Choosing Primary Care: Factors Influencing Graduating Osteopathic Medical Students

Katherine M. Stefani, OMS III, MPH; Jesse R. Richards, DO; Jessica Newman, DO; Kenneth G. Poole Jr, MD, MBA; Shannon C. Scott, DO; Caleb J. Scheckel, DO

From the Midwestern University Arizona College of Osteopathic Medicine in Glendale (Student Doctor Stefani and Dr Scott); the Division of Infectious Disease (Dr Newman) in the Department of Internal Medicine (Dr Richards) at the University of Kansas Medical Center in Kansas City; and the Division of Community Internal Medicine (Dr Poole) and the Department of Internal Medicine (Dr Scheckel) at Mayo Clinic in Scottsdale, Arizona.

Financial Disclosures: None.

Support: This research was supported by internal funding from the Mayo Clinic Department of Internal Medicine to support statistical analysis.

Address correspondence to Caleb J. Scheckel, DO, Department of Internal Medicine at Mayo Clinic, 13400 E Shea Blvd, Scottsdale, AZ 85259-5452. Email: scheckel.caleb@mayo.edu

Submitted April 4, 2019; revision received June 26, 2019; accepted July 15, 2019.

Context: Access to primary care (PC) improves health outcomes and decreases health care costs. The shortage of PC physicians and shifting physician workforce makes this an ongoing concern. Osteopathic medical schools are making strides to fill this void. Considering the critical need for PC physicians in the United States, this study aims to identify factors related to choosing a PC specialty.

Objective: To understand possible motivations of osteopathic medical students pursuing a career in PC specialties by examining the role of sex and the influence of 5 key factors in this decision.

Methods: Responses from the annual American Association of Colleges of Osteopathic Medicine graduate survey (2007-2016) were analyzed. Self-reported practice decision considerations of 5 key factors, including (1) intellectual and technical content, (2) debt level, (3) lifestyle, (4) prestige/income level, and (5) personal experience and abilities were summarized, and their subjective value was contrasted between osteopathic medicine graduates pursuing PC specialties vs those pursuing non-PC specialties.

Results: The mean percentage of graduates pursuing PC and non-PC specialties from 2007 to 2016 was 31.3% and 68.7%, respectively. Women were 1.75 times more likely to choose PC than men (95% CI, 1.62-1.89). Regardless of specialty choice, lifestyle was the most important factor each year (1027 for PC [75.3%] vs 320 for non-PC [63.3%] in 2016; P<.0001). Students entering PC were more likely to report prestige and income level to be “no or minor influence” compared with students entering non-PC specialties (P<.0001). Debt level was more likely to be a “major influence” to students choosing to enter non-PC specialties than to those entering PC (P<.0001), and the percentage of non-PC students has grown from 383 in 2007 (22.9%) to 833 in 2016 (30.6%).

Conclusion: Sex was found to significantly influence a graduate’s choice of specialty, and female graduates were more likely to enter practice in PC. Each of the 5 survey factors analyzed was significantly different between students entering PC and students entering non-PC specialties. Lifestyle was deemed a major influencing factor, and responses suggested that debt level is a strong influencing factor among students pursuing non-PC specialties.

J Am Osteopath Assoc. 2020;120(6):380-387

Keywords: medical education, primary care, residency
As health care reform continues to evolve in the United States, the common goals of improving health outcomes and decreasing health care expenditures have persisted. Routine access to primary care (PC) is a critical mechanism required to achieve these goals; even 1 additional PC physician per 10,000 persons in a population decreases emergency department visits, hospitalizations, and elective operations.\(^1\)\(^2\) However, with the shortage of PC physicians and rapid attrition of the current workforce, increasing access to PC is problematic.\(^2\) In the 2017 update\(^4\) by the Association of American Medical Colleges, the projected 2030 shortfalls in PC range between 7300 and 43,100 physicians. In family medicine, the number of residency positions has risen steadily over the past 9 years, and the 2018 residency match had the highest fill rate in history at 96.7%.\(^5\) With only 3.3% of family medicine residency spots open, the current education pipeline is full. The geographic maldistribution of PC physicians is an added concern. There is a large discrepancy in the distribution of PC physicians between Mississippi, the state with the lowest number of PC physicians (1925; 64.4/100,000 residents), and Massachusetts, the state with the highest number of PC physicians (9156; 134.4/100,000 residents).\(^6\)

Today, 1 in 4 US medical students graduate from an osteopathic medical school, yielding more than 6500 new osteopathic physician graduates annually.\(^7\) Furthermore, osteopathic medical schools are responsible for training a large portion of PC physicians, with an estimated 56% of current osteopathic physicians practicing in a PC field.\(^7\) The proportion of women actively practicing osteopathic medicine has also increased, from 18% in 1993 to 42% today.\(^8\) As a result of these trends, 74% of actively practicing female osteopathic physicians in the United States are under the age of 45.\(^8\)

Given the importance of PC to health outcomes, understanding the components that attract or deter medical students from entering PC fields has received considerable attention in the literature. Among allopathic graduates, several factors have been cited to account for the movement away from PC, including rising educational debt, a “controllable lifestyle,” prestige, and prospective income.\(^9\)\(^10\) Published factors associated with allopathic students choosing PC include the female sex, having a rural upbringing, planning to practice in a rural community, having lower income expectations, and attending a public medical school.\(^11\) But do these findings generalize to a contemporary physician workforce and a growing osteopathic cohort? The question is legitimate given highlighted differences between the osteopathic and allopathic cohorts in relation to how debt influences specialty selection. Studies\(^12\)\(^-\)\(^16\) attempting to link debt and specialty selection among allopathic medical students have routinely been uncorrelated or mixed. With notable confounders such as underlying sociodemographics playing a role, debt has proven to be an influential variable in osteopathic graduates in a contemporary cohort, especially in relation to access to loan-forgiveness programs.\(^17\)

Considering the critical need for PC physicians in the United States, the increasing heterogeneity of the physician workforce, the increase in graduates from osteopathic medical schools, and differences in osteopathic and allopathic cohorts, we sought to understand how various factors, including sex, influence PC selection and which elements are prioritized in a contemporary osteopathic cohort.

**Methods**

The American Association of Colleges of Osteopathic Medicine (AACOM) administers a voluntary annual survey to all students graduating from osteopathic medical schools. This survey gathers information on graduate demographics, medical school training, anticipated career path, and other metrics. We obtained de-identified data, with the permission of AACOM, from 2007, 2010, 2013, and 2016 survey results. This time frame was chosen to examine how determinants of PC selection have transformed longitudinally.
Responses to the following questions from 2007, 2010, 2013, and 2016 were analyzed: (1) “Select 1 specialty in which you are most likely to work or seek training,” and (2) “Please indicate the importance of each of the following factors affecting your specialty choice decision.”

To contrast the perceived importance of various factors between groups, respondents were divided into PC or non-PC groups depending on their declared specialty. Primary care was defined as pursuing a career in family medicine, general internal medicine, general pediatrics, or geriatrics. Although AACOM defines PC as the disciplines of family medicine, general internal medicine, and general pediatrics, we also included geriatrics given the high degree of practice overlap and the tendency of geriatricians to identify as PC physicians. The non-PC category included all other specialties. The influence of sex on the decision to pursue a career in PC was analyzed, and 5 key factors, including (1) intellectual and technical content of the specialty, (2) debt level, (3) lifestyle, (4) prestige/income level, and (5) personal experience and abilities, were summarized. The subjective value of those factors was contrasted between students pursuing PC vs those who were not. This study was approved by the institutional review board at Midwestern University (Glendale, Arizona).

The distribution of responses was tabulated for each of the 5 self-reported factors across a 5-point Likert scale (major influence, strong influence, moderate influence, minor influence, no influence). χ² analyses were performed to evaluate differences between those planning to enter a PC specialty compared with those who were not. We assessed relationships of interest, including the association between sex and PC selection, using a multivariable proportional odds ratio (OR) model with logistic regression. Statistical significance was indicated by P<.05. Categorical data were expressed as the number of respondents and percentage of the sample. SAS software, version 3.7 (SAS Institute, Inc.) was used for statistical analysis.

Results
Survey responses increased from 2403 in 2007 to 4191 in 2016 as graduating osteopathic class sizes increased nationwide. Although participation in the survey was optional, response rates ranged between 72% and 77% from 2007 to 2016. We included data from 12,887 surveys (6207 women and 6670 men), which comprised all surveys without missing responses (288 surveys) to the analyzed variables. Figure 1 depicts the consistent trend in specialty choice among graduating students, with the majority choosing to pursue careers in non-PC.
areas. The percentage of osteopathic medical students entering PC between 2007 and 2016 gradually increased (675 [28%] and 1345 [33%], respectively). The number of men pursuing PC increased from 2007 to 2010 (248 [21%] to 581 [26%], respectively).

More women (2358 [57.7%]) planned to enter PC fields compared with men (1729 [42.3%]; OR, 1.75; 95% CI, 1.62-1.89), and sex was found to be associated with differences in choosing a specialty (P<.0001). In the sex-stratified analyses, the percentage of women (427 in 2007 [35.1%] to 764 in 2016 [41.0%]) and men (248 in 2007 [21.1%] to 581 in 2016 [26.8%]) entering PC demonstrated a modest increase since 2007. In the results of the logistic regression analysis, women remained more likely to select PC than men for each year analyzed. For example, in 2007, women were 2.02 times more likely to choose PC (95% CI, 1.68-2.42), and in 2016, this OR dropped to 1.89 (95% CI, 1.66-2.16; Table). In the linear regression, sex had a significant effect on each of the 5 influencing survey factors (P<.0006).

Among self-reported factors, lifestyle was the most important element in specialty choice each year for all students (P<.0001). For students entering PC, the percentage of students reporting that lifestyle was a “major influence” increased gradually from 397 (60.1%) in 2007 to 1027 (75.3%) in 2016. A similar trend was observed among students entering non-PC specialties, with increases from 966 in 2007 (57.5%) to 1729 in 2016 (63.3%). Students entering PC were more likely to report prestige and income level to be “no influence” or a “minor influence” compared with students entering non-PC specialties (P<.0001). Debt level was more likely to be a “major influence” for students choosing to enter non-PC specialties than it was for those entering PC (P<.0001), and this percentage of students entering non-PC specialties increased from 393 in 2007 (22.9%) to 833 in 2016 (30.6%). The intellectual and technical content of the specialty was of great importance to more students entering non-PC specialties (1005 [36.7%]) than it was students entering PC.

### Table.
**Distribution of Osteopathic Medical Students Into Primary Care and Non–Primary Care Specialties by Sex and Year**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>2007</th>
<th>2010</th>
<th>2013</th>
<th>2016</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OR (95% CI)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.02</td>
<td>1.60</td>
<td>1.62</td>
<td>1.89</td>
<td>1.75</td>
</tr>
<tr>
<td></td>
<td>(1.68-2.42)</td>
<td>(1.36-1.87)</td>
<td>(1.41-1.87)</td>
<td>(1.66-2.16)</td>
<td>(1.62-1.89)</td>
</tr>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary care</td>
<td>1216</td>
<td>1439</td>
<td>1687</td>
<td>1865</td>
<td>6207</td>
</tr>
<tr>
<td>Non–primary care</td>
<td>427 (35.1)</td>
<td>528 (36.7)</td>
<td>639 (37.9)</td>
<td>764 (41.0)</td>
<td>2358</td>
</tr>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary care</td>
<td>1173</td>
<td>1432</td>
<td>1901</td>
<td>2164</td>
<td>6670</td>
</tr>
<tr>
<td>Non–primary care</td>
<td>248 (21.1)</td>
<td>381 (26.6)</td>
<td>519 (27.3)</td>
<td>581 (26.8)</td>
<td>1729</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2389</td>
<td>2871</td>
<td>3588</td>
<td>4029</td>
<td>12,877</td>
</tr>
</tbody>
</table>

* P<.0001 for the association between sex and specialty for each year.
* Data are given as No. (%) unless otherwise indicated.
* P<.05 for the association between sex and year for each specialty.

**Abbreviation**: OR, odds ratio.
(354 [25.9%]) in 2016. Last, students entering PC and non-PC both reported similar frequencies across the Likert scale when rating the importance of one’s personal experience and abilities in choosing a specialty (Figure 2).

Discussion

Primary care is the cornerstone of medical care delivery in the United States; adequate access to PC improves health outcomes and plays a role in cost mitigation. As PC shortages remain, it is important to understand the factors that influence and predict an osteopathic graduate ultimately choosing to practice PC.

Previous efforts have attempted to understand the multifaceted factors that may influence a medical student’s choice of practice. In a broad review of the literature, Bennett et al identified 5 factors highly associated with choosing PC: female sex, a rural background, planning to practice in a rural community, low-income expectation, and attending a public medical school. In a different study of allopathic medical
students, female sex was found to be strongly associated with pursuing a career in PC in an analysis of more than 100,000 graduates from 1997 to 2006. The number of students entering PC between 1997 and 2006 declined from 60.7% to 42.1%, respectively. However, the increase in female allopathic graduates was proposed to have attenuated this decline. Although the findings from these studies are suggestive, both are older and based on an allopathic cohort. Individual factors that attract a student to pursue an education at an osteopathic instead of an allopathic medical school may suggest that conclusions reached in an allopathic cohort cannot be generalized to include osteopathic graduates.

Although there was a notable increase in men pursuing PC from 2007 to 2010 (21% to 26%) in the current study, the rates were largely flat from 2010 to 2016 (Table). The rates of women entering PC increased each year, while women decreased from 51% of the total osteopathic graduates in 2007 to only 46% in 2016. This finding suggests that while the representation of women among graduates decreased, PC became an increasingly popular choice for women, which should add further credence to the statistically significant OR of the representation of women to men in PC of 1.75 from 2007 to 2016.

Differences in sex representation among specialties have been hypothesized to be related to women seeking careers that offer more work-life-family balance. However, some studies found that women also pursue careers associated with uncontrollable lifestyles, including PC specialties and obstetrics and gynecology, whereas men were found to favor surgical specialties and other controllable lifestyle specialties (eg, emergency medicine, radiology, ophthalmology, anesthesiology, and dermatology).

Osteopathic medical schools have invested heavily to increase the number of graduates who pursue PC; many schools stress the importance of producing graduates who practice PC in their mission statements, and their recruitment patterns likely reflect these stated goals. Other strategies to increase PC graduates have been reported; for example, Lake Erie College of Medicine initiated a 3-year accelerated PC program in 2010.

Each of the 5 survey factors analyzed was significantly different between students entering PC and those entering non-PC specialties. Lifestyle was deemed a major influencing factor each year, and respondents suggested that the debt level was perceived as a strong influencing factor among students pursuing non-PC specialties, which are typically associated with higher compensation. The potential lifestyle permissible by certain specialties is a major influencing factor among medical school graduates since 1990 and has been attributed to the shifts in specialty choices since that time. In the AACOM survey, lifestyle was defined as having predictable working hours and sufficient time for family and deemed the most important factor for all students regardless of their choice of practice. The interpretation of controllable lifestyle specialties is subjective, and may have been influenced by the subjective nature of the survey in general, as well as other potential factors not able to be captured through the current study design.

In the setting of rising debt burdens, the relationship between debt and specialty selection has been the subject of several studies. Although 1 study found that students with higher debt burdens tended to pursue higher-paid specialties, several studies have not found debt to be an influential factor. A 2019 study demonstrated that the use of loan forgiveness programs mitigated the effect of debt on specialty selection. Students with higher burdens of debt and who did not use such programs were less likely to pursue PC specialties.

The current study has several limitations. Survey questions about intended practice plans may not have reflected actual residency choice or practice pursued after residency. However, most surveys were administered at the end of the final year of medical school and after Match Day; thus, responses should be largely congruent with final specialty destination. The survey was retrospective, and although the current study used a
large sample population and included data spanning 10 years, we were limited by the confines of the predetermined survey that is disseminated annually by AACOM. Therefore, we were limited by the scope to which we could explore other potentially important factors that may have influenced specialty choice.

Although previous studies\textsuperscript{10,14,20,21,23,34,35} have shown that demographics influence practice selection, no demographic information beyond sex were included in our analyses. Factors such as socioeconomic status, race, marital status, and board scores are variables that could influence graduate specialty selection but were not analyzed in this study because these data were either not available under our data use agreement or not collected through the AACOM survey. Further analyses are recommended to understand how these and other factors influence students’ choice of practice, especially in light of findings\textsuperscript{35} indicating that the percentage of women entering osteopathic medical schools has been declining since 2004. More investigation of whether medical school experiences, such as mentoring and clerkship opportunities (which may garner or reinforce student interest in PC) influence specialty selection is warranted. Studies regarding the geographic locale of a medical school and the size of the community in which it operates are also needed.

Additionally, there is variation within PC pertaining to controllable vs uncontrollable work lifestyle (eg, ambulatory only practice vs PC with inpatient call vs full concierge practice models), and respondents likely have varying interpretations of what is deemed a controllable vs uncontrollable lifestyle in the context of specialty selection. Career planning and specialty selection decisions are multifactorial, and we cannot make conclusive predictions based on this study’s results. Constructing causal determinations is beyond the scope of this study. However, our data showed an association between being a woman and the likelihood to choose a PC specialty. Further studies that link osteopathic physician specialty choice and longitudinal practice patterns would offer additional insight; an osteopathic equivalent of the American Medical Association Master File data repository might enable such research.

Conclusion
Increasing rates of PC choice by osteopathic medical school graduates are being driven by female students. Though previous research has been inconclusive about relationships between influencing monetary and social factors on medical trainee practice choices, the clear differences between these influencing survey factors in terms of sex may provide avenues for future research. Further research could illuminate methods for shifting interest in PC practice in future medical graduates.

Acknowledgments
We thank the Mayo Clinic and AACOM for their support of this analysis.

Author Contributions
Student Doctor Stefani and Drs Richards and Scheckel provided substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; all authors drafted the article or revised it critically for important intellectual content; all authors gave final approval of the version of the article to be published; and all authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

References


