How Influences on Residency Choice Change Through Medical School

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Abstract

Purpose: To attract medical students (MS) to primary care, administrators must understand what impacts students to select a certain area of medicine. This study elucidates these influences and how they change throughout four years.

Methods: A survey was administered to first-year (Group-I) and fourth-year (Group-II) MS at New York Institute of Technology College of Osteopathic Medicine (NYIT-COM). Questions sought to understand what factors influence student’s residency choice.

Results: There were 258 respondents, 184 responses (71.0%) were from Group-I and 75 (29.0%) were from Group-II. Academic performance and board scores had a greater impact on career choice for Group-I (83.2%) than Group-II (13.3%). Perceived status among colleagues had a greater negative influence on Group-II (13.7 %) than Group-I (2.90 %). Opportunity to care for patients and their families had an increased negative influence on Group-II (11.1%) than Group-I (0.6 %).

Conclusions: Upon entering medical school, academic performance had a greater influence on residency choice than it did 4th year after exams were completed. Compared to 1st year MS, the ability to care for patients and families, with perceived status among colleagues is a deterring factor to 4th year MS choice of residency.

Keywords: medical students; residency; academic performance; status

Introduction

There is a large demand for primary care physicians in the United States. (AMA, 2019; IHS, 2017). Primary care is frequently defined to encompass the specialties of family medicine, general internal medicine, pediatrics, and geriatrics, as recently reported by the American Osteopathic Association (AOA) (AOA, 2018). In the United States, primary care physicians (PCPs) account for less than one-third of our nation’s total physicians (AMA, 2019). In
2008, the total number of primary care visits was estimated to be 426 million and this number is projected to increase to 565 million by 2025 (Pettersen, et al., 2012). Currently the estimated PCPs shortage is approximately 15,000-25,500 (IHS, 2017). In addition to high workloads and a perceived lack of adequate reimbursement, a large number of PCPs retiring is a main contributor to the shortage. As of 2017, approximately 60,000 of the 223,000 PCPs are aged 60 years or older, accounting for over a quarter of the PCP workforce (AMA, 2019). The Association of American Medical Colleges predicts an increased shortage of between 21,100 and 55,200 PCPs by 2032 (HIS, 2017). In addition, the growing demand for PCPs can be attributed to the large aging population in the United States. As this patient population grows and requires increased visits to maintain wellness and manage chronic disease, the importance of having competent physicians to adequately address these patient needs becomes necessary, for both residency and medical school programs who have an essential role in the training of these future physicians.

One principle of osteopathic medicine is that having a solid foundation in primary care medicine creates a strong physician, with most osteopathic medical schools holding this tenet as part of their mission statement. Therefore, these educational institutions should assist with the training of PCPs to address this national shortage. For this task to be accomplished, it is important that faculty, school administrators, and even residency directors, understand the influences that impact a medical student’s choice of their preferred area of practice. Thus, the objectives of this study were 1. To understand the factors which lead to a medical student’s career choice. 2. To examine how these components change over the course of their medical education, specifically to determine which of these influences are most important to entering students (OMS-I) as compared to the students who are completing osteopathic medical school (OMS-IV). Further elucidation of these influences can help medical college and residency administrators develop curriculums and training programs, which will provide the necessary resources to attract applicants who are interested in pursuing primary care.

**Methods**

**Survey design:**

A 24 and 27 question survey was administered to first year medical students (OMS-I; Group I) and fourth year medical students (OMS-IV; Group II) respectively (See Supplemental File I). This was developed by adapting the design of previously validated surveys by Hauer, K.E., et al. (2008), and Scott, I., et al. (2011). Before distribution, an Institutional Review Board (IRB) approval was obtained. The survey was administered electronically on the anonymous secure web application Red Cap (Nashville, TN) to both groups. Group I was administered the survey after completing their first month of OMS-I. Group II was emailed the survey in April of OMS-IV, after the match process was completed. Both groups had demographic questions pertaining to age, gender, ethnicity, marital status, and the presence of children or dependents. There were also questions included to elucidate what influences may have an impact on medical student selection of a particular residency specialty and future career. All the responses collected included the option of "prefer not to answer" to facilitate the completion of the survey and to minimize any potential anxiety associated with a particular question. The survey took approximately five minutes to complete. A Pearson Chi-Square test in addition to a student's 2-tailed t-test were used to evaluate for the significance of relationships, with \( \alpha=0.05 \) set for all tests. IBM SPSS Statistics 25 (Chicago, IL) was used to perform the analysis.

**Results/Analysis**

**Demographics:**

There were a total of 258 respondents to the survey. Of this number, 184 responses (71.0%) were students from Group I. The remaining 75 (29.0%) were from Group II. There were no significant differences between the two
groups in terms of gender (p = 0.10), or added responsibility of children or dependents (p = 0.48). It was observed
that Group II had more respondents that were married (p = 0.03) when compared to Group I. Group I was also
younger in age than Group II (p <0.001) (Table 1). There were significant differences in terms of ethnicity. Group I
had more respondents of Asian ethnicity (p = 0.01) and Group II included more Caucasians (p=0.04) (Table 2).

**Table 1: Comparing Age, Gender, and Marital Status between Group I and II Medical Students**

|                          | Group I          | Group II         | P-Value |
|--------------------------|------------------|------------------|---------|
| **Mean (SD)**            |                  |                  |         |
| Age                      | 24.66 (4.45)     | 27.24 (3.07)     | 0.02    |
| **N (%)**                |                  |                  |         |
| Gender                   |                  |                  |         |
| Female                   | 85 (46.2)        | 42 (56.0)        | 0.10    |
| Male                     | 98 (53.3)        | 31 (41.3)        |         |
| Prefer Not to Answer     | 0 (0.00)         | 1 (1.3)          |         |
| Marital Status           |                  |                  | 0.03    |
| Married/Domestic Partner | 29 (15.8)        | 18 (24.0)        |         |
| Prefer not to answer     | 0 (0.0)          | 2 (2.7)          |         |
| Separated                | 1 (0.5)          | 0 (0.0)          |         |
| Single                   | 153 (83.6)       | 54 (72.0)        |         |
| Widowed                  | 0 (0.0)          | 1 (1.3)          |         |

**Table 2: Comparing Ethnicities between Group I and II Medical Students**

| Ethnicity Demographics | N (%) | P-Value |
|------------------------|-------|---------|
| **American Indian or Alaska Native** |       |         |
| Yes                    | 3 (1.6) | 0 (0.0) | 0.27 |
| No                     | 181 (98.4) | 75 (100.0) | |
| **Asian**              |       |         |
| Yes                    | 81 (44.0) | 20 (26.7) | <0.01 |
| No                     | 103 (56.0) | 55 (73.3) |     |
| **Black or African American** |       |         |
| Yes                    | 8 (4.4) | 0 (0.0) | 0.07 |
| No                     | 175 (95.6) | 75 (100.0) |     |
| **Hispanic or Latino** |       |         |
| Yes                    | 13 (7.1) | 1 (1.3) | 0.11 |
| No                     | 162 (88.0) | 66 (88.0) |     |
| Prefer Not to Answer   | 6 (3.3) | 7 (9.30) |     |
| **Native Hawaiian or Other Pacific Islander** |       |         |
| Yes                    | 1 (0.5) | 0 (0.0) | 0.52 |
| No                     | 183 (99.5) | 75 (100.0) |     |
| **White**              |       |         |
| Yes                    | 92 (50.0) | 48 (64.0) | 0.04 |
| No                     | 92 (50.0) | 27 (36.0) |     |
| Prefer not to Answer   | 10 (5.4) | 7 (9.3) | 0.25 |
Influence on Career Choice:

When examining influences on career choice between the two groups, there were three significant differences noted. It was observed that academic performance and board scores had a greater impact on career choice for Group I when compared to Group II (Figure 1). In fact, 83.2% (N=153) of Group I reported that board scores and academic performance had an influence on residency choice, while 13.6% (N=25) were not influenced. In contrast, 84.0% (N=63) of Group II reported academic performance and boards scores having no influence on residency choice, while 13.3 % (N = 10) reporting an influence on career choice. In regards to perceived status among colleagues, 2.9 % (N = 5) of Group I and 13.7 % (N= 10) of Group II reported to this having a negative influence on career choice (p = 0.004) (Figure 2). In regards to the opportunity to care for patients and their families, 0.6% (N=1) of Group I and 11.1% (N=8) of Group II reported a negative impact on career choice while 74.3% (N=124) of Group I and 68.1% (N = 49) of Group II reported it as a positive impact on career choice (Figure 3). It was interesting to note that when asked about their first-choice in a residency, 22.3% of Group I respondents were considering primary care medicine. Group II had 57.3% of their respondents ultimately match into a primary care residency, as this survey was distributed to these students after the residency selection period.

Figure 1: The relationship of academic performance to residency choice between Groups I and II as measured by number of student responses.

![Figure 1: The relationship of academic performance to residency choice between Groups I and II as measured by number of student responses.](image1)

Figure 2: The relationship of perceived status among colleagues to residency choice between Groups I and II as measured by number of student responses.

![Figure 2: The relationship of perceived status among colleagues to residency choice between Groups I and II as measured by number of student responses.](image2)
Figure 3: The relationship of the opportunity to care for patients and their families to residency choice between Groups I and II as measured by number of student responses.
Discussion

A shortage of primary care physicians persists in the United States, while the aging population is steadily increasing. The selection of a residency is highly influenced by the type of work future physicians will carry throughout their careers. Thus, the various demographics, work experiences, and personal perceptions of the individual medical student are important to examine. This information can prove to be valuable to medical school faculty and clerkship managers as they help prepare students for a primary care residency.

Our study was able to identify factors based on the specific surveys distributed to OMS-I and IV students. The most important factor for the entering medical school students (Group I) when considering a particular residency was academic performance, with the main focus on the licensing exam score. The emphasis placed on this examination score for the selection of a residency is understood from the beginning of medical school. This is especially true for those students desiring to match into their first-choice of residency or highly competitive specialties (Gauer and Jackson, 2017; Mitsouras, et al., 2019). A recent study demonstrated (Mitsouras, et al., 2019) that a difference in COMLEX and USMLE scores was more pronounced for those students matching into highly competitive specialties rather than into first choice, with a larger difference in mean scores between students matching into specialties of high versus low competitiveness, than between students matching into their first versus non first choice residency (Mitsouras, et al., 2019). The concerns regarding licensing exam results is expected from a first year medical student, given the vigorous preclinical basic science curriculum and the required change in study habits from what is needed to successfully complete their undergraduate studies. In addition, most first year students enter medical school without knowing much about the medical careers open to them, especially since this group enters school at a
younger age (Group I), with minimal clinical experiences. Thus, getting the highest possible score works in the students favor, especially if they choose a highly competitive residency as their first choice in the future. It could be inferred that board scores was not a factor for Group II because the survey was administered to the fourth year students shortly after the residency match process and examinations pertinent to residency acceptance were completed. This finding stresses the importance of medical schools in the designing of a preclinical curriculum that fosters the learning of basic science to clinical medicine, while providing early patient exposure and mentoring opportunities for these new students, with the focus on a primary care specialty.

Perceived status among colleagues was a negative factor for Group II when surveyed about entering a residency and was similar to other studies. One published work observed that status among peers was considered important by more than 40% of fourth-year medical students (Osborn, et al., 2017). In another, residents noted that there was a cultural sense that primary care medicine lacked the prestige of other specialties (Long, et al., 2016), especially by other physicians who viewed general medicine negatively. This highlights the need for mentors and faculty who not only practice primary care medicine, but who are able to convey to their students the positive aspects of pursuing primary care early on in the student’s training, which can include the opportunity to impact a patient's total health by establishing a doctor-patient relationship. Interactions with supportive peers and attending physicians during the clinical clerkship period can inspire medical students to consider a career in general medicine. This was not a factor for the Group I respondents, as those students entering medical school have had minimal interactions with physicians in different specialties at this particular point in time.

The term "family-centered care (FCC)" recognizes the role a patient's family members play in extended and at-home care planning and care giving (Clay and Parsh, 2016). This has been observed to increase satisfaction of the clinician, decrease costs, and improve patient outcomes. It seeks to treat the patient as a whole, including psychological, spiritual, cultural, and emotional considerations. While most of the current literature on FCC focuses on the practice of pediatrics, this concept has become widespread in medicine, with primary care physicians having a leading role in this holistic approach to treating a patient. By fourth year, medical students have had at least two years of clinical experience, having interacted with various patient populations, having observed their physical and behavioral health habits, along with social and family history. In our study, Group II reported the opportunity to provide care for patients and their families as a negative influence to their choice of a residency. While this finding may be discouraging to increasing the practice of primary care, it does outline some possible ways to alter this perception in the future. In one study, which evaluated student influences on the choice of family medicine, it was found that a better understanding of this area of medicine is related to patient exposure throughout the preclinical curriculum, as well as on clinical rotations (Alavi, et al., 2019). Hence, if students are able to see the positive progress made by the patient through holistic care, along with the added benefits of a strong physician-patient relationship afforded by primary care medicine, it could alter this view. Like previously mentioned, this would require the participation and time allotment of an influential preceptor, implementing early patient interactions at the earliest, and possibly the establishment of a mechanism where the students can be made to "follow" their patient’s progress and observe the positive impact of primary care medicine practices on the patient over a period of time, with the supervision of a mentor. While this might be a challenge for medical schools, which are already tasked to provide an integrative curriculum, it is imperative to the future of increasing primary care specialties, which will need to serve a growing population of patients.

Conclusion

The data collected from this study helps to elucidate the influences that impact medical student residency selection. There is an expected change in perception, which occurs through the four years of medical school, and can be attributed to the level of student training. The common theme that summarizes all the specific factors, which were
studied is this work is the benefit of implementing early patient exposure from the start of medical school along with
the identification of an experienced physician who will be able to accentuate the positives of their specialty to the
medical students they mentor.

Limitations and Future Directions

Although this study provides us with significant insights on residency selection, it is important to note that it is
limited in responses from one osteopathic medical school. Future studies should include other osteopathic medical
schools in different geographic locations. This study is novel in the fact that it focused solely on osteopathic medical
students but future studies should include allopathic medical schools. It would be interesting to compare the
influences on residency choice on osteopathic medical students to their allopathic counterparts.

Take Home Messages

- A shortage of primary care physicians persists in the United States despite an aging population.
- It is of use to study what influences a medical student's selection of a residency, to assist medical
  schools and residency directors in the development of curriculums and programs.
- First year medical students hold academic performance, especially exam scores as key for choosing
  their residency. This was in contrast to fourth year medical students.
- Fourth year medical students found the opportunity to care for patients and their families, along with
  perceived status among colleagues as negative factors in the choice of a residency.

Notes On Contributors

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Appendices

None.

Declarations

The author has declared that there are no conflicts of interest.

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Ethics Statement

This was a survey. However, an IRB was submitted for this project "Examining factors affecting career choices among medical students" to the IRB of New York Institute of Technology (NYIT). The reference number: ESB1298. The letter states that the referenced project is exempt from IRB review. Research is conducted in established or commonly accepted educational setting, involving normal educational practices, such as: research on regular and special education instructional strategies. No further action is required unless the project is significantly modified.

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