

Resident Involvement and Publication Rates at the Mid-America Orthopaedic Association Annual Meetings

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ABSTRACT

Introduction: The Mid-America Orthopaedic Association (MAOA) hosts an annual educational meeting that traditionally has a large number of residents in attendance. The purpose of this study is to determine the percentages of residents presenting at the MAOA as well as the rate at which these resulted in a publication.

Materials and Methods: All 1,113 presentations that have taken place at the MAOA annual meetings from 2012 to 2016 were catalogued in a database. For each presentation, the database included the title, subspecialty topic, presenting author and their category (medical student, resident, fellow, or attending), and additional authors. This information was then used to direct a search to determine which of these presentations led to publications. If the presentation was associated with a publication, additional information such as the publishing journal and the date of publication were entered into the database.

Results: Of the 1,113 presentations from 2012 to 2016 at the MAOA annual meetings, 631 of them were presented by residents representing 57% of the presentations. In total, 655 presentations were associated with a publication, an overall publication rate of 59%. These presentations and publications covered a wide variety of subspecialties within Orthopaedic Surgery and were published in over 90 different journals. Of the total resident presentations, 378 abstracts were

associated with a publication resulting in a 60% publication rate of resident presentations.

Conclusion: The 59% publication rate of the presentations at the MAOA annual meeting is comparable to the publication rates of other major orthopaedic meetings such as 49% at the annual meeting of The American Academy of Orthopaedic Surgeons, 51% at the Pediatric Orthopaedic Society of North America, and 73% at the Orthopaedic Trauma Association annual meeting. The similar publication rates validate the quality of research being presented at the MAOA, however these other studies did not further categorize the data by presenting author category. Our study is unique with these findings. The large amount of resident involvement is apparent at the MAOA and an interesting future study would delineate the amount of involvement of residents at these other orthopaedic society meetings.

INTRODUCTION

One of the foundational aspects of the practice of medicine is the continual betterment of treatment approaches through novel research. Regardless of the scope of inquiry, all biomedical investigation shares one common goal: an underlying objective to contribute to the promotion of higher quality treatment and outcomes for patients in a clinical setting. Research findings are most commonly distributed to wider audiences through the avenues of presentations at specific conferences and publication

in peer-reviewed literature. Orthopaedic surgery is one of the fields that is furthered by the research contributions of students, residents, and physicians through conscientious research that supplies content for numerous regional and national conferences as well as peer-reviewed journals. The findings supplied by these resources act as an invaluable educational tool for current orthopaedic surgeons to engage in continual learning and contribute to lifelong learning for application in practice and the patient care setting.

The Mid-America Orthopaedic Association (MAOA) annual meeting is one forum that allows the dissemination of new research through podium and poster presentations. With publication in a peer-reviewed journal being considered as a more validated source of information, the reputation of a medical conference can be measured by the publication rates of the findings presented at the conference. The goal of this investigation was to determine the rates of publication from the MAOA annual meeting over the years of 2012 to 2016 as well as the resident involvement in these presentations and publications.

MATERIALS AND METHODS

Detailed records from the MAOA annual meeting from 2012 to 2016 were obtained. These records contained the presentation titles, the authors, and the presenter's level of training (resident, attending or medical student) for every presentation at each annual meeting. Over the 5

years included in this study, there were a total of 1,113 presentations given at the MAOA annual meetings. These 1,113 presentations were entered into a database that included the presentation title, subspecialty category based on title of presentation, year of presentation, authors, presenting author, presenting author's level of training, whether or not it led to a journal publication, and if so, the name of the publishing journal and when it was published.

All of the presentations were further researched in order to determine if they were published in a journal. A PubMed search was conducted for each presentation based on a systematic method. This approach started with a PubMed search of the entire title of the presentation. If this search resulted in a match, the publishing journal and the date of publication were entered into the database. If this did not result in a match, the name of the senior author was searched. Again, if this resulted in a match then the information would be entered into the database and if a publication was not found then it would move to the next step in the systematic search. The next step in the search included a search for two additional authors that were listed in association with the presentation. If none of these searches resulted in evidence that the presentation had been published, then the presentation was classified as

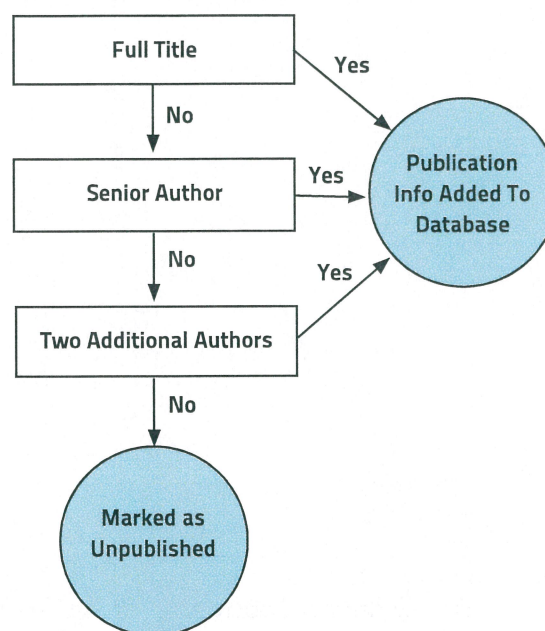
unpublished. The systematic approach used to verify publications is shown in Figure 1.

After all 1,113 presentations were searched in this manner, the database was further analyzed to determine publication rates, subspecialty distributions, and resident involvement at the MAOA annual meeting. These results were compared to other reputable annual meetings to draw conclusions about the quality of research presented at the MAOA as well as the resident involvement.

RESULTS

Of the 1,113 presentations from 2012 to 2016 at the MAOA annual meetings, 631 of them were presented by residents. This equates to 57% of the total presentations delivered. Of the 1,113 presentations, 655 were discovered to be associated with a publication in a peer-reviewed journal through the systematic PubMed search. This is an overall publication rate of 59%. Of the 631 total resident presentations, 378 were associated with a publication. This results in a 60% publication rate for presentations given by a resident. This data, broken down by year, can be seen in

FIGURE 1: Systematic Pubmed Search



more depth in Table 1. There are no other studies on this topic delineating specifically the number of presentations by residents.

These presentations and publications covered a wide variety of subspecialties within Orthopaedic Surgery. The distribution of subspecialties represented at the MAOA between 2012 and 2016 can be seen in Table 2. The quantity of presentations within each subspecialty varied from year to year, but hip was consistently the highest represented subspecialty each year.

Not only did the MAOA presentations cover

**TABLE 1:
Resident Involvement and Publication Rates of Presentations Delivered at the MAOA Annual Meetings**

Year	Resident Presentations	Total Presentations	Resident Publications	Total Publications
2012	99	195	68	125
2013	118	221	66	138
2014	118	206	81	141
2015	146	256	98	154
2016	150	235	65	97
Total	631	1,113	378	655
Resident %	56.7%		57.7%	

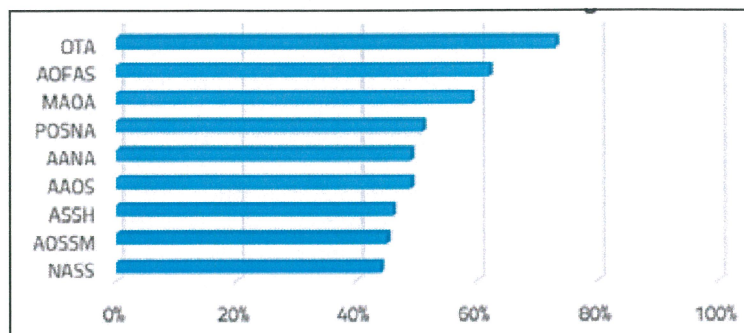
TABLE 2:
MAOA Presentation Subspecialties

Subspecialty	Total
Hip	199
Knee	137
Shoulder	132
Sports	94
Trauma	88
Joints	88
Spine	75
Foot & Ankle	74
Hand	45
General	43
Peds	42
Basic Science	35
Mis.	22
Tumor	21
Elbow	14

a wide range of subspecialties but also they were published in a variety of peer-reviewed journals. Through the systematic PubMed search, MAOA presentations were associated with publications in over 90 different journals. The publishing journals as well as the number of publications that were associated with a MAOA presentation can be seen in Table 3. The top three publishing journals for MAOA presentations were Journal of Arthroplasty, The Journal of Bone & Joint Surgery, and Clinical Orthopaedics & Related Research. These three journals constituted 224 out of the 655 total publications. Sixty-two out of the ninety-eight publishing journals were associated with two or fewer MAOA presentations which is why the number of publishing journals is so large.

DISCUSSION

The direction of advancement in the field of orthopaedic surgery is dependent on a strong foundation of innovative research, such as the findings that are consistently being presented at national association

FIGURE 2 : Publication Rates of Annual Meetings

meetings. However, the dissemination of research at these conferences does not necessarily translate into the work being published in a peer-reviewed journal. While association meetings offer an important, albeit limited, mode of educating physicians and instructors, publication helps to both widen the scope and ease of access in addition to

forming a permanent base of research knowledge that can be referenced at any time.

The MAOA published 59% of the 1,113 presentations given within the years 2012 to 2016. This publication rate is favorable when compared to the publication rates of other orthopaedic associations, such as the North American Spine Society (44% for 2010-12), American Orthopaedic Society for Sports Medicine (45% for 2011-15), American Society for Surgery of the Hand (46% for 2000-2005), the American Academy of Orthopaedic Surgeons (49% for 2001), Arthroscopy Association of North America (49% for 2008-12), Pediatric Orthopaedic Society of North America (51% for 2002-06), American Orthopaedic Foot & Ankle Society (62% for 2008-12), and the Orthopaedic Trauma Association (73% for 2008-12).¹⁻⁸ These publication rates can be seen and compared in Figure 2. These references do not delineate specifically category of presenter into medical student, resident, affiliated or attending physician

staff. It is encouraging the rate of publication of resident presentations was still consistent with other meetings.

We specifically chose to evaluate percentages of residents presenting at this regional orthopaedic meeting and subsequent publication. A research project is a requirement of residency programs per ACGME.⁹ However, not all projects result in presentation or publication. A regional orthopaedic meeting represents a more intimate setting than a large specialty society or American Academy of Orthopaedic Surgeons meeting and residents may build their confidence and improve their presentation skills at this type of meeting. The finding of 60% publication rate is encouraging in that residents not only improve their resume by presenting, but also contribute to production of a scholarly manuscript, learning the steps it takes for publication. This represents a invaluable educational process.

While the focus of this study was not to examine the causes of why presentations would go unpublished, various reasons can be inferred. One such reason could be the time investment and significant workload that must be performed to assemble a journal article from a presentation, especially when weighed against other professional responsibilities. Another reason for a presentation remaining unpublished could be that a paper was submitted and consequently rejected

TABLE 3:
Publishing Journals of MAOA Presentations

Journal Title	# of Publications
Journal of Arthroplasty	114
The Journal of Bone & Joint Surgery	57
Clinical Orthopaedics & Related Research	53
Journal of Shoulder & Elbow Surgery	40
American Journal of Sports Medicine	37
Orthopedics	33
Journal of Orthopaedic Trauma	26
Journal of Knee Surgery	21
Foot & Ankle International	21
Arthroscopy	17
Journal of Hand Surgery	18
Journal of Pediatric Orthopaedics	16
American Journal of Orthopedics	12
Journal of Surgical Orthopaedic Advances	10
Spine	9
Hand	9
The Bone & Joint Journal	8
Knee Surgery, Sports Traumatology, Arthroscopy	7

by a journal. However, conclusions on these causalities cannot be made because authors of presentations that went unpublished were not contacted and therefore unable to determine their specific reasons.

One possible limitation in this study, as shared with all research investigating publication rates, is the possibility that a presentation was published and not discovered during the systematic search and data collection. While the systematic Pubmed search methodology was strictly adhered to, it would be remiss to deny the possibility of an oversight. Conversely, there is also the possibility that a presentation from an association meeting

was published in a journal that lies outside of the scope of our data collection procedure. Another potential limitation to our study is the range of years that were analyzed. Our systematic PubMed search was conducted in 2018 which means the presentations that were given in the earlier years of investigation such as 2012 or 2013 had more time to publish in comparison to the presentations in 2016. This limitation could be the explanation for the lower number of publications in 2016, 97 publications, when compared to the other years of interest which had an average of 112 publications.

Considering all 1,113

presentations that were included in this study, it remains unlikely that these limitations would significantly impact overall publication rates.

In conclusion, the MAOA had a publication rate that was on the higher end when compared to other reputable orthopaedic associations' annual meetings. This reinforces the validity and reputation of the research that is presented at the MAOA annual meeting. It was also apparent that residents play a large role in these annual meetings and the MAOA is a great venue for residents to present their research. An interesting future study would delineate the amount of

involvement of residents at these other orthopaedic society annual meetings to be able to compare resident involvement in addition to the publication rates.

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