

MEDICAL EDUCATION

NIH Funding and Research Output of Dermatology Applicants Before and After STEP 1 Pass/Fail Transition

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ABSTRACT

Dermatology is one of the most competitive specialties in the current residency match. Following the USMLE STEP 1 transition to pass/fail in January 2022, greater emphasis has been placed on medical students' research productivity.² In general, higher institutional funding through the National Institutes of Health (NIH) has been linked to greater research output among medical students.⁴ However, little is known about how the disparity in student research output between more and less well-funded schools has changed following the STEP 1 pass/fail transition and subsequent changes in residency selection criteria. The objective of this study was to characterize the impact of level of institutional funding on PubMed-indexed research productivity of successful dermatology applicants before and after the STEP 1 transition. Research metrics of residents from the classes of 2026 (pre-transition) and 2028 (post-transition) across 93 U.S. MD and DO dermatology programs were reviewed. PubMed was sourced to quantify total number of publications, first authorships, and dermatology-related publications. Medical schools were grouped into high, moderate, or low NIH funding levels based on 2024 Blue Ridge Institute rankings. Overall, total number PubMed publications (3.47 vs 4.45, $p < 0.004$), first-authorships (1.78 vs 2.20, $p < 0.054$), and dermatology-related publications (2.35 vs 3.27, $p < 0.01$) increased significantly post-transition. Notably, post-transition increases were only significant amongst applicants from high NIH-funded medical schools (4.63 to 5.87, $p = 0.025$). These findings suggest that medical students from highly funded research institutions are better equipped to adapt to changes in residency selection.

INTRODUCTION

Dermatology ranks among the most competitive specialties, with 22.7% unmatched MD seniors and 57.1% DO seniors in 2025.¹ The USMLE STEP 1 exam transitioned to pass/fail in January 2022, prompting program directors to place greater

emphasis on research productivity.² However, research opportunities are not equally distributed across medical schools. Access to research varies by medical schools due to differences in funding, infrastructure, curricula, and support.³ Prior studies have specifically linked increased National Institutes of Health (NIH) funding with greater student research output; however, the impact

of the STEP 1 transition on this relationship in the setting of evolving residency selection criteria remains unclear.^{4,5} The objective of this study was to assess the impact of level of institutional NIH funding on PubMed-indexed research productivity of successful dermatology applicants before and after this transition.

METHODS

We reviewed 142 U.S. MD and DO dermatology residency programs listed on Doximity and included programs with publicly available resident data (93 total). Residents from the classes of 2026 (pre-STEP 1 transition) and 2028 (post-STEP 1 transition) were selected. PubMed was searched using each resident's name and medical school to identify total number of publications, first authorships, and dermatology-related publications prior to residency. For the purposes of this study, "research output" refers to all PubMed-indexed scholarly activity, including original research articles, reviews, case reports, and other peer-reviewed publications. Medical school of each resident was stratified by NIH funding level using the 2024 Blue Ridge Institute for Medical Research rankings, with top third (ranks 1-48) as "high," middle third (49-96) as "moderate," and lower third (97-144) as "low." DO-granting schools were excluded from NIH funding tier analysis due to lack of Blue Ridge ranking. Mann-Whitney U tests were used for comparisons ($p < 0.05$) with continuous variables presented as means. Logistic regression identified predictors of having ≥ 1 publication, using STEP 1 phase and NIH funding tier. Analyses were conducted using Python (version 3.12).

RESULTS

Following the USMLE STEP 1 transition to pass/fail, overall research productivity amongst dermatology applicants significantly increased. Post-transition applicants had higher mean total number of publications (4.45 vs 3.47, $p < 0.004$), first-author publications (2.20 vs 1.78, $p < 0.054$), and dermatology-related publications (3.27 vs 2.35, $p < 0.01$) compared to the pre-transition cohorts (**Figure 1**). When stratified by medical school NIH funding level, only applicants from highly funded institutions demonstrated a statistically significant increase in total number of publications post-transition (5.97 vs 4.63, $p = 0.025$). No significant changes were observed in research metrics among applicants from moderate or low NIH-funded schools (**Table 1**).

DISCUSSION

Our findings show that the STEP 1 transition to pass/fail scoring was associated with an overall significant increase in PubMed-indexed research output among dermatology applicants, particularly in total number of publications, first authorships, and dermatology-related work. When stratified by NIH funding, applicants from highly funded medical schools demonstrated a significant increase in research productivity whereas those from moderate or low-funded institutions did not. Potential limitations of this study include exclusion of DO schools from NIH tier analysis, as well as omission of abstracts, poster presentations, and other non-PubMed-indexed research output. Regardless, these results suggest that institutional NIH funding levels impact the ability of applicants to respond to evolving residency selection criteria, namely the heightened emphasis on research following the STEP 1 transition. The concentration of increased research output post-transition

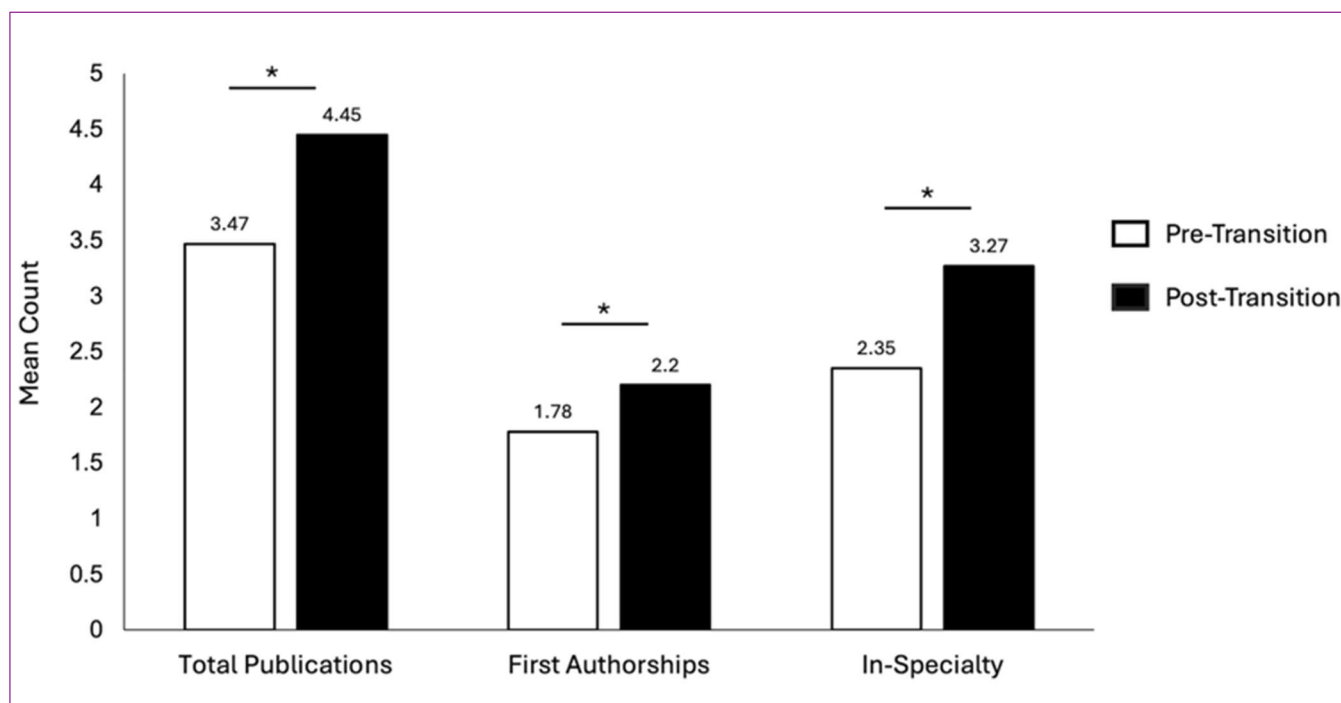


Figure 1. Overall research output of dermatology applicants, before and after STEP 1 pass/fail transition

	NIH Level	Pre-Transition (mean ± SD)	Post-Transition (mean ± SD)	p
Total Publications	High	4.63 ± 5.03	5.97 ± 6.13	0.025
	Moderate	2.86 ± 3.45	3.38 ± 3.70	0.29
	Low	2.61 ± 2.86	3.33 ± 3.21	0.185
First Authorships	High	2.32 ± 2.54	2.95 ± 3.41	0.087
	Moderate	1.47 ± 1.90	1.82 ± 2.37	0.292
	Low	1.45 ± 1.76	1.45 ± 1.67	0.746
In-Specialty	High	3.02 ± 3.20	4.35 ± 5.18	0.059
	Moderate	1.95 ± 2.43	2.60 ± 3.12	0.197
	Low	2.04 ± 2.63	2.29 ± 2.49	0.262

among students from highly funded schools highlights the importance of interpreting research productivity within the broader context of opportunity. Additional research that considers how these trends affect match

outcomes can provide a more contextualized view of applicant behavior.

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