

Students' Perspectives on the Impact of Scholarly Projects on Residency Applications

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ABSTRACT

Background: With the transition of United States Medical Licensing Examination (USMLE) Step 1 to pass/fail scoring, medical students have increasingly turned to research to strengthen their residency applications. However, the variability in residency research expectations leaves the impact of scholarly work on match outcomes unclear.

Methods: We conducted a survey among fourth-year medical students at a large academic medical school in the Midwest to evaluate their perceptions of the role of scholarly work in residency applications and match outcomes.

Results: Of the 55 students who matched, the majority (53%) reported that more than half of their residency interviews included discussions about their scholarly projects. A substantial majority (78%) believed that presenting and/or publishing their scholarly work contributed to securing their residency positions.

Discussion: Our findings indicate that students generally view scholarly work as valuable for residency applications. However, there is a clear need for a consistent and objective standard for how residency programs evaluate scholarly work.

BACKGROUND

The National Board of Medical Examiners (NBME) introduced the 3-step United States Medical Licensing Examination (USMLE) in 1992, with Step 1 designed to assess foundational medical knowledge and competency before clinical rotations. However, as Step 1 scores became a crucial factor in residency selection, they were associated with increased student stress and well-being concerns. In response to these challenges and following recommendations from the Invitational Conference on USMLE

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Scoring, Step 1 scoring was changed from a numerical score to pass/fail in January 2022.¹

The transition to pass/fail grading for USMLE Step 1 has sparked speculation regarding its impact on residency outcomes. Although Step 1 is now reported as pass/fail, Step 2 Clinical Knowledge (CK) scores remain a key objective performance metric. Nonetheless, Step 1 no longer holds the decisive weight it once did in the residency selection process. Other assessment criteria, such as research participation, have gained more importance. A study published in the *Journal of Graduate Medical Education* highlighted that residency program directors are increasingly using research involvement to differentiate

applicants.² A separate survey also reported that 41% of program directors believe research will play a larger role following the pass/fail shift.³ Consequently, medical students are increasingly engaging in research to bolster their competitiveness for residency.

While research has not traditionally been required for residency applications, national data from the Association of American Medical Colleges (AAMC) show that, even before the Step 1 transition, approximately 44% of US medical schools required students to complete a scholarly project.⁴ These projects allow students to explore clinical interests and gain additional experience. At our academic medical center in the Midwest, medical students are required to complete 1 scholarly project before their final year, fostering independent learning. However, few studies have explored the impact of these scholarly projects on residency outcomes, a gap that this study sought to address by evaluating the perceived role of scholarly work in residency applications amidst the evolving assessment landscape.

METHODS

Fourth-year (M4) medical students from a large academic medical school in the Midwest who participated in the 2024 residency match were invited to complete an anonymous online survey. Survey participation implied consent, with formal consent waived by the institutional review board. The survey explored scholarly engagement, application attributes, match outcomes, and perceived role of scholarly work, with an open-ended section for additional comments. Quantitative analyses were conducted using R version 4.1.2 (R Foundation for Statistical Computing). Qualitative data were thematically coded using Taguette (Rampin R, NYU Libraries), an open-source qualitative analysis software.

Although the response rate was 31%, institutional data from the registrar showed that the overall match rate for the full M4 class was slightly higher than the 93% match rate observed among survey respondents, indicating that the survey sample was broadly representative with respect to match outcomes.

RESULTS

Out of 187 eligible M4 students, 59 (31%) completed the questionnaire. Table 1 summarized survey respondents' demographics. The majority identified as female (54%). Regarding race/ethnicity, 59% identified as White/European, 22% Asian, 5% Middle Eastern/North African, 5% Black/African, and 7% Hispanic.

Every respondent reported participating in at least 1 scholarly project. Most participated in multiple types of scholarly projects, including research (95%), community engagement (47%), case reports (46%), quality improvement (37%), basic science (8%), and medical education (2%). Of the 59 students, 55 (93%) successfully matched into residency programs. Among the 4 students who did not match, all reported involvement in scholarly projects, and their level of research exposure was comparable to that of matched peers. In each case, personal circumstances—such as withdrawal from the match or other non-research-related factors—were likely contributors to their match outcome.

Table 2 presents survey responses from the students who matched into residency programs. Internal medicine was the most common matched specialty (22%), followed by anesthesiology (11%), psychiatry (11%), pediatrics (9%), general surgery (7%), family medicine (5%), and neurology (5%), among others. A significant majority (85%) had at least 1 publication, with most (55%) having 1 to 4 publications. Over half (53%) reported that more than 50% of their residency interviews included discussions about their scholarly projects, and 78% somewhat or strongly believed that presenting and/or publishing their scholarly work contributed to securing residency positions.

These findings highlight the broad engagement in scholarly activities and their perceived importance in residency matching, emphasizing the value students place on research as a critical component of their applications.

Table 1. Survey Responses From Medical Students Applying for Residency in 2024

Characteristics	Total (N = 59)
Gender	
Male	44%
Female	54%
Missing	2%
Race/ethnicity	
White or European origin	59%
Asian	22%
Hispanic	7%
Middle Eastern or North African	5%
Black or African origin	5%
Prefer not to answer	2%
Involvement in at least 1 scholarly project	100%
Types of scholarly projects ^a	
Research	95%
Community engagement	47%
Case report	46%
Quality improvement	37%
Basic science	8%
Medical education	2%
Matched	
Yes	93%
No	7%

^aTotal percentage is more than 100% because respondents could choose more than 1 option.

In addition to structured survey items, students provided open-ended responses reflecting on their scholarly experiences and advice for future applicants. Thematic analysis of these responses revealed 3 major themes. First, many students emphasized the importance of engaging in scholarly projects early in medical school, ideally before clinical clerkships. Early involvement was associated with greater access to mentorship, more time to produce meaningful work, and the ability to align projects with career interests. Second, while students generally favored quality over quantity, some acknowledged that a higher number of publications or presentations might be necessary to remain competitive—particularly in more selective specialties. Lastly, students described a range of motivations and perceived benefits of scholarly work—including improving residency prospects, developing professional skills, and pursuing personally meaningful topics. Several students noted that the value placed on scholarly output varied by specialty, with more competitive fields placing a greater emphasis on research credentials. To illustrate these themes in students' own words, selected quotes are included in the Supplemental Table (see Appendix).

DISCUSSION

A 2017-2018 AAMC survey found that 44% of medical schools require students to participate in research, and such requirements predate the USMLE Step 1 scoring change. However, residency program requirements for research involvement are not

standardized. A 2021 National Resident Matching Program survey showed that “interest in research” was ranked 13th in importance for interview selection.⁵

Despite this, a significant gap exists in the literature regarding the role of research involvement following the USMLE Step 1 pass/fail transition. To our knowledge, this is the first study to assess students’ perspectives on the role of scholarly work in residency applications. Our study found that most students who matched into residency programs at our large Midwestern academic medical school reported being asked about their scholarly projects during the majority of their interviews. Additionally, a significant majority of matched students (78%) said they believed that presenting and/or publishing scholarly work contributed to securing their residency positions.

Qualitative assessments revealed varying perspectives on the relative importance of quality versus quantity in scholarly work. While some students viewed research primarily as a means to enhance residency applications, others were motivated by professional development, networking opportunities, or personal fulfillment. Many emphasized the importance of engaging in scholarly projects early in medical school and highlighted the value of mentorship in guiding successful research engagement. Students perceived the need to approach research strategically, selecting projects that aligned with long-term goals and specialty interests. These insights suggest that institutional efforts to support early, goal-directed research—particularly in collaboration with faculty mentors—may improve both student experience and scholarly outcomes. Students further perceived scholarly work as especially important for highly competitive specialties, such as general surgery and ophthalmology. Although this study highlights student perceptions, future research should incorporate residency program directors’ perspectives to better understand how scholarly work is weighed during the selection process.

Despite widespread student perceptions that scholarly work is valuable for residency applications, there is no consistent or objective standard for how residency programs evaluate research involvement. Most programs lack uniform requirements, and the absence of program-specific guidelines makes it challenging to quantify the impact of scholarly work on match success or candidate ranking. Greater clarity may reduce uncertainty and alleviate pressure on students to overproduce research, which may adversely affect overall well-being. There is a need for more consistent and objective standards for evaluating scholarly work within the residency selection process. Understanding program-specific requirements and preferences can inform best practices for both students and residency programs, particularly as the holistic review process evolves.

Beyond student perceptions, systemic factors may also influence the impact of scholarly work on residency applications. Although all students surveyed engaged in some form of scholarly work during medical school, 15% of those who matched did

Table 2. Summary of Survey Responses from Medical Students Who Successfully Matched Into Residency Programs

Characteristics	Total ^a (N = 55)
Matched specialties	
Internal medicine	22%
Anesthesiology	11%
Psychiatry	11%
Pediatrics	9%
General surgery	7%
Family medicine	5%
Neurology	5%
Physical medicine and rehabilitation	4%
Orthopedic surgery	4%
Otolaryngology/ear, nose, throat	4%
Emergency medicine	4%
Transitional year/dermatology	2%
Radiation oncology	2%
Plastic surgery	2%
Obstetrics and gynecology	2%
Combined medicine–dermatology	2%
Diagnostic radiology	2%
Ophthalmology	2%
Missing	2%
Number of publications	
0	15%
1–4	55%
5–8	20%
9–13	9%
>13	2%
Asked about scholarly projects during residency interviews	
<25% of interviews	24%
25%–50% of interviews	24%
>50% of interviews	53%
Presenting/publishing scholarly work helped in securing residency spot	
Strongly agree	38%
Somewhat agree	40%
Neither agree nor disagree	15%
Somewhat disagree	5%
Strongly disagree	2%

^aTotals may not equal 100% due to rounding.

not produce a publication, suggesting potential barriers—such as insufficient time or limited support—that hinder project completion or dissemination. Medical schools could consider implementing programs designed to better support students in navigating these challenges and successfully completing and publishing scholarly work.

Additionally, we observed low participation in basic science (8%) and medical education (2%) projects. Although the survey did not explore reasons for this pattern, further investigation is warranted to determine whether these findings reflect broader structural factors—such as access to mentorship, research infrastructure, or specialty-specific priorities. Future studies should aim to increase survey participation, examine differences between respondents and nonrespondents, adopt longitudinal designs to assess long-term impact of scholarly work on match outcomes

(both overall and within individual specialties), and incorporate perspectives from residency programs and directors to provide a more comprehensive and informed understanding.

CONCLUSIONS

Assessing the impact of scholarly work on residency matching is challenging due to varying medical school requirements and residency program priorities. While students generally recognize the importance of research, there is significant variation in the types of research valued by programs—often based on informal information or assumptions rather than clear communication. Residency programs and students would benefit from more explicit research expectations to ensure better alignment between applicants and program values. This highlights a disconnect between residency program directors and medical students, underscoring the need for clearer, more consistent communication from residency programs.

Our study suggests that the focus of scholarly work should shift from quantity to quality, with students encouraged to pursue projects they are genuinely passionate about. However, we acknowledge that students may perceive that more competitive specialties prioritize the quantity of scholarly experiences rather than the quality of those endeavors. To mitigate the growing pressure of a “publication race,” residency programs should establish clear guidelines that set expectations on the number of required research projects. Such guidelines should promote high-quality, specialty-specific research early in medical education and should be supported by mentorship and institutional opportunities.

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Appendix: Available at www.wmjonline.org

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