The Influence Of Home And Program Affiliated Academic Productivity On Orthopaedic Residency Match Outcomes

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INTRODUCTION: Matching into orthopaedic surgery is highly competitive, and research productivity is an increasingly important factor in applicant evaluation. However, less is known about whether the location of research influences match outcomes. Publications affiliated with an applicant's home institution or with external programs may confer different advantages, raising questions of both fairness and applicant strategy. In this study, we examined the 2025 orthopaedic residency match cohort to determine whether applicants were more likely to match at their home program or at institutions with which they co-published, whether home-matched applicants published less overall, and whether total publication volume moderated the relationship between home publications and home matching.

METHODS: We conducted a cross-sectional bibliometric analysis of all 221 NRMP-participating orthopedic surgery programs. Of 929 matched residents (2024-2025 cycle), complete publication data was obtained for 823 residents through publicly available program websites and social media. PubMed was queried using standardized search terms with institutional affiliation disambiguation. After filtering for overlapping affiliations and publications before September 24, 2024, 13,987 publications were analyzed. Publications were classified as home institution (medical school) or external, with binary (has/lacks home publications) and continuous (percentage home publications) variables created. Four primary analyses were performed: (1) association between home publications and home matching using chi-square tests for binary comparisons and independent t-tests for continuous measures; (2) publication productivity differences between home and away matches assessed via t-tests and Mann-Whitney U tests given non-normal distributions (Shapiro-Wilk $p<0.001$); (3) relationship between publishing at any institution and matching there evaluated through chi-square tests, Mann-Whitney U tests for volume comparisons, and multivariable logistic regression with cross-validated AUC; and (4) publication volume and home publication percentage interaction effects tested using likelihood ratio comparisons of logistic regression models. Sensitivity analyses excluded 173 zero-publication applicants (21.0%) to assess finding robustness. All analyses employed two-tailed tests ($\alpha=0.05$) using Python 3.13.7 with scipy.stats and scikit-learn libraries.

RESULTS SECTION: Among 823 orthopaedic surgery residency applicants, 650 (79.0%) had published at least one peer-reviewed article (mean 6.23±10.3 publications, median 3.5), while 150 (18.2%) matched at their home institution. The presence of home institution publications showed no association with home matching in binary analysis (19.3% vs 15.6% match rate, OR 1.3, 95% CI: 0.81-2.1, $p>0.05$.). However, continuous analysis among published applicants revealed that those matching at home institutions dedicated a significantly higher proportion of their publications to their home institution (70.4% vs 60.7%, mean difference 9.7%, $p<0.05$), though predictive performance remained moderate (AUC 0.525, 95% CI: 0.483-0.567.). Total publication count did not differ between home and away matches (6.2 ±15.9 vs 4.9±9.7, Mann-Whitney U = 48,686, $p>0.05$), with consistent patterns across all program tiers.

The strongest association emerged between publishing at any institution and subsequently matching there, with 211 applicants (25.6%) matching at institutions where they had previously published - significantly exceeding chance expectations ($\chi^2 = 154.7$, $p<0.001$). These residents demonstrated higher publication volumes (9.1±18.4 vs 5.7±9.0, Mann-Whitney U = 42,112, $p<0.01$) and the multivariable model achieved moderate discriminative performance (AUC 0.568, 95% CI: 0.534-0.602), substantially outperforming home-match prediction models. No interaction was detected between publication volume and home publication percentage (LR $\chi^2 = 0.0023$, $p = 0.96$), indicating these factors operate independently. Notably, the 173 zero-publication residents (21.0%) achieved comparable match rates (20.8% home match rate), and their exclusion in sensitivity analyses strengthened some associations while attenuating others, particularly reducing the publishing-institution match model's AUC from 0.674 to 0.568.

DISCUSSION: Publishing with a residency program was strongly associated with matching at that institution, whereas traditional home-institution productivity showed weaker and inconsistent effects. Applicants who published with a program had significantly higher match rates at that institution, while overall publication volume and home-publication percentage had limited predictive value. Importantly, the inclusion of zero-publication applicants, who comprised one-fifth of the cohort and paradoxically had slightly higher home match rates, substantially altered statistical significance and model performance, suggesting that publication strategies are most relevant for research-active applicants. Limitations include reliance on publicly available data and analysis of a single match cycle. These findings indicate that collaborative research serves more as a pathway for institutional integration than a simple measure of output, with implications for how applicants and programs view research in the match process.

SIGNIFICANCE/CLINICAL RELEVANCE: Orthopaedic surgery residency selection remains highly competitive, with research productivity serving as a key metric of applicant strength. By clarifying whether home or program-affiliated publications influence match outcomes, our study addresses a critical gap in understanding institutional factors and provides evidence to guide applicants in making informed research decisions.