

Health Professions Advisors: Perceptions of the Health Professions Advising
Community Regarding Factors Important to the Selection of Students for Medical
School.

by

Tara K Cunningham

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

Approved November 2012 by the
Graduate Supervisory Committee:

Christine Wilkinson, Chair
James Rund
Tacy Ashby

ARIZONA STATE UNIVERSITY

December 2012

ABSTRACT

This study determined if differences exist among the health professions advising community between factors (academic and non-academic) used as selection criteria in medical school admissions, as well as the impact of the holistic review in admissions on new admissions initiatives with respect to personal and professional backgrounds of advisors. The study examined the differences based on the gender, race and ethnicity, age, years of advising experience, institution size and type, classification and region of the population.

Statistical analyses were conducted using comparison of means tests: one-sample t-tests and one-way ANOVA to determine the significance of differences for each of the variables. Significant differences were found to exist among the health professions advising community based on gender, race and ethnicity, institution type, classification of appointment, institution size and type.

The findings of the study suggested that the personal and professional background of a health professions advisor did impact the perception of importance among the academic and non-academic factors used in the selection of medical students. The medical school admissions community should appreciate the unique viewpoints of the broader health professions advising community when building relationships and finding opportunities to collaborate.

DEDICATION

Wholeheartedly, I dedicate the culmination of my educational journey to my husband, Brandon and our children, Gabby, Zoe and Harper. Brandon, thank you for encouraging my academic pursuits and may our children find the same thrill for learning by exploring what life has to offer through the lens of education.

In honor of my father, Howard Kemp, I owe my tenacity to do more with less in life entirely to you. When your heart was unable to support your life, please know mine grew stronger and this has been the most rewarding gift a daughter could receive from her father. I feel your presence when I am weakest. Love, Turkey.

Lastly, to David K. Clark, JD, I dedicate this journey of preserving the “sparkle you saw in my eyes” that would have been damaged by a life in law. I wish you were here to appreciate the impact of suggesting education that summer day at your kitchen table during our last visit.

ACKNOWLEDGMENTS

It is difficult to find the words to express my sincere gratitude for the assistance and encouragement of so many individuals who have supported me throughout this experience. I could not have attained this goal without each and every one of you.

With the utmost admiration, I extend my sincerest appreciation to Drs. Tacy Ashby, James Rund and Christine Wilkinson for serving as my dissertation committee. Dr. Ashby, I am mesmerized by your professionalism and ability to balance strength and intellect with the softest heart and soothing presence. It must be a genetic trait in your family! Dr. Rund, if only I had half your energy and ideas! Thank you for forcing my broad thoughts into one sentence. Finally, words cannot describe my appreciation for the endless efforts of Dr. Wilkinson as my chair. You found the time to respond to my spurts of work at any time of the day, and night! Your gentle ability to give feedback with a kick added with the patience of a saint is awe-inspiring. I admire your leadership. I am so thankful for you.

There are several colleagues I would like to acknowledge for their unwavering support and mentorship. Each of you has contributed so much to my professional growth. To the Office of Admissions and Recruitment Team: thank you for creating such a healthy work environment, especially during the final months. Dr. Alan Rawls: your monthly progress calls reminded me that a good dissertation is a finished dissertation. Dr. Jacque Chadwick: your prescription of

tender encouragement, subtle nudging, and trust to get this done kept me well during this process. Dr. Stuart Flynn: your high expectations and leadership have navigated my professional growth. Thank you for adding me to your team. Roy and DF: I have learned the value of commitment, loyalty, humility and passion from you. After many years, I have come to respect and finally understand the desire to observe and celebrate from the shadows.

Brandon, Gabby, Zoe and Harper: you have witnessed me at my lowest and highest moments during this experience. My absenteeism was not easy on you and now it is time to make good on the promise that this was all worth it. I owe my family, especially Angie Mendez, and friends a final answer to the hardest question asked during this process. *YES, I am done!* Thank you for your love and hugs. To my very sweet and endlessly supportive parents, Nanette and Rick Ferguson and the “in-laws” Dee and Rick Cunningham, thank you for giving me the confidence to do more than believed possible from my humbled roots as a small-town Kansas girl with big dreams; I learned how to work hard and remain committed by observing each of you doing the same every day.

Thank you to the National Association of Advisors for the Health Professions, Inc. and Carol Baffi-Dugan for supporting my data collection and all of the amazing advisors who work tirelessly to support students interested in medicine.

TABLE OF CONTENTS

	Page
LIST OF TABLES.....	vii
LIST OF FIGURES.....	viii
CHAPTER	
1 INTRODUCTION	1
Background.....	1
Period of Expansion	4
Holistic Review Project.....	4
Role of Medical School Admissions Community	7
Role of Health Professions Advisor Community	8
Statement of Problem	11
Purpose of the Study.....	14
Significant of the Study.....	15
Limitations of the Study	15
Organization of the Study.....	16
2 LITERATURE REVIEW	17
Historical Perspective of Shortage and Growth.....	18
Historical Perspective of Medical Education.....	24
Contemporary Admissions Paradigm	27
Core Personal Competencies.....	32
Core Academic Competencies	35

CHAPTER	Page
Revised Admissions Tools	38
Medical School Admissions Community	43
Health Professions Advising Community	44
3 METHODOLOGY	49
Introduction.....	49
Sample Population.....	50
Research Design	51
Research Questions	52
Variables	52
Null Hypotheses	53
Data Collection	53
Research Instrument	54
Validity and Internal Consistency.....	55
4 DATA ANALYSIS AND RESULTS	56
Introduction.....	57
Personal Background of Participants	57
Professional Background of Participants	64
Institutional Profile	67
Differences in Academic Factors	71
Differences in Non-academic Factors.....	82

CHAPTER	Page
Impact of Holistic Review on Admissions Initiatives	88
5 DISCUSSION	91
Introduction.....	91
Results Summary	92
Conclusion	95
Recommendations	96
REFERENCES	97
APPENDIX	
A Health Professions Advisors Survey	104
B Institutional Review Board Approval	110
C List of Abbreviations.....	112

LIST OF TABLES

Table	Page
1. Core Personal Competencies	33
2. Admissions Officers' Ratings of Personal Competencies	34
3. Frequency of Ages in 10 Year Clusters	58
4. Gender Mean Age	59
5. Self-identified Race.....	59
6. Self-identified Ethnicity.....	61
7. States Represented by Participants	62
8. Years of Advising Experience	66
9. Total Student Enrollment	68
10. Level of Responsibility	70

LIST OF FIGURES

Figure	Page
1. Growth in enrollment since 2001	23
2. Number of Applicants to U.S. Medical Schools since 2001	24
3. Regions within the NAAHP	48
4. Gender of Study Participants	57
5. NAAHP Region Affiliation	64

Chapter 1

INTRODUCTION

Background

Considered a profession of integrity and ethical behavior, leadership, academic excellence and economic security, a career in medicine is a life-long decision that requires immense dedication, perseverance and motivation. The pursuit of medicine for some people may begin at an early age, often inspired by the qualities of a role model: a family physician, parents, and educators. Others arrive at the decision later in life, during the college years or even well into an established career (Baffi-Dugan and Cannon, 2011). Regardless of one's timing, a future physician, or a premedical student, must, at minimum, possess a strong science foundation, interpersonal skills, a consistent demonstration of maturity, integrity, and the ability to face and cope with adversity, including people from backgrounds different than their own. Individual paths leading to medical school are as diverse as the before mentioned characteristics, and are considered important to the diversity of medical schools.

Creating an environment rich in academic and personal diversity is important to medical schools, as such is viewed a positive training environment to serving patients from equally diverse backgrounds (Beach et al, 2005). However, the review and acknowledgment of varied backgrounds, academic and personal, requires a collection of data that goes beyond an academic transcript. To complement the academic data, the application process to medical school includes

a series of targeted essay questions that lend insight into a student's personal readiness for medicine, letters of recommendation, a resume of experiences, and a face-to-face interaction, or interview. The information gathered during the medical school application process tells a story, a story of a premedical student's academic, personal and professional preparation for a career in medicine. This story is received by medical school admissions offices for review, leading to a hopeful acceptance. For those admitted to medical school, nearly 100% will graduate and enter the physician workforce upon completing four years of undergraduate medical training and another three to five years of graduate medical training.

Medical schools admissions personnel have an obligation of evaluating the readiness of premedical students in competencies deemed critical to the profession, which will be measured throughout a student's medical career. Six core cognitive and non-cognitive competencies were adopted by the Accreditation Council for Graduate Medical Education (ACGME) in 2001, including patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism and systems-based practice. Over the past decade, undergraduate medical school curricula has transformed into system-based, evidence-based medicine; teaching modalities have introduced more small group learning, problem-based learning and other hands-on activities that assess and measure the medical student's mastery of the six core competencies.

Changes to medical education were not limited to pedagogical approaches or curriculum reform, however.

Similar to the work within the medical education community to identify core competencies and measurements of mastery before graduation, a task force was developed by the Association of American Medical Colleges (AAMC) and charged with investigating ways to measure personal characteristics in the medical school admissions process. This working group became known as the Innovation Lab Working Group (ILWG) and conducted numerous presentations at the annual AAMC National Meeting held in November, 2010 in Washington, DC. One of the findings of the ILWG was the identification of personal competencies considered important to success in medical education and throughout a physician's career and, therefore must be assessed during the admissions process. Further, the ILWG suggested the assessment of these competencies should be conducted from multiple sources using multiple measures in order to gain a more complete picture of premedical students' characteristics; therefore, providing triangulation of information about an applicant to medical school. The core set has been expanded since November 2010 and was endorsed by the Group on Student Affairs (GSA) in November 2011, and disseminated to the medical school admissions community.

At minimum, these efforts to align the admissions process with competencies established by the medical community suggest the significance of evaluating the readiness of premedical students related to these revised

parameters, as they will be held to the same competencies during their education career and eventually as a physician.

Period of Expansion

Historically, the demand of physicians has appeared to fluctuate based on governmental workforce studies that date back to the 1950s. Currently, experts estimate an imminent shortage of the physician workforce on the horizon and the medical school community must react by expanding the pipeline. Therefore, in light of the physician workforce shortage, the AAMC called upon the medical school community to enter a period of expansion that would increase the 2015 entering student population by 30% (AAMC, 2011).

While medical schools address the expansion, the AAMC medical admissions community simultaneously introduced the opportunity to adjust the way in which medical schools have traditionally reviewed applicants, a process that has largely been dependent on grades and performance on the Medical College Admissions Test (MCAT). Efforts to broaden the selection criteria beyond traditional means is the impetus to diversifying the composition of today's entering medical school student body.

Holistic Review Project

The medical school community has been encouraged to shift the selection paradigm from academics as the sole criteria for admissions to a comprehensive review as a mechanism to address diversity within the composition of medical students. The review of a student in the context of experience, academic

preparation and attributes important to the field of medicine is considered to be advantageous to identifying students who demonstrate a readiness for a career in medicine. A major initiative of the AAMC, the Holistic Review Project (HRP) is a purposeful project to develop tools and resources that medical schools can adopt or adapt in institution-specific ways to identify and sustain medical student diversity. Formally stated, the holistic review is “flexible, highly individualized process by which balanced consideration is given to the multiple ways in which applicants may prepare for and demonstrate suitability as medical students and future physicians” (Addams, Bletzing, Sondheimer, White and Johnson, 2010, p. 4) The HRP has highlighted the need to broaden the selection parameters and to develop sound and reliable assessments tools to increase and sustain medical student diversity.

Changing the lens by which medical schools review applicants is not the only adjustment to the admissions process. Medical schools have been challenged to identify institutional-specific academic and personal competencies that are deemed essential in the students they seek to admit, as well as the tools by which the competencies are assessed. To compensate for the ineffective attestation of non-cognitive data, some form of personal interview is present in medical school admissions and has been considered the primary method of assessing qualities. Traditionally, the interview method includes an open-ended, one-on-one conversation with someone serving as a representative of the medical school (i.e. faculty, administrator, current student). The lack of inter-rater reliability and

unconscious bias that is present in the traditional interview model has become a concern among the AAMC's Committee of Admissions (COA) and in fact, the adoption of a new and structured interview technique has become the focus for over twenty U.S. and Canadian medical schools within the past five years. The Multiple Mini-Interview (MMI) is a series of shortened, structured interviews that gain multiple perspectives of applicants' personal traits and characteristics. This assessment tool is more accurate in identifying candidates in possession of the desired characteristics for a career in medicine (Eva, Reiter, Rosenfeld and Norman, 2004).

In addition, the medical school community is changing the primary academic measurement tool that has been a standard in medical school admissions. The Medical College Admissions Test (MCAT) is considered a measurement of academic readiness for the rigors of medical school curricula, a leveling factor due to the inconsistencies within the vagrancies of an undergraduate education and a normalizing measurement of academic aptitude among applicants. The MCAT, a standardized, multiple-choice exam is required for admissions to almost all medical schools in the U.S. and many in Canada (www.aamc.org/mcat2015, accessed on October 15, 2011). Created in the early 1900s, the MCAT has been widely administered to over hundreds of thousands of students, and has been reviewed and updated to reflect the changes in medical education just three times since its inception. The MCAT is currently undergoing

a revision and update in over half a century of administration, and will introduce the new version in 2015.

Role of Medical School Admissions (MSA) Community

According to the Handbook for Admissions Officers, created by the AAMC GSA national COA, the most recent 2011 edition is a resource for both new and experienced admissions officers and their professional and administrative staffs. Information regarding the role of an admissions officer, recruiting premedical students, conducting admissions legally and in concert with institutional policies and relating to stakeholders within and outside the institution can be found in the free publication to registered GSA members. The admissions efforts of any medical school should be aligned with the mission, goals and diversity interests of the respective medical school, and each school must decide which applicants will benefit most from the school's educational program, and best serve the needs of its patients, community and the medical profession at large (AAMC, 2011).

Medical school admissions officers are encouraged to become familiar with the advising system, curricula and other unique characteristics of the schools whose students commonly apply to the respective medical school. To do this, admissions officers are encouraged to visit the schools and meet with HPA, premedical advisory committee, if one exists, as well as faculty who teach and write letters of recommendations. In doing so, the admissions officer will have a better understanding of the school's culture and education programs which, in

turn, allows the admissions officer to establish a solid relationship with the feeder institutions. The same relationship should be established with other schools from which the medical school receives applications. Additionally, admissions officers should be a resource to advisors and provide consultation for potential applicants with unique needs or special situations. Lastly, to support the role of the HPA, admissions officers are encouraged to be active and support the regional and national pre-health professions advisor organization, the National Association of Advisors for the Health Professions (NAAHP).

Resources for medical school admissions vary at each institution and resource constraints are felt by many, if not all, medical schools (Case, Fitzpatrick, and Sondheimer, personal communication, December 5, 2011). Therefore, the challenges of medical school admissions officers are fraught with the demands of a growing applicant pool and external pressures impacting the admissions process, including the holistic review paradigm, the introduction of competencies and the need to identify more accurate, sound and reliable methods of assessment.

Role of the Health Professions Advisor (HPA) Community

Universities and colleges expend resources to student development during the formative years in college, often dedicating student services personnel or faculty in advisement roles to assist students in choosing courses, or personal development opportunities in organized extracurricular activities and social events in areas of interest to complement academia. Advisors may be assigned to work

with a targeted population, such as pre-medicine, or even more generally speaking, pre-health. The HPA must have a comprehensive understanding of the demands in the medical profession, the criteria by which students are selected for medical school and how to plan students' paths adequately during their time at the institution, the latter of which is measured by the placement figures of students who matriculate into medical school in any given cycle.

Consumers of medical schools, including premedical students and HPA, must begin preparing to embrace the competency-laden assessment of academic, personal and professional readiness for admission to medical school. Fortunately for the premedical student, there are nearly 140 allopathic medical school options in the United States to obtain a Doctorate of Medicine (MD); however, unfortunate for the HPA, the number of medical schools is growing, which adds to the bank of information the HPA is responsible to know. HPA and medical school admissions officers play important roles in the identification of future physicians (Witzburg, 2007). Coming from a variety of diverse institutions, these professionals share a common goal in advising students with regard to where students might apply, to which medical school and even who will not apply at all.

The NAAHP is an organization of approximately one thousand health professions advisors at colleges and universities, as well as a few hundred health professions schools and associations throughout the U.S. that assist advisors in fostering the intellectual, personal, and humanist development of students who are preparing for careers in health professions. Through regional representation of

the greater association, the NAAHP has become an important liaison with health professions institutions (Baffi-Dugan and Cannon, 2011). The NAAHP conducts an ongoing survey of membership every five years with questions yielding important information relative to advisor demographics, position descriptions, location of academic services and other factors relative to the advising structures at institutions across the country. The most recent survey of members was conducted in the spring of 2010, and the results were published in the March 2011 edition of The Advisor, a journal published quarterly by the NAAHP.

According to the survey, HPA are found at institutions of varied sizes: small, medium, large and very large, which incorporate a diverse community of degree granting institutions. HPA identify themselves as faculty or administrative/professionals who are increasingly being asked to “do more with less” and who report that administrators do not understand the value of services, resulting in less than adequate compensation in terms of time, travel, money and clerical support. Across the board, the 2010 survey highlighted the increase in the health professions that NAAHP members discuss with students. The HPA community gathers the breadth of knowledge necessary to be effective through the NAAHP via meetings, information and articles in The Advisor, and the NAAHP listerv (Cheesman et al, 2011). According to Kerry L. Cheesman, PhD, Professor of Biological Sciences and Director of Health Professions Program at Capital University and a member of the NAAHP Board of Directors, “We aren’t

just premed advisors – we cover the entire field. We have evolved in our scope of practice” (Cheesman et al, 2007).

Statement of the Problem

The need to expand medical school enrollment is urgent and compelling. In this time of expansion exists an opportunity to re-examine longstanding assumptions in medical education and to identify innovative ways to prepare students better for a career in medicine. The relationship between HPA and medical school admissions officers is essential to the success of future students; the need to build alliances and bridge gaps of awareness and information relative to the rapid changes in the selection paradigm of medical students is critical. Neither the HPA nor the medical schools can settle with “more of the same”. Despite the external pressures impacting medical schools to revise the identification, screening and selection of students and the challenges facing the HPA community to adjust long-standing practices as results of these changes, the need to invoke collaborations between the two communities is needed more than ever (Sondheimer, et al, 2009). As said by Dr. Cheesman, “The best advisor is an informed advisor” and the medical schools will benefit from not only an informed advisor, but more importantly the informed advisee” (Cheesman et al, 2011).

While the HPA and the students they advise hope for a checklist that leads to automatic admissions, the selection process is not simple and the medical school admissions community desires to help the advisors and students understand this better. However, the challenge remains for medical schools to

inform the complex admission process in a way that is best understood by the applicants and the HPA community. Otherwise, the lack of understanding from those charged with advising premedical students could result in an unsuccessful application to medical school. Without a secondary plan to enter graduate or other health-related profession school, the student's college degree may be rendered useless, providing very little in way of employability after graduation.

Countless hours have been dedicated to volunteering time at local healthcare clinics and hospitals often to indicate their understanding of the clinical environment. Personal essays have been coached to document the beginnings of their interest in medicine and offer background and illustrations to support their consistent and persistent pursuit of medicine. Letters of recommendation from prominent members of the healthcare community, leaders in academia and other carefully chosen individuals offer insight to the student's maturity and academic ability to pursue medicine. All the information is collected and sometimes summarized by HPA.

All in all, the medical school admissions process has boiled down to the submission of well-written essays, list of coursework and grades earned, a resume of applicable clinical and non-clinical experience and the performance on the MCAT. Medical schools and the HPA must begin to shift practices to embrace an admissions process that involves a comprehensive review, or holistic review, of applicants' readiness for medicine based on academic and personal characteristics. Additionally, the HPA is pressured to modify advising practices

to introduce and develop premedical students in cognitive and non-cognitive competencies' as measured on the MCAT2015, MMI through the holistic admissions review.

As a medical school admissions administrator at one of the newest medical schools in the country, this researcher felt compelled to investigate the health professions advisors' attitudes within the NAAHP's four regions relative to the academic and personal selection factors used in medical school admissions. The interest stems from the attendance at the annual Association of American Medical Colleges (AAMC) Western Group for Student Affairs (WGSA) annual meeting in the spring of 2011, a regional meeting of several medical education professionals: Group of Student Affairs (GSA) and Group of Educational Affairs (GEA), both of which are a sub-group of the larger AAMC, as well the Western Association of Advisors for Health Professions Advisors (WAAHP), which is one of five regional groups in the National Association for Health Professions Advisors, Inc. The bi-annual joint meeting provided an opportunity for those involved in pre-health advising to interact with medical school admissions professionals, and to share knowledge, programs and updates critical to the preparation of our future medical students. A variety of topics were discussed during the four-day meeting: changes to the MCAT, revised selection criteria for medical school admissions, as well as a new method of interviewing medical school applicants and development of a standardized letter of recommendation.

The WAAHP-affiliated members appeared anxious, curious and at times frustrated by the volume of changes in the criteria and selection of medical students, which places the advisors in a particularly difficult position. On one hand the generalizable feeling of the advisors present at the meeting was an understanding that medical schools must improve admission tools and procedures by which students are chosen, not only for the sake of society, but also for the success of the student. However, the ambiguity of modifying criteria around competencies and less on a prescribed set of academic and experiences makes their job that much more difficult. The researcher sought to be put meaning to the observations made during one of the four regional meetings and answer the broader question of how does the background of an advisor affect their perception of academic and non-academic factors important to the selection of medical students.

Purpose of the Study

The purpose of this research study is to determine if differences exist among the health professions advising community between factors (academic and non-academic) used as selection criteria in medical school admissions, as well as the impact of the holistic review in admissions on new admissions initiatives with respect to personal and professional backgrounds of advisors. The health professions advising community was surveyed to respond to these questions.

Significance of the Study

For the past six years, this researcher has served as the admissions administrator at one of the newest medical schools in the US, and has faced the reality of the external pressures that have led to the changes in the admissions practices. A sincere appreciation has developed for the strength of advising and undeniable desire of health professions advisors to prepare their students well for the medical school admissions process, and ultimate career as a physician. The timing of this study is appropriate considering the intense focus within the MSA and HPA communities on the identification of personal and academic competencies, the tools by which these are assessed and the impact these changes will have on the premedical student. The results of the study have raised awareness and generated possible areas for collaboration between the MSA and HPA communities as it relates to preparing future applicants to medical school.

Limitations of the Study

1. The focus of this study is limited to the approximate 900 advisor affiliated members of the National Association of Advisors for the Health Professions, Inc.; therefore, the study will not reach every individual involved in advising future medical students who are not active members of the NAAHP.
2. The researcher in this study is relatively new in terms of educational research; therefore, the study is largely dependent on the novice perspective.
3. Participation in this study was voluntary and the researcher did not offer a monetary or materialistic incentive in exchange for participation.

Organization of the Study

This research paper is presented in five chapters. Chapter 1 served as an introduction to the external pressures impacting medical school admissions and the roles the MSA and HPA play in the medical school admissions process. Chapter 2 encompassed the following themes: 1) a historical perspective of physician workforce shortages and expansion of medical schools, 2) a historical perspective of medical education and the opportunity to change the profile of new medical school entrants by adjusting long-standing admissions standards and practices, 3) a review of the new admissions initiatives as result of the holistic review in admissions paradigm, 4) the current role of the health professions advisor community in preparing premedical students. Chapter 3 described the methodology for which the quantitative study was analyzed, and the research questions, variables, and the population surveyed. Chapter 4 presented the findings of the study. Chapter 5 integrated the findings and offered recommendations and suggestions for future research on the topic.

Chapter 2

LITERATURE REVIEW

To understand the challenges facing medical school admissions administrators' (MSAAs) and the health profession advisors' (HPAs) who prepare students in the pipeline, it is important to understand the historical context of medical school enrollment in the U.S within the last sixty years. Medical schools have opened doors, expanded existing facilities, and even duplicated services in entirely different cities as a means to increase the production of physicians. The historical timeline lends insight to the disagreements within the federal government and advisory groups relating not only to the physician workforce calculations, but also the production of physicians who will care for a diverse society.

One significant impetus for change within the medical school admissions community over the last decade is the estimation that by 2020, the physician workforce will reach a pivotal moment – the population among those over 65 will be at an all-time high and one-third of today's physicians will enter retirement - resulting in a significant shortage of physicians. In anticipation of these events, the strategy to stave off a physician shortage is to increase the number of graduates from medical schools, through a combination of increased medical school class sizes and new medical schools. While growth in medical schools is believed to address the shortage of physicians, changing the long-standing selection criteria and admissions practices is considered the best approach to

producing physicians who are prepared to deliver quality healthcare to an increasingly diverse patient population.

Sharing the burden of altering practices extends to the HPAs, who are considered the professionals guide, development and nurture the premedical student population. The literature review will identify the effect of external pressures on medical schools and the admissions process that will transcend the role of the HPAs in preparing premedical students.

Historical Perspective Shortage and Growth

The supply and demand of medical schools is predicated on the projections of the workforce and up until the 1950s, there was little concern about the production of physicians relative to the nation's population needs. During the 1956 annual AAMC meeting, the medical community received an official endorsement to increase the physician supply in the United States as it was stated that the country "should increase its output of physicians by increasing the number of its medical schools" (AAMC, 1958, p. 56). The lack of opportunity in many states for qualified students to attend medical school, leading to a severe physician shortage by mid-70s was a finding of 1959 consultant group charged by the United States (US) Surgeon General. The Bane Report, or formerly stated the *Physicians for a Growing America*, urged the country to expand its existing medical schools and create new ones to increase physician production.

Considered the most influential report since the Flexner Report of 1910, the Bane Report provided momentum to pass federal legislative measures and

authorize law to assist in building new facilities or rehabilitate existing facilities provided that medical schools increase class size by five percent or by five students. Additional federal legislation in 1965, 1968 and in the 1970s provided financial incentive for medical schools to increase entering class sizes (Ludmerer, 1999). These initiatives resulted in dramatic growth between 1963 and 1975, from 8,722 to 15,295 first-year medical students. Simultaneously, the number of accredited medical schools increased from 83 to 109 in the same period (Robinson, 2002).

In 1970, the Carnegie Foundation for Higher Education added support to the growing class sizes by addressing the physician shortage in *Higher Education and the Nation's Health*. According the Carnegie Foundation, the “United States today faces only one serious manpower shortage and that is in health care personnel” (p. 2). The foundation recommended increasing the number of first-year medical students by 50 percent – to 16,200 – by 1978. The outcomes of both the Bane Report and the Carnegie Report were realized in two separate steps. U.S. medical schools enrolled 15,295, exceeding the 15,000 goal set by the Bane Report. The Carnegie’s call for 16,400 by 1978 was surpassed slightly with 16,501 entering medical school that year (Mallon, et. al, 2006). In total, forty new allopathic medical schools were established in the United States from 1960-1980, resulting in a near 50 percent increase in the total number of allopathic medical schools in the country. The results of the new schools were visible as the rise of

physicians increased from approximately 7,500 to 16,000 over the course of that 25-year period.

However, despite the growth felt in these two decades, the expansion of U.S. medical schools came to a stop in the 1980s and 1990s, largely due to perception of local and state officials who believed no new schools were needed. Responding to a report published in 1981 by the Graduate Medical Education National Advisory Committee (GMENAC), Congress began eliminating subsidies to medical schools and enrollment in U.S. medical schools was restricted based on the report's findings - a predicted surplus of physicians of 145,000 by 2000, or 23 percent of the projected workforce (Nicholson, 2009). Adding to the fear of a saturated workforce, a federally created advisory group, known as The Council on Graduate Medical Education (COGME), concurred with GMENAC and supported the halt in medical school growth, a stance held strong through each annual report to Congress through the remainder of the twentieth century. However, in 2003, COGME abandoned the forecast of a physician surplus based on the mounting evidence from physician work force experts and hiring firms. The work force shortage went beyond fewer students attending medical school and it was clear the nation was indeed facing a shortage of 85,000 physicians by 2020 (Croasdale, 2003).

The plateau of medical school enrollment felt during the 1980s and 1990s meant that the supply of physicians was trailing the aging population, especially those over 65 years who are considered the largest consumers of health care

resources. According to the U.S. Census Bureau, the nation is growing by more than 25 million people every decade (U.S. Census Bureau, 2006), and in 2005, the estimated number of baby boomers exceeded 78 million. An aging population becomes a two-fold concern among the physician workforce; first, the number of older physicians nearing retirement changes the landscape of physicians and second, the aging population will create a demand issue for the physicians still in practice.

Ed Salsberg, the commissioned expert by COGME to analyze the changing physician workforce noted, “younger physicians wanting to work fewer hours; an aging population that requires more care; and an increased demand for specialists” (Croasdale, 2003) forced COGME to change their position completely and rather than debate whether there will be or will not be a shortage, turn energy to finding a solution to the problem (Croasdale, 2003). Although in agreement, some in the medical community believed COGME’s estimates were modest given that the U.S. Census Bureau anticipated the population growing 18%, from 274 million in 2000 to 324 million by 2020 (Nicholson, 2008). Additionally, the population among those over 65 will be at an all-time high and one-third of today’s physicians will enter retirement.

The Institute for Health Policy at the Medical College of Wisconsin in Milwaukee led the initiative to suggest a minimum increase of 15% would be necessary to keep accessibility to medical education stable. Following suit, then former senior vice president for the AAMC Division on Medical Education,

Michael Whitcomb, MD, carefully stated in an online American Medical news article on November 3, 2003,

A couple of years ago, we changed the policy that had been adopted in mid-1990s, that we'd have too many physicians. Now our perspective is one of agnosticism. We aren't exactly sure. We've paid careful attention to the reports suggesting that we'll have too few physicians, and we feel some responsibility to take those concerns seriously. The COGME recommendations will stimulate a lot more thinking on the options for increasing the supply of physicians in this country (Croasdale, 2003).

The pressure of medical schools to increase graduates was taken to task by the AAMC in June 2006 by the call to increase entering class sizes by 30 percent by 2015 (AAMC, 2002). Since the AAMC call for a 30 percent increase in enrollment to help alleviate anticipated physician workforce shortages, U.S. medical schools have increased entering class sizes by 16.6 percent over the 2002 base year used in calculating the 30 percent (AAMC, 2011). The 2011 entering class of medical students across the U.S. increased by 3 percent over the last year, with 19,230 students enrolled. Darrell G. Kirch, M.D., AAMC president and CEO notes in an October 24, 2011 press release, "Current projections indicate that medical schools are on target to reach the 30 percent enrollment increase by 2017." He notes the majority of the growth came from existing schools while a smaller portion came from new medical education programs established over the last decade (see Figure 1).

U.S. Medical School First-Year Enrollment, 2001-2011

Year	Total	% change from prior year
2001	16,365	+0.4%
2002	16,488	+0.8%
2003	16,541	+0.3%
2004	16,648	+0.6%
2005	17,003	+2.1%
2006	17,361	+2.1%
2007	17,759	+2.3%
2008	18,036	+1.6%
2009	18,390	+2.0%
2010	18,665	+1.5%
2011	19,230	+3.0%

Figure 1 Growth in enrollment since 2001

At the same time the number of applicants was on the rise. Total applications received rose by 2.8 percent to 43,919 in 2011, of which 32,654 were received from first-time applicants. Since 1982-83, the medical school population has fluctuated from the lowest number of applicants in 1988-89 of just 26,702 to the highest number of applicants in 1996-97 of nearly 47,000 applicants (www.aamc.org, accessed on August 24, 2012). “We [AAMC] are very pleased that medicine continues to be an attractive career choice at a time when our health care system faces many challenges, including a growing need for doctors coupled with a serious physician shortage in the near future”, Dr. Kirch. Figure 2 represents the number of applicants to U.S. medical schools since 2001. U.S.

medical schools have received applications from a record number of students who desire a seat in the entering class (see Figure 2).

U.S. Medical School Total Applicants, 2001-2011

Year	Total	% change from prior year
2001	34,860	-6.0%
2002	33,624	-3.5%
2003	34,791	+3.5%
2004	35,735	+2.7%
2005	37,372	+4.6%
2006	39,108	+4.6%
2007	42,315	+8.2%
2008	42,231	-0.2%
2009	42,268	+0.1%
2010	42,741	+1.1%
2011	43,919	+2.8%

Figure 2 Number of Applicants to U.S. Medical Schools since 2001

Historical Perspective of Medical Education

In addition to understanding the supply and demand of physicians and the growing applications to U.S. medical schools, it is critical to this study that the same be understood regarding the cause and effect that the curricular components have on the entrance requirements. The history of medical education can be traced to the nineteenth century methods that utilized one of three basic systems: apprenticeship system, or hands-on training with a practicing physician; a proprietary system that was led by the physician-owner who delivered lectures; or the university system, a combination of lectures and clinical training throughout

affiliated hospitals. By the turn of the twentieth century, the American Medical Association (AMA) sought to standardize medical education and in 1904, the AMA created the Council on Medical Education (CME). Over the course of the next four years, CME outlined its major reform initiatives: standardization of education requirements for entry into medical school and national implementation of an “ideal” curriculum (Beck, 2004).

In 1908, the CME approached the Carnegie Foundation for the Advancement of Teaching to conduct a study of the U.S. medical schools. Abraham Flexner, a schoolmaster and educational theorist, was identified to head the survey and completed site visits to all 155 U.S. medical schools. His report eighteen months later became the manifest that would lead medical school reform well into the 21st century. The Flexner Report, *Medical Education in the United States and Canada*, was released in 1910 and quickly thereafter, state licensing boards began to force medical schools across the U.S. to implement stricter admission standards and curriculum requirements.

Flexner noted in his report that “if the sick are to reap the full benefit of recent progress in medicine, a more uniformly arduous and expensive medical education is demanded.” However, an unintended consequence of his statement was the effect on the schools designed to serve the local community. The increased entrance requirements and curriculum standards promoted the “professional elitism” and inhibited the economically disadvantaged from pursuing careers in medicine (Markowitz and Rosner, 1973). By the 1930s,

proprietary medical colleges were eradicated and concurrently the closure of several small, rural medical colleges and all but two African American medical colleges.

For over a century, the delivery of a medical education has remained virtually unchanged, including the *arduous and expensive* components demanded by Flexner. The long-standing model of medical education is part lecture and part apprenticeship, which Flexner identified as the “superior model” and is considered the “university system”. This system trains medical students by capturing basic science concepts through lectures and exams during the first two years of medicine, leaving the last two years of education to be conducted in hospitals and clinical training sites. Although the delivery has remained unchanged, for the most part, the field of medicine has not. The practice of medicine and its scientific, pharmacological and technical foundations have been transformed with rapid advancements and discoveries of disease and treatments. Consequently, the Flexner blueprint of medical education excellence is at a crossroads: continue to teach medical students in the direction established over a century ago or to take a different course guided by contemporary innovation to train a physician for the 21st century (Cooke, Irby and O’Brien, 2010).

The driving force in the undergraduate medical education community with regard to curricular changes is the level of accountability and responsibility to produce competent practicing physicians. Considered the Flexnerian revolution of the 21st century, the shift to competency-based curriculum and evaluation of

outcomes is the reality of present day medical education. In 1999, the Accreditation Council for Graduate Medical Education (ACGME) endorsed six general competencies as the foundation for all graduate medical education: (1) patient care, (2) medical knowledge, (3) practice-based learning and improvement, (4) interpersonal and communication skills, (5) professionalism and (6) systems-based practice. A vision for the future of medical education was purported in the *Education Physicians: A Call for Reform of Medical School and Residency*, the 2010 findings of a study supported by The Carnegie Foundation for the Advancement of Teaching. The findings were articulated into four goals for medical education, leading a vision for the future of medical education to strengthen the profession by revitalizing the need for medical students to: (1) exceed competence in skills, (2) be self-motivated to learn beyond minimal expectation, (3) engage in self-awareness and, (4) not only to recognize deficiencies in skills, but also to overcome and teach others. These goals in medical education influence the selection criteria that are identified during the admissions process.

Contemporary Admissions Paradigm

Medical school admissions practices have been a topic of research for decades (Ferguson, James and Madeley, 2007). The research has covered the impact of application data on the selection of students relative to the predictors of success in medical school, the validity of tools used in selecting medical students, as well as the future field of medicine practiced. However, the research has also

exposed the effect on diversity in medical schools due to a heavy reliance on academic metrics in selecting students (AAMC, 2008), as well as the inability to assess personal traits of premedical students due to flawed interview formats and other screening parameters. The movement to evaluate applicants for medical school beyond the “GPA-exam-activities-service model” expanded to encompass a holistic assessment, (Chuck, 2011). Several initiatives will be discussed during this section of the literature review, all of which are changing the way in which medical schools look at premedical students and consequently, the role of a health professions advisor (HPA).

As result of the growth in medical schools and the shift to competency-based assessment in the medical education arena, the medical school admissions community (MSAA) began to review the selection criteria and prerequisite coursework believed necessary to obtain the MD degree and to become a competent physician. Shifting the selection paradigm from academics as the sole criteria to a comprehensive review, a review of a student in the context of experience, academic preparation and attributes important to the field of medicine have led the discussions of the AAMC and those involved in medical school admissions for the past several years.

The pressures and limitations on HPAs in medical school admissions practices and outcomes are essential to understand in this study. As the applications to medical school and the demand to enroll more students’ increases as a response to a projected physician workforce study, the job of HPAs becomes

critically important. Once a medical school has admitted a class of entering students, it is anticipated that 96% of those students will graduate (AAMC, 2007). Therefore, medical schools have a moral obligation to evaluate the readiness of premedical students in competencies deemed critical to the profession, which will be measured throughout a student's medical career. As a correlate, the guidance and development of premedical students through the HPAs has a direct impact on the quality of students from which the medical school admissions community will select. It is the converging relationship between the HPAs and MSAs that unites this research study.

Simultaneous to the increased interest among premedical students, the medical school admissions community has begun to make concerted efforts to identify students for admission whose backgrounds and experiences will significantly change the profile of the entering students. Several additional initiatives have been coordinated by the AAMC to address the way in which medical schools select students, including a philosophical model that takes into account the whole applicant, not just the premedical students' academic past. Additionally, the assessment of the cognitive and non-cognitive readiness through the modification of existing tools and the development of new tools has become a focus of change.

Over the past several years there has been an organized movement among the AAMC Group for Student Affairs (GSA) and the admissions-related subgroup known as the Committee on Admissions (COA) to lead thoughtful

discussions and build consensus among the medical school community to examine long-standing admissions practices. Through a network of conversations held at national and regional meetings, work groups of MSAs and leaders within the AAMC, several initiatives have been launched and are reshaping medical school admissions.

The first effort discussed in this chapter is the development of a paradigm wherein the medical school admissions community thinks differently about the criteria used to select students for admission. The AAMC Advisory Committee on Holistic Review was established in 2007 and focused on the application and admissions process related to institutional diversity, as well as the functions that support diversity, such as outreach, recruitment, financial aid and retention (AAMC, 2010). The work of the advisory committee was outlined in the 2008 *AAMC Roadmap to Diversity* and provided legal and policy guidance to higher education regarding the development of diversity policies and programs.

The advisory committee continued its work and released a second publication in 2010, *Roadmap to Diversity: Integrating Holistic Review Practices into Medical School Admissions Processes*. The publication provided a set of self-discovery checklists designed after launching an initiative known as the Holistic Review Project that initially a piloted program to help medical schools establish and implement institutional-specific, diversity-related policies that will their core educational goals with minimal legal risk (AAMC, 2010). This purposeful project identified tools and resources that medical schools can adopt or

adapt in institution-specific ways to identify and sustain medical student diversity, and the selection of students who are suitable for the profession. The HRP highlighted the need to broaden the parameters by which medical students have been traditionally assessed.

From the beginnings of an advisory board in 2007, HRP is now a product offered in the form of a workshop to admissions committee members and staff, and other stakeholders in medical school admissions: diversity affairs officers, screeners, interviewers, and faculty. According to the *Holistic Review in Admissions Fact Sheet*, the “workshop enables admissions committee members to achieve the diversity interests the school seeks using holistic review practices to screen, interview, and select applicants” (AAMC, 2011, 1). As the medical school community begins shifting the selection paradigm from academics as the sole criteria for admissions to a comprehensive review, a review of a student in the context of experience, academic preparation and attributes important to the field of medicine, better tools to identify non-cognitive traits must be developed. Additionally, the Holistic Review Project espouses the absolute need for medical schools to tailor the selection of students to fit the school-specific institutional values and mission; therefore, if done properly, each of the U.S. medical schools would be unique in the screening, interview and selection of premedical students. This level of specificity makes the role of advising premedical students difficult considering the level of variability in medical school-specific values and missions.

Core Personal Competencies

Medical educators agree that medical student success does not occur in an academic vacuum; behaviors and personal traits play a significant role and are related to improved patient care (Grumbach & Bodenheimer, 2004; Beach et al., 2005). Despite the importance, there have been few efforts to define personal competencies systematically and further, what is expected of an entering medical student. From 2008 to 2010, the AAMC identified several workgroups to study the desired entry-level competencies that are required for success in medical school and during a physician's career. The Admissions Initiative (AI) included multiple data collections and input from multiple sources to develop the core competencies.

The Innovation Lab Working Group (ILWG) was created after surveys were collected from admissions officers and academic officers to identify personal characteristics. The personal competencies established by the workgroup gained endorsement from the GSA COA in July 2010 (AAMC and NAAHP webinar, February 2, 2012). Table 1 represents the nine competencies and a description for which each represents.

Table 1

Core Personal Competencies

Item	Description
Integrity and Ethics	Behaves in an honest and ethical manner; adheres to ethical principles and follows rules and procedures; resists peer pressure to engage in unethical behavior and encourages others to behave in honest and ethical ways.
Reliability and Dependability	Consistently fulfills obligations in a timely and satisfactory manner; takes responsibility for personal actions and performance.
Service Orientation	Demonstrates a desire to help others and sensitivity to others' needs and feelings; demonstrates a desire to alleviate others' distress.
Social and Interpersonal Skills	Demonstrates an awareness of others' needs, goals, feelings, and the ways that social and behavioral cues affect peoples' interactions and behaviors; adjusts behaviors appropriately in response to these cues; treats others with respect and demonstrates a respect for diverse populations.
Capacity for Improvement	Sets goals for continuous improvement and for learning new concepts and skills; engages in reflective practice for improvement; solicits and responds appropriately to feedback.
Resilience and Adaptability	Demonstrates tolerance of stressful or changing environments or situations and adapts effectively to them; is persistent, even under difficult situations; recovers from setbacks.
Cultural Competence	Demonstrates knowledge of social and cultural factors that affect interactions and behaviors; shows an appreciation and response for multiple dimensions of diversity; recognizes and appropriately addresses bias in themselves and others; interacts effectively with people from diverse backgrounds
Oral Communication	Effectively conveys information to others using spoken words and sentences; listens effectively; recognizes potential communication barriers and adjust approaches or clarifies information as needed.
Teamwork	Works collaboratively with others to achieve shared goals; shares information and knowledge with others and provides feedback; puts team goals ahead of individual goals.

The ILWG’s next step was to examine the importance of each competency to success in medical school, which led to the development of the 2010 Personal Competency Survey. Admissions Deans for all U.S. and Canadian medical schools were invited to complete the survey, of which 98 responded, a 69% response rate. Rating the competencies on a 5-point Likert-type scale (1=Not Important to 5=Extremely Important) led to the following findings (Table 2).

Table 2

Admissions Officers’ Ratings of Personal Competencies

Personal Competency	Mean
Integrity and Ethics	4.7
Reliability and Dependability	4.4
Service Orientation	4.2
Social and Interpersonal Skills	4.5
Capacity for Improvement	4.3
Resilience and Adaptability	4.2
Cultural Competence	3.7
Oral Communication	4.2
Teamwork	4.3

The identification of core personal competencies brought awareness to the development of tools that enable admissions committees to assess these competencies during the initial screening and evaluation of medical school applicants (AAMC, 2012).

Core Academic Competencies

A significant component of the selection process focused on the ability to demonstrate academic readiness for the rigors of medical school curricula gleaned by the performance on the MCAT. MCAT scores help admissions committees interpret grades and other academic data that come from a variety of undergraduate curricular emphasis and grading procedures. Because course content differs among schools, the MCAT is considered a leveling factor in the medical school admissions process, a way to address inconsistencies within the vagrancies of an undergraduate education and a normalizing measurement of academic aptitude among applicants' (AAMC, 2011).

The MCAT is designed to measure applicants' knowledge of introductory-level concepts in biology, organic chemistry, general chemistry and physics, as well as critical thinking skills in hypothesis testing, problem solving, verbal reasoning and quantitative reasoning. Like other standardized exams, the MCAT is not perfect and examinees scores can fluctuate due to fatigue, test anxiety, testing conditions, exposure to tested topics. The MCAT is the standardized, multiple-choice exam required for admissions to almost all medical schools in the U.S. and many in Canada (www.aamc.org/mcat2015, accessed on October 15, 2011). Created in the early 1900s, the MCAT has been widely administered to over hundreds of thousands of students, and has been reviewed just three times since its inception.

Beginning in 2008, the MR5 committee was established to review the exam and to recommend changes to increase its usefulness in the selection of medical students. The 21 committee members included medical school deans, admissions, educational affairs, student affairs, diversity officers, basic and clinical sciences faculty, pre-health advisors and other baccalaureate faculty, a resident and a medical student (www.aamc.org/initiatives/mr5, accessed on October 20, 2011). The MR5 committee solicited input from stakeholders including the AAMC-Howard Hughes Medical Institute (HHMI) Scientific Foundations for Future Physicians (SFFP), the AAMC Behavioral and Social Sciences Expert Panel, the Holistic Review Project Advisory Committee, the National Association of Advisors for the Health Profession (NAAHP) and other groups. The MR5 committee received more than 2,700 surveys from baccalaureate and medical school faculty, holding more than 75 outreach events, including seven during the 2011 AAMC Annual Meeting and numerous presentations at AAMC regional meetings, the preliminary outcomes were announced during the 2011 AAMC Annual Meeting and formally adopted by the Board of Directors in February 2012. The next exam will be administered in 2015.

The revised MCAT, currently known as MCAT2015 is designed to test and report scores in four sections: 1) Molecular, Cellular and Organismal Properties of Living Systems, 2) Physical, Chemical and Biochemical Properties of Living Systems, 3) Behavioral and Social Sciences Principles, and 4) Critical

Analysis and Reasoning Skills. The knowledge and skills for the exam can be learned through introductory courses in biology, general chemistry, organic chemistry, and physics, as well as psychology and sociology. Notably, the changes to the MCAT may modify the courses completed during the undergraduate experience and shift from a rigid and concise list of discipline-based to competency-based curricula that recognizes the importance of socio-cultural and behavioral determinants of health and health outcomes (AAMC, 2011).

While changes to the MCAT have been adopted, there is still debate regarding the coursework required for admission to medical school. The current medical school pre-requisites have not changed for more than 40 years (joint NAAHP and AAMC webinar, February 2, 2012); the MR5 committee did not offer an updated list of specific courses required. Instead, the emphasis has been placed on “academic competencies”. In July 2010, the GSA COA endorsed a paradigm shift to base medical school admissions requirements on academic competencies rather than lists of required courses. The AAMC developed the Admissions Initiative to explore the possibility of competency-based admissions, believing this paradigm provides the greatest flexibility for applicants with diverse educational backgrounds to prepare and demonstrate suitability as medical students and future physicians, aligning to the Holistic Review. The Admissions Initiative is considering a “Bridge Solution” as the means by which to demonstrate prerequisite flexibility and enable applicants to demonstrate mastery

in course content. The Bridge Solution may alleviate the frustration of undergraduate schools who are feeling pressure in preparing their students for both the new MCAT and possible changes in prerequisite coursework (joint NAAHP and AAMC webinar, February 2, 2012).

Revised Admissions Tools

Admissions committees use a variety of information to determine those who will be accepted to medical school, including academic and non-academic data that is collected during the application process. While grades and MCAT play a role in the selection of students admitted to medical school, the relative information found within letters of recommendation and interviews conducted gain valuable insight into the applicant's character. To help medical schools consider data on integrity, service orientation and the aforementioned personal characteristics, options for gathering data to assess these traits are vigorously being pursued by the AAMC. Attributes described as a "non-cognitive", "personal qualities", "character traits" are difficult to identify and measure; however, the professionals involved in medical schools have long desired to consider these attributes. Measurements of non-cognitive traits can include personal qualities noted in letters of recommendation, personal statements and the personal interview (Gutaowski, Thaker, Heinrich and Fadem, 2010). Each medical school determines how many letters of recommendation will be required and from whom the letters should come. Each medical school also determines the interview format to be used during the application process. Currently, one must

delve deeply to find key information in the personal statements, applicant experiences and other sections of the national application, creating inefficiency (Case, Fitzgerald, and Sondheimer, personal communication, December 5, 2011).

According to a survey of medical school admissions officers conducted in 2010 by the COA, 80% of U.S. and Canadian medical schools reported using letters of recommendation and interview recommendations as the first and second data most important in their decisions to offer an acceptance (Dunleavy and Whittaker, 2011). As a result, the GSA COA and AAMC staff have begun exploring possible ways to collect, report and deliver information to admissions committees about core entry-level personal competencies from a variety of sources, providing admissions committees the ability to triangulate information (AAMC, 2012).

One method of evaluating a premedical student's character is through letters of recommendation that come from a variety of authors. A minimum of three letters of recommendation (LORs) are a standard requirement in the application for the majority of medical schools (www.aamc.org/msar, as accessed on November 5, 2011). Each letter should provide an evaluation of a student's readiness for medicine based on the author's familiarity with the student through a variety of personal experiences: classroom, extracurricular activity, employment, research project to name a few. Medical schools vary in how they instruct applicants to select writers and what content is desired, leading to a variety of letter length, information and formats. Because the writers are chosen by the

applicants, the information gleaned from the letter is never completely believed to be a critique of a student, but rather a letter of support. Further, the variance from writer to writer makes it difficult to use the letters as a comparison tool between applicants (Albanese et al, 2003).

Some undergraduate institutions provide multi-authored letters, known as composite or committee letters, which are often coordinated through the pre-health advising office. These letters may be the result of several independently received letters compiled into a single document, using the most complementary statements to build a strong case of support. Other committee-type letters are developed after a series of interviews with the premedical student. Regardless of the format, premedical students are encouraged to waive the right to preview the letter, which presumably adds honesty and candor to the content of the letter (Dugan and Cannon, 2011, 17).

Letters of recommendation (LORs) are sent directly to the national application clearing house, the American Medical College Application Service (AMCAS), and distributed to schools to which the students have submitted an application. LORs are sent to medical schools' admissions offices in time to be used in the screening process and may be relied upon to measure a student's motivation, maturity, perseverance, judgment, compassion, integrity, interpersonal and communication skills, cultural sensitivity among others (Dugan and Cannon, 2011, 17). Letters of recommendation are intended to provide insight into the premedical student's readiness for a career in medicine; however,

each letter writer may or may not be guided appropriately by the student requesting the letter, resulting in a variety of information, or lack thereof, about the student. As a remedy to the current letter writing process, in 2008, the ILWG considered a more systematic approach to letters; discussions to develop a national standardized letter of recommendation that would not only guide the letter writer, but also would ask the letter writer to assess a student's competency in domains important for medical school consideration.

The term "standardized letter of recommendation" (SLOR) was first introduced during the AAMC national meeting in November 2010. SLORs would ask multiple writers to score applicants on the personal competencies, using a set of behaviorally-anchored scales, as well as a short narrative to support the rating (AAMC, 2010). The piloted concept was discussed throughout the AAMC regional meetings during 2011 and presented during a webinar in February 2012. Although still in the discovery phase, the concept of improving the information gained from letter writers is very much a reality, and tied to the holistic review of applicants. Conversations among and between MSAA and HPAs will continue in the near future (AAMC webinar, February 2012).

As the personal interview is the primary method of assessing a number of qualities, 99% of medical programs use the interview as part of the admissions process (Puryear and Lewis, 1981). The most commonly used interview method is an open-ended, one-on-one conversation with a member of the medical school faculty, administrative staff or even currently enrolled medical students.

However, the growing concern regarding the traditional interview format is the apparent lack of reliability and predictive validity due to the impossibility to control the content of the interview, as well as the way the interviewer assesses the premedical student (Eva et al, 2004). Further, interviewers may be biased towards candidates who are like themselves (Quintero et al, 2009). Eva and colleagues (2004) noticed that the personal interview scores used to assess candidates at McMaster University were subject to bias. One point of bias was the rapport developed between compatible interviewer/interviewee pairs. Eva and colleagues explained, “A lucky candidate who is randomly assigned to a like-minded interviewer will score highly, whereas an identical, but less fortunate candidate who is randomly assigned to an incompatible interviewer will score poorly” (p. 315). Another source of bias was social and demographic characteristics, with interviewers tending to give higher ratings to candidates with similar backgrounds. Moreover, they found that personal interviews did not necessarily cover information that is useful in selecting students because of the variation in interview content. Given these limitations, Eva and others at McMaster experimented with a system of small interviews, known as the Multiple Mini-Interview (MMI).

The first MMI was conducted at McMaster in 2002 in order to test the MMI as a feasible way to screen students (Eva et al, 2004). In total, 117 students participated in the MMI and participants’ scores for each of the 10 stations were averaged to yield an overall score. Analysis showed that the overall reliability of

the MMI was reasonably high (.65). The findings of the initial MMI pilot suggested that the MMI is a more reliable and viable alternative to the traditional personal interview.

Since the Eva report in 2004, the MMI has been adopted by over 20 medical schools in the U.S. and Canada and is considered an assessment of a number of personal qualities deemed essential in a future physician: empathy, professionalism, critical thinking and analytical skills, and interpersonal communication to name a few. The MMI format has been endorsed by the AAMC Holistic Review Project Team mentioned by the ILWG and is growing popularity among medical schools as the improved and more statistically sound interview process that aligns with the comprehensive review of a premedical student's personal competencies.

Medical School Admissions Community

The AAMC is a consensus-building organization that represents all 140 accredited U.S. and 17 accredited Canadian medical schools, in addition to 400 of the nation's major teaching hospitals and health systems, including 62 Department of Veterans Affairs medical centers; and nearly 90 academic and scientific societies. Through these entities, the AAMC represents 125,000 faculty members, 75,000 medical students, and 106,000 resident physicians (www.aamc.org, accessed on March, 2012). Established in Washington, D.C., the AAMC is organized in several work units; Academic Affairs, Health Care Affairs, Operations and Services to name a few. The majority of interaction for

medical school admissions officers occurs within the Operations and Services unit due to the nature of application and data services provided: the American Medical College Application Service (AMCAS) and the Medical College Admissions Test (MCAT). Additionally, the AAMC support a number of professional development groups for leaders at member medical schools to foster growth and leadership skills, and provide opportunity for networking and information sharing.

Health Professions Advising Community

The NAAHP was established in 1974 as an organization of health professions advisors at colleges and universities throughout the United States, and is organized into four independent regional associations: Central (CAAHP), Northeast (NEAAHP), Southeast (SAAHP) and West (WAAHP). From the origin, the NAAHP has existed to serve as an effective source of information and consensus building among the professional, dues paying members. The growth seen over the last four decades in pre-health professions has created a national clearinghouse for opinions of advisors and news from allopathic and osteopathic medicine, chiropractic, dental, nursing, optometry, pharmacy, physical therapy, physician assistant, podiatric medicine, public health, and veterinary medical schools. NAAHP has also established partnerships with health professions schools and their respective national organizations through advisor liaisons and an Advisory Council comprised of representatives from these organizations, a group of nearly 20 health professions: American Association of Colleges of Nursing,

American Association of Colleges of Osteopathic Medicine, American Association of Colleges of Pharmacy, American Association of Colleges of Podiatric Medicine, American Dental Association, American Dental Education Association, American Medical Association, American Occupational Therapy Association, American Physical Therapy Association, Association of Accredited Naturopathic Medical Colleges, Association of American Medical Colleges, Association of American Veterinary Medical Colleges, Association of Chiropractic Colleges, Association of Schools and Colleges of Optometry, Association of Schools of Public Health, Association of University Programs in Health Administration, Council of Colleges of Acupuncture and Oriental Medicine and Physician Assistant Education Association. The targeted association for this project is the Association of American Medical Colleges (AAMC). NAAHP also recognizes professional schools and associations whose professionals would also benefit from a relationship with NAAHP and its members; therefore, NAAHP offers patron membership and has over 170 health professional programs and/or colleges and universities listed as members. The September 2011 edition of The Advisor lists 52 of the 135 US allopathic medical schools as patron members.

The mission of the NAAHP is to “serve as a resource for the professional development of health professions advisors. It is a representative voice with health professions schools and their professional associations, undergraduate institutions, and other health professions organizations. The Association

promotes high standards for health professions advising at universities and colleges. It assists advisors in fostering the intellectual, personal and humanistic development of students as they prepare for careers in health professions” (www.naahp.org, accessed on November 29, 2011). The success of NAAHP is dependent upon the strength of the four regional associations – CAAHP, NEAAHP, SAAHP and WAAHP. Membership from each region is encouraged to share collective wisdom, best practices and scholarly inquiry with the general members, as well as establish stronger communication with health professions schools and their national associations. Additional expectations of members include collaboration with advising peers to enhance advising skills and to network with peers, as well as health professions admissions representative by attending the biennial national and regional conferences. HPA are encouraged to collaborate with health professions schools and appropriate agencies to improve health professions advising, as well as promote the importance of health professions advising.

Members are encouraged to contribute and take benefit from up-to-date information through publications and communication channels, such as: The Advisor, a peer journal published quarterly containing articles, reprints and research studies. A monthly electronic newsletter, NAAHP-NET, offers updates and late-breaking news. The NAAHP listserv is a convenient and fast electronic communication modality for peers and health professions admissions deans. Print resources are available to NAAHP members to assist with advising students, such

as: Write for Success: Preparing a Successful Professional School Application; Health Professions Admissions Guide; and Interviewing for Health Professions Schools. An exclusive publication, The Premedical Advisor's Reference Manual, is made available only to advisors.

The NAAHP regional groups are composed of several states that are diverse with regard to colleges and university size/type/location, organizational design of advising and management of the regional groups. Each regional group elects and appoints officers as governed by the respective bylaws. Membership to the NAAHP does not automatically transfer to the respective regional association; therefore, members of the NAAHP may or may not belong to one or more regional associations. Each regional group conducts an annual meeting, in addition the NAAHP annual meeting held in the spring (see Figure 3).

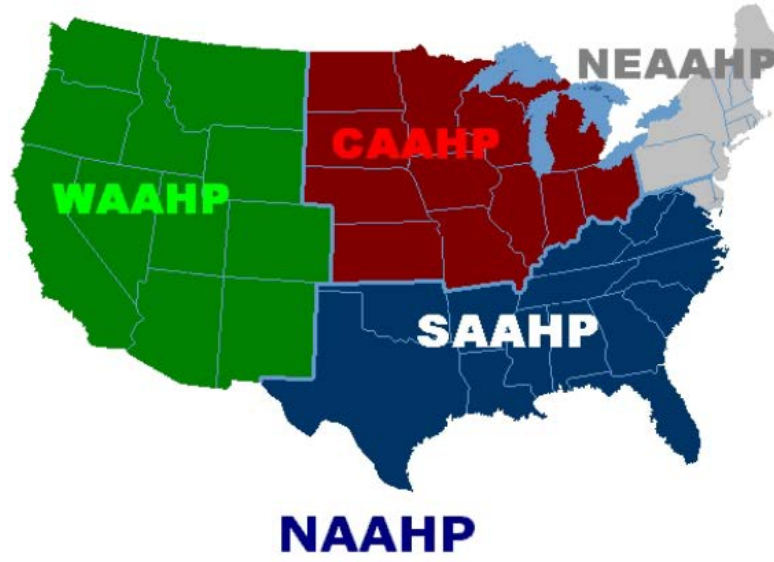


Figure 3 Regions within the NAAHP

Chapter 3

METHODOLOGY

Advising students interested in a career in medicine is a common goal shared between the medical school admissions and the health professions advising communities. Existing literature has supported the exposure of medical school admissions professionals to the ongoing changes and conversations being led by the AAMC regarding the changes in medical school entrance requirements, selection factors and assessment tools. The changes have already occurred in several of these areas, including the imminent implementation of a revised entrance exam, the focus on non-cognitive and behavioral traits, in addition to assessing beyond academic performance to determine the best student to be selected into medical school.

However, the gap in literature exist among the health professions advising community with regard to the criteria they espouse to be most important in the selection process, and thereby the advice provided to students interested in medicine. Considering the impact these professionals have on the preparation of the students seeking advisement and counseling for a career in medicine, the researcher felt it appropriate and a responsibility to examine the opinions of this population and to determine what, if any, differences exists within the health professions advising community.

The researcher conducted a study to determine the differences among the health professions advisor community between factors (academic and non-

academic) used as selection factors in medical school admissions with respect to personal and professional backgrounds of advisors. Moreover, the study determined the impact of the holistic review in admissions on new initiatives with respect to personal and professional backgrounds of advisors.

This chapter outlines the quantitative approach used to collect and analyze the data garnered from a diverse and broad sample of health professions advisors across the United States.

Sample Population

The researcher identified a population of professionals who are identified as professional advisors to students interested in a medical career. Advisors with an active membership with the NAAHP were determined as the most appropriate population for this study. According to the NAAHP website, the organization supports nearly 1,200 individuals who identify as either a health professions advisor or patron for membership purposes (www.naahp.org, accessed on September 5, 2012). The researcher applied a multi-stage or clustering technique to isolate the study population to target the individuals who are registered as advisors, thereby reducing the number of possible participants to 838, a significant reduction from the near 1,200 general membership roster.

Stratification of participant characteristics was enhanced by inviting all 838 advisors to participate in the study, instead of limiting the study to one or two of the NAAHP regions. A random sample of the study population provides equal opportunity to participate, thereby creating a sample of the representative

population (Keppel, 1991). However, individual participation was self-selected and as result, may not necessarily be reflective of the entire population.

Research Design

In order to gather descriptive and inferential statistics that examined the factors and application data considered most important in the selection of medical students from the perspective of the health professions advising community, the researcher chose to conduct a study using a questionnaire instrument to gather data. While a questionnaire can be used in either quantitative or qualitative designs, the questions utilized in this study are congruent to a quantitative design due to the closed and predefined nature of the questions (Kelly, 1999). Survey designs are used to provide a numeric description of trends, opinions, perspectives of a certain population by sampling a sub-group of that population (Creswell, 2009). Further, a web-based survey is considered an adequate method to sample a large population in a short amount of time (Patten, 2009), in addition to a cost-effective and accurate means of assessing a certain population (Zikmund, 2003).

The survey gathered data to investigate the differences of health professions advisors in terms of academic, non-academic and implications of the holistic review in admissions on new admissions initiatives.

Research Questions

Q1. Do differences exist in the academic factors considered important in medical school selection with respect to personal and professional backgrounds of advisors?

Q2: Do differences exist in the non-academic factors considered important in medical school selection with respect to personal and professional backgrounds of advisors?

Q3: Do differences exist in the impact of the holistic review on the implementation of new initiatives in medical school admissions with respect to personal and professional backgrounds of advisors?

Variables

The following variables were analyzed quantitatively to determine what, if any, significant differences exist among health professions advising community between the personal and professional characteristics of a health professions advisor and the broader research questions. The research conducted will inform the medical school admissions community if differences exist within the health professions advisor community regarding the perception of academic and non-academic factors in the selection of medical students.

1. Is there a difference between female and male advisors?
2. Do differences exist between white and non-white health professions advisors?
3. Does the age of a health professions advisor make any difference?

4. Does the work experience in terms of years on the job make a difference?
5. Were any differences observed based on the size of an institution wherein the health professions advisor works?
6. Is there a difference among health professions advisors who work at public and private institutions?
7. Is there a difference between faculty and non-faculty health professions advisors?
8. Do differences exist across the NAAHP between the regions?

Null Hypothesis

The null hypothesis (H_0) utilized for the quantitative analysis was: no differences exist among the health professions advisors' perception of factors considered important to the selection of medical students or the impact of the holistic review on the implementation of new initiatives.

Data Collection

In order to increase credibility with the potential participants for the study, the researcher sought endorsement for the study from the NAAHP. The researcher conducted a telephone meeting with the board of directors in the winter of 2012 to discuss the possible use of the NAAHP internal directory for the data collection phase. Subsequent to the telephone meeting, the researcher provided the study proposal for review and approval. An endorsement of the study was

provided in the early spring of 2012. The endorsement statement appeared within the body of the solicitation message.

A web-based survey created through SurveyMonkey.com was developed to provide responses to questions that gathered demographic, personal and professional data. The survey also allowed participants to respond to a series of questions regarding the relevance of criteria used in selecting medical students. A successful pilot test was conducted on six participants to test the instrument and clarity of questions prior to launching the survey to the sample population. Two of these individuals responded to the final survey and were removed before data was analyzed.

The survey link was sent within the body of a cover letter that included the endorsement statement from the board of directors at the NAAHP and was made available for 14-calendar days in October 2012. A second message was sent on day seven.

Research Instrument

The research instrument consisted of 26 questions, several of which contained multiple follow-up questions based on the participant's response to the main question. The research instrument was organized to ask relevant questions in the following areas:

1. Health Professions Advisor Demographics
2. Current Institution/Employer
3. Factors Used in Medical School Selection

4. Admissions Initiatives

5. Final Thoughts

Validity and Internal Consistency

Threats to validity should be identified by the researcher in advance in order to minimize the risk so they are less likely to occur (Creswell, 2009). Two types of threats are possible during research, internal and external, both of which the researcher took under advisement when designing the questionnaire and selecting the study population. The potential to threaten the internal validity based on a predisposed selection of participants with certain characteristics was minimized by the open invitation for any health professions advisor to participate in the study. Further, the researcher based the personal and professional questions from the NAAHP survey administered every five years to the membership. Additionally, the researcher verified the content validity after making revisions to the questionnaire according to the pilot participants' recommendations.

Chapter 4

DATA ANALYSIS AND RESULTS

The health professions advising community was surveyed in October 2012 and the results were entered into a statistical software program known as SPSS 20.0 for tabulation and analysis. Descriptive and inferential statistics are reported throughout this chapter and as response to the null hypothesis (H_0): no differences exist among the health professions advisors relative to the research questions. Each research question was analyzed quantitatively using the following independent variables: 1) gender, 2) race/ethnicity, 3) age, 4) years of health professions advising experience, 5) institution size, 6) institution type, 7) appointment type, and 8) NAAHP regional affiliation.

The survey was sent electronically to 838 advisor-affiliated members of the NAAHP during and was available for completion over the duration of 14 days. The first seven days yielded 98 completed surveys, representing 11.69% of the study population. A second invitation was sent midway through the study timeframe, garnering an additional 67 completed surveys, for a total of 165 participants for the study. Therefore, the findings of the study are based upon nearly 20% of the study population.

The first part of the survey asked participants to respond voluntarily to a series of questions based on personal and professional identifiers. Participants provided background information relative to personal data (i.e. gender, age, race, and ethnicity), residence (i.e. state, location), education (i.e. level, type of degree),

and professional (i.e. experience, professional development, and training). The second half of the survey asked participants to respond with their perceptions of the academic, non-academic factors used in the selection of medical students, in addition to several statements measuring opinions related to the outcomes of the holistic review in admissions paradigm.

Personal Background of Participants

Ninety-eight percent, or 163 of 165 of the participants in this study responded to the question regarding gender; 77.3%, or 126 of 163 were women and 22.7%, or 37 of 163 were men (See Figure 4).

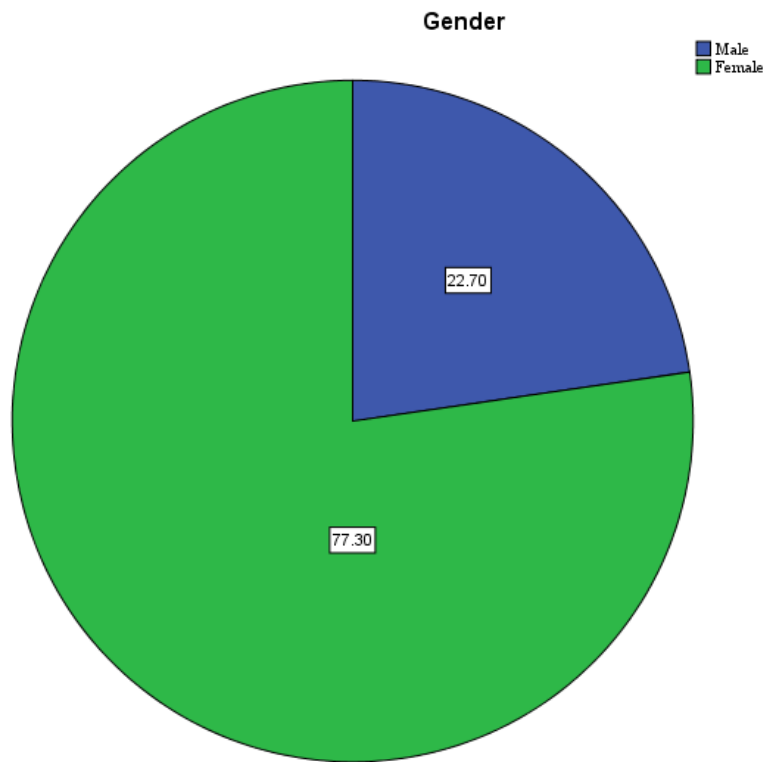


Figure 4 Gender of Study Participants

One hundred and fifty-nine participants reported their age at the time of the survey; however, two participants were removed from the results based on their non-numeric entry of “over 21” and “mid-fifties”. The remaining 157 participants ranged in age from 24 years to 72 years, for a mean of 48.6 years of age. More than 50% of the participants are older than 50 years, including two participants at 72 years of age. Just nine participants were 30 years or younger (Table 3).

Table 3
Frequency of Ages in 10 Year Clusters

Age Clusters	Frequency	Percent
20-29	8	5.1
30-39	35	22.2
40-49	34	21.5
50-59	45	29
60-69	33	20.9
70-above	2	1.3
Total:		100

Considering the high frequency of women (N = 126) in this study, analysis was conducted to split the populations to determine a gender-specific mean. The mean age for men (n=35) was slightly higher at 51.4 years, compared to the mean for women (n=121) at 47.7 years (Table 4).

Table 4

Gender Mean Age

Gender	Mean
Male	51.4571
Female	47.7686

Ninety-six percent, or 159 of the 165 participants self-identified to one of the following race categories: White, Black or African American, American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander. An open-flow text field labeled “Other” captured the response “Caucasian” as a descriptor, which was folded into the “White” category for analysis. Nearly 91%, or 144 of the 158 participants identified as “White”. The remaining 8.4% of the participants self-identified as Black or African-American (5.7%), Asian (3.1%), and American Indian or Alaskan Native (.6%) (Table 5).

Table 5

Self-identified Race

Race	Frequency	Percent
White	144	90.6
Black or African-American	9	5.7
American Indian or Alaskan Native	1	.6
Asian	5	3.1

Participants were also asked to self-report the ethnicity that best describes them from the following categories: Hispanic, Latino or of Spanish descent,

American Indian or Alaska Native, Asian Indian, Black or African American, Native Hawaiian, Guamanian or Chamorro, Samoan or Other Pacific Islander, Chinese, Filipino, Japanese, Korean, Vietnamese, Other Asian, White or Other. Fourteen participants declined to respond to the racial descriptor. The remaining 92% of the participants, or 151 of the 165 responded. The majority of participants or 90.5% identified as “White”, followed by 5.5% as Black or African American, 1.8% as Hispanic, Latino or of Spanish descent and 1.2% for each of the following: Chinese, Filipino and Japanese. One participant self-identified as Native Hawaiian. Four participants responded to the “Other” category, a free-text field. Two of the entries indicated “European-American” for an ethnic description, in addition to one as “Irish”. The fourth entry was a statement that read, “Confusing Q: “White” is not an ethnicity...” and therefore, was not used in analysis. Two participants chose two categories to represent their ethnic background (Table 6).

Table 6

Self-identified Ethnicity

Ethnicity	Frequency	Percent
White	135	90.5
Black or African-American	9	5.5
Hispanic, Latino or of Spanish Descent	3	1.8
Chinese	2	1.2
Filipino	2	1.2
Native Hawaiian	1	.6
Other	4	2.6

Participants represented 41 states across the United States according to the 163 responses to the survey (Table 7).

Table 7

States Represented by Participants

U.S. State	Frequency
Alabama	2
Arizona	1
California	11
Colorado	7
Connecticut	3
Delaware	1
District of Columbia (DC)	1
Florida	4
Georgia	2
Hawaii	1
Idaho	1
Illinois	14
Indiana	3
Iowa	3
Kentucky	1
Louisiana	3
Maine	4
Maryland	3
Massachusetts	4
Michigan	8
Missouri	3
Montana	1
New Jersey	4
New Mexico	1
New York	13

Table 7 (Continued)

States Represented by Participants

U.S. State	Frequency
North Carolina	3
Ohio	8
Oklahoma	1
Oregon	2
Pennsylvania	16
Rhode Island	1
South Carolina	1
South Dakota	1
Tennessee	2
Texas	5
Utah	4
Vermont	1
Virginia	10
Washington	3
Wisconsin	5
Wyoming	1

The geographical distribution of participants in this study was further observed when they were asked to report to which NAAHP regions does the participant identify (see Figure 5). Three participants did not reply to the question. The largest region with representation was the Northeast with 50 participants, a total of 31% of the study population. Following with 46 participants, or 29% was

the Central region. The West and Southeast were represented with 34, or 21% and 32, or 19%, respectively.

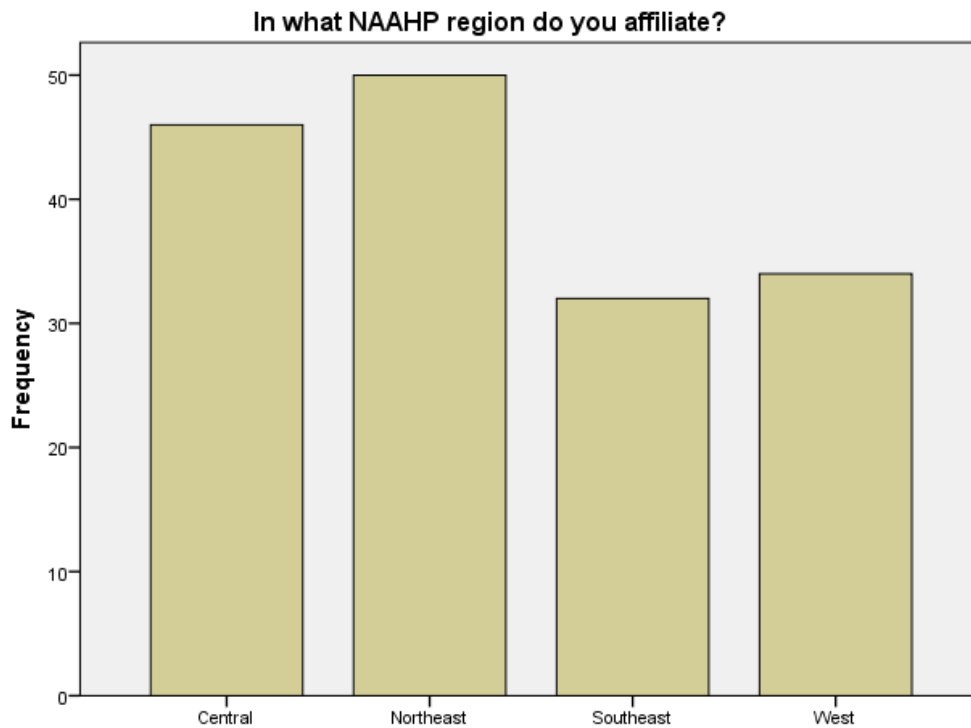


Figure 5 NAAHP Region Affiliations

Professional Background of Participants

All but one of the 165 participants responded to the question related to the highest level of education attained. Ninety-six of the participants in this study have furthered their education beyond a baccalaureate degree.

Participants with a master's degree were asked to identify which degree they received and the breakdown was as follows: 26% earned Master of Arts (MA), 25% earned a Master of Science (MS), 14% a Master of Education (MEd) and 3% a Master of Business Administration (MBA). An optional text field was

available for master degrees that were not pre-populated in the questionnaire; this question was completed by six participants, two of whom reported having an additional master's degree. Additional graduate degrees included Master of Public Health (MPH), Master of Public Administration (MPA), Master of Fine Arts (MFA) and Master in Library and Information Science (MLIS).

Participants with a doctorate were asked to provide the discipline from which the degree was earned. Ninety percent of the participants earned a Doctor of Philosophy (PhD). Seven participants, or 8.3% earned a Doctor of Education (EdD), two others, or 1.2% earned a Doctor of Medicine (MD) and one in each of the following disciplines completed the variety of doctorate degrees: Doctor of Nursing Practice (DNP), Doctor of Psychology (PsyD), Doctor of Osteopathy (DO), Doctor of Veterinary Medicine (DVM) and Doctor of Health Education (DHED).

The PhD participants were asked in what field of study was the doctorate focused and 85% responded with "Sciences". Less than 10% of the participants earned a doctorate in either the field of Social Sciences (9.6%) or Humanities (5.5%).

One hundred sixty-one participants identified their professional title or appointment as an administrator, faculty (tenure or non-tenure) or professional counselor/advisor. Forty-two percent of the participants identified as a professional counselor/advisor while 20% considered themselves administrators.

The remaining 38% identified as faculty, of which 32% were tenure-track and 6% non-tenure track.

Two participants chose not to respond to the question regarding their years of experience in advising pre-health profession students. For the 163 responses collected to this question, more than 50% had 10 years or less and 18% had more than 20 years of experience (Table 8).

Table 8

Years of Advising Experience

Years of Experience	Frequency	Percent
Less than 5 years	44	26.7
5-10 years	53	32.1
11-15 years	24	14.5
16-20 years	13	7.9
More than 20 years	29	17.6

Members of NAAHP are encouraged to attend professional development conferences organized by the NAAHP national and region-specific groups. Questions in this section asked if each participant attended these meetings and if not, what reasons precluded their attendance.

Ninety-seven, or 60% of the responders to this section reported attendance at both the regional and national meetings organized by the NAAHP or region-specific association. Thirty-three, or 20% attended just the national meetings with 10, or 6.1% attending only the regional meetings. Twenty-three participants or 14% reported not having attended either the national or regional meetings. These

participants were asked why they do not attend these meetings in a subsequent question using pre-populated responses: lack of financial support, lack of time, little to no interest in meeting agenda and did not know I was eligible. Thirteen, or 7.9% chose “lack of financial support,” 17, or 10.3% cited “lack of time” and 5, or 3% had “little to no interest in meeting agenda” as the primary reasons for not attending NAAHP national or region-specific meetings. No participants reported not attending due to a lack of awareness that they were eligible. An open-text response box was available to record reasons other than those listed for not attending the conference(s), which was completed by four participants. Other reasons included “interferes with my primary job as a faculty,” “maternity leave/family schedule conflicts,” and “personal health issues.”

Institutional Profile

The second section to the survey asked participants to respond to a series of questions related to their current institution (size of institution, type of institution), professional program for which they advise, and services most often sought by the pre-health professions students. The following data is a report of the participants’ responses.

Fifty-four percent of the 160 participants represent a private institution with the remaining 46% representing public. Just two of the participants in the study work for a junior college, or community college, with 25.5% of others represent an institution that awards a baccalaureate degree. Institutions that award a masters degree were represented by 15.2% of the participants in the study,

leaving the remaining 55.8% to institutions where the highest degree a student can attain is a doctorate degree. The size of institutions in terms of student enrollment as of 2012-2013 ranged from fewer than 10,000 to schools with more than 50,001 students. More than half of the participants, or 52.7%, in this study were currently employed by institutions with fewer than 10,000 students. The table below represents the composition of the remaining participants' institution's size (Table 9).

Table 9

Total Student Enrollment

Students	Frequency	Valid Percent
Fewer than 10,000	87	54.0
10,001- 20,000	32	19.9
20,001 - 30,000	17	10.6
30,001 - 40,000	17	10.6
40,001 - 50,000	5	3.1
More than 50,001	3	1.9

The variety of job responsibilities was the focus of two questions within the survey. The first question asked participants to rate the level of responsibility of services provided to pre-professional students based on a four-point Likert scale where “1=not at all responsible,” “2=somewhat responsible,” “3=mostly responsible,” and “4=completely responsible.” A free-form text question allowed participants to list “other” responsibilities not listed in the pre-determined menu of choices. One hundred and sixty-one of the 165 participants entered a response,

including 19 who entered comments that ranged from hosting workshops regarding application preparedness, interviews, exploring careers, tracking data about student placement, and teaching courses.

Participants were asked how many, if any, other individuals were responsible for providing services to pre-health professional students and 142, or 86% responded. Sixty-one percent reported having at least two colleagues to assist in the expected workflow, while 22.5% had three to four colleagues and 17% had five or more. Finally, the advising load occupied by pre-medical students was the last question in this section, which yielded responses from 161 of the 165 participants. Nearly 44% reported that pre-medical students occupy more than three-quarters of the advising load, followed by 29% that spend between 51% and 75% of the time advising pre-medical students. Thirteen percent spend between 26% and 50%, and 14% spend less than a quarter of their time advising pre-medical students (Table 10).

Table 10

Level of Responsibility

Responsibility Type	N	Mean	Std. Deviation
General Career Advising	161	2.05	.80
General Academic Advising	161	2.51	1.02
Specific Graduate/Professional Application Preparation	161	3.18	.92
Entrance Exam Preparation	161	2.09	.97
Letter of Recommendation Coordination	161	3.00	1.18
Interview Preparation	161	2.77	1.00
Volunteer/Internship Placement	161	2.05	.85
Student-led Organization/Club Advising	161	2.51	1.13

The crux of the study was analyzed from the results based on the third component of the survey. Questions related to the importance of areas of study and academic data used in the selection process were analyzed to determine what, if any, differences existed among health professions advisors. Secondly, personal characteristics or non-academic factors considered important in selecting medical students were also evaluated among the health professions advisors. All factors were relationally analyzed with comparative means tests to determine statistical significance among the various background variables of the health professions advising community. The researcher used an alpha level of .05 for all statistical tests.

Differences in Academic Factors

Research Question One: Do differences exist among the health professions advising community between the academic factors used in medical school selection and the unique personal and professional backgrounds of advisors?

Participants responded to the question using a 5-point Likert scale (1=not acceptable to 5=extremely acceptable) for the 18 subject areas and (1=not important to 5=extremely important) for factors used in the selection of medical students: cumulative grade point average, prerequisite coursework, and MCAT composite test score.

From a gender perspective, based on the comparison of academic factors utilized in the selection of medical school admissions, no differences existed between female and male advisors in the use of grades, prerequisite courses or the MCAT score during the selection process. According to female advisors ($M = 4.14$, $SD = .67$) and male advisors ($M = 4.00$, $SD = .72$), $p = .315$, neither group favored the use of grades any differently than the other. Prerequisite courses were not statistically viewed any differently by female advisors ($M = 4.81$, $SD = .44$) and male advisors ($M = 4.58$, $SD = .69$), $p = .075$. The use of the MCAT composite test score has no significant difference between female advisors ($M = 4.00$, $SD = .89$) and male advisors ($M = 4.03$, $SD = .94$), $p = .156$. Therefore, the null hypotheses were retained.

The outcome of the statistical analysis conducted between the two groups of advisors demonstrated a significant difference in the subject areas considered

acceptable for admission to medicine school. In this instance, the null hypotheses were rejected. An independent-samples t-test was conducted to determine which of the differences between female and male advisors were statistically valid. Of the 18 subjects analyzed, the mean scores of female advisors were higher in than male advisors in every subject; however, the differences were considered statistically significant in seven subject areas. The results indicated female advisors ($M = 4.24$, $SD = .85$) considered physics to be more acceptable for admission to medical school than male advisors ($M = 3.63$, $SD = 1.00$), with a $p = .002$. Math also was revealed to be of significant difference between female advisors ($M = 4.12$, $SD = .92$) and male advisors ($M = 3.54$, $SD = 1.12$), $p = .008$. Female advisors ($M = 4.24$, $SD = .87$) indicated a preference for natural/physical sciences compared to male advisors ($M = 3.79$, $SD = .91$), $p = .016$. Education was rated higher among female advisors ($M = 3.02$, $SD = 1.26$) compared to male advisors ($M = 2.46$, $SD = 1.17$), $p = .020$. Females ($M = 3.37$, $SD = 1.21$) showed greater preference for engineering compared to male advisors ($M = 2.74$, $SD = 1.20$), $p = .010$. Government/political science among female advisors ($M = 3.17$, $SD = 1.23$) was considered higher than among male advisors ($M = 2.68$, $SD = 1.12$), $p = .034$. Results indicated significant preference for specials studies (i.e. gender studies) among female advisors ($M = 3.25$, $SD = 1.24$), compared to male advisors ($M = 2.65$, $SD = 1.07$), $p = .009$.

When considering the differences among the race and ethnicity of health professions advisors and the academic criteria of subject, grade point average,

prerequisite coursework or MCAT score, there were no significant findings to suggest differences exists. Biology was viewed equally by white advisors ($M = 4.67, SD = .60$) and non-white advisors ($M = 4.22, SD = .97$), $p = .214$. Chemistry returned no difference between by white advisors ($M = 4.59, SD = .65$) and non-white advisors ($M = 4.50, SD = .76$), $p = .760$. White advisors ($M = 3.97, SD = 1.02$) and non-white advisors ($M = 4.38, SD = .92$) did not view mathematics any differently, $p = .260$. Physics was not considered statistically different between white advisors ($M = 4.09, SD = .95$) and non-white advisors ($M = 4.59, SD = .92$), $p = .420$. Behavioral and social sciences was viewed equally by white advisors ($M = 4.13, SD = .85$) and non-white advisors ($M = 3.89, SD = .93$), $p = .467$. Business returned no difference between by white advisors ($M = 3.00, SD = 1.21$) and non-white advisors ($M = 3.11, SD = .93$), $p = .724$. White advisors ($M = 3.56, SD = 1.24$) and non-white advisors ($M = 3.33, SD = .86$) did not view communication any differently, $p = .484$. Education was not considered statistically different between white advisors ($M = 2.90, SD = 1.30$) and non-white advisors ($M = 3.11, SD = .93$), $p = .484$. Engineering was viewed equally by white advisors ($M = 3.23, SD = .1.23$) and non-white advisors ($M = 3.62, SD = .1.06$), $p = .345$. English language and literature returned no difference between by white advisors ($M = 3.56, SD = 1.24$) and non-white advisors ($M = 3.33, SD = .86$), $p = .484$. White advisors ($M = 3.01, SD = 1.1.30$) and non-white advisors ($M = 3.37, SD = .92$) did not view fine arts any differently, $p = .316$. Health Sciences was not considered statistically different between white advisors ($M =$

3.83, $SD = .96$) and non-white advisors ($M = 3.63$, $SD = .1.06$), $p = .611$. History was viewed equally by white advisors ($M = 3.13$, $SD = .1.25$) and non-white advisors ($M = 3.25$, $SD = .87$), $p = .719$. Foreign language/linguistics returned no difference between by white advisors ($M = 3.29$, $SD = 1.12$) and non-white advisors ($M = 3.63$, $SD = .74$), $p = .267$. White advisors ($M = 3.07$, $SD = 1.24$) and non-white advisors ($M = 3.14$, $SD = .90$) did not view government/political science any differently, $p = .856$. Natural/physical science was not considered statistically different between white advisors ($M = 4.16$, $SD = .87$) and non-white advisors ($M = 4.00$, $SD = 1.20$), $p = .721$. Philosophy/Religion was not considered statistically different between white advisors ($M = 3.23$, $SD = .1.20$) and non-white advisors ($M = 3.75$, $SD = 16$), $p = .260$. Special studies was viewed equally by white advisors ($M = 3.07$, $SD = 1.22$) and non-white advisors ($M = 3.50$, $SD = 1.06$), $p = .313$. Therefore, the null hypotheses were retained.

With regard to age, there were no statistical differences identified between the health professions advising community on the academic criteria and factors believed to be important in the selection of medical students. Biology showed no difference regardless of age ($M = 4.62$, $SD = .64$), $p = .770$. Chemistry showed no difference regardless of age ($M = 4.57$, $SD = .67$), $p = .989$. Mathematics did not demonstrate a difference depending on age ($M = 3.97$, $SD = 1.00$), $p = .613$. Physics showed no difference of preference by age ($M = 4.08$, $SD = .93$), $p = .929$. Age ($M = 4.10$, $SD = .86$), $p = .512$ did not make a difference for behavioral and social sciences. Business was also not determined to be different by age ($M =$

2.96, $SD = 1.17$), $p = .069$. Communication showed no difference between age ($M = 3.53$, $SD = 1.20$), $p = .417$. Education showed no difference by age ($M = 2.87$, $SD = 1.25$), $p = .244$. Engineering was not determined to be statistically different by age ($M = 3.19$, $SD = 1.22$), $p = .310$. English language and literature showed no difference of preference by age ($M = 3.43$, $SD = 1.11$), $p = .938$. Fine arts showed no difference of preference by age ($M = 2.98$, $SD = 1.26$), $p = .658$. Age ($M = 3.80$, $SD = .98$), $p = .348$ did not make a difference for health sciences. History was also not determined to be different by age ($M = 3.07$, $SD = 1.22$), $p = .779$. Foreign language/linguistics showed no difference between age ($M = 3.28$, $SD = 1.10$), $p = .765$. Government/political science showed no difference by age ($M = 3.03$, $SD = 1.20$), $p = .410$. Natural/physical sciences was not determined to be statistically different by age ($M = 4.11$, $SD = .91$), $p = .936$. Philosophy/religion showed no difference of preference by age ($M = 3.25$, $SD = 1.19$), $p = .622$. Special studies ($M = 3.07$, $SD = 1.21$), $p = .122$ did not show a significant difference. In this regard, the null hypotheses were retained.

Along with years of advising experience, analyses were conducted to determine if a difference existed between the years of experience among the health professions advisors on the academic criteria and factors considered important in selecting students for medical school. Health professions advisors' years of experience revealed no statistical difference. With regard to years of advising experience, there were no statistical differences identified between the health professions advising community and the academic criteria and factors

believed to be important in the selection of medical students. Biology showed no difference regardless of years of advising experience ($M = 4.62, SD = .64, p = .512$). Chemistry showed no difference regardless of years of advising experience ($M = 4.56, SD = .67, p = .520$). Mathematics did not demonstrate a difference depending on years of advising experience ($M = 3.95, SD = 1.01, p = .383$). Physics showed no difference of preference by years of advising experience ($M = 4.07, SD = .93, p = .280$). Years of advising experience ($M = 4.08, SD = .86, p = .180$) did not make a difference for behavioral and social sciences. Business was also not determined to be different by years of advising experience ($M = 2.96, SD = 1.17, p = .193$). Communication showed no difference between years of advising experience ($M = 3.53, SD = 1.23, p = .223$). Education showed no difference by years of advising experience ($M = 2.87, SD = 1.26, p = .423$). Engineering was not determined to be statistically different by years of advising experience ($M = 3.21, SD = 1.22, p = .549$). English language and literature showed no difference of preference by years of advising experience ($M = 3.43, SD = 1.11, p = .935$). Fine arts showed no difference of preference by years of advising experience ($M = 2.98, SD = 1.26, p = .850$). Years of advising experience ($M = 3.79, SD = .98, p = .615$) did not make a difference for health sciences. History was also not determined to be different by years of advising experience ($M = 3.05, SD = 1.24, p = .891$). Foreign language/linguistics showed no difference between years of advising experience ($M = 3.28, SD = 1.10, p = .541$). Government/political science showed no difference by years of advising

experience ($M = 3.03$, $SD = 1.20$), $p = .712$. Natural/physical sciences was not determined to be statistically different by years of advising experience ($M = 4.11$, $SD = .91$), $p = .692$. Philosophy/religion showed no difference of preference by years of advising experience ($M = 3.25$, $SD = 1.19$), $p = .790$. Special studies ($M = 3.07$, $SD = 1.21$), $p = .585$ did not show a significant difference. In this regard, the null hypotheses were retained.

Institutional size was examined to determine what, if any, differences existed regarding the academic criteria and factors associated with selecting medical students. The size of an institution had no effect on the research question. Therefore, the finding retained the null hypotheses.

When considering the differences among the public and private institutions represented in this study, there were no significant findings to suggest differences exist. Biology was viewed equally by public institutions ($M = 4.57$, $SD = .74$) and private institutions ($M = 4.67$, $SD = .53$), $p = .326$. Chemistry returned no difference between by public institutions ($M = 4.56$, $SD = .72$) and private institutions ($M = 4.55$, $SD = .63$), $p = .931$. Public institutions ($M = 3.96$, $SD = 1.00$) and private institutions ($M = 3.96$, $SD = .103$) did not view mathematics any differently, $p = .991$. Physics was not considered statistically different between public institutions ($M = 4.03$, $SD = .99$) and private institutions ($M = 4.13$, $SD = .88$), $p = .542$. Behavioral and social sciences was viewed equally by public institutions ($M = 4.10$, $SD = .85$) and private institutions ($M = 4.08$, $SD = .89$), $p = .893$. Business returned no difference between by public

institutions ($M = 3.10$, $SD = 1.29$) and private institutions ($M = 2.83$, $SD = .1.04$), $p = .174$. Public institutions ($M = 3.67$, $SD = 1.22$) and private institutions ($M = 3.38$, $SD = 1.20$) did not view communication any differently, $p = .159$.

Education was not considered statistically different between public institutions ($M = 2.97$, $SD = 1.33$) and private institutions ($M = 2.77$, $SD = 1.19$), $p = .364$.

Engineering was viewed equally by public institutions ($M = 3.27$, $SD = 1.23$) and private institutions ($M = 3.13$, $SD = 1.17$), $p = .521$. English language and literature returned no difference between by public institutions ($M = 3.56$, $SD = 1.07$) and private institutions ($M = 3.33$, $SD = 1.15$), $p = .235$. Public institutions ($M = 3.16$, $SD = 1.30$) and private institutions ($M = 2.83$, $SD = 1.22$) did not view fine arts any differently, $p = .135$. Health Sciences was not considered statistically different between public institutions ($M = 3.80$, $SD = .94$) and private institutions ($M = 3.77$, $SD = 1.00$), $p = .859$. History was viewed equally by public institutions ($M = 3.23$, $SD = 1.28$) and private institutions ($M = 2.92$, $SD = 1.17$), $p = .156$. Foreign language/linguistics returned no difference between by public institutions ($M = 3.33$, $SD = 1.17$) and private institutions ($M = 3.23$, $SD = 1.05$), $p = .598$. Public institutions ($M = 3.13$, $SD = 1.29$) and private institutions ($M = 2.94$, $SD = 1.13$) did not view government/political science any differently, $p = .357$. Natural/physical science was not considered statistically different between public institutions ($M = 4.04$, $SD = .95$) and private institutions ($M = 4.17$, $SD = 1.17$), $p = .406$. Philosophy/Religion was not considered statistically different between public institutions ($M = 3.32$, $SD = 1.26$) and private

institutions ($M = 3.15$, $SD = 1.17$), $p = .384$. Special studies was viewed equally by public institutions ($M = 3.23$, $SD = 1.29$) and private institutions ($M = 2.92$, $SD = 1.16$), $p = .158$. Therefore, the null hypotheses were retained.

The size of an institution based on enrollment in increments of 10,000 students, starting with schools less than 10,000 to the institutions with over 50,000, was examined in this study. From this perspective, all 18 subject areas and academic factors utilized in selecting students were analyzed to determine if a statistical difference existed. A one-way ANOVA was conducted to determine if the differences identified were statistically valid. Of the 18 subjects analyzed, there was a significant effect for the institution size in seven subject areas. Based on the academic factors utilized in the selection of medical school admissions, differences exist between the perception of business, communication, education, engineering, English, fine arts and special studies.

The four original types of advisors (faculty, non-tenured faculty, administrators, professional advisors,) in this study were reclassified as either faculty (faculty, non-tenured faculty) or non-faculty (administrators and professional advisors) for data analysis purposes. From these two perspectives, all 18 subject areas and academic factors utilized in selecting students were analyzed to determine if a statistical difference existed. An independent-samples t-test was conducted to determine if the differences identified were statistically valid. Of the 18 subjects analyzed, there was a significant effect for advisor-type, with faculty advisors rating lower scores than non-faculty advisors in two subject

areas. Based on the academic factors utilized in the selection of medical school admissions, differences exist between faculty and non-faculty and areas of study in business and education subjects as considered acceptable areas of study for medical school.

An independent-samples t-test was conducted to determine if the differences between faculty and non-faculty advisors were statistically valid. Of the 18 subjects analyzed, there was a significant effect on the advisor type. Faculty advisors ($M = 2.72$, $SD = 1.15$) viewed business as a less acceptable area of study than did non-faculty advisors ($M = 3.12$, $SD = 1.18$), $p = .046$. Additionally, faculty advisors ($M = 2.48$, $SD = 1.23$) felt education to be less acceptable for a path of study than did non-faculty counterparts ($M = 3.14$, $SD = 1.22$), $p = .039$. Therefore, the findings reject the null hypotheses. From the academic factors utilized in selecting medical students, there were also differences between the faculty and non-faculty groups. Faculty advisors ($M = 3.93$, $SD = .73$) considered the cumulative grade point average less important in the selection process than did non-faculty advisors ($M = 4.22$, $SD = .64$), $p = .016$. The MCAT composite test score was similarly viewed less important by the faculty advisors ($M = 3.77$, $SD = .98$) than by non-faculty colleagues ($M = 4.15$, $SD = .83$), $p = .015$. Therefore, the null hypotheses were rejected.

The final perspectives analyzed were the four regional affiliations within the NAAHP, representing the geographical diversity of the health professions

advisors within the study. No significant difference was identified by the statistical tests conducted and therefore, the null hypotheses were retained.

In summary, differences exist within the health professions advising community with regard to the subject areas considered acceptable for admitting students into medical school. The gender of an advisor illustrated a difference in the acceptability of nearly half of the subject areas studied by the researcher. Female advisors support seven subjects of study at a rate that is considered statistically higher in acceptability than male colleagues in the same position. Therefore, the researcher has concluded that students who seek the academic planning services of female advisors may find flexibility in the areas of study suggested as appropriate routes to medical school preparation, which could contribute to the educational diversity found within our nation's medical school classrooms. Secondary to the differences in gender, the classification between health professions advisors as faculty members and non-faculty members demonstrated a significant difference in the acceptability of two subjects that were also highlighted in the gender analysis. Education and business subject areas were considered less acceptable by faculty members, whereas the non-faculty members thought these to be appropriate when evaluating a student for medical school. Lastly, the role of academic factors used in selecting medical students was not viewed any differently by seven of the eight variables examined in the study. The only time that cumulative grade point average and the use of the composite MCAT test score were identified as having been statistically more

important than any other factors was during the faculty and non-faculty analysis. The researcher believes medical schools must use these findings to encourage dialogue with health professions advisors with regard to the institutional success of students with each of the medical schools, thereby providing a more targeted approach to selecting schools to where the students will apply.

Differences in Non-academic Factors

Research Question Two: Do differences exist among the health professions community between the non-academic factors including personal characteristics used in medical school selection and the unique personal and professional backgrounds of advisors? Participants responded to several questions on a 5-point Likert scale (1=not important to 5=extremely important) to determine which non-academic factors including personal characteristics are most important when selecting medical students.

From a gender perspective, based on the comparison of nine non-academic factors utilized in the selection of medical school admissions, differences exists between female and male advisors in two areas: resiliency and adaptability and cultural competence. The use of selection criteria determined to assess personal characteristics also demonstrated a difference between the health professions advisors by gender. Therefore, the null hypotheses are rejected for the personal characteristics as determined by gender.

An independent-samples t-test was conducted to determine if the differences between female and male advisors were statistically valid. Of the

personal characteristics analyzed, there was a significant effect for gender, with female advisors rating higher scores than male advisors in two characteristics. Female advisors ($M = 4.51, SD = .60$) found a student's resiliency and ability to adapt was more important than male advisors ($M = 4.22, SD = .68$), $p = .028$. A significant difference in the importance of cultural competency was also determined to be more important by female advisors ($M = 4.16, SD = .81$) compared to male advisors ($M = 3.78, SD = .90$), $p = .026$. Gender also highlighted a statistically significant difference in the importance of non-clinically based community service as selection criteria. Female advisors ($M = 4.16, SD = .81$) considered this as more important than male counterparts ($M = 3.78, SD = .90$), $p = .026$.

The race and ethnicity of health professions advisors was compared to the non-academic factors and personal characteristics and the results of the analyses indicated the importance of cultural competence is significantly different between white and non-white advisors. Therefore, the null hypotheses were rejected when analyzed by race and ethnicity. When race and ethnicity were examined to determine if differences existed among the selection criteria used, the null hypotheses were retained.

An independent-samples t-test was conducted to determine if the differences between white and non-white advisors were statistically valid. Of the nine personal characteristics analyzed, there was a significant effect on race and ethnicity. Non-white advisors ($M = 4.58, SD = .85$) rated the importance of

cultural competence as a personal characteristic in the selection of medical students at a rate higher than non-white peers ($M = 4.05$, $SD = .51$), $p = .005$. Further consideration should be given to the effect of race and ethnicity based on a larger study with a higher frequency of non-white participants.

With regard to the years of advising experience and years of advising experience among the health professions advisors between the importance of personal characteristics and the selection of medical students, the study did not identify any difference. Therefore, the null hypotheses were retained. The researcher believes this is a significant finding considering the potential of “generational gap” between advisors and younger students.

Health professions advisors’ institutional sizes were catalogued in terms in total student enrollment for the purpose of this study. From an institutional size perspective, all of the personal characteristics were analyzed to determine the importance of personal characteristics and selection criteria as demonstrated by premedical students during the application process. The size of an institution had an effect on the importance given to the non-medical community service among the health professions advisors. Therefore, the null hypotheses were rejected in the scope of institutional size.

An independent-samples t-test was conducted to determine if the differences between the sizes of institutions were statistically valid. Health professions advisors within institutions with more than 50,001 students ($M = 4.33$, $SD = .58$), $p = .027$ rated the importance of non-medical community service

higher than all others in the study: fewer than 10,000 students ($M = 3.51$, $SD = .98$), 10,000 - 20,000 students ($M = 3.67$, $SD = .92$), 20,001 – 30,000 students ($M = 4.13$, $SD = .81$), 30,001 - 40,000 students ($M = 4.2$, $SD = .15$), and 40,001 – 50,000 students ($M = 3.8$, $SD = .84$).

From the perspective of institution type based on the comparison of non-academic factors utilized in the selection of medical school admissions, differences exist between health professions advisors from public and private institutions with regard to two of the non-academic criteria utilized in selecting students. For this, the null hypotheses were rejected.

An independent-samples t-test was conducted to determine if the differences between the public and private institutions were statistically valid. Health professions advisors within public institutions ($M = 3.90$, $SD = .84$) believed non-medical community experience was more important in the selection of students than advisors from private institutions ($M = 3.51$, $SD = .1.00$), $p = .011$. With regard to experience within underserved community, public advisors ($M = 3.74$, $SD = .85$) rated the importance higher than private peers ($M = 3.36$, $SD = .94$), $p = .013$.

The four original types of advisors (faculty, non-tenured faculty, administrators, professional advisors,) in this study were reclassified as either faculty (faculty, non-tenured faculty) or non-faculty (administrators and professional advisors) for data analysis purposes. From these two perspectives, all seven personal characteristics and non-academic factors used in selecting

students were analyzed to determine if a statistical difference existed. Based on the results of the independent-samples t-test, non-faculty and faculty advisors differ on nearly half of the personal characteristics and on the importance of non-medical community service. Therefore, the null hypotheses were rejected when evaluated by the classification of an advisor.

The non-faculty advisors ($M = 3.84$, $SD = .95$) rated the importance of non-medical community service in the selection process at a higher rate statistically different from the faculty advisors ($M = 3.50$, $SD = .91$), $p = .03$. Further analyses showed non-faculty advisors ($M = 4.52$, $SD = .64$) considered social and interpersonal skills to be more important in the identification of medical students than faculty members ($M = 4.25$, $SD = .65$), $p = .013$. The difference between the two advisor groups was identified in the cultural competency personal characteristic, viewed higher by non-faculty advisors ($M = 4.27$, $SD = .84$) than faculty advisors ($M = 3.80$, $SD = .78$), $p = .001$. The last personal characteristic with statistical difference between non-faculty and faculty advisors was the importance of the capacity for improvement. Non-faculty ($M = 4.26$, $SD = .72$) believed this to be more important than faculty advisors ($M = 3.97$, $SD = .74$), $p = .017$.

The last variable analyzed to determine if differences existed was between the health professions advisors by region and the personal characteristics and factors used in selecting students. Two variables were identified to be viewed differently among the regions; therefore, the null hypotheses were rejected.

A one-way ANOVA was conducted to determine if the difference in means was significant between the four regions of the NAAHP: central, northeast, southeast and west. The outcome of the statistical test demonstrates that premedical advisors from the western region ($M = 3.97$, $SD = .74$), placed more importance on experience working with underserved populations than peers in the other three regions: central ($M = 3.36$, $SD = 1.02$), southeast ($M = 3.39$, $SD = .80$), and northeast ($M = 3.51$, $SD = .93$), $p = .023$. Similarly, the view of integrity and ethics was considered statistically different between the four regions. The central region ($M = 4.94$, $SD = .23$) and southeast region ($M = 4.90$, $SD = .49$) were slightly higher than colleagues in the northeast region ($M = 4.74$, $SD = .49$) and west region ($M = 4.61$, $SD = .66$), $p = .019$.

The results of the analyses conducted to examine differences among the health professions advising community and the importance of non-academic factors and personal characteristics returned rather significant findings on the whole. Six of the eight variables of the health professions advisors demonstrated a difference of opinion when considering the personal characteristics of future medical students. While years of advising experience and years of experience retained the null hypotheses, the other six variables rejected the null hypotheses. Gender, race/ethnicity, the institution size and type, along with the classification of an advisor and the region wherein the advisor resides highlight the heterogeneity of health professions advisors with regard to the perceptions related to ideal personal characteristics of a future medical student. These findings

should aid medical schools to understand how best to prepare advisors with the information necessary to adequately advise future students in the development of non-cognitive, softer skills known as the personal characteristics used in selecting medical students.

Impact of Holistic Review on Admissions Initiatives

Research Question Three: Do differences exist among the health professions advising community between the impact of the holistic review on the implementation of new initiatives in medical school admissions and the unique personal and professional backgrounds of advisors? Participants responded to several agreement statements measured on a 5-point Likert scale (1=strongly disagree to 5=strongly agree) to determine the opinions of the impact the holistic review in admissions paradigm has had on the possible outcomes in increasing diversity, using revised assessment tools (MMI, Standardized Letters of Recommendation, MCAT) and moving beyond academic metrics as the sole determinant in selecting medical students. Each of these statements was analyzed between the health professions advisors to determine what, if any, differences exist.

From a gender perspective, based on the comparison of six statements to measure the impact the holistic review paradigm on the newest admissions initiatives, no differences exists between female and male advisors. Therefore, the null hypotheses were retained.

Based on the comparison of the six statements and the race and ethnicity of the health professions advisors, no differences were calculated in the perceived impact of the holistic review paradigm. Similar to gender and race/ethnicity, the years of advising experience of the health professions advisors made no difference between the impact of the holistic review and the admissions initiatives. Between the years of experience and the statements to measure the significance of the changes as result of the holistic review in admissions, no difference was identified; therefore, the null hypotheses throughout these variables were retained.

Likewise, the results of the analyses conducted to examine differences among the health professions advising community in terms of the institution size or type did not identify any differences. The null hypotheses were retained.

Analyses conducted to review the advisor classification, non-faculty and faculty, identified a difference with regard to one of the six statements. The belief that the holistic review in admissions paradigm has improved the selection criteria by a revised MCAT test were scored higher by non-faculty advisors ($M = 3.10$, $SD = .96$) than faculty peers ($M = 2.70$, $SD = 1.27$), $p = .048$. The null hypotheses were rejected in terms of the differences between the classification of advisors and the impact the holistic review has had improving the academic selection criteria by way of a new MCAT test.

There were no differences identified between the four NAAHP regions and the impact that the holistic review and the implementation of new initiatives in medical school; therefore, the null hypotheses were retained.

The differences identified between the health professions advisors and the impact of the holistic review and admissions initiatives were not found to be significant by this study.

Chapter 5

DISCUSSION

A number of substantive changes are occurring in the field of medical school admissions that have an impact on health professions advisors, all of which were presented throughout Chapter 1 and 2 of this study. During the spring of 2010, an observation made during a joint national meeting between the western region of the medical school admissions and health professions advising community raised concern that the communication with colleagues who prepare students for medical school was ineffective. From this observation came the focus of this study, to identify if differences exist among the health professions advising community regarding factors important to the admission process to medical school.

This study involved over 160 health professions advisors who responded to a survey that collected personal and professional background information that were used as the variables in this study: gender, race and ethnicity, years of advising experience, institution size, institution type, advisor classification and region. Using these variables, the study sought to answer three questions:

1. Do differences exist in the academic factors considered important in medical school selection with respect to personal and professional backgrounds of advisors?

2. Do differences exist in the non-academic factors considered important in medical school selection with respect to personal and professional backgrounds of advisors?
3. Do differences exist in the impact of the holistic review on the implementation of new initiatives in medical school admissions with respect to personal and professional backgrounds of advisors?

The findings of this study demonstrated differences among the health professions advising community in a few of the academic and non-academic factors used in medical school selection based on the personal and professional backgrounds of advisors. The significance of these findings is relevant to the medical school admissions community both from a relational and a communicative perspective. The instructive nature of the findings can inform strategies, partnerships, alliances and other formal relationships to occur between the two communities to minimize confusion or more importantly, encourage dialogue.

For the most part, the perception of academic factors considered important to the selection of students for medical school were unaffected by the personal and professional backgrounds of the participating health professions advisors in this study. This is a positive outcome in the researcher's opinion considering the reliance upon these advisors to prepare students adequately for the medical school application process.

Differences in Gender

Female advisors appeared to approach the academic and non-academic preparation more closely aligned to the movement of a holistic review for admissions. Female advisors gave more weight and opportunity than the male advisors to non-science majors like education and business a real chance of acceptance into medical school. Further, female advisors were more willing to encourage the development of students in cultural competency, and saw non-clinically based experiences in the community as a strong factor that should be taken into account when selecting students. Female advisors also viewed resiliency and adaptability as more important in the personal character of a student pursuing medicine than the male advisors.

Differences in Advisor Classification

Non-faculty members placed higher significance in education and business subject areas, as well as the use of grades and MCAT scores in the selection process. In addition, non-faculty members had notable differences in non-academic factors including personal characteristics compared to faculty peers. Social and interpersonal skills, cultural competency, capacity for improvement and non-medical clinical experiences were all scored higher by non-faculty advisors than faculty peers. The implication of this finding will be of significance to medical schools that are moving towards personal competency assessment tools like the Multiple Mini-Interview and Standardized Letters of Recommendation,

and who are looking to build buy-in from the health professions advisors from their top feeder institutions to support these initiatives.

Differences in Institution Size and Type

The finding suggested a stronger preference for non-medical community service to be considered more important by schools with enrollments between 20,000 – 40,000 students a rate higher than schools with less than 20,000 students or institutions over 50,000 students. Additionally, health professions advisors who are currently employed at public institutions were shown to be more interested in the use of experience working with the underserved at a higher rate than peers employed at private institutions. Learning this offers the following questions for further study. Is the difference attributed to socio-economic status of students within these two different institution types? Do publically-funded institutions support student involvement in their local community at a rate higher than private institutions? How does the size of an institution affect a student's co-curricular opportunities?

Impact of Holistic Review on the Implementation of Admissions Initiatives

The study failed to identify any significant difference in the perception of impact that the holistic review had on the creation and implementation of admissions initiatives, which is likely due to the faulty design of survey questions. The researcher recognizes the structure of the essay questions was confusing to the participants, as commented during the open-essay question in the last segment of the essay. Comments included, “lumping the multiple factors in the last

section of questions will lead to some confusion regarding the answers”, another participant said, “there was too much info in each question. I do not see how I could possibly answer them jointly”.

Other Considerations for Research

Several survey questions did not inform the research questions and therefore, were not reported in Chapter 4. First, the response rate for degree attainment was heavily skewed to post-baccalaureate degree earners (96%); therefore, the ability to determine if differences exist between advisors with graduate work and those with just undergraduate training would not have been statistically valid. Second, the resource load was thought to be an interesting question for the researcher, however upon analysis, the variable did little more than to show the complexity of the health profession advising role. Third, the findings identified in the open-essay segment of the survey also provided solid ideas on future research topic within health professions advising as follows:

- The impact of limited resources has on advising students for medical school when challenged to equally prepare for non-MD programs.
- The area of retention and satisfaction of advisement based on the race and ethnicity of health professions advisors.
- The outcome of the holistic review project with regard to increasing diversity in U.S. medical schools. How do we know when we have achieved success?

- The impact of moving towards academic competency instead of required courses for admissions. How does this change the use of academic data, i.e. grades and standardized test scores?

REFERENCES

- Addams, A. N., Bletzinger, R. B., Sondheimer, H., White, L., and Johnson, L. M. (2010). *Roadmap to Diversity: Integrating Holistic Review into Medical School Admission Processes*, Association of American Medical Colleges.
- Albanese, M. A., Farrell, P., & Dottl, S. L. (2005). A comparison of statistical criteria for setting optimally discriminating MCAT and GPA thresholds in medical school admissions. *Teaching and Learning in Medicine*, 17(2), 149-158.
- Albanese, M.A., Snow, M.H., Skochelak, S.E., Huggett, K.N., & Farrell, P.M. (2003). Assessing personal qualities in medical school admissions. *Academic Medicine*, 78(3), 313-321.
- Association of American Medical Colleges. (2006). *Diversity in the Physician Workforce*. Washington, D.C.
- Association of American Medical Colleges. (2002). *Increasing medical school entering classes*. Washington, D.C.
- Association of American Medical Colleges. (2010). *Roadmap to Diversity: Admissions*. Washington, D.C.
- Association of American Medical Colleges. (2008). *Roadmap to Diversity: Key Legal and Educational Policy Foundations for Medical Schools*. Washington, D.C.
- Association of American Medical Colleges (2012). *Holistic Review in Admissions Fact Sheet*. Washington, D.C.
- Association of American Medical Colleges (2011). *Handbook for Admissions Officers*. Washington, D.C.
- Association of American Medical Colleges (2011). MR5: 5th Comprehensive Review of the Medical College Admission Test (MCAT). Retrieved from www.aamc.org/initiatives/mr5
- Association of American Medical Colleges (2011). Medical School Admission Requirements. Retrieved from www.aamc.org/msar, as access on November 5, 2011).

- Association of American Medical Colleges (1958). Minutes of the Proceedings, Sixty- Eighth Annual Meeting, October 21-23, 1957. *Journal of Medical Education*, 33: 59.
- Baffi-Dugan, C. & Cannon, R. (2011). *Health Professions Admissions Guide: Strategy for Success*, National Association of Advisors for the Health Professions, Inc.
- Barzansky, B. (2012, August). General format. Retrieved from <http://www.lcme.org/directory.htm>
- Bardes, C. L. (2006). Is medicine altruistic? A query from the medical school admissions office. *Teaching and Learning in Medicine*, 18(1): 48-49.
- Beach, M.C., Price, E.G., Gary, T.L., Robinson, K.A., Gozu, A., Palacia, A., Smarth, C., Jenckes, M.W., Feuerstein, C., Bass, E.B., Powe, N.R., & Cooper, L.A. (2005). Cultural competence: A systematic review of health care provider educational interventions. *Medical Care*, 43(4): 356-73.
- Beck, A. (2004). The Flexner Report and the Standardization of American Medical Education. *Journal of American Medical Education*, 291(17): 2139-2140.
- Carnegie Committee on Higher Education (1970). *Higher Education and the Nation's Health: Policies for Medical and Dental Education*. New York: McGraw-Hill Bok Company.
- Cheesman, K. L., Ewing, A. L & Cheesman, I. W. (2011). Report of the 2010 NAAHP Membership Survey. *The Advisor*, 31(1), 6-13.
- Cheesman, K. L. & Ewing, A. L (2007). Report of the 2010 NAAHP Membership Survey. *The Advisor*, 27(1), 5-13.
- Chuck, E. (2011, February 10). The Competency Manifesto: Part *The Student Doctor Network Articles & Interviews*. Retrieved from <http://studentdoctor.net/2011/02/the-competency-manifesto-part-1/>
- Cohen, J.J. (2005). Increasing diversity in the medical workforce is one solid way to prevent disparities in healthcare. *Medline General Medicine*, 77, 26.
- Creswell, J. (2009) *Research Design: Qualitative, Quantative, and Mixed Methods Approaches*. Thousand Oaks, CA: Syears of advising experience.

- Creswell, J. & Plano Clark, V. (2010) *Designing and Conducting Mixed Methods Research*. Thousand Oaks, CA: Syears of advising experience
- Croasdale, M. (2003, November 6). Federal advisory group predicts physician shortyears of advising experience looming. *American Medical News*. Retrieved from <http://www.ama-assn.org/ammednews/2002/11/03/prsb113.htm>
- Donnon, T., Paolucci, E. O. & Violato, C. (2007). The predictive validity of the MCAT for medical school performance and medical board licensing examinations: A meta-analysis of the published research. *Academic Medicine*, 82(1), 100-106.
- Dunleavy, D. M. & Whittaker, K. (2011). The Evolving Medical School Admissions Interview. *Analysis in Brief*, 11(7).
- Elam, C. & Johnson, M. (1997). An analysis of admission committee voting patterns. *Academic Medicine*, 72(10), S72-75.
- Elam, C., Stratton, T., Scott, K., Wilson, J. & Lieber, A. (2009). Review, Deliberation, and Voting: A Study of Selection Decisions in a Medical School Admission Committee. *Teaching and Learning in Medicine*, 14(2), 98-103.
- Eva, K. (2005). Editorial-Dangerous Personalities. *Advances in Health Sciences Education*, 10, 275-277.
- Eva, K. & Reiter, H. (2004). Where Judgment Fails: Pitfalls in the Selection Process for Medical Personnel. *Advances in Health Sciences Education*, 9, 161-174.
- Ferguson, E., James, D., & Madeley, L. (2002). Factors associated with success in medical school: systematic review of the literature. *British Medical Journal*, 324, 952-957.
- Flexner, A. (1910). *Medical Education in the United States and Canada*. Carnegie Foundation for the Advancement of Teaching. New York: NY.
- Grumbach, K. & Bondeheimer, T. (2004). Can health care teams improve primary care practice? *Journal of American Medical Association*, 291(10), 1246-51.

- Gutowski, C. J., Thaker, N. G., Henirich, G., & Fadem, B. (2010). Current medical student interviewers add data to the evaluation of medical school applicants. *Medical Education Online*, 15, 5245.
doi:10.3402/meo.v15i0.5245
- Hanson, M. D., Dore, K. L., Reiter, H. I., & Eva, K. W. (2007). Medical school admissions: Revisiting the veracity and independence of completion of an autobiographical screening tool. *Academic Medicine*, 82(10), S8-S11.
- Hauck, C., Case, S., & Sondheimer, H. *Academic Competencies: Preparing for MCAT 2015 and Beyond* [PDF document}. Retrieved from www.aamc.org/mcat2015
- Irby, D.M., Cooke, M., & O'Brien, B.C. (2010). Calls for reform of medical education by the Carnegie Foundation for the Advancement of Teaching. *Academic Medicine*, 85(2), 220-227.
- Johnson, M., et al.(1998). Medical School Admission Committee Members' Evaluations of and Impressions from Recommendation Letters. *Academic Medicine*, 73(10), S41-43.
- Johnson, R.B. & Onwuegbuzie, A.J. (2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher*, 33(7), 14-26.
- Julian, E. R. (2005). Validity of Medical College Admission Test for predicting medical school performance. *Academic Medicine*, 80(10), 910-917.
- Kanter, S. (2008). Assuring the Integrity of Medical School Admission Decisions. *Academic Medicine*, 83(7), 623-624.
- Kelly, D. (1999). *Measurement made accessible: A research approach using qualitative, quantitative, and quality improvement methods*. Thousand Oaks, CA: Sage Publications, Inc.
- Kirch, D. G. (2011). Are we meeting the public's expectations? *The Reporter*. Washington, D.C.
- Kondo, D. & Judd, V. (2000). Demographic Characteristics of US Medical School Admission Committee. *Journal of American Medical Association*, 284(9), 1111- 1113.
- Kulatunga-Moruzi, C. & Norman, G. R. (2002) Validity of admissions measures in predicting performance outcomes: The contribution of cognitive and

- non-cognitive dimensions, *Teaching and Learning in Medicine*, 14(1), 34-42.
- Kulatunga-Moruzi, C. & Norman, G. R. (2002) Validity of admissions measures in predicting performance outcomes: A comparison of those who were and were not accepted at McMaster, *Teaching and Learning in Medicine*, 14(1), 43-48.
- Lemay, J.F., Lockyers, J. M., Collin, V. T., & Brownell, K. W. (2007). Assessment of non-cognitive trait through the admissions multiple mini-interview. *Medical Education*, 41, 573-579.
- Ludemer, K. M. (1999). *Time to Heal: American Medical Education from the Turn of the Century to the Era of Manyyears of advising experienced Care*. New York: NY, Oxford University Press.
- Mallon, W. T., Liu, M., Jones, R. F. & Whitcomb, M. (2006). *Regional Medical Campuses: Bridging Communities, Enhancing Mission, Expanding Medical Education*. Association of American Medical Colleges, Washington, D. C.
- Mann, S. (2011). Medicine Remains Attractive Career as Enrollment Reach All-Time High. *AAMC Reporter*, as accessed on August 24, 2012 at <https://www.aamc.org/newsroom/reporter/november2011/266832/enrollment.htm>.
- Mann, S. (2011). New Reports Announce Competencies, Action Strategies For Interprofessional Collaboration. *AAMC Reporter*, <https://www.aamc.org/newsroom/reporter/january2011/>.
- Markowitz, G. E. & Rosner, D. K. (1973) Doctors in crisis: A study of the use of medical education reform to establish modern professionalism elitism in medicine. *American Quarterly*, 25, 83-107.
- McGaghie, W. C. (2008). Assessing readiness for medical education: Evolution of the medical college admission test. *Journal of American Medical Association*, 288(9), 1085-1090.
- McGaghie, W. C. (1990). Qualitative variables in medical school admission. *Academic Medicine*, 65(3), 145-149.
- Merriam, S. (2009) *Qualitative Research: A Guide to Design and Implementation*. San Francisco: Jossey-Bass, 1998.

- National Association of Advisors for the Health Professions, Inc. (2011). Membership. Retrieved from <http://www.naahp.org/default>, as accessed on March, 2012).
- Nicholson, S. (2009). *Will the United States Have a Shortyears of advising experience of Physicians in 10 Years?* Robert Wood Johnson Foundation.
- Norman, G. (2004). Editorial-The Morality of Medical School Admissions. *Advances in Health Sciences Education*, 9, 79-82.
- Nutter, D., & Whitcomb, M. *The AAMC Project on the Clinical Education of Medical Studies*. Washington, D.C.: Association of American Medical Colleges, 2001.
- Patten, M. L. (2009). *Understanding research methods: An overview of the essentials*. Glendale, CA: Pycszak Publishing.
- Puryear, J. B., & Lewis, L. A. (1981). Description of the interview process in selecting students for admission to the US medical schools. *Journal of Medical Education*, 56, 881-885.
- Quintero, A. J., Segal, L. S., King, T. S., & Black, K. P. (2009). The personal interview: Assessing the potential for personality similarity to bias the selection of orthopedic residents. *Academic Medicine*, 84(10), 1364-1373.
- Reiter, H., Eva, K. W., Rosenfeld, J., & Norman, G. R. (2007). Multiple mini-interviews predict clerkship and licensing examination performance. *Medical Education*, 41, 378-384.
- Roberts, C., Walton, M., Rothnie, I., Crossley, J., Lyon, P., Kumar, K., & Tiller, D. (2008). Factors affecting the utility of the multiple mini-interview in selecting candidates for graduate-entry medical school. *Medical Education*, 42, 396-404.
- Robinson, L., ed (2002). *AAMC Data Book: Statistical Information Related to Medical School and Teaching Hospitals*. Association of American Medical Colleges. Washington, DC.
- Salvatori, P. (2001). Reliability and validity of admissions tools used to select students for the health professions. *Advances in Health Sciences Education*, 6, 159-175.

- Siu, E. & Reiter, H. (2009). Overview: what's worked and what hasn't as a guide towards predictive admissions tool development. *Advances in Health Sciences Education*, 14, 759-775.
- Sondheimer, H., Bletzinger, R., Addams, A., Johnson, L., and White, E. (2009) Making holistic review in medical school admissions: An introduction to the AAMC Holistic Review Project, *The Advisor*, (29) 3, 5-15.
- Spooner, C. (1990). Help for the Gatekeepers: Comment and Summation of the Admission Process. *Academic Medicine*, 183-187.
- Stansfield, B. R. & Kreiter, C. D. (2007). Conditional reliability of admissions interview ratings: Extreme ratings are the most informative. *Medical Education*, 41(1), 32-38.
- Sternberg, R.J. (2008). Assessing students for medical school admissions: Is it time for a new approach? *Academic Medicine*, 83(10 supplement), S105-S110.
- Teddlie, C. & Tashakkori, A. (2009). Foundations of mixed methods research. Thousand Oaks, CA: Sage Publications, Inc.
- Weisman, R., Weinberg, P., Winstel, J. (1972). On Achieving Greater Uniformity in the Admissions Committee Decisions. *Journal of Medical Education*, 47(8), 593-602.
- White, B. C., Dey, E. L., & Rantone, J. C. (2009). Analysis of factors that predict clinical performance in medical school. *Health Sciences Education*, 14, 455-464.
- Whiteman, L. F. (2003). Standardized testing and equal access: A tutorial. In M. J. Change, D. Witt, & J. Jones (Ed). *Compelling Interests: Examining the Evidence on Racial Dynamics in Colleges and Universities*. Stanford CA, Stanford University Press, pp. 49-95.
- Witzburg, R. (2007). The Health Professions Advisor's Letter of Evaluation: Everything You Ever Wanted to Know But Were Afraid to Ask. *The Advisor*, 27(1), 23-27.
- Zikmund, W. (2003). *Business Research Methods*. Mason, OH: South-Western.

APPENDIX A
HEALTH PROFESSIONS ADVISORS SURVEY

Survey

1. Gender
2. Age
3. What race best describes you?
4. What ethnicity best describes you?
5. In what state or U.S. territory do you live?
6. What is the highest level of education you have completed?
7. Which best describes your master's degree, doctoral degree?
8. Which of the following best describes your primary title/appointment classification?
9. How many years' experience do you have advising pre-health profession students?
10. In what NAAHP region do you affiliate?
11. Which of the NAAHP-affiliated meetings do you attend?
12. I do not attend NAAHP-affiliated meetings because:
13. Which of the Association of American Medical Colleges (AAMC) affiliated meetings do you attend?
14. I do not attend AAMC-affiliated meetings because:
15. Highest degree a student can achieve at your institution is:
16. Your institution is considered, private or public?
17. Total student enrollment for 2012-2013 is:
18. What is your level of responsibility for each service?

- a. General Career Advising
 - b. General Academic Advising
 - c. Specific Graduate/Professional Application Preparation
 - d. Entrance Exam Preparation
 - e. Letter of Recommendation Consideration
 - f. Interview Preparation
 - g. Volunteer/Internship Placement
 - h. Student-led Organization/Club Advising
19. Besides you, how many other individuals are responsible for these services?
20. How many students utilize you for services in a given year?
21. What percentage of your advising load is occupied by pre-medical students?
22. Please rate the acceptability for each subject area as it relates to choosing students for medical school.
- a. Biology, Chemistry, Mathematics, Physics, Behavioral and Social Science, Business, Communication, Education, Engineering, English Language and Literature, Fine Arts, Health Sciences, History, Foreign Language/Linguistics, Government/Political Science, Natural/Physical Sciences, Philosophy/Religion, Special Studies.

23. Rate the importance of the following application data as it relates to the selection of students for medical school.
- a. Community service: non-medical, Community service: medical, Completion of premedical requirements, experience with underserved populations, GPA; cumulative, GPA; cumulative science and math, interview recommendation, leadership experience, medical/clinical work experience, MCAT total score, personal statement, school-specific secondary questions/essays.
24. Rate the importance of the personal characteristics as each relates to the selection of students for medical school.
- a. Integrity & Ethics, Reliability & Dependability, Service Orientation, Social & Interpersonal Skills, Capacity for Improvement, Resilience & Adaptability, Cultural Competence, Oral Communication, Teamwork.
25. Overall, which best describes your opinion related to these initiatives.
- a. I believe these initiatives give equal opportunity to students from varied backgrounds who might otherwise not be considered.
 - b. I believe these initiatives improve my advisees' chances for entry into medical school.
 - c. I believe these initiatives increase the diversity of students admitted to medical schools.

- d. I believe these initiatives broaden the selection criteria beyond academic- metrics only.
- e. I believe these initiatives distinguish medical schools from one another, therefore making it easier to match students based on "best fit" for them.
- f. . I believe these initiatives allow medical schools to be very clear about their respective criteria used to make admissions decisions
- g. I believe these initiatives make my job of guiding students through the medical school admissions process easier
- h. I believe these initiatives will come and go, akin to "a fad".
- i. I believe these initiatives have improved the interview process by suggesting the adoption of new formats like the Multiple Mini-Interview (MMI).
- j. I believe these initiatives have improved the letters of recommendation format by suggesting the exploration of Standardized Letters of Recommendation.
- k. I believe the initiatives have improved the academic selection criteria by revising the MCAT.
- l. I believe these initiatives have improved the academic preparation by encouraging undergraduate institutions to consider

academic competencies rather than prescribed discipline-specific majors.

m. I believe these initiatives have encouraged dialogue at my institution among health professions advisors and the faculty who teach the courses medical schools require advisees to have completed.

26. What else, if anything should be considered as relevant in medical school admission that has not been covered in this survey?

APPENDIX B
INSTITUTIONAL REVIEW BOARD APPROVAL

Approval Letter

To: Christine Wilkinson
FULTN

From: Mark Roosa, Chair
Soc Beh IRB

Date: 10/15/2012

Committee Action: **Exemption Granted**

IRB Action Date: 10/15/2012

IRB Protocol #: 1209008243

Study Title: Health Professions Advisors: A quantitative study of relevant medical school admissions selection criteria and the implications of holistic admission criteria

The above-referenced protocol is considered exempt after review by the Institutional Review Board pursuant to Federal regulations, 45 CFR Part 46.101(b)(2) .

This part of the federal regulations requires that the information be recorded by investigators in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. It is necessary that the information obtained not be such that if disclosed outside the research, it could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.

You should retain a copy of this letter for your records.

APPENDIX C
LIST OF ABBREVIATIONS

Abbreviations

AAMC	Association of American Medical Colleges
ABOR	Arizona Board of Regents
ACGME	Academy Council for Graduate Medical Education
AMCAS	American Medical College Application Service
CAAHP	Central Association of Advisors for the Health Professions, Inc.
COA	Committee on Admissions
COGME	Council on Graduate Medical Education
GSA	Group for Student Affairs
HPA	Health Professions Advisors
HLP	Holistic Review Project
ILWG	Innovation Lab Working Group
LCME	Liaison Committee for Medical Education
MCAT	Medical College Admissions Test
MMI	Multiple Mini-Interview
MSAA	Medical School Admissions Administrators
NAAHP	National Association of Advisors for the Health Professions, Inc.
NEAAHP	Northeastern Association of Advisors for the Health Professions, Inc.
SAAHP	Southern Association of Advisors for the Health Professions, Inc.
WAAHP	Western Association of Advisors for the Health Professions, Inc.