

This Medical Education theme issue introduces a new collaboration between the *JAOA* and the American Association of Colleges of Osteopathic Medicine (AACOM) to recruit, peer review, edit, and distribute articles through the *JAOA* on osteopathic medical education research and other scholarly issues related to medical education.

## **JAOA and AACOM**

### Advising Needs of Osteopathic Medical Students Preparing for the Match

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**Context:** Concern over the number of residency positions available to graduating osteopathic medical students has led to calls for better advising, but there is little research on the relationship between student advising and successful matching.

**Objectives:** To determine the satisfaction of graduating osteopathic medical students with their residency match advising, and to compare advising satisfaction with residency match results.

**Methods:** A 30-item survey was developed for students preparing for the residency match. The survey was e-mailed to fourth-year osteopathic medical students at Midwestern University/Arizona College of Osteopathic Medicine in February 2015, before the National Matching Services match and the National Resident Matching Program match.

**Results:** Of the 242 surveys sent, 95 were received and 90 (37%) contained sufficient information for analysis. Of the 90 respondents, 41 (45%) agreed with the statement “My advising needs were adequately met,” and 32 (36%) disagreed. Pearson product moment correlations revealed that having one’s advising needs met was correlated to having clear career goals ( $r=0.44$ ,  $n=77$ ;  $P<.001$ ), having a match strategy ( $r=0.40$ ,  $n=78$ ;  $P<.001$ ), having confidence in one’s qualifications for his or her top choice ( $r=0.40$ ,  $n=81$ ;  $P<.001$ ), and matching to the top choice specialty ( $r=0.37$ ,  $n=81$ ;  $P=.001$ ) and program ( $r=0.27$ ,  $n=81$ ;  $P=.016$ ).

**Conclusions:** A range of advising resources was shown to be effective for most students during the residency match. Further research is needed to determine whether different advising methods for different academically performing groups or different demographic groups will increase students’ ability to successfully match.

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Widespread concern about the number of residency positions available to graduating medical students permeates faculty and student bodies at US medical schools.<sup>1-3</sup> Whether there is a shortage of positions is the subject of some debate, but Mullan et al<sup>4</sup> posited that “Greater competition for residency opportunities may challenge U.S. medical students’ traditional assumptions about specialty selection and give new importance to the advice about appropriate specialties provided by medical school faculty and advisors,” and that increases in unmatched students are due more to poor decision-making around specialty choice and students’ degree of competitiveness for a desired specialty.

Before better advising can be recommended and implemented, however, more must be known about the advising needs of osteopathic medical students. Current studies have widely focused on specialty choice, specifically in internal medicine or primary care, owing to the shortages predicted in these fields. For example, Hauer et al<sup>5</sup> analyzed potentially modifiable factors in the decision process for students choosing a career in internal medicine. The following factors were cited as contributing most to career choice in general: intellectual challenge, commitment to patient care, role models, and personal and professional satisfaction. Arora et al<sup>6</sup> also examined student interest in pursuing a general internist career, finding that overall satisfaction with and characteristics of an attending physician were significant predictors of student pursuit of a career in general internal medicine.

Outside specialty choice, few data exist to help medical schools understand and meet the advising needs of students preparing for the residency match. The results of having these advising needs met or unmet, likewise, have not been explored, to our knowledge. The current study was conducted to assess students’ experiences with advising in the match preparation process and to analyze the differences in the match experience of students who had their advising needs met vs those whose needs were unmet.

## Methods

In this survey-based study, we used a nonexperimental design with a convenience sample of fourth-year osteopathic medical students. The institutional review board at Midwestern University/Arizona College of Osteopathic Medicine (MWU/AZCOM) in Glendale reviewed and approved the survey instrument and all other aspects of the study.

A 30-item survey was developed for students preparing for the residency match. The survey measured students’ awareness and use of advising resources, the extent to which students had narrowed their career interests, and the extent to which students were confident in their match strategies and their qualifications for the match.

Of the 30 survey items, 23 had answer choices in the form of a 5-point Likert scale, with 1 indicating strongly disagree and 5 indicating strongly agree. Of the remaining items, 3 were multiple choice, and 4 required a free text response. The survey instrument was reviewed for content validity by members of the faculty who frequently advised students on specialty choice match qualifications, and match strategy. Questions were edited, added, and removed based on the suggestions of these faculty members.

The survey was e-mailed to fourth-year medical students at MWU/AZCOM who were participating in the Match (the National Matching Services [NMS] match, the National Resident Matching Program [NRMP] match, or both), in February of their fourth year (2015), 2 weeks before the NMS match results were known. The NRMP match was 1 month later. The survey’s cover page was a consent form, also approved by the MWU/AZCOM institutional review board. After 1 week, a reminder was sent to all students who had not completed the survey.

We used the Chronbach  $\alpha$  to measure interrelatedness of items in each of the survey sections, which would demonstrate moderate to high validity for the various sections of the survey (a value above .70 is desired).

Further analysis was done for those students who did not have their specialty choices narrowed, whose needs were not met, and who did not believe that they were qualified to match in their specialty. A  $\chi^2$  analysis was done on variables related to specialty choice, to advising needs, and to match confidence, compared with a binomial variable that indicated whether or not the student matched in the NMS or NRMP residency match. Matching “in the Match” means that the student was matched to a program on match day vs other options. These options included (1) AOA-accredited osteopathic residency program “scramble”; (2) the ACGME-accredited residency program Supplemental Offer and Acceptance Program; or (3) during the period after these postmatch programs end, accepting a position with a residency program that was too newly approved to have positions in the match or accepting a position that remained unfilled after the Supplemental Offer and Acceptance Program.

## Results

Of the 242 surveys sent to fourth-year osteopathic medical students, 95 were received, and 90 (37%) had sufficient information for the analysis. Survey responses from the 90 respondents are summarized in the *Table*. In response to the statement, “My advising needs were adequately met,” 41 students (45%) responded “strongly agree” or “agree” and 32 (36%) responded “disagree” or “strongly disagree.” To understand more about the advising experiences of these students, Pearson product moment correlations were computed to test the relationship between responses to the statement “My advising needs were adequately met” and responses to other statements in the survey. A Bonferroni correction was used to adjust for the number of correlations in the analysis.

Having their advising needs adequately met was moderately correlated to having clear career goals ( $r=0.44$ ,  $n=77$ ;  $P<.001$ ), having a well-defined plan for the match ( $r=0.40$ ,  $n=78$ ;  $P<.001$ ), having a strategy for the match ( $r=0.40$ ,  $n=78$ ;  $P<.001$ ), and believing that he or she was well-qualified for his or her top choice specialty ( $r=0.40$ ,  $n=81$ ;  $P<.001$ ) and top choice program ( $r=0.40$ ,  $n=81$ ;  $P<.001$ ). Smaller but still meaningful correlations were

found with the belief that the respondent would match to the top choice specialty ( $r=0.37$ ,  $n=81$ ;  $P=.001$ ) and top choice program ( $r=0.27$ ,  $n=81$ ;  $P=.016$ ).

To determine whether statistically significant differences existed between students with met vs unmet advising needs, respondents were grouped into 2 groups according to their answers to the statement, “My advising needs were adequately met.” Those who responded “strongly agree” or “agree” were in the needs met group ( $n=37$ ), and those who responded “disagree” or “strongly disagree,” were in the needs unmet group ( $n=29$ ). The mean (SD) score in the needs met group was 4.38 (0.49), and in the needs unmet group was 1.59 (0.50). *t* Tests were computed for the 2 groups (*Table*).

Statistically significant differences were found in the responses received about advising, match planning, and match confidence between the 2 groups but not in the area of narrowing specialty choices. The *Table* illustrates that those students whose advising needs were met were more likely to have advisors whom they viewed as accessible, who helped them identify strengths and weaknesses, who provided information and support, who considered the student’s life circumstances, and who were knowledgeable in the specialty. Students with unmet needs were less likely to know about advising resources. These findings are not surprising, but they do inform faculty as to their importance to students. Student whose advising needs were met were also significantly more likely to have used on-campus faculty as advisors than those with unmet advising needs ( $P=.011$ ). However, students who felt as though their advising needs were unmet were equally likely as their counterparts to have narrowed their specialty choices.

Forty-five students participated in postmatch programs. Of these, 6 were seeking a first-year position and had successfully matched to a postgraduate year 2 position. Of the remaining 39 students, 10 (26%) responded to the survey and were included in the unmatched group. Neither specialty choice nor advising variables produced a statistically significant difference in the 2 groups (those who matched vs those who did not match). However, answering “disagree” or “strongly disagree” to the statement “I believe I will match into my top choice specialty” was significantly associated with not matching

**Table.**  
**Results of a Survey Assessing Osteopathic Medical Students'**  
**Satisfaction With Advising in Preparation for Residency Match**

Survey Item	Answer Choice, No. (%)					Needs Met <sup>a</sup> , Mean Score (SD)	Needs Unmet <sup>a</sup> , Mean Score (SD)
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
<b>Specialty Preference<sup>b</sup></b>							
I have narrowed my specialty choices to no more than 3	3 (3)	1 (1)	2 (2)	6 (7)	78 (87)	4.78 (0.82)	4.59 (1.05)
I am interested in a single specialty at this time	1 (1)	5 (6)	2 (2)	7 (8)	75 (83)	4.81 (0.62)	4.55 (0.86)
I haven't yet narrowed my specialty choices	79 (88)	6 (7)	1 (1)	2 (2)	2 (2)	1.35 (1.03)	1.10 (0.89)
I am concerned about making a specialty choice	67 (74)	10 (11)	4 (4)	6 (7)	3 (3)	1.54 (1.19)	1.69 (1.29)
I feel unable to make a specialty choice	75 (83)	9 (10)	4 (4)	0 (0)	2 (2)	1.22 (0.75)	1.38 (0.90)
I feel that my preferred specialty choice is not available to me	70 (78)	10 (11)	4 (4)	4 (4)	2 (2)	1.35 (0.98)	1.45 (0.87)
<b>Career Advising<sup>c</sup></b>							
I am aware of career advising resources	8 (9)	13 (15)	13 (15)	40 (45)	15 (27)	4.11 (0.74)	2.97 (1.24) <sup>d</sup>
I have used on-campus faculty as an advisor	14 (16)	5 (6)	9 (10)	37 (42)	24 (27)	4.11 (1.05)	2.97 (1.24) <sup>e</sup>
I have used preceptor(s) as advisor(s)	5 (6)	4 (4)	11 (12)	43 (48)	26 (29)	4.11 (1.55)	3.90 (1.05)
I have used (an)other physician(s) as advisor(s)	13 (15)	17 (19)	6 (7)	29 (33)	22 (25)	3.64 (1.29)	3.50 (1.55)
I have used nonphysician(s) as advisor(s)	13 (15)	6 (7)	8 (9)	28 (31)	30 (34)	3.94 (1.39)	3.62 (1.47)
I have used online resources from DO sources	28 (31)	13 (15)	10 (11)	27 (30)	9 (10)	2.86 (1.38)	2.39 (1.49)
I have used online resources from MD sources	10 (11)	11 (12)	10 (11)	34 (38)	18 (20)	3.66 (1.28)	3.33 (1.84)
I have explored my career options without using others	29 (33)	20 (22)	12 (13)	12 (13)	7 (8)	2.40 (1.38)	2.40 (1.47)
My advisor(s) helped me identify strengths and weaknesses	7 (9)	10 (12)	11 (13)	31 (38)	17 (21)	4.26 (0.70)	2.58 (1.34) <sup>d</sup>
My advisor(s) provided me with information and support	7 (9)	14 (17)	16 (20)	21 (26)	18 (22)	4.17 (0.92)	2.50 (1.21) <sup>d</sup>
My advisor(s) took my life situation into account	7 (9)	13 (16)	10 (12)	26 (32)	18 (22)	4.21 (0.95)	2.60 (1.26) <sup>d</sup>
My advisor(s) was (were) knowledgeable about my area of interest	6 (7)	6 (7)	11 (13)	34 (41)	20 (24)	4.31 (0.82)	3.04 (1.28) <sup>d</sup>
My advisor(s) was (were) accessible	5 (6)	9 (11)	11 (13)	31 (38)	22 (27)	4.35 (0.79)	2.88 (1.24) <sup>d</sup>
Sessions with my advisor(s) were useful	4 (5)	9 (11)	10 (12)	35 (43)	18 (22)	4.43 (0.56)	2.88 (1.18) <sup>d</sup>
<b>Career Plan<sup>f</sup></b>							
I have a well-defined plan	5 (6)	11 (13)	16 (20)	20 (26)	26 (32)	4.19 (1.00)	3.23 (1.51) <sup>e</sup>
I have clearly identified career goals	2 (2)	5 (6)	8 (10)	33 (40)	29 (35)	4.46 (0.61)	3.68 (1.28) <sup>e</sup>
I have identified resources and strategies to help me with goals	1 (1)	9 (11)	10 (12)	31 (38)	28 (34)	4.41 (0.69)	3.62 (1.24) <sup>e</sup>

(continued)

**Table (continued).  
Results of a Survey Assessing Osteopathic Medical Students' Satisfaction With Advising in Preparation for Residency Match**

Survey Item	Answer Choice, No. (%)					Needs Met <sup>a</sup> , Mean Score (SD)	Needs Unmet <sup>a</sup> , Mean Score (SD)
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
<b>Match Plan<sup>g</sup></b>							
My advising needs were adequately met	12 (15)	17 (21)	15 (19)	23 (28)	14 (17)	...	...
I believe I will match into my top choice specialty	1 (1)	4 (5)	8 (10)	26 (32)	42 (52)	4.62 (0.64)	3.90 (1.08) <sup>d</sup>
I believe I will match into my top choice program	3 (4)	7 (9)	24 (30)	22 (27)	25 (31)	4.00 (1.08)	3.41 (1.15) <sup>h</sup>
I feel I am a qualified candidate for my top choice specialty	1 (1)	1 (1)	5 (6)	31 (38)	43 (53)	4.70 (0.46)	4.10 (0.94) <sup>d</sup>
I feel I am a qualified candidate for my top choice program	2 (2)	2 (2)	10 (12)	28 (35)	39 (48)	4.57 (0.65)	3.90 (1.11) <sup>e</sup>

<sup>a</sup> In response to the statement, "My advising needs were adequately met," students whose needs were met were those who answered "strongly agree" or "agree," and students whose needs were unmet were those who responded "disagree" or "strongly disagree."

<sup>b</sup> Chronbach  $\alpha$ =.74.

<sup>c</sup> Chronbach  $\alpha$ =.96.

<sup>d</sup> Significant at  $P$ ≤.001.

<sup>e</sup> Significant at  $P$ ≤.01.

<sup>f</sup> Chronbach  $\alpha$ =.86.

<sup>g</sup> Chronbach  $\alpha$ =.88.

<sup>h</sup> Significant at  $P$ ≤.05.

( $\chi^2=12.93$ ;  $P=.024$ ). Likewise, answering "disagree" or "strongly disagree" to the statement "I feel I am a qualified candidate for my top choice specialty" was significantly associated with not matching ( $\chi^2=16.96$ ;  $P=.005$ ).

## Discussion

Despite the availability of advising resources to students, a large minority of students reported that they did not have their advising needs met. Our findings indicate that these students were less likely to know about advising resources. Advising students on qualifications for program specialty and match strategy has a statistically significant positive affect on the likelihood that a student will match, because students who were more satisfied with their advising were more likely to be confident in matching to their top choice specialty. However, advising did not predict failing to match. More research is needed to determine whether this effect changes depending on specialty choice, advisor or advisee sex, or other factors.

Although we found no statistically significant differences in narrowing specialty choice between students

whose match advising needs were met and those whose needs were unmet, we did find statistically significant differences in satisfaction with advisors, match planning, and confidence in the match outcome. The relationship between lack of confidence and not matching was statistically significant.

Understanding risk factors for not matching, such as a student's lack of confidence in his or her match plan, can help medical educators and student advisors to better advise their students. Students may be unaware of or not properly using their advising resources. Early identification of risk factors for not matching may lead to more participation in advising and use of resources for match preparation, as well as better match results. Students who are not confident in their qualifications to match in their chosen specialty and program and who have doubts about their match are at higher risk of not receiving a position during the match.

Limitations to our analysis exist. The low rate of return of the survey among fourth-year medical students was expected, which might reflect that lower survey response rates have been found among young people and

for online surveys.<sup>8</sup> Still, the low response rate limits firm conclusions about students for whom advising needs are or are not adequately being met. Likewise, the small number of unmatched students in the survey limits the generalizability of our findings with regard to the characteristics of matched vs unmatched students. Additionally, the survey was conducted among students at 1 osteopathic medical school, and our conclusions about the effectiveness of advising may be limited to this group or this campus.

This study breaks important ground in the assessment of student satisfaction with advising needs and the association of satisfactory advising with match results. However, many areas for further research in advising surrounding student qualifications for the match remain. A strength of the current study is that the structure of the advising provided at our campus is similar to that provided at other campuses.<sup>9</sup> More importantly, to our knowledge, this study is the first to explore the relationship between osteopathic medical students' advising needs being met and students' ability to match. Faculty and administration should be able to stratify students according to the likelihood that they will match and provide assistance when applicable. Providing a range of common advising resources is effective for most students.

## Conclusion

Student use of and satisfaction in advising resources, as well as the development of a match plan that engenders student confidence and focus, are important factors in students' ability to match to a residency program. We expect the importance of advising for the match to increase, based on 2 factors: First, as competition for all residency positions increases, accurate assessment of a student's qualifications for the match is essential. Second, some students will have to be redirected from residency positions that they are most interested in to available positions into which they are most likely to match. Both factors require students to trust their advisors and their match plan. In addition, if student advising around qualifications for the Match is to improve, we must understand more about the most effective match advising strategies. Further investigation is necessary to

determine whether there are differences among students, specialty interests, or resource use that increase the effectiveness of the Match and the confidence of students in their qualifications for the Match. These new directions will be crucial to ensure that students' match expectations are in line with their qualifications and the availability of positions.

## Author Contributions

Dr Speicher provided substantial contributions to the research conception and design, analysis and interpretation of the data, and drafted the article; Student Doctor Pradhan provided substantial contributions to the research conception, developed and drafted the survey instrument, acquired and interpreted the data, and drafted the article; both authors gave final approval of the version of the article to be published; and both 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.

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