

Osteopathic Emergency Medicine Programs Infrequently Publish in High-Impact Emergency Medicine Journals

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Introduction: Both the Accreditation Council for Graduate Medical Education (ACGME) and the American Osteopathic Association (AOA) require core faculty to engage in scholarly work, including publication in peer-reviewed journals. With the ACGME/AOA merger, we sought to evaluate the frequency of publication in high-impact peer-reviewed EM journals from authors affiliated with osteopathic emergency medicine (EM) programs.

Methods: We performed a retrospective literature review using the Journal Citation Report database and identified the top five journals in the category of 'Emergency Medicine' by their 2011 Impact Factor. We examined all publications from each journal for 2011. For each article we recorded article type, authors' names, position of authorship (first, senior or other), the author's degree and affiliated institution. We present the data in raw numbers and percentages.

Results: The 2011 EM journals with the highest impact factor were the following: *Annals of Emergency Medicine*, *Resuscitation*, *Journal of Trauma, Injury*, and *Academic Emergency Medicine*. Of the 9,298 authors published in these journals in 2011; 1,309 (15%) claimed affiliation with U.S.-based EM programs, of which 16 (1%) listed their affiliations with eight different osteopathic EM programs. The 16 authors claimed affiliation with 8 of 46 osteopathic EM programs (17%), while 1,301 authors claimed affiliation with 104 of 148 (70%) U.S.-based allopathic programs.

Conclusion: Authors from osteopathic EM programs are under-represented in the top EM journals. With the pending ACGME/AOA merger, there is a significant opportunity for improvement in the rate of publication of osteopathic EM programs in top tier EM journals. [West J Emerg Med. 2014;15(7):908-912.]

INTRODUCTION

Currently, graduate medical education in the United States is governed by two different organizations: the Accreditation Council for Graduate Medical Education (ACGME) for allopathic programs and the American Osteopathic Association (AOA) for osteopathic programs. Both organizations have expectations of faculty, including scholarship activity. The ACGME's listing of scholarship activities includes publication of original work, obtaining grant funding and presentation at national meetings.¹ The

AOA requires "major activity," which includes publication of original work, along with other avenues such as national board membership and exam item writing.² Given the recent announcement that all United States (U.S.) graduate medical education programs are to be accredited by the ACGME, osteopathic residencies must examine the impact this merger may have on their academic involvement.

Previous work has identified several barriers to successfully completing scholarly work across a range of medical specialties, including emergency medicine (EM);

however, these have focused on allopathic programs.³⁻⁷ Limited data exist comparing the research endeavors and publication rates of core faculty, either in or between allopathic and osteopathic EM residencies. We sought to determine the frequency of research publications in high-impact EM journals for osteopathic EM residency programs.

METHODS

Study Design

Using the Journal Citation Report database, we identified the top five journals in the EM category by their 2011 impact factor (IF), as 2011 was the most recent year with complete impact factor results.⁸ We accessed and cataloged each article and collected article type, authors' names, authorship position, author's highest degree (MD, DO, PhD, etc.) and affiliated institution. All journals listed the affiliated institution except for the *Journal of Trauma* for which we cross-referenced the articles with www.PubMed.org to identify the corresponding author's institution. No institutional review board approval was sought, as this was a literature review from publicly available data.

Study Protocol

We accessed all published volumes for each of the top five journals. We subdivided affiliation into EM or other (e.g. surgery), and further subdivided EM into U.S. or international for each author. U.S. EM authors who only claimed affiliation with industry, public service organizations or other non-clinical organizations were categorized as lacking academic affiliation. We checked author affiliation against the 2011 listings of ACGME and AOA affiliated EM residencies.² We designated authors who claimed affiliation with only U.S. military training programs as ACGME programs unless either the program's website or the AOA indicated dual accreditation. When authors claimed affiliation with a hospital or health system, we determined ACGME or AOA designation by departmental or hospital affiliations with their respective training programs. We included any author affiliated with a dual ACGME/AOA accredited program in both cohorts. Given that neither the ACGME nor the AOA qualify scholarly work to include or exclude publication type (original work, case reports, etc), we included all publications and stratified by type.

Measurements

We determined the number of published articles containing at least one U.S.-based EM physician claiming affiliation with either an ACGME or AOA EM residency. We also determined the raw percentage of osteopathic and allopathic programs that published in the identified journals.

Data Analysis

We present the data in both percentages and raw numbers computed using Stata v. 12 (Statacorp, College Station, TX). We also compared publications per program between allopathic and osteopathic programs using Wilcoxon-Mann-Whitney test.

RESULTS

The 2011 EM journals with the highest impact factor (IF) were: *Annals of Emergency Medicine* (4.133), *Resuscitation* (3.601), the *Journal of Trauma* (2.478), *Injury* (1.975) and *Academic Emergency Medicine* (1.861). We identified 1,992 manuscripts published by 9,298 authors. Of these, 1,309 (15%) claimed affiliation with U.S.-based EM programs, of which 16 (1%) listed their affiliations with osteopathic EM programs (Figure 1).

The 1,309 authors represent 418 publications, with only 10 publications listing at least one author from an osteopathic institution (five original works, four case reports, and one letter to the editor). The 418 publications included 217 original works, 30 case reports, 81 editorials, 12 review articles, 31 letters to the editors, 39 policy statements, seven book reviews and one perspective paper.

The 16 osteopathic-affiliated authors claimed affiliated with eight different osteopathic EM residencies and represent 17% of the 46 AOA-accredited programs in 2011. There were 1,301 authors who claimed affiliation with 104 U.S.-based allopathic programs representing 70% of the 148 programs in 2011. Figure 2 shows the frequency of publications per program for both allopathic and osteopathic programs. Allopathic programs published a median (IQR) of two papers (0, 5.5) while osteopathic published a median (IQR) of zero papers (0, 0) in the selected journals in 2011 ($p < 0.001$). Of the 217 original works, five were from four of the 46 osteopathic programs (8.7%), while the remainders were from 63 of 148 allopathic programs (42.6%).

DISCUSSION

Although previous efforts have attempted to quantify research in EM in the United States, there are limited data describing osteopathic EM research, specifically the frequency of publishing authors based on their affiliated institution.⁹⁻¹¹ Our results show that authors affiliated with osteopathic EM programs and osteopathic programs are underrepresented in high-impact EM journals.

There are several possible explanations for the low rate of publication from osteopathic programs. Barriers to completion of research projects, such as lack of time, interest, and not having an established research curriculum, have been well published.^{4,12,13} While these were identified in prior studies in allopathic programs, it is likely these are also present in osteopathic programs and would not result in such a discrepancy. Another possibility is that the authors are publishing their work outside of EM journals, targeting specific audiences.^{6,9}

Additionally, the limited publication rates for osteopathic programs may be the result of limited time and resources at the disposal of osteopathic researchers. While we were unable to identify prior studies that compared the extent of work and resources required to publish in the highest-impact journals, these journals publish works most likely to affect practice change. Academic institutions, which are historically allopathic programs,

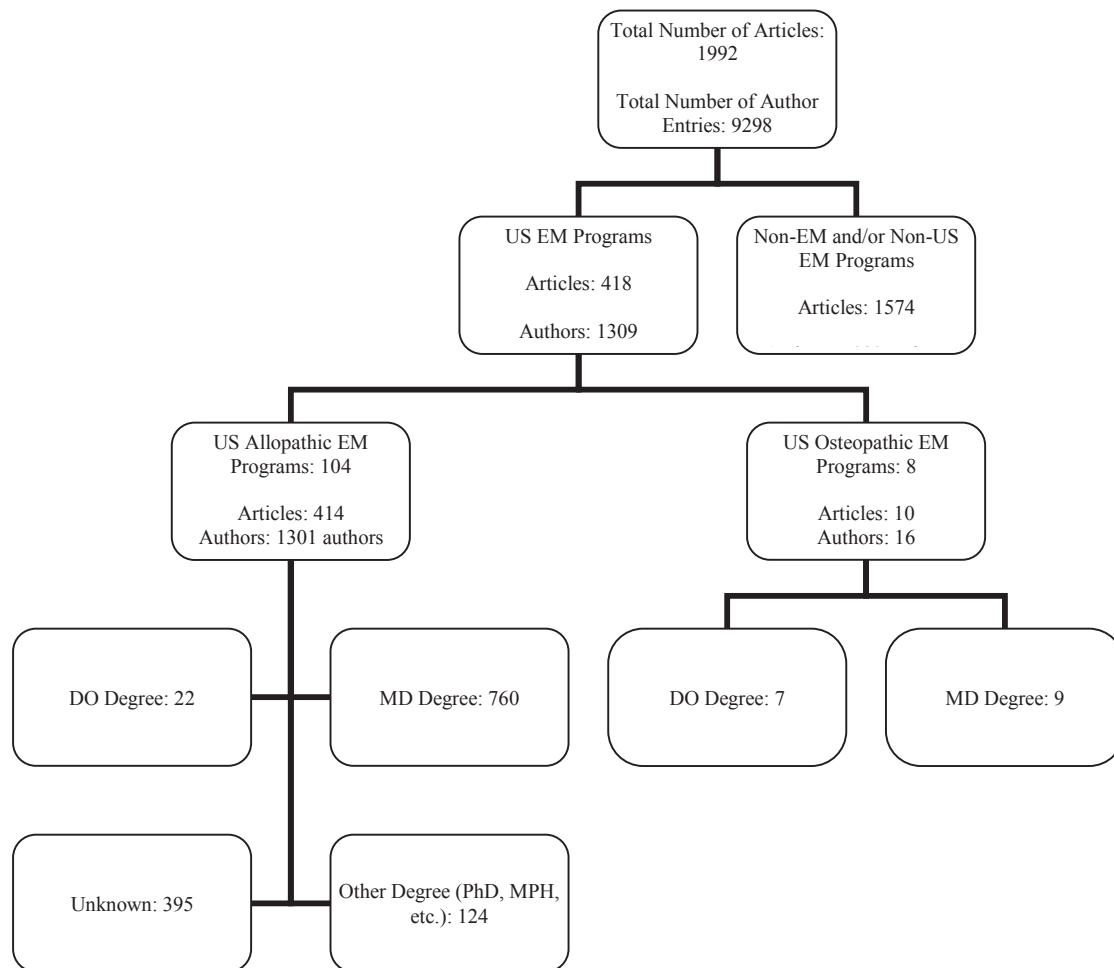


Figure 1. Consort diagram of all manuscripts. Three articles are the result of multi-centered studies and are included in both allopathic and osteopathic categories. Eight authors, affiliated with dual ACGME/AOA accredited residencies, are both included in both categories. *US*, United States; *EM*, Emergency Medicine; *DO*, Doctor of Osteopathic Medicine; *MD*, Medical Doctor; *PhD*, Doctor of Philosophy; *MPH*, Masters of Public Health

may have more opportunities for multi-centered trials, statistical support and “protected time” for faculty, allowing for more impactful research compared to osteopathic EM residencies, which tend to be based out of community teaching hospitals.⁵ Future efforts may help to identify academic differences between osteopathic and allopathic programs, such as statistical support, faculty with formal research training and funding opportunities, which may help to explain these differences.

Previous work has suggested techniques for improving research productivity, which include designated faculty mentors, increased resources (financial and time), guidance in project selection and support for national meeting attendance.^{3,4,12,14,15} For osteopathic EM programs that cannot support an increased research department internally, partnering with regional academic institutions may provide access to university resources while allowing for the included authorship from osteopathic-affiliated researchers. Additionally, recruitment of faculty with prior published research experience may be an avenue by which programs could support an increased research curriculum and simultaneously provide mentorship to current

and future faculty with less research experience.

The recently announced merger of graduate medical education states that all current AOA residencies must adhere to the standards of and receive accreditation from the ACGME. While the AOA and ACGME may continue to adapt to changing graduate medical education requirements, it appears that the ACGME’s listing of scholarship activities (including publication of original work, obtaining grant funding and presentation at national meetings) will be the benchmark for research requirements after the merger has been implemented.

Although accreditation may change, it is unlikely that the majority of the aforementioned barriers will be resolved. Current osteopathic programs will need to consider ways to increase their research output if they are to reach the standards required of the ACGME. Through professional organizations such as the American College of Osteopathic Emergency Physicians (ACOEP) and the Foundation of Osteopathic Emergency Medicine (FOEM), seminars are offered in the areas of faculty development and research infrastructure

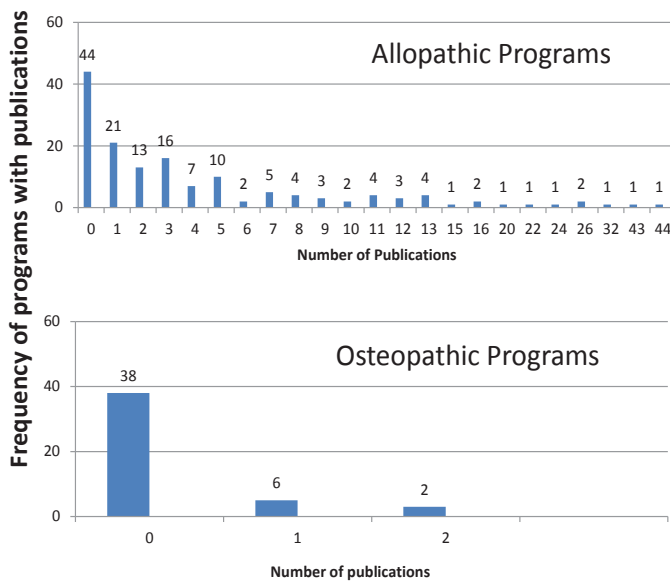


Figure 2. Publication frequency for emergency medicine residencies. The top graph shows the frequency of publications per program for allopathic programs. The lower graph shows the frequency of publications per program for osteopathic programs.

to prepare osteopathic faculty for the ACGME's Common Core Standards. Additionally, FOEM's Research Quality Improvement Initiative seeks to assist faculty and residents to increase both the caliber and quantity of academic output.¹⁶

Limitations

There are several limitations with our study. We do not know the rate of submission and/or rejection by the journals that we studied. We did not determine the rank of the author (attending vs. resident) at the time of acceptance or publication. Our study was limited to EM journals, whereas authors may have published in other specialty journals. We did not evaluate all EM journals. There are 23 EM journals listed in Journal Citation Report.⁸ We selected the top five as we feel these are likely to be the most impactful and likely to drive emergency care. Future efforts may evaluate the rate of osteopathic publications in lower impact journals.

While we did identify publications listed in each of the journals, we did not contact individual programs to identify their publications during the determined time period. Because of concerns for potential biases in response rates (e.g. programs with greater numbers of publications may be more likely to return the survey), we objectively evaluated the publications listed in the selected journals.

The *Journal of Trauma* did not list the authors' affiliation, and cross-referencing articles with PubMed only provided the affiliation for the corresponding author. We do not believe this would dramatically alter the data as only 2.63% (11 of 418 manuscripts) of all publications were from the *Journal of Trauma*, of which all corresponding authors claimed affiliation with allopathic programs. We did search the authors' names

via department websites and verified that all EM authors are currently affiliated with allopathic EM programs; however, they may not have been affiliated at the time of publication.

We identified articles by journal impact factor. While other metrics including immediacy index and cited half-life have been suggested for assessing journal rank, impact factor remains a key metric for assessing journal influence.

CONCLUSION

Osteopathic EM programs rarely publish in the high-impact EM journals. With the pending ACGME/AOA merger, there is a significant opportunity for improvement in the rate of publication of osteopathic EM programs in top tier EM journals.

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