20*(*1*), 5-11. doi:10.1177/0272431600020001001

www.manaraa.com

Dugger R.A., El-Sayed, A.M., Dogra, A., Messina, C., Bronson, R., Galea, S. (2013). The Color of Debt: Racial Disparities in Anticipated Medical Student Debt in the United States. *PLoS ONE 8(9):* e74693. https://doi.org/10.1371/journal.pone.0074693

Dyce, C. M., Albold, C., & Long, D. (2013). Moving From College Aspiration to Attainment: Learning From One College Access Program. *The High School Journal*, *96*(*2)*, 152-165. doi:10.1353/hsj.2013.0004

Emmerton, L., Fejzic, J., & Tett, S. E. (2012). Consumers' experiences and values in conventional and alternative medicine paradigms: a problem detection study (PDS). *BMC Complementary and Alternative Medicine*, *12(39)*12-39. http://doi.org/10.1186/1472-6882-12-39

Erwin, W. M., Korpela, A. P., & Jones, R. C. (2013). Chiropractors as Primary Spine Care Providers: precedents and essential measures. *The Journal of the Canadian Chiropractic Association*, *57*(*4)*, 285–291.

Ewing, A., Thompson, N., & Ricks-Santi, L. (2014). Strategies for Enrollment of African Americans into Cancer Genetic Studies. *Journal of Cancer Education*, *30*(*1*), 108-115. doi:10.1007/s13187-014-0669-z

Figueroa, O. (2014). The significance of recruiting underrepresented minorities in medicine: an examination of the need for effective approaches used in admissions by higher education institutions. *Medical Education Online*, *19 (10)*, 10.3402/meo.v19.24891. http://doi.org/10.3402/meo.v19.24891

Flores, L. Y., & O'Brien, K. M. (2002). The career development of Mexican American adolescent women: A test of social cognitive career theory. *Journal of Counseling Psychology, 49*(*1)*, 14-27. http://dx.doi.org/10.1037/0022-0167.49.1.14

www.manaraa.com

Flores, L.Y.., Navarro, R.L., Smith, J.L., Ploszaj, A.M. (2007). Testing a Model of Nontraditional Career Choice goals with Mexican American Adolescence Men. *Journal of Career Assessment 14(2),* 214-234

Foster, E., & Savala, L. (2012). Engaging Under-Represented Youth in Food, Agriculture and Natural Resources through Pre-College Residential Summer Programs. *NACTA Journal, 56*(*2*), 38-46. Retrieved from http://www.jstor.org/stable/nactajournal.56.2.38

Fouad, N. A., & Byars-Winston, A. M. (2005). Cultural Context of Career Choice: Meta-Analysis of Race/Ethnicity Differences. *The Career Development Quarterly*, *53*(3), 223-233. doi:10.1002/j.2161-0045.2005.tb00992.x

Gabard L. (2007). Increasing minority representation in the health care professions. Journal of Allied Health. 36(3):165-75.

Garriott, P. O., Flores, L. Y., & Martens, M. P. (2013). Predicting the math/science career goals of low-income prospective first-generation college students. *Journal of Counseling Psychology*, *60*(*2)*, 200-209. doi:10.1037/a0032074

George, S., Duran, N., & Norris, K. (2014). A Systematic Review of Barriers and Facilitators to Minority Research Participation among African Americans, Latinos, Asian Americans, and Pacific Islanders. *American Journal of Public Health*, *104*(*2*), e16-e31. doi:10.2105/ajph.2013.301706

Ghee, M., Keels, M., Collins, D., Neal-Spence, C., & Baker, E. (2016). Fine-Tuning Summer Research Programs to Promote Underrepresented Students Persistence in the STEM Pathway. *Cell Biology Education*, *15*(3), ar28-ar28. doi:10.1187/cbe.16-01-0046

Gill, P., Steward, K., Treasure, E., & Chadwick, B. (2008). Methods of data collection in qualitative research: interviews and focus groups. *British Dental Journal 204* (*1*) 291-295

www.manaraa.com

Glatz, T., & Buchanan, C. M. (2015). Change and predictors of change in parental self-efficacy from early to middle adolescence. *Developmental Psychology*, *51(10),* 1367-1379. doi:10.1037/dev0000035

Glatz, T., Cotter, A., & Buchanan, C. M. (2016). Adolescents' Behaviors as Moderators for the Link between Parental Self-Efficacy and Parenting Practices. *Journal of Child and Family Studies*, *26*(*4*), 989-997. doi:10.1007/s10826-016-0623-2

González, K. P. (2000). Toward a Theory of Minority Student Participation in Predominantly White Colleges and Universities. *Journal of College Student Retention: Research, Theory & Practice*, *2*(*1*), 69-91. doi:10.2190/lpcf-p0c3-n4bu-464r

Greene, K. M., Lee, B., Constance, N., & Hynes, K. (2012). Examining Youth and Program Predictors of Engagement in Out-of-School Time Programs. *Journal of Youth and Adolescence*, *42*(*10*), 1557-1572. doi:10.1007/s10964-012-9814-3

Griffin, B., Hu, W. (2015). The interaction of socio-economic status and gender in widening participation in medicine *Med Edu. 49(1)*:103-13. doi: 10.1111/medu.12480.

Grumbach, K., & Mendoza, R. (2008). Disparities in Human Resources: Addressing the Lack of Diversity in the Health Professions. *Health Affairs*, *27*(*2*), 413-422. doi:10.1377/hlthaff.27.2.413

Guetterman, T. (2015). Descriptions of Sampling Practices. Within Five Approaches to Qualitative Research in Education and the Health Sciences. *Forum: Qualitative Social Research*, *16*(*2*), 45-57.

Hackett, G. (n.d). Self-efficacy in career choice and development. *Self-efficacy in Changing Societies*, 232-258. doi:10.1017/cbo9780511527692.010

www.manaraa.com

Hackett, G., Lent, R. W., & Greenhaus, J. H. (1991). Advances in vocational theory and research: A 20-year retrospective. *Journal of Vocational Behavior*, *38*(*1*), 3-38. doi:10.1016/0001-8791(91)90015-e

Haintz, G. L., Graham, M. & McKenzie, H. (2015). Navigating the ethics of cross-cultural health promotion research. *Health Promotion Journal Australia*, *26(2)*: 235-240. doi:10.1071/HE15050

Hanson, J., Balmer, D., & Giardino, A. (2011). Qualitative Research Methods for Medical Educators. *Academic Pediatrics*, *11(5*), 375-386

Harris, S., Halpin, G. (2002). Development and validation of the factors influencing pursuit of higher education (FIPHE) questionnaire. Educational and Psychological Measurement, 62 (1), 179-96

Harris, G. L. A., Lewis, E. L., & Calloway, M. (2012. A call to action: increasing health providers in underrepresented populations through the military. Journal of Health and Human Services Administration, 35(3), 356-410

Hatch, J. A. (2002). Doing Qualitative Research in Education Settings. Albany, New York: State University of New York Press

Henderson, R. I., Williams, K., & Crowshoe, L. (. (2015). Mini-med school for Aboriginal youth: experiential science outreach to tackle systemic barriers. *Medical Education Online*, *20*(*1*), 29561. doi:10.3402/meo.v20.29561

Herman, P. M., Poindexter, B. L., Witt, C. M., & Eisenberg, D. M. (2012). Are complementary therapies and integrative care cost-effective? A systematic review of economic evaluations. *BMJ Open*, *2*(*5)*, e001046. doi:10.1136/bmjopen-2012-001046

www.manaraa.com

Hernandez-Reif, M., Shor-Posner, G., Baez, J., Soto, S., Mendoza, R., Castillo, R., … Zhang, G. (2008). Dominican Children with HIV Not Receiving Antiretrovirals: Massage Therapy Influences their Behavior and Development. *Evidence-Based Complementary and Alternative Medicine*, *5*(*3*), 345-354. doi:10.1093/ecam/nem032

Hiller, S. E. (2012). *The impact of a citizen science program on student achievement and motivation: A social cognitive career perspective* (Order No. 3547088). Available from ProQuest Dissertations & Theses Global. (1271757993). Retrieved from https://ezp.waldenulibrary.org/login?url=https://search-proquest-com.ezp.waldenulibrary.org/docview/1271757993?accountid=14872

Hillman, N. W., Tandberg, D. A., & Gross, J. P. (2014). Market-Based Higher Education: Does Colorado's Voucher Model Improve Higher Education Access and Efficiency? *Research in Higher Education*, *55*(*6*), 601-625. doi:10.1007/s11162-013-9326-3

Holden, L., Berger, W., Zingarelli, R., & Siegel, E. (2015). After-School Program for urban youth: Evaluation of a health careers course in New York City high schools. *Information Services & Use*, *35*(*1-2*), 141-160. doi:10.3233/isu-150773

Hoy, D., March, L., Brooks, P., Blyth, F., Woolf, A., Bain, C., … Buchbinder, R. (2014). The global burden of low back pain: estimates from the Global Burden of Disease 2010 study. *Annals of the Rheumatic Diseases*, *73*(*6*), 968-974. doi:10.1136/annrheumdis-2013-204428

Hsiao, A., Wong, M. D., Goldstein, M. S., Yu, H., Andersen, R. M., Brown, E. R., … Wenger, N. S. (2006). Variation in Complementary and Alternative Medicine (CAM) Use Across Racial/Ethnic Groups and the Development of Ethnic-Specific Measures of

www.manaraa.com

CAM Use. *The Journal of Alternative and Complementary Medicine*, *12*(*3)*, 281-290. doi:10.1089/acm.2006.12.281

Hughes, A., Galbraith, D., & White, D. (2011). Perceived Competence: A Common Core for Self-Efficacy and Self-Concept? *Journal of Personality Assessment*, *93*(*3*), 278-289. doi:10.1080/00223891.2011.559390

Hunter, A., Lusardi, P., Zucker, D., Jacelon, C., Chandler. G. (2002). Making Meaning: The Creative Component in Qualitative Research. Qualitative Health *12(3*):388–98. doi: 10.1177/104973202129119964

Isaac, V., Walters, L., & McLachlan, C. S. (2015). Association between self-efficacy, career interest and rural career intent in Australian medical students with rural clinical school experience. *BMJ Open*, *5*(*12*), e009574. doi:10.1136/bmjopen-2015-009574

James, S. R. (2008). I think I can: Parenting self-efficacy in parents of young adolescents. (Dissertation/Thesis), Retrieved from ProQuest Dissertations & Theses Global. (304556671)

Jaquette, O., & Curs, B. R. (2015). Creating the Out-of-State University: Do Public Universities Increase Nonresident Freshman Enrollment in Response to Declining State Appropriations? *Research in Higher Education*, *56*(*6*), 535-565. doi:10.1007/s11162-015-9362-2

Jarvik, J. G., Comstock, B. A., Heagerty, P. J., Turner, J. A., Sullivan, S. D., Shi, X., … Deyo, R. A. (2014). Back pain in seniors: the Back pain Outcomes using Longitudinal Data (BOLD) cohort baseline data. *BMC Musculoskeletal Disorders*, *15(1)*, 134 - 142. http://doi.org/10.1186/1471-2474-15-134

www.manaraa.com

Johnson, C. D., & Green, B. N. (2012). Diversity in the Chiropractic Profession: Preparing for 2050. *Journal of Chiropractic Education*, *26*(*1*), 1-13. doi:10.7899/1042-5055-26.1.1

Johnson, C., Killinger, L. Z., Christensen, M. G., Hyland, J. K., Mrozek, J. P., Zuker, R. F., … Oyelowo, T. (2012). Multiple views to address diversity issues: an initial dialog to advance the chiropractic profession. *Journal of Chiropractic Humanities*, *19*(*1*), 1-11. doi:10.1016/j.echu.2012.10.003

Kaseweter, K. A., Drwecki, B. B., & Prkachin, K. M. (2012). Racial Differences in Pain Treatment and Empathy in a Canadian Sample. *Pain Research and Management*, *17*(*6*), 381-384. doi:10.1155/2012/803474

Keating, J. (1999). Chiropractic: History & Philosophy. *The British Journal of Chiropractic*, *3*(*1*), 8. doi:10.1016/s1466-2108(99)80055-2

Kiang, L., Glatz, T., & Buchanan, C. M. (2016). Acculturation Conflict, Cultural Parenting Self-Efficacy, and Perceived Parenting Competence in Asian American and Latino/a Families. *Family Process*. *56(4),* 943-961

Kirby, E. R., Broom, A. F., Adams, J., Sibbritt, D. W., & Refshauge, K. M. (2014). A qualitative study of influences on older women's practitioner choices for back pain care. *BMC Health Services Research*, *14*(*1*), 131-143. doi:10.1186/1472-6963-14-131

Kirshner, B. (2005), Moral voices of politically engaged urban youth. *New Directions for Youth Development*, *5(1)*, 31-43. doi:10.1002/yd.140

Klassen, R. M. (2010). Confidence to Manage Learning: The Self-Efficacy for Self-Regulated Learning of Early Adolescents with Learning Disabilities. *Learning Disability Quarterly*, *33*(*1*), 19-30. doi:10.1177/073194871003300102

www.manaraa.com

Klassen, R. M., Krawchuk, L. L., & Rajani, S. (2008). Academic procrastination of undergraduates: Low self-efficacy to self-regulate predicts higher levels of procrastination. *Contemporary Educational Psychology*, *33*(*4*), 915-931. doi:10.1016/j.cedpsych.2007.07.001

Knox, J. B., Orchowski, J. R., & Owens, B. (2012). Racial Differences in the Incidence of Acute Low Back Pain in United States Military Service Members. *Spine*, *37*(*19*), 1688-1692. doi:10.1097/brs.0b013e318255a07b

Kronenberg, F., Cushman, L. F., Wade, C. M., Kalmuss, D., & Chao, M. T. (2006). Race/Ethnicity and Women's Use of Complementary and Alternative Medicine in the United States: Results of a National Survey. *American Journal of Public Health*, *96*(*7*), 1236-1242. doi:10.2105/ajph.2004.047688

Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a Unifying Social Cognitive Theory of Career and Academic Interest, Choice, and Performance. *Journal of Vocational Behavior*, *45*(*1*), 79-122. doi:10.1006/jvbe.1994.1027

Liamputtong, P. (2010). *Performing qualitative cross-cultural research*. Cambridge, UK: Cambridge University Press.

Lincoln, Y.S. & Guba, E.G. (1985). *Naturalistic Inquiry*. Newbury Park, CA: Sage Publications.

Loftus, J., Duty, S. (2010). Educating ethnic minority students for the nursing workforce: facilitators and barriers to success. *Journal of the National Black Nurses 21(1):*7-16.

Lorenc, A., Clow, A., Forte, D., & Robinson, N. (2012). "It keeps me going" – older people's perception of well-being and use of complementary and alternative medicine (CAM). *Quality in Ageing and Older Adults*, *13*(*2*), 135-144. doi:10.1108/14717791211231210

www.manaraa.com

Längler, A., & Zuzak, T. J. (2013). Complementary and alternative medicine in paediatrics in daily practice—A European perspective. *Complementary Therapies in Medicine*, *21(4)*, S26-S33. doi:10.1016/j.ctim.2012.01.005

Lisk, P. A. S. (2003). *Factors influencing success in nursing school: Minority students' perspectives* (Order No. 3079359). Available from ProQuest Dissertations & Theses Global. (305238996). Retrieved from https://ezp.waldenulibrary.org/login?url=https://search-proquest-com.ezp.waldenulibrary.org/docview/305238996?accountid=14872

Maddux, J. E. (2009). Self-Efficacy: The Power of Believing You Can. *Oxford Handbooks Online*. doi:10.1093/oxfordhb/9780195187243.013.0031

Maddux, J. E., Gosselin, J. T., Kleiman, E., Maddux, J. E., Gosselin, J. T., & Kleiman, E. (n.d). Self-Efficacy. *Oxford Bibliographies Online Datasets*. doi:10.1093/obo/9780199828340-0088

Magnuson, C. S., & Starr, M. F. (2000) How early is too early to begin life career planning? The importance of the elementary school years. *Journal of Career Development*, *27* (*2*), 89-101

Mauthner, N., Doucet, A. (2003) Reflexive Accounts and Accounts of Reflexivity in Qualitative Data Analysis. *Sociology, 37*(*3*), 413-431

Mays, V. M., Coles, C. N., & Cochran, S. D. (2012). Is There a Legacy of the U.S. Public Health Syphilis Study at Tuskegee in HIV/AIDS-Related Beliefs Among Heterosexual African Americans and Latinos? *Ethics & Behavior*, *22*(*6*), 461-471. doi:10.1080/10508422.2012.730805

McKendall, S. B., Kasten, K., Hanks, S., & Chester, A. (2014). The Health Sciences and

www.manaraa.com

Technology Academy: An Educational Pipeline to Address Health Care Disparities in West Virginia. *Academic Medicine : Journal of the Association of American Medical Colleges*, *89*(*1*), 37–42. http://doi.org/10.1097/ACM.0000000000000047

Miller, K., & Cummings, G. (2009). Gifted and talented students' career aspirations and influences: A systematic review of the literature. *International Journal of Nursing Education Scholarship*, *6(8*), 46-57.

Moy, E. (1995). Physician Race and Care of Minority and Medically Indigent Patients. *JAMA: The Journal of the American Medical Association*, *273(19),* 1515. doi:10.1001/jama.1995.03520430051038

Moy, E., Bartman, B. A., Clancy, C. M., & Cornelius, L. J. (1998). Changes in Usual Sources of Medical Care Between 1987 and 1992. *Journal of Health Care for the Poor and Underserved*, *9*(*2*), 126-139. doi:10.1353/hpu.2010.0305

Murthy, V., Sibbritt, D., Broom, A., Kirby, E., Frawley, J., Refshauge, K. M., & Adams, J. (2015). Back pain sufferers' attitudes toward consultations with CAM practitioners and self- prescribed CAM products: A study of a nationally representative sample of 1310 Australian women aged 60–65 years. *Complementary Therapies in Medicine*, *23*(*6*), 782-788. doi:10.1016/j.ctim.2015.09.003

Murthy, V., Sibbritt, D. W., & Adams, J. (2015). An integrative review of complementary and alternative medicine use for back pain: a focus on prevalence, reasons for use, influential factors, self-perceived effectiveness, and communication. *The Spine Journal*, *15*(*8*), 1870-1883. doi:10.1016/j.spinee.2015.04.049

Myers, T., DeHart, R., Dunn, E., & Gardner, S. (2012). A summer pharmacy camp for high school students as a pharmacy student recruitment tool. *American Journal of*

www.manaraa.com

Pharmaceutical Education, 76(*4)*, 60.

Nadia L. Ward, Michael J. Strambler, & Lance H. Linke. (2013). *Increasing Educational Attainment among Urban Minority Youth: A Model of University, School, and Community Partnerships*. *The Journal of Negro Education*, *82*(*3*), 312. doi:10.7709/jnegroeducation.82.3.0312

Nagatsuka, J. M. (2008). *The decline in the admission of underrepresented minority students to selective public institutions after the implementation of anti –affirmative action legislation* (Order No. 3322104). Available from ProQuest Dissertations & Theses Global. (304652906). Retrieved from https://ezp.waldenulibrary.org/login?url=https://search-proquest-com.ezp.waldenulibrary.org/docview/304652906?accountid=14872

Nate, K. C., Griffin, K. H., Christianson, J. B., & Dusek, J. A. (2015). Practitioner Perspectives on Delivering Integrative Medicine in a Large, Acute Care Hospital. *Evidence-Based Complementary and Alternative Medicine : eCAM*, *2015*, 394040. http://doi.org/10.1155/2015/394040

National Center for Complementary and Integrative Medicine. (2017). *What's in a Name?* Retrieved from https://nccih.nih.gov/health/integrative-health#integrative

Noone J, Carmichael J, Carmichael RW, Chiba SN. (2009). An organized pre-entry pathway to prepare a diverse nursing workforce. *Journal of Nursing Education, 46(6)*:287-91.

Northwestern Health Sciences University (2008). Summer Science Academy. Retrieved from https://www.nwhealth.edu/news-events/news-archive/featured-stories/name-8140-en.html

OECD (2017), *Education at a Glance 2017: OECD Indicators*, OECD Publishing, Paris.

www.manaraa.com

http://dx.doi.org/10.1787/eag-2017-en

Oettigen, G. (1995) Cross Cultural Perspectives on Self Efficacy in Bandura, A. (2002). *Self-efficacy in changing societies*. (pp. 149 – 176). Cambridge, UK: Cambridge University Press.

Office of Disease Prevention and Health Promotion. (2016). Disparities. In *Healthy People 2020*. Retrieved from https://www.healthypeople.gov/2020/about/foundation-health-measures/Disparities

Oliver, M.N., Wells, K.M., Joy-Gaba, J., Hawkins, C.B., Nosek, B., (2014) Do Physicians' Implicit Views of African Americans Affect Clinical Decision Making? *Journal of the American Board of Family Medicine, 27 (2*) 177-188 doi: 10.3122/jabfm.2014.02.120314

O'Neal, C. W., Mancini, J. A., & DeGraff, A. (2016). Contextualizing the Psychosocial Well-being of Military Members and Their Partners: The Importance of Community and Relationship Provisions. *American Journal of Community Psychology*, *58(3-4),* 477-487. doi:10.1002/ajcp.12097

Ortega, R. R. (2011). *Motivation and career outcomes of a precollege life science experience for underrepresented minorities* (Order No. 3481117). Available from ProQuest Dissertations & Theses Global. (905157464). Retrieved from https://ezp.waldenulibrary.org/login?url=https://search-proquest-com.ezp.waldenulibrary.org/docview/905157464?accountid

Ovink, S. M., & Veazey, B. D. (2011). More Than "Getting Us Through:" A Case Study in Cultural Capital Enrichment of Underrepresented Minority Undergraduates. *Research in Higher Education*, *52*(*4*), 370–394. doi.org/10.1007/s11162-010-9198-8

Palmer, D. D. (1910) Text-book of the science, art and philosophy of chiropractic for students

www.manaraa.com

and practitioners (*The Chiropractor's Adjuster*). Portland, MN: Portland Printing House Company.

Palmer, R. T., & Maramba, D. C. (2015). The Impact of Social Capital on the Access, Adjustment, and Success of Southeast Asian American College Students. *Journal of College Student Development*, *56*(*1*), 45-60. doi:10.1353/csd.2015.0007

Patterson, C., & Arthur, H. M. (2008). A Model for Implementing Integrative Practice in Health Care Agencies. *Integrative Medicine Insights*, *3(1)*, 13–19.

Patton, M. Q. (2015) *Qualitative research & evaluation methods: Integrating theory and practice.* Los Angeles: SAGE

Pechura, C. (2001). Programs of the Robert Wood Johnson Foundation to develop minority medical careers. *International Journal of Medical Sciences, 322* (*5*), 290-2.

Perry, B. (2009). Achieving Professional Fulfillment as a Palliative Care Nurse. *Journal of Hospice & Palliative Nursing*, *11*(*2*), 109-118. doi:10.1097/njh.0b013e31819975de

Population Estimates and Projections. (n.d). *Encyclopedia of the U.S. Census*. doi:10.4135/9781452225272.n111

Possamai-Inesedy, A., & Cochrane, S. (2013). The consequences of integrating complementary and alternative medicine: An analysis of impacts on practice. *Health Sociology Review*, *22*(*1*), 65-74. doi:10.5172/hesr.2013.22.1.65

Pretlow, J., & Wathington, H. (2013). Access to Dual Enrollment Courses and School-Level Characteristics. *Community College Journal of Research and Practice*, *37*(*3*), 196-204. doi:10.1080/10668926.2013.739513

Reason, P., & Bradbury, H. (n.d). 49 Concluding Reflections: Whither Action Research? *The SAGE Handbook of Action Research*, *1(20),* 695-707. doi:10.4135/9781848607934.d60

www.manaraa.com

Redmond, M., Lewis, R., & Paschal, A. (n.d). Self-efficacy and HIV Prevention in African American Adolescents in Kansas. *PsycEXTRA Dataset, 13(95), 137-142*. doi:10.1037/e628622012-137

Ricks, M. (2006). A study of the impact of an informal science education program on middle school students' science knowledge, science attitude, STEM high school and college course selections, and career decisions (Order No. 3245344). Available from ProQuest Dissertations & Theses Global. (304979576).

Robb, N., Dunkley, L., Boynton, P., Greenhalgh. (2007). Looking for a better future: Identity construction in socio-economically deprived 16-year olds considering a career in medicine. *Social Science & Medicine 65*(*4*) 738-754

Robinson, N., & Lorenc, A. (2011). Traditional and complementary approaches to child health. *Nursing Standard*, *25*(*38*), 39-47. doi:10.7748/ns2011.05.25.38.39.c8532

Rogers, M. E., & Creed, P. A. (2011). A longitudinal examination of adolescent career planning and exploration using a social cognitive career theory framework. *Journal of Adolescence*, *34*(*1)*, 163-172. doi:10.1016/j.adolescence.2009.12.010

Roulston, K. (2010). Reflective interviewing: A guide to theory and practice. London: SAGE Publications Ltd doi: 10.4135/9781446288009

Roy, S. L., Shaw, P. C., & Beattie, T. F. (2015). Low back pain in the paediatric athlete. *European Journal of Emergency Medicine*, *22*(*5*), 348-354. doi:10.1097/mej.0000000000000154

Ryder, P. T., Wolpert, B., Orwig, D., Oarter-Pokras, O., & Black, S. A. (2008). Complementary and Alternative Medicine Use among Older Urban African Americans: Individual and

www.manaraa.com

Neighborhood Associations. *Journal of the National Medical Association*, *100*(*10*), 1186-1192. doi:10.1016/s0027-9684(15)31475-9

Sabir, M. G., & Pillemer, K. A. (2014). An intensely sympathetic awareness: Experiential similarity and cultural norms as means for gaining older African Americans' trust of scientific research. *Journal of Aging Studies*, *29*, 142-149. doi:10.1016/j.jaging.2013.11.005

Saldana J. (2009). The Coding Manual for Qualitative Research. London: Sage Publishing Co.

Schim, S. M., Vallerand, A. H., Hasenau, S. M., & Robinson, S. G. (2014). Challenges to Recruitment of Urban African American Patients with Cancer Pain. *Palliative Medicine & Care : Open Access*, *1*(*3*), 5.

Schneider, M., Murphy, D., & Hartvigsen, J. (2016). Spine Care as a Framework for the Chiropractic Identity. *Journal of Chiropractic Humanities*, *23*(*1*), 14-21. doi:10.1016/j.echu.2016.09.004

Shoff, C., & Yang, T.-C. (2012). Untangling the associations among distrust, race, and neighborhood social environment: A social disorganization perspective. *Social Science & Medicine (1982)*, *74*(*9*), 1342–1352. http://doi.org/10.1016/j.socscimed.2012.01.012

Setari, A. P., & Setari, R. R. (2016). Trends in Catholic School Minority Enrollment and Higher Education Entrance Over the Recession. *Journal of Catholic Education*, *19*(*3)*, 4-19. doi:10.15365/joce.1903022016

Shippee, T. P., Schafer, M. H., & Ferraro, K. F. (2012). Beyond the Barriers: Racial Discrimination and Use of Complementary and Alternative Medicine Among Black

www.manaraa.com

Americans. *Social Science & Medicine (1982)*, *74*(*8*), 1155–1162. http://doi.org/10.1016/j.socscimed.2012.01.003

Shiri, R., Karppinen, J., Leino-Arjas, P., Solovieva, S., & Viikari-Juntura, E. (2009). The Association Between Obesity and Low Back Pain: A Meta-Analysis. *American Journal of Epidemiology*, *171*(*2*), 135-154. doi:10.1093/aje/kwp356

Simms C. (2010). Health reform in Canada. *International Journal of Clinical Practice* 64(4):426-8.

Stebleton, M., Soria, Krista M. (2013).Breaking down Barriers: Academic Obstacles of First-Generation Students at Research Universities. *Learning Assistance Review*, *17(2)*:7-20

Steel, A., Wardle, J., Diezel, H., Johnstone, K., & Adams, J. (2014). Educating for collaboration: The outcomes of an interprofessional education workshop for complementary and alternative maternity care providers. *Advances in Integrative Medicine*, *1*(1), 17-24. doi:10.1016/j.aimed.2013.05.001

Steinsbekk, A., Rise, M. B., Bishop, F., & Lewith, G. (2011). Predictors for Adolescent Visits to Practitioners of Complementary and Alternative Medicine in a Total Population (the Young-HUNT Studies). *PLoS ONE*, *6*(10), e25719. doi:10.1371/journal.pone.0025719

Stewart, D. W., & Shamdasani, P. (2017). Online Focus Groups. *Journal of Advertising*, *46*, 48-60. doi:10.1080/00913367.2016.1252288

Stone, T., Levett-Jones, T., Harris, M., & Sinclair, P. M. (2010). The genesis of 'the Neophytes': A writing support group for clinical nurses. *Nurse Education Today*, *30*(*7*), 657-661. doi:10.1016/j.nedt.2009.12.020

www.manaraa.com

Stout, M. (2015). *The aspiration-attainment gap of black students in the health professions* (3746589) (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (3746589)

Tindall, L., Smith, J., Flower, P., Larkin, M. (2009) Interpretative Phenomenological Analysis: Theory, Method and Research, *Qualitative Research in Psychology*, *6(4*) 346-347, doi: 10.1080/14780880903340091

Trask, C., Bath, B., McCrosky, J., & Lawson, J. (2014). A Profile of Farmers and Other Employed Canadians With Chronic Back Pain: A Population-Based Analysis of the 2009-2010 Canadian Community Health Surveys. *The Journal of Rural Health*, *30*(*3)*, 300-310. doi:10.1111/jrh.12062

Tsang, S. K., Hui, E. K., & Law, B. C. (2012). Self-Efficacy as a Positive Youth Development Construct: A Conceptual Review. *The Scientific World Journal*, *2 (10),* 1-7. doi:10.1100/2012/452327

Tucker, C. R. (2015). *The lion's storyteller: Underrepresented minority students' use of psychological needs to persist* (3728618) (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (3728618)

Tuckett, A. (2005) Applying thematic analysis theory to practice: A researcher's experience, *Contemporary Nurse*, *19(2),* 75-87, doi 10.5172/conu.19.1-2.75

Usher, E. L., & Pajares, F. (2008). Sources of Self-Efficacy in School: Critical Review of the Literature and Future Directions. *Review of Educational Research*, *78*(*4*), 751-796. doi:10.3102/0034654308321456

www.manaraa.com

Van Campen, K. S., & Romero, A. J. (2012). How Are Self-Efficacy and Family Involvement Associated With Less Sexual Risk Taking Among Ethnic Minority Adolescents? *Family Relations*, *61(4)*, 548-558. doi:10.1111/j.1741-3729.2012.00721.x

Vassilaki, M., & Hurwitz, E. L. (2014). Insights in Public Health: Perspectives on Pain in the Low Back and Neck: Global Burden, Epidemiology, and Management. *Hawai'i Journal of Medicine & Public Health*, *73*(*4*), 122–126.

Villa-Caballero, L., Morello, C. M., Chynoweth, M. E., Prieto-Rosinol, A., Polonsky, W. H., Palinkas, L. A., & Edelman, S. V. (2010). Ethnic differences in complementary and alternative medicine use among patients with diabetes. *Complementary Therapies in Medicine*, *18*(*6*), 241-248. doi:10.1016/j.ctim.2010.09.007

Villarejo, M., Barlow, A. E., Kogan, D., Veazey, B. D., & Sweeney, J. K. (2008). Encouraging Minority Undergraduates to Choose Science Careers: Career Paths Survey Results. *Cell Biology Education*, *7*(*4*), 394-409. doi:10.1187/cbe.08-04-0018

Voskuil, V. R., & Robbins, L. B. (2015). Youth physical activity self-efficacy: a concept analysis. *Journal of Advanced Nursing*, *71*(*9*), 2002-2019. doi:10.1111/jan.12658

Voss, G. (2012). Gaming, Texting, Learning? Teaching Engineering Ethics Through Students' Lived Experiences With Technology. *Science and Engineering Ethics*, *19*(*3*), 1375-1393. doi:10.1007/s11948-012-9368-5

Wardle, J. (2016). Celebrating the diversity of integrative medicine: Essential to moving forward integrative medicine's role in primary health care and public health. *Advances in Integrative Medicine*, *3*(*2*), 41-42. doi:10.1016/j.aimed.2016.11.007

www.manaraa.com

Wardle, J., Lui, C., & Adams, J. (2010). Complementary and Alternative Medicine in Rural Communities: Current Research and Future Directions. *The Journal of Rural Health*, *28*(*1*), 101-112. doi:10.1111/j.1748-0361.2010.00348.x

Washington, K. V. (2013). *A longitudinal analysis of minority career development programs in developing a viable health careers pipeline: Perspectives on policy and funding* (3559591) (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (3559591)

Wiese, G. W. (2003). *Choice, challenges, and leaps of faith: A qualitative study of sixteen African-American chiropractors experiences in chiropractic education n*. (Doctoral dissertation). Retrieved from ProQuest Dissertation and Theses. (Accession Order No.3114405).

Whedon, J. M., & Song, Y. (2012). Geographic Variations in Availability and Use of Chiropractic Under Medicare. *Journal of Manipulative and Physiological Therapeutics*, *35*(*2*), 101-109. doi:10.1016/j.jmpt.2011.12.004

Winkleby, M. A., Ned, J., Ahn, D., Koehler, A., Fagliano, K., & Crump, C. (2013). A Controlled Evaluation of a High School Biomedical Pipeline Program: Design and Methods. *Journal of Science Education and Technology*, *23*(*1*), 138-144. doi:10.1007/s10956-013-9458-4

Winkleby, M. (2007). The Stanford Medical Youth Science Program: 18 years of a biomedical program for low-income high school students. *Academic Medicine, 82*(*2*), 139-45.

Winkleby, M. A., Ned, J., & Crump, C. (2015). Tapping Underserved Students to Reshape the Biomedical Workforce. *Journal of Community Medicine & Health Education*, *5*(*2*), 340–347. http://doi.org/10.4172/2161-0711.1000340

www.manaraa.com

Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. *The Academy of Management Review*, *14*(*3*), 361. doi:10.2307/258173

Zhang, L. (2011). *Use of complementary and alternative medicine (CAM) in racial, ethnic and immigrant (REI) populations: Assessing the influence of cultural heritage and access to medical care* (3449173) (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (3449173)

www.manaraa.com