

ORIGINAL CONTRIBUTION

Medical student experiences of applying into emergency medicine during the COVID-19 pandemic: A multi-institutional survey of emergency medicine-bound medical students

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Abstract

Background: The COVID-19 pandemic added new and great uncertainty to the typical approach to applying into emergency medicine (EM) for medical students. There are little data on students' lived experience of applying during this time period. We performed a multi-institutional survey of EM-bound students' experiences with preparing to apply into EM during the pandemic.

Methods: This was a cross-sectional survey design study of fourth-year students preparing to apply into EM during the 2020–2021 academic year. All self-identified EM-bound students at four participating institutions were recruited by email in June 2020 to participate in a 13-item, 5-point Likert-scale survey. Univariate descriptive statistics, response rate, and nonresponse bias were calculated.

Results: Sixty-seven of 125 eligible students responded for an overall response rate of 53.6%. Nonresponse bias for specific survey items ranged from 0.01 to 0.12. Students rated the importance of securing an EM rotation at their home institution the highest of any item (mean \pm SD = 4.81 \pm 0.68). Students indicated higher satisfaction with advice from their department of EM (mean \pm SD = 4.28 \pm 0.75) than from their school of medicine (mean \pm SD = 3.52 \pm 0.89). Students indicated higher confidence in their home EM rotations' ability to assure adequate personal protective equipment (PPE; mean \pm SD = 3.91 \pm 0.83) than an away rotation (mean \pm SD = 2.82, 1.09). Students reported feeling between moderately and quite stressed about applying into EM this year (mean \pm SD = 3.49 \pm 1.01), but reported the financial stress the lowest of any item (mean \pm SD = 1.46 \pm 0.84). Students rated it highly important that away rotations prioritize students from institutions without an EM residency (mean \pm SD = 4.51 \pm 0.93).
Conclusion: Medical students applying into EM during the COVID-19 pandemic felt confident in their EM advisors' recommendations and their home institution's PPE provision. Students with EM residency programs at their schools recognized the importance of away rotations being prioritized for students from schools without EM residency programs. Strong EM advising is important to students.

KEYWORDS

away rotations, elective rotations, student advising and development, undergraduate medical education

BACKGROUND

The COVID-19 pandemic added new and great uncertainty to the seemingly ordered and typical approach to applying into emergency medicine (EM) for medical students.¹ One of the most significant disruptions from the pandemic was a sudden lack of access to away rotations for medical students applying into EM. Traditionally, performance on an away EM rotation has been very highly valued by EM residency program directors when evaluating an EM applicant's portfolio.² On May 11, 2020, the Coalition for Physician Accountability, a group of national medical education organizations, recommended that away rotations be discouraged for the 2020–2021 academic year except in specific circumstances.³ In addition, the CORD Advising Students Committee in Emergency Medicine published a consensus statement encouraging students to go on fewer, if any, away rotations.⁴ Because of the disruption to the clinical learning environment and the ability to travel to away rotations, many institutions, including all four of our institutions, canceled away rotations for their students.⁵ Other than anecdotal reports, there are little data on students' experiences with preparing to apply into EM given changes due to the COVID-19 pandemic or how our advising interventions in response to the pandemic were impacting them. As such, we performed a multi-institutional survey of EM-bound students' experiences with preparing to apply into EM during the pandemic.

METHODS

Study design and population

This was a cross-sectional survey design study. We considered all medical students self-reporting to their respective institutions as applying into EM from a purposeful sample of four institutions as eligible to participate in the survey. The University of Michigan (Michigan), OSU Wexner Medical Center (OSU), Oregon Health & Science University (OSHU), and the University of Washington (UW) all participated in the study. We surveyed students in June 2020, in the midst of the COVID-19 pandemic and social distancing measures and at a time of national uncertainty about the future of medical students being permitted in the clinical environment.

We recruited participants by email. The initial survey invitation was sent out on June 1, 2020, with two reminders sent at 1-week intervals each. Data collection was completed by the end of June 2020. All participation was voluntary and there was no compensation for taking the survey. All responses were anonymized. The human subjects division at all four institutions deemed the study to be exempt from institutional review board review.

Survey content and protocol

We developed an original 13-item survey instrument guided by Messick's validity framework.⁶ The content validity for the survey instrument was based on the CORD student advising guide and the timely Council of Residency Directors in EM (CORD) Advising Students Committee in EM (ASC-EM) consensus statement.^{2,4,7} All the authors are EM clerkship directors and iteratively contributed to the development of the survey. We intentionally avoided including more demographic questions in the survey to maintain strict anonymity of all participants. We performed cognitive, "think-aloud" interviews with two senior medical students who had recently matched in EM and two rising fourth-year medical students pursuing non-EM specialties for response process validity evidence and for clarity. We incorporated all feedback into the final instrument, which we determined via consensus of all authors (see Data Supplement S1, available as supporting information in the online version of this paper, which is available at <http://onlinelibrary.wiley.com/doi/10.1002/aet2.10587/full>). We rated each item on a 1- to 5-point Likert scale ranging from "not at all" to "extremely," with response anchors intentionally worded to emphasize the construct being measured rather than simple agreement.⁸

Data collection and analysis

We collected and managed the study data using REDCap electronic data capture tools hosted at the University of Washington. REDCap (Research Electronic Data Capture) is a secure, Web-based software platform designed to support data capture for research studies, providing 1) an intuitive interface for validated data capture, 2) audit trails for tracking data manipulation and export procedures, 3) automated export procedures for seamless data downloads to common statistical packages, and 4) procedures for data integration and interoperability with external sources.

We conducted data analysis using Microsoft Excel 2018 (Microsoft Corp., Redmond, WA) with which we calculated univariate descriptive statistics including the mean and standard deviation (SD) of each item, a response rate according to the AAPOR definition of response rate 5 (RR5) and the nonresponse bias for each item to estimate the difference between those who responded and those who did not, using wave analysis.^{9–12}

RESULTS

We electronically delivered the survey via email to 125 medical students applying into EM at our four institutions. Of those, 67

students responded to the survey for an overall response rate of 53.6%. Response rates for each participating institution ranged from 38.1% to 70% (Table 1).

The descriptive statistics and nonresponse bias for 11 of the 13 survey items are displayed in Table 2. The nonresponse bias was minimal, ranging from 0.01 to 0.12 on the 5-point scale. The other two items inquired about whether students perceived that they were still permitted to do away rotations. Of all respondents, only one student reported that their institution was allowing them to do

away rotations despite their institution's policy against it. The same student also reported that they were “not at all confident” that they would secure an away rotation despite their perceptions they were allowed to do so.

Emergency medicine-bound medical students rated the importance of securing an EM rotation at their home institution prior to submitting residency applications this year the highest (mean ± SD = 4.81 ± 0.68). Students also indicated that they were more satisfied with the advice from their department of EM (mean ± SD = 4.28 ± 0.75) than from their respective schools of medicine (mean ± SD = 3.52 ± 0.89). Not surprisingly, students reported feeling between moderately and quite stressed about applying into EM this year (mean ± SD = 3.49 ± 1.01) and at least moderately concerned that they needed to do an away rotation at a particular institution to get an interview there (mean ± SD = 3.27 ± 1.14). However, they also reported that the rationale for not permitting away rotations was quite clear to them (mean ± SD = 4.34 ± 0.90) and that they were moderately to quite confident in their advisors plan to support them through the process of applying this year (mean ± SD = 3.68 ± 0.98). Students rated the financial stress they were experiencing the lowest

TABLE 1 Participant response rate by institution

School	Recruited	Responded	Response rate (%)
Michigan	28	11	39.3
OHSU	20	14	70
OSU	21	8	38.1
UW	56	33	58.9

Michigan, University of Michigan; OHSU, Oregon Health & Sciences University; OSU, Ohio State University; UW, University of Washington.

TABLE 2 Descriptive statistics of students' survey responses (1-5 scale from “not at all satisfied” to “extremely satisfied”)

Survey item	Mean	SD	Nonresponse bias
How satisfied are you with the advising communication from your department of EM?	4.28	0.75	0.12
How satisfied are you with the advising communication from your school of medicine?	3.52	0.89	0.01
How stressed do you feel about applying in EM this year?	3.49	1.01	0.01
How important is it to you to secure an EM rotation spot at your home institution prior to submitting your residency applications this year?	4.81	0.68	0.08
How confident are you that your advisors' plan to support you in your application process will help mitigate the lack of an away rotation given the COVID-19 pandemic?	3.68	0.90	0.02
How clear is the rationale from your department of EM for their policy on away rotations this year?	4.34	0.90	0.03
How much financial stress are you experiencing regarding away rotations this year?	1.46	0.84	0.06
How confident are you that your home EM rotation will be able to assure you adequate PPE?	3.91	0.83	0.05
How confident are you that any away EM rotation will be able to assure you adequate PPE?	2.82	1.09	0.06
How important do you think it is that programs that offer away rotations prioritize spots for students who attend institutions without an EM residency program?	4.51	0.93	0.02
How important do you think it is to do an away rotation at an institution you are interested in in order to get an interview at that institution?	3.27	1.14	0.05

Abbreviation: PPE, personal protective equipment.

of any item (mean \pm SD = 1.46 \pm 0.84). In addition, they indicated that they were much more confident in their home EM rotations' ability to assure them adequate personal protective equipment (PPE; mean \pm SD = 3.91 \pm 0.83) than an away EM rotations' ability to do so (mean \pm SD = 2.82 \pm 1.09). It was highly important to students that away rotations prioritize spots for students at institutions without an EM residency program (mean \pm SD = 4.51 \pm 0.93).

DISCUSSION

These results illustrate the stressors that medical students experienced while preparing to apply in EM during the COVID-19 pandemic and illuminate areas where we can focus our support for students in response. They underscore the importance of effective advising that has been previously demonstrated in the literature and add to the paucity of data we have on students' experience with advising.¹³

Students identified that their EM departmental advising inspired more confidence than the general career advising from their medical schools. These results highlight the importance of having engaged and involved specialty-specific advising, in addition to the more generalized residency application advising from a school of medicine. Although students applying in all specialties faced similar challenges with lack of away rotations and upended schedules, our EM-bound students placed a higher value on the career advising from EM faculty than the generalized school of medicine advising. These findings may have implications for medical students at institutions without an EM residency program to provide directed career advising, where students may face even more challenges than usual during a time when specialty-specific career advising and support is viewed as critical by EM-bound students. Furthermore, students from an institution without an EM residency program are much more likely to be from historically excluded in medicine backgrounds.¹⁴ The different advising and EM experiential opportunities that students have access to at these institutions may further exacerbate existing inequities in our field.

Our results also highlight that students feel between moderately and quite stressed, but not extremely so. We imagine that the clear EM national consensus guidelines and collaborative leadership from EM specialty societies also contributed to a sense of security and community in the EM applicant group.¹⁵ It would be interesting to compare our results to students applying into other specialties, particularly those that did not release clear national guidelines to guide and support programs and applicants during this time (Figures 1 and 2).

Students expressed confidence in their advisors' plans and in the clarity from their advisors for the rationale of not permitting away rotations this year. Supporting this, they strongly understood the importance of rotating at their home institution in EM prior to applying to residency. Students recognize that an away rotation is important to getting an interview and nonetheless still agree with the rationale of the no-away-rotation policy. To us, this demonstrates that our EM-bound students understand the seriousness of the pandemic

and importance of shared sacrifice. It also reinforces the importance of strong and timely leadership through consensus guidelines.

Predictably, and positively, students expressed very low financial stress from away rotations this year—further supporting the fact that they understand the policies and rationale for no away rotations. The low financial stress is of benefit during a time of great stress and it will likely also be an unintended benefit of having remote interviewing for residency this year. Given the well-documented financial burden of applying to residency, it would be wise to consider ways that we can maintain some of the decreased financial stress of applying that has resulted from this year's upheaval.¹⁶ In addition, further research evaluating the effectiveness of virtual interviewing in light of the financial burden of traveling to traditional in-person interviews would also help us better understand ways we may be able to address financial inequalities in applying into EM.

Additionally, students were more confident that their home EM rotation would be able to provide them adequate PPE than an away EM rotation (Figures 3 and 4). Students seem to be more apprehensive about the safety of away rotations and more comfortable with the safety of their home institution. It is not surprising to be more comfortable with what is familiar. However, it also illustrates

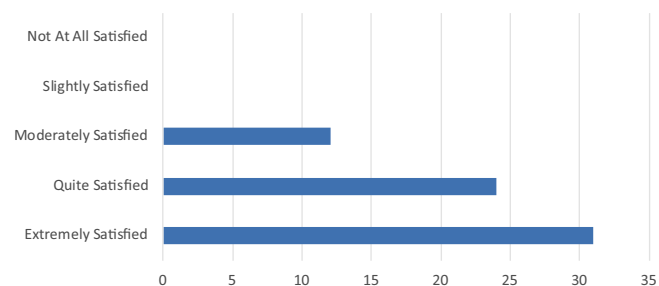


FIGURE 1 Student responses to the survey item, "How satisfied are you with the advising communication from your department of EM?" Extremely satisfied (31, 46.3%), quite satisfied (24, 35.8%), moderately satisfied (12, 17.9%), slightly satisfied (0, 0.0%), not at all satisfied (0, 0.0%)

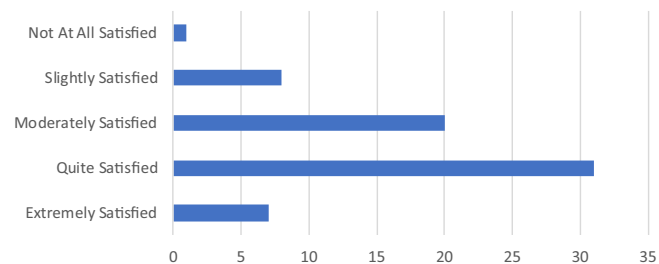


FIGURE 2 Student responses to the survey item, "How satisfied are you with the advising communication from your school of medicine?" Extremely satisfied (7, 10.4%), quite satisfied (31, 46.3%), moderately satisfied (20, 29.9%), slightly satisfied (8, 11.9%), not at all satisfied (1, 1.5%)

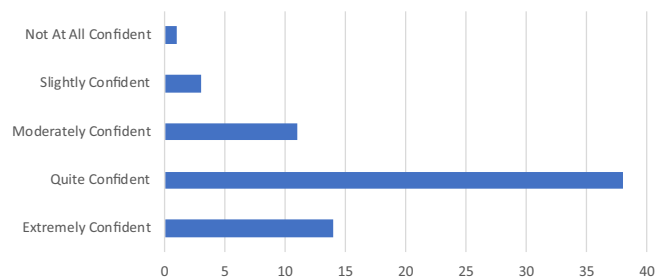


FIGURE 3 Student responses to the survey item, “How confident are you that your home EM rotation will be able to assure you adequate PPE?” Extremely confident (14, 20.9%), quite confident (38, 56.7%), moderately confident (11, 16.4%), slightly confident (3, 4.5%), not at all confident (1, 1.5%)

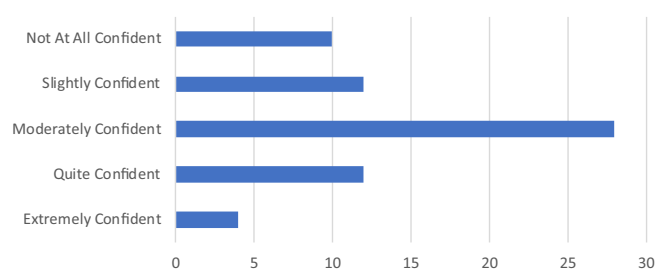


FIGURE 4 Student responses to the survey item, “How confident are you that any away EM rotation will be able to assure you adequate PPE?” Extremely confident (4, 6.1%), quite confident (12, 18.2%), moderately confident (28, 42.4%), slightly confident (12, 18.2%), not at all confident (10, 15.2%)

the challenges of variance among local and regional specific policies when students are expected to move between different hospital systems nationally.

Finally, students reported that it was highly important that away rotations prioritize spots for students without home EM residency programs. This highlights a sense of shared community and generosity among EM-bound students, who recognize that the limited available away rotations should go to students most in need of a core EM rotation. It is clear that students have strong confidence in their EM advisors, even in a time of great uncertainty, and it follows that our EM educational community has an opportunity to evaluate all medical students' access to EM-specific advising including the need to prioritize away rotations for those students at institutions without EM residency programs. Given that there are over 80 medical schools without EM residency programs, we would suggest implementing practical, nationally collaborative processes such as creating more formal partnerships between schools without an EM residency program and other geographically proximate institutions with EM residency programs. Other ideas include increasing virtual advising, either from these formal partnerships or through professional society-sponsored national advising teams.¹⁷

LIMITATIONS

This study is limited by the nature of it being a convenience sample of medical students from four institutions rather than a sample of the entire population of students applying into EM in the 2020–2021 academic year. These four institutions also have departments of EM with established EM residency programs, which may make it difficult to generalize the results to all, especially to students at schools without EM residency programs. Future work in this area should certainly expand to a wide range of institutions to include the important perspectives of a broader range of medical students. Furthermore, while the nonresponse bias was minimal and the response rate was adequate, our results may not be fully representative of all the students we recruited. We also recruited students who self-identified as pursuing EM as a career in June 2020, which may have changed over time, and a small percentage of responses may no longer be from students still applying into EM.

CONCLUSIONS

This multi-institutional study of fourth-year medical students applying into emergency medicine during the COVID-19 pandemic demonstrates that the communication and rationale for no away rotations this year was clear and that students felt confident in their EM advisors' recommendations and their home institution's ability to provide them adequate personal protective equipment. Students with emergency medicine residency programs at their schools recognized the importance of away rotations being prioritized for students from schools without EM residency programs. During a time of uncertainty, clear and consensus-based advising likely made this experience less stressful for students. Most importantly, it reinforces the importance of strong emergency medicine advising to students.

CONFLICT OF INTEREST

The authors have no potential conflicts to disclose.

AUTHOR CONTRIBUTIONS

Joshua Jauregui, Ross Kessler, and Jamie Shandro contributed to the study concept and design, the acquisition of data, analysis and interpretation of the data, drafting of the manuscript, and critical revision of the manuscript for important intellectual content. Nicholas Villalón, Joseph House, Michael Cole, and Nicholas Kman contributed to the study concept and design, acquisition of data, and drafting of the manuscript.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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