Impact of AOA Status and Perceived Lifestyle on Career Choices of Medical School Graduates

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BACKGROUND: Based upon student ratings of such factors as predictable work hours and personal time, medical specialties have been identified as lifestyle friendly, intermediate, or unfriendly. Lifestyle friendly programs may be more desirable, more competitive, and for students elected to the Alpha Omega Alpha (AOA) Honor Medical Society, more attainable.

OBJECTIVE: The objective of this study was to evaluate whether AOA students increasingly entered lifestyle friendly residency programs and whether trends in program selection differed between AOA and non-AOA graduates.

DESIGN: This retrospective cohort study examined PGY-2 data from the Association of American Medical Colleges and the 12 allopathic schools in the Associated Medical Schools of New York.

PARTICIPANTS: Data on 1987–2006 graduates from participating schools were evaluated.

MAIN MEASURES: Residency program selection over the 20-year period served as the main outcome measure.

KEY RESULTS: AOA graduates increasingly entered lifestyle-friendly residencies—from 12.9% in 1987 to 32.6% in 2006 ($p < 0.01$). There was also a significant decrease in AOA graduates entering lifestyle unfriendly residencies, from 31.6% in 1987 to 12.6% in 2006 ($p < 0.01$). Selection of lifestyle intermediate residencies among AOA graduates remained fairly stable at an average of 53%. Similar trends were found among non-AOA students. However, within these categories, AOA graduates increasingly selected radiology, dermatology, plastic surgery and orthopedics while non-AOA graduates increasingly selected anesthesiology and neurology.

CONCLUSIONS: While lifestyle factors appear to influence residency program selection, AOA graduates differentially were more likely to either choose or attain certain competitive, lifestyle-friendly specialties. Health care reform should be targeted to improve lifestyle and decrease income disparities for specialties needed to meet health manpower needs.

KEY WORDS: career choice; medical students; workforce; residency; lifestyle.

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During the third or fourth year of medical school, top-performing medical students can be elected to the Alpha Omega Alpha Honor Medical Society (AOA), a national honor society with chapters at 95% of the medical schools in the United States.¹ Election criteria to AOA can vary between institutions but are based largely on academic achievement with consideration given to leadership, service, professionalism, and promise of future success in medicine.² With medical school graduates in the United States increasingly selecting subspecialties that offer more predictable work hours and greater income potential, AOA recognition may give those medical students an advantage in applying for competitive residency programs.^{3,4} Earlier studies have examined career choices of honor medical students in the 1970s and 1980s^{5–7} and the National Resident Matching Program summarizes AOA match data for specialties each year, but recent trends in selection of lifestyle-friendly careers by honor graduates remains unexplored.

Recent studies have investigated the changing factors that may influence medical students in their career specialty choices with lifestyle emerging as one of those considerations that has become increasingly important to students.^{3,8–10} Some students even remark about “heading for the ROAD”—radiology, ophthalmology, anesthesiology and dermatology, all of which are considered the epitome of lifestyle-friendly careers.¹¹ A previous study by two of the current authors (MG, DN) used medical students’ ratings on various career attributes to classify medical specialties as “lifestyle friendly,” “lifestyle intermediate” and “lifestyle unfriendly.”³

Nationally there has been very little growth in the number of residency positions offered. In the context of increasing desirability (or demand) for the lifestyle-friendly careers, investigators used residency program selection data from a large cohort of medical school graduates to test the hypothesis that entry to these lifestyle-friendly programs has become increasingly competitive with AOA students at an advantage in attaining their career choice.

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Correspondingly, the investigators formulated the following research questions: 1) have AOA students increasingly entered training in lifestyle-friendly residency programs?; 2) is there a difference in trends between AOA and non-AOA graduates entering each lifestyle category (friendly/intermediate/unfriendly)?; and 3) regardless of lifestyle category, is there a difference in trends between AOA and non-AOA graduates entering specific residency specialties?

METHODS

Study Design

This retrospective cohort study examined the career choices of all medical students who graduated from all New York allopathic medical schools over a 20-year period.

Subjects and Setting

Subjects were medical students graduating from the 12 medical schools included in the Associated Medical Schools of New York (AMSNY): Albany Medical School; Albert Einstein College of Medicine of Yeshiva University; Columbia University College of Physicians and Surgeons; Mount Sinai School of Medicine; New York Medical College; New York University School of Medicine; SUNY Downstate College of Medicine; SUNY Upstate Medical University; Stony Brook University School of Medicine (SUNY); University at Buffalo School of Medicine and Biomedical Sciences (SUNY); University of Rochester School of Medicine and Dentistry; and Weill Cornell Medical College.

Students were eligible to be included in this study if they graduated from one of the AMSNY schools during the 20-year period (1987–2006) and chose one of 18 categorical residency programs previously defined by investigators as *lifestyle friendly* (radiology, emergency medicine, urology, otolaryngology, ophthalmology, dermatology, physical medicine and rehabilitation, anesthesiology), *lifestyle intermediate* (internal medicine, pediatrics, psychiatry, orthopedics, family medicine, internal medicine-pediatrics, neurology, plastic surgery), or *lifestyle unfriendly* (surgery-general, obstetrics-gynecology). These categories were established by investigators using questionnaire data from students graduating from two medical schools between 1998 and 2004. Students responded to questions regarding the influence of career attributes on the selection of a specialty.³ Seven factors that influenced career choice were generated by that study. One of those factors was lifestyle. Our current study focuses on the five items that clustered to form the lifestyle-friendly factor: 1) allows more leisure time; 2) provides an opportunity to enjoy life outside of work; 3) allows predictable work hours; 4) allows time to pursue activities outside of work; and 5) allows more time with family. Ranking each residency based on the results of these analyses yielded a list of specialties by student perceived “lifestyle friendliness” in one of the three categories noted above. Three specialties—nuclear medicine, pathology, and public health—had not been categorized by lifestyle because too few students selected them.³

This study cohort, which consists of slightly more than 10% of all U.S. medical school graduates, is noteworthy for representing a national group of students who cover the spectrum of applicant academic competitiveness from a diverse group of institutions—public and private, urban and rural, patient care- and research-oriented. In addition, New York medical schools attract and enroll students from every region of the U.S.—an average of 42.1% of these graduates (range: 2.6% to 77.0%) from the entire cohort are out-of-state residents (AAMC [facts@aamc.org], e-mail, February 4, 2010).

According to 2006 AAMC data, this cohort has a similar ethnic/racial distribution (56.5% non-Hispanic white, 26.0% Asian, 6.5% non-Hispanic black, and 4.7% Hispanic graduates) compared to other medical schools in the country.¹² The gender distribution is also similar to overall national proportions for the years 1987–2006 with an average of 42.2% female graduates from New York medical schools (range: 32.8% in 1987 to 50.0% in 2006) compared to 40.2% from all U.S. medical schools (32.3% in 1987 to 48.7% in 2006) (AAMC [facts@aamc.org], e-mail, February 18, 2010). The 20 years included in this study span multiple “generations” of students ranging from the last of the baby boomers through Generation X and into the start of Generation Y.¹³

Data Collection

Data were collected from the Association of American Medical Colleges (AAMC) and the 12 participating medical schools through AMSNY. With written authorization from the dean at each school, investigators then received the names of the AOA students who graduated between 1987 and 2006. The AAMC provided investigators with residency survey data collected annually from program directors during the 20-year project period. The data set also included 2007 to capture information for 2006 graduates.

Analysis

To determine residency selection and ensure only categorical residencies were captured (i.e. excluding transitional and preliminary residency positions), investigators examined AAMC survey data for the 2nd year of residency (post-graduate year 2; PGY2). The names of AOA graduates provided by the participating schools were matched by name, school and graduation year to PGY2 data provided by the AAMC to identify the selected residency programs of AOA and non-AOA graduates.

The frequency that medical specialties were chosen by graduates was calculated for each graduation year. The specialties were then categorized by lifestyle status—friendly, intermediate and unfriendly. Simple linear regression analyses were used to summarize AOA and non-AOA graduates entering each lifestyle category and each specialty over the 20-year period. In these analyses, graduation year served as the exposure variable and proportion of graduates entering the three lifestyle categories served as the primary outcome variables. The coefficient of determination (r^2) was also calculated to describe how much of the total variation in the proportion

of graduates was explained by its linear relationship with graduation year. Trend lines were compared between AOA and non-AOA graduates with the null hypothesis that the slopes were identical.¹⁴ Given the three primary outcomes examined, results that obtained a p-value of less than 0.02 were considered statistically significant. Specific residency program selections were compared similarly but with no correction given their role as secondary outcomes.¹⁵

This study was approved by the Institutional Review Board of New York Medical College.

RESULTS

The AAMC provided investigators with the names and specialty choices of 35,211 residents who graduated from participating

Figure 1. Sample selection of AOA and non-AOA graduates.

schools during the 20-year study period. The twelve New York schools provided the names of 5,738 AOA students who graduated during that same period (one school was unable to provide the names of AOA graduates from 1986 to 1989). After applying eligibility criteria stated above, investigators achieved a sample of 26,482 graduates—4,265 AOA and 22,217 non-AOA (see Fig. 1).

Trends among AOA and non-AOA graduates entering lifestyle-friendly, intermediate and unfriendly residencies are shown in Figure 2. There was an overall increasing trend in AOA graduates entering lifestyle-friendly residency programs from 1987 to 2006 ($r^2=0.79$, $p<0.01$). There was also a significant decrease in AOA graduates entering lifestyle unfriendly residencies over the 20-year period ($r^2=0.74$, $p<0.01$). However, similar trends occurred among non-AOA graduates for lifestyle-friendly ($r^2=0.90$, $p<0.01$) and unfriendly residencies ($r^2=0.79$, $p<0.01$). Selection of lifestyle intermediate residencies among AOA graduates remained fairly stable at an average of 53% over the 20-year period ($r^2=0.26$, $p<0.05$). Similarly, non-AOA graduates selected lifestyle intermediate programs at an average of 57% overall, with an average of 63% selecting such programs in 1997 through 2000 ($r^2=0.32$, $p<0.01$). Overall, the trends by lifestyle category were not different between the two groups of medical school graduates.

There were specific specialties where significant differences in trends between the AOA and non-AOA groups were found: increase in selection by AOA over non-AOA graduates—radiology, dermatology, plastic surgery and orthopedics (figure available online); increase in selection by non-AOA over AOA graduates—anesthesiology and neurology (figure available online); and decrease in selection by non-AOA compared to AOA graduates

—combined internal medicine-pediatrics (5.9% to 1.3% among non-AOA vs. 3.9% to 0.8% among AOA graduates ($p<0.05$)). Graduates entering emergency medicine, ophthalmology, otolaryngology, and pediatrics increased significantly over the study period, but the increases were similar for both AOA and non-AOA graduates (figure available online). Residency specialties where selection by both groups decreased significantly over the study period included general surgery, obstetrics-gynecology, physical medicine/rehabilitation and urology (figure available online). Selection of psychiatry decreased significantly among AOA graduates (from 7.7% in 1987 to 3.3% in 2006, $r^2=0.37$, $p<0.01$) but fluctuated among non-AOA graduates (8.3% in 1987 to 3.3% in 1996 to 6.0% in 2006, $r^2=0.11$, $p=0.16$) over the study period.

No statistically significant trends among or between AOA and non-AOA graduates entering family medicine or internal medicine were found (see Fig. 3). Over the 20-year period, an average of 3.1% of AOA (range: 0.6% to 6.8%, $r^2=0.10$) and 6.2% of non-AOA graduates (3.8% to 10.1%, $r^2=0.03$) entered family medicine while 26.6% of AOA (18.6% to 33.5%, $r^2=0.01$) and 26.1% of non-AOA graduates (22.6% to 32.1%, $r^2=0.11$) entered internal medicine.

DISCUSSION

Although it was our expectation that students elected to AOA would be more likely than non-AOA colleagues to select and achieve residencies in the more lifestyle-friendly careers, our study did not support this hypothesis. The trends over time for students entering these broad categories of lifestyle friendly, intermediate and unfriendly were actually quite similar for the two groups of students. Medical school graduates, both AOA and non-AOA, increasingly entered lifestyle-friendly careers, while both groups were less likely to enter lifestyle unfriendly careers over the 20-year study period. However, while the trend for the three lifestyle categories for the two groups was similar, more notable differences were found when considering individual specialties, suggesting that within each lifestyle category, some may be more competitive than others.

AOA graduates were significantly more likely than non-AOA graduates to enter two of the popular lifestyle-friendly careers—radiology and dermatology. Both of these two fields attract residents with average USMLE Step 1 and 2 scores among the highest compared to other specialties, and well above the national mean.¹⁶ Interestingly, anesthesiology, another lifestyle-friendly career, had increasing numbers of graduates overall choosing this field. For reasons that are unclear, the increase among non-AOA students was greater than the increase among AOA graduates.

Trends for the other lifestyle-friendly residencies were similar for the two groups, with more students overall entering emergency medicine, ophthalmology, and otolaryngology. It is noteworthy that AOA graduates were significantly more likely to attain positions within two specialties that did not fall into the lifestyle-friendly category but have become increasingly popular over the study period, orthopedics and plastic surgery. Although these specialties did not have the same high rating for lifestyle, prior work has suggested these specialties are perceived as lifestyle intermediate.³

Figure 2. AOA vs. non-AOA graduates entering lifestyle-friendly, intermediate and unfriendly residencies over 20 years (1987 to 2006). N=26482.

Figure 3. AOA vs. non-AOA graduates entering general internal medicine, family medicine and internal medicine-pediatrics residencies over 20 years (1987 to 2006).

Another lifestyle intermediate option, the career track of combined internal medicine-pediatrics (Med-Peds) had interesting findings. While fewer total graduates in this study were choosing that career path over this 20-year period, AOA student choice of Med-Peds was relatively maintained compared to that of the non-AOA students. Conversely, non-AOA students were significantly more likely to enter neurology residencies, another lifestyle intermediate career choice, when compared to their AOA peers.

Four careers showed significant decreases in medical student choice regardless of AOA status. Two of these four are the lifestyle unfriendly careers of general surgery and obstetrics-gynecology.

These results are similar to other studies that found long work hours have been strongly associated with dissatisfaction and that physicians are increasingly concerned with work-life balance.^{4,17,18} Urology and physical medicine/rehabilitation, while seen as lifestyle friendly, have decreasing numbers suggesting the influence of other factors.¹⁹

Internal medicine and family medicine are both categorized as lifestyle intermediate careers, and neither career showed a significant trend over the 20 years relating medical student choice with AOA status. The lack of a relationship between choice of an internal medicine career and AOA status may mask any number of underlying relationships. Many graduates

entering internal medicine go on to subspecialize. For example, the percent of third year internal medicine residents choosing to pursue a career in a subspecialty has risen from 42% in 1998 to 58% in 2007.²⁰ Yet, the subspecialties of internal medicine vary greatly in lifestyle attributes and income. Those characteristics may make certain subspecialties more attractive, hence more competitive, and as a result, more AOA graduates may enter those subspecialties. Over the time period of this study, the new internal medicine career track as hospitalist has also evolved. The relationship between these career choices and AOA status obviously cannot be addressed by the current study.

Our analysis differs somewhat from prior studies that dichotomized residencies into two groupings, controllable vs. uncontrollable lifestyle, as these studies defined controllable lifestyle careers on the basis of the investigators' *a priori* perceptions.^{4,10} We made the decision to look at the perception of fourth-year medical students. The data from our earlier studies revealed some important differences between the views of the students as opposed to the views of the investigators cited above. For example, urology emerged as a lifestyle-friendly career even though past studies placed it in the uncontrollable-lifestyle category. Second, physical medicine/rehabilitation, a specialty not included in prior studies, was rated as the second most lifestyle-friendly study in our previous work. Our data suggests that the past investigators' tendency to dichotomize careers into lifestyle-controllable vs. uncontrollable may have masked important complexities, as some of the careers typically lumped into the uncontrollable lifestyle category (family medicine, general pediatrics and general internal medicine) may actually reside between the lifestyle-friendly and unfriendly extremes.³

We are aware that by framing our analysis of the relationship between AOA status and careers choice by lifestyle characteristics, we were not accounting for the myriad of other factors that influence that decision.¹⁹ Some are societal and others institutional, but most are related to the values and aspirations of the individual medical student/resident. Our study confirms the increasing influence of lifestyle aspirations on career choice. While not included in our analysis, anticipated income plays a key role in influencing and attaining a certain lifestyle.⁴ It is worth noting that all of the lifestyle-friendly specialties have annual incomes considerably higher than those of the unpopular career choices of general internal medicine and family medicine.²¹ There is conflicting evidence, however, as to whether anticipated debt affects specialty choice.^{22,23} Prestige within the profession may also play a role in specialty selection by the very high-achieving AOA students.

This study is limited by the varying response rates for the AAMC annual resident survey over the study period; however, since 2000, the response rate has been approximately 90%. In addition, this study did not track graduates who chose to subspecialize beyond their primary residency program selection. It is possible that AOA status could be a factor in differentiating between students choosing to become generalists after a residency in internal medicine or pediatrics and those who go on to fellowship training. There is also literature suggesting that AOA status might also differentiate between students becoming general surgeons and those who enter a surgical subspecialty after completing residency.^{24,25}

This study also does not account for other factors, such as gender or age, which have been shown to have a variable influence on career choice in previous studies.¹⁹ Additional research is needed to clarify the contribution of gender and AOA status to career decisions. Moreover, this study analyzed data on graduates from one state; however, as stated earlier, New York schools traditionally have broad representation geographically, economically, and academically. Investigators also cannot draw conclusions about the residency program selection of top-performing students in the 5% of medical schools without AOA chapters.

In summary, AOA status does not result in significant differences in student attainment of training in careers categorized by lifestyle status. However, certain specialties in both the lifestyle-friendly (e.g., radiology, dermatology) and lifestyle intermediate (orthopedics and plastic surgery) categories appear to be more competitive than other fields in those same categories. AOA status (and/or the related factors) may either convey an advantage in achieving training in those fields or in influencing career choice.

Recent analyses of health care needs point to a national need for more students to enter primary care, obstetrics, general surgery and psychiatry.²⁶⁻³² Health care reform and funding priorities should be targeted to increase the popularity and attractiveness of these fields by systematically addressing the need to improve lifestyles and decrease income disparities. If adequate funding can be provided to allow students who enter these fields to have predictable work hours and adequate time for life outside of work, they should become increasingly attractive to all students, including those who have been elected to AOA.

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