

# Examining Research Productivity in Medical School and Dermatology Residency: A Cross-Sectional Study

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## Short Report

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# Abstract

Research productivity is one criterion used by residency programs to evaluate the academic qualifications of prospective applicants. Our objective was to examine individuals' research productivity in dermatology residency compared to medical school. A cohort of dermatology residents who graduated from an Accreditation Council for Graduate Medical Education (ACGME) certified Dermatology program in 2019 or 2020. An author search was conducted to identify author publications. Author number, journal name, impact factor, study type, and publication date were collected. Publications were characterized as pre-residency publications (PRPs) if published during intern year, medical school graduating year, or the year before graduating year. Publications were residency publications (RPs) if published during residency. A Wilcoxon signed-rank test was used to compare the average number of PRPs and RPs between individuals. Secondary outcomes were compared using chi-square and t-tests. 5,5159 publications were collected. There was no difference in mean number of PRPs and RPs. However, PRPs were more likely to be first author publications and RPs were more likely to be case reports. Both PRPs and RPs were generally published in the same journals. The differences in PRPs and RPs may stem from changes in mentorship/sponsorship roles during training. Our findings add to the literature on PRPs. Future research should examine continued trends of publications in residency and fellowship.

## Introduction

Research productivity is one criterion used by residency programs to evaluate the academic qualifications of prospective applicants. Previous studies have examined medical students' research productivity to identify factors associated with future career productivity [2]. Our objective was to examine individuals' research productivity in dermatology residency compared to medical school.

## Methods

Our cohort included dermatology residents who graduated from an Accreditation Council for Graduate Medical Education (ACGME) certified Dermatology program in 2019 or 2020. The ACGME website was queried for a comprehensive list of dermatology residency programs, excluding military and doctor of osteopathy only programs. Each residency program's website was used to identify a list of residents and their medical schools. An author search was conducted in PubMed and Scopus to identify publications. Author affiliation was used to confirm the correct author for residents with common names. Author number, journal name, impact factor, study type, and publication date were collected. Publications were categorized as pre-residency publications (PRPs) if they were published during intern year (PGY 1), graduating year (PGY 0), or the year before graduation (PGY - 1). Publications were categorized as residency publications (RPs) if they were published during residency (PGY 2-4). Study types were categorized into basic science/translational studies, review articles, case reports, retrospective/prospective clinical studies, book chapters, and other (clinical guidelines, narratives, etc). A Wilcoxon signed-rank test was used to compare the average number of PRPs and RPs between

individuals. Secondary outcomes, including first author number, study type, and impact factor, were compared using chi-squared tests and t-tests.

## Results

There were 5,159 publications collected for 770 individuals. There was no difference in the mean number of PRPs and RPs (3.38 versus 3.42,  $p = 0.51$ ). However, when compared to RPs, PRPs were more likely to be first author publications (54% versus 42%,  $p < 0.001$ ) and more likely to be basic science/translational studies (16% versus 3%,  $p < 0.001$ ). RPs were more likely to be case reports (42% versus 27%,  $p < 0.001$ ). PRPs had a higher mean journal impact factor compared to RPs (5.1 versus 4.4;  $p = 0.0004$ ) (Table 1). Both PRPs and RPs were generally published in the same journals with *The Journal of the American Academy of Dermatology* publishing the most PRPs and RPs (Table 2).

Table 1  
Descriptive characteristics comparing pre-residency publications and residency publications

	PRP N (%) or Mean (SD)	RP N (%) or Mean (SD)	p-value
Number of Publications	3.38 (4.52)	3.42 (4.51)	0.507 <sup>a</sup>
First Author	1378 (54)	1095 (42)	< 0.001 <sup>b</sup>
Study Type			< 0.001 <sup>b</sup>
Basic Science	412 (16)	89 (3)	
Book Chapter	82 (3)	40 (2)	
Case Report	684 (27)	1092 (42)	
Clinical Study	709 (28)	697 (27)	
Other	277 (11)	275 (10)	
Review articles	404 (16)	436 (17)	
Impact Factor	5.1 (6.8)	4.4 (5.9)	0.0004 <sup>c</sup>
<sup>a</sup> Wilcoxon Signed-Rank test			
<sup>b</sup> Chi-squared test			
<sup>c</sup> t-test			
Abbreviations: PRP, pre-residency publications (PGY - 1, PGY 0, PGY 1); RP, residency publications (PGY 2, PGY 3, PGY 4)			

Table 2  
Top 10 journals for pre-residency publications and residency publications

PRPs		RPs		
Journal	N(%)	Journal	N(%)	
1	<i>JAAD</i>	191 (12)	<i>JAAD</i>	301 (12)
2	<i>JAMA Dermatology</i>	97 (6)	<i>JAAD Case Reports</i>	232 (9)
3	<i>Dermatology Online Surgery</i>	93 (6)	<i>Dermatologic Surgery</i>	149 (6)
4	<i>Cutis</i>	52 (3)	<i>Pediatric dermatology</i>	146 (6)
5	<i>Journal of Drugs in Dermatology</i>	49 (3)	<i>JAMA Dermatology</i>	135 (5)
6	<i>Pediatric Dermatology</i>	48 (3)	<i>Dermatology Online Journal</i>	118 (5)
7	<i>JAAD Case Reports</i>	41 (3)	<i>Cutis</i>	117 (5)
8	<i>Dermatologic Surgery</i>	35 (2)	<i>Journal of Drugs in Dermatology</i>	72 (3)
9	<i>International Journal of Dermatology</i>	34 (2)	<i>International Journal of Dermatology</i>	71 (3)
10	<i>British Journal of dermatology</i>	31 (2)	<i>Journal of Cutaneous Pathology</i>	67 (3)

Abbreviations: JAAD, Journal of the American Academy of Dermatology; JAMA, Journal of the American Medical Association

## Discussion

Our data reveal that the number of RPs was approximately equal to PRPs for a cohort of individuals graduating dermatology residency in 2019 or 2020. PRPs were more likely to be first author and basic science/translational studies, while RPs were more likely to be case reports. These differences may stem, in part, from changes in mentorship/sponsorship roles during training (i.e. residents often mentor medical students on case reports). Our findings add to the literature on PRPs given the recent emphasis on using PRPs to predict future academic productivity and trending PRPs to further understand the research output associated with a successful match into dermatology [1–3]. Limitations include relying on names from residency websites. As a result, we may have missed publications due to common names or name changes. Future research should examine continued trends of publications in residency and fellowship.

## Declarations

**Funding sources:** None

**Conflicts of Interest:** None declared.

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