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## Factors Associated With the Journal Publication of Oral Abstracts From the American College of Foot and Ankle Surgeons: 2010 to 2014

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### ABSTRACT

The oral abstract publication incidence (76.9%) of the American College of Foot and Ankle Surgeons (ACFAS) is currently the highest reported for any national foot and ankle society conference to date. However, factors associated with the conversion of an abstract to a journal publication (JP) remain undetermined. The purpose of the present study was to identify the factors associated with the JP and time to publication for oral abstracts from the ACFAS conference from 2010 to 2014. Databases containing information on the abstracts were procured, and predictor variables were categorized as abstract or author specific. Bivariate analysis was conducted using the Mann-Whitney *U* test, Fisher's exact test, chi-square test of independence, or Spearman's rank correlation. Multivariable logistic regression and generalized linear regression models were utilized to analyze predictor variables. Oral abstracts by authors without a formal research degree were >12 times (95% confidence interval 2.25 to 71.67) more likely to achieve JP compared to abstracts by authors with a research degree. The author-specific variable was the only significant predictor of future JP ( $p = .002$ ); however, trends with respect to other variables (funding, prior publications, and ACFAS regional division) were also identified. Abstracts originating from academic institutions ( $p = .042$ ) and those involving fewer centers ( $p = .03$ ) were associated with a significantly shorter time to publication. Although the present study broadens our understanding on the publication incidence and time to publication for oral abstracts from the ACFAS from 2010 to 2014, it remains unclear why almost a quarter of the abstracts accepted ultimately failed to achieve JP. Identifying the publication barriers of those abstracts remains a necessary first step in helping to form recommendations aimed at improving the future publication incidence for oral abstracts presented at the ACFAS conference.

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National foot and ankle society conferences are used to disseminate the latest research and innovations through oral and poster abstract presentations annually (1–4). However, not all abstracts accepted for oral presentation by conference selection committees ultimately go on to achieve journal publication (JP), despite their obvious merits. Although the oral abstract publication incidence of the American College of Foot and Ankle Surgeons (ACFAS) from 2010 to 2014 (76.9%, 83 of 108) is currently the highest reported for any national foot and ankle society conference to date, factors associated with the successful conversion of an oral abstract to a JP following the conference remain undetermined (1–3). The purpose of the present retrospective study was to identify

the factors associated with the JP and time to publication (TP) for oral abstracts from the ACFAS conference from 2010 to 2014.

### Materials and Methods

From a previous study (1), a database containing information on all oral abstracts accepted for presentation at the ACFAS conference from 2010 to 2014 was procured. The database included basic information originally compiled and provided by the ACFAS office (author names, abstract titles, and year of presentation) and information determined subsequently thereafter (publication incidence, mean TP, journal of publication, and publication within 3 years of conference presentation) for the purposes of the original study (1). Using the database, 2 investigators (C.J.R. and D.C.R.) performed manual searches ([www.google.com](http://www.google.com)) to identify and record predictor variables potentially associated with the successful conversion of an oral abstract. These variables were classified as either abstract or author specific (5). Abstract-specific variables included the institution type (academic or nonacademic), number of authors, number of centers, type of research (patient oriented or basic/laboratory), study design (meta-analysis, systematic review, randomized controlled trial, prospective cohort, retrospective cohort, case-control, case series, or laboratory study), funding (yes or no), and the ACFAS regional division (Big West, Great Lakes, Gulf States, Mid-Atlantic, Midwest, Northeast, Pacific, Southeast, or Tri-State) (Fig).

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Author-specific variables included the primary authors: level of training (faculty, fellow, resident, or student), number of prior JPs (preceding the respective date of abstracts' presentation at the conference), and the presence of a formal research degree (doctoral, masters, or none).

#### Statistical Analyses

Data were collected and entered into a statistical database. Duplicate searches, assessments of reliability, and logic checks (accuracy of the data entered) were performed. Univariate descriptive statistics were calculated for all study variables. Bivariate analyses were conducted using the Mann-Whitney *U* test, Fisher's exact test, chi-square test of independence, or Spearman's rank correlation, as appropriate. Multivariable logistic regression or a generalized linear model regression was employed to analyze variables as potential predictors of successful abstract conversion (yes or no) and TP (months). Variables in the final logistic models with *p* values <.20 from the bivariate analysis were selected. R 3.4.2 (SAS Institute; Cary, NC) was used for all data analysis (6), and statistical significance was a *p* value <.05.

#### Results

A total of 108 abstracts were accepted for oral presentation at the annual ACFAS conference from 2010 to 2014. Of these abstracts, 76.9% (83 of 108) achieved JP prior to the previously established cutoff date (1), at a mean of 9.6 (range 0 to 44) months following the conference. Overall, the majority of accepted projects were unfunded (93%), led by attending faculty (72%), without a formal research degree (93%), from the Midwest (30%), Great Lakes (14%), and Pacific (13%) regions of the college (Fig). Eighty-six percent were patient-oriented research, whereas 14% were basic/laboratory research. Retrospective cohorts were the most frequently accepted

study design (*n* = 40, 37%), followed by case series (*n* = 31, 29%) and prospective cohorts (*n* = 11, 10%). Per project, the mean number of authors was  $3.9 \pm 1.42$  (range 2 to 8), the mean number of institutions was  $1.9 \pm 1.0$  (range 1 to 5), and the mean number of prior JPs for the primary authors was  $10.2 \pm 18.95$  (range 0 to 144). Descriptive statistics for the abstract-/author-specific variables and bivariate associations with respect to the JP and TP are summarized in Tables 1 and 2. A logistic regression model was employed to predict successful JP (academic degree, number of prior publications, and number of institutions), and a generalized linear regression model was employed to predict TP (academic degree, number of institutions, and funding) (1). Funding was excluded from the logistic regression model, because all funded studies were published, and the ACFAS regional divisions were excluded owing to too many geographical locations. When controlling for the number of prior publications and number of institutions, authors without a formal research degree were 12.72 times (95% confidence interval 2.25 to 71.67) more likely to achieve JP.

#### Discussion

The 2 largest professional societies currently representing foot and ankle surgeons (FASs) in the United States are the ACFAS and the American Orthopaedic Foot and Ankle Society (AOFAS). Several studies have assessed the publication incidence of oral abstracts presented at the annual meeting of each respective society (ACFAS 76.9% and AOFAS 73.7%), which have served as indirect proxies for the quality of the

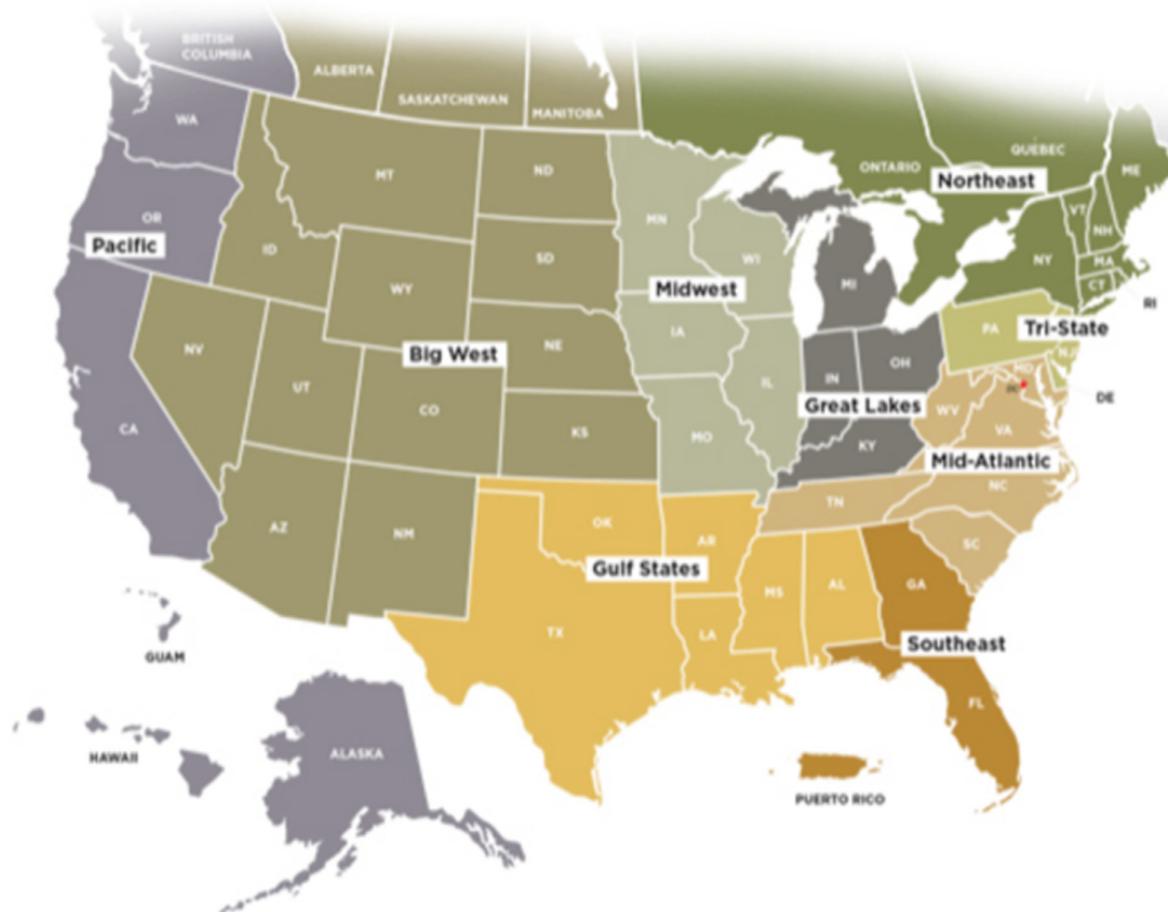


Fig. Regional divisions map of the American College of Foot and Ankle Surgeons.

**Table 1**  
Descriptive statistics for abstract-specific predictors and bivariate analysis for journal publication/time to publication

Predictor	Total Sample (N = 108)	p Value (Journal Publication/Time to Publication)
Institution type, n (%)		
Academic	54 (50)	.820/.042*
Nonacademic	54 (50)	
Number of authors	3.9 ± 1.4 (2–8)	.781/.480
Number of centers	1.9 ± 1 (1–5)	.191/.030*
Type of research, n (%)		
Patient oriented	93 (86)	
Basic/laboratory	15 (14)	
Study design, n (%)		
Retrospective cohort	40 (37)	.912/.501
Case series	31 (29)	
Prospective cohort	11 (10)	
Laboratory study	10 (9)	
Systematic review	8 (7)	
Case–control	3 (3)	
Cross-sectional	3 (3)	
Meta-analysis	2 (2)	
Randomized controlled trial	0 (0)	
Funded, n (%)		
No	100 (93)	.112/.154
Yes	8 (7)	
ACFAS regional division, n (%)		
Midwest	32 (30)	.086/.012*
Great Lakes	15 (14)	
Pacific	14 (13)	
Gulf States	12 (11)	
Tri-State	12 (11)	
Big West	8 (7)	
Southeast	7 (6)	
Northeast	6 (6)	
Mid-Atlantic	2 (2)	

Abbreviation: ACFAS, the American College of Foot and Ankle Surgeons.

Data presented as sample “n” (sample %)

\*Statistically significant association.

content presented (1,4). Although the maturation of an abstract to a full JP following its presentation is a natural and expected outcome, not all abstracts accepted to society conferences go on to successfully navigate the more rigorous peer review process and achieve JP. The purpose of the present study was to identify the factors associated with the JP and TP for oral abstracts from the ACFAS.

A total of 108 abstracts were accepted for oral presentation at the ACFAS conference from 2010 to 2014. Of these abstracts, 76.9% (83 of 108) achieved JP, at mean of 9.6 (range 0 to 44) months (1). Overall, no

**Table 2**  
Descriptive statistics for author-specific predictors and bivariate analysis for journal publication/time to publication

Predictor	Total Sample (N = 108)	p Value (Journal Publication/Time to Publication)
Level of training (primary author), n (%)		
Faculty	78 (72)	.853/.528
Fellow	12 (11)	
Resident	17 (16)	
Student	1 (1)	
Prior journal publications (primary author)	10.2 ± 18.95 (0–144)	.156/.560
Research degree, n (%)		
None	100 (93)	.002*/.472
Masters	8 (7)	
Doctoral	0 (0)	

Data presented as number of prior JPs (preceding the respective date of abstracts' presentation at the conference)

\*Statistically significant association.

associations were identified between any of the abstract-specific variables and the successful conversion of an oral abstract to a JP (Table 1). Projects from academic and nonacademic institutions were represented equally over the conference years analyzed (n = 54); however, a significantly shorter TP was identified for abstracts originating from academic institutions (p = .042) and those involving fewer centers (p = .03). Specifically, 86% (n = 93) of projects were patient oriented, while 14% (n = 15) were basic/laboratory research. Retrospective cohorts were the most frequently accepted study design (37%), followed by case series (29%), prospective cohorts (10%), and laboratory studies (9%). Trends were identified between funding and the ACFAS regional division and between the successful conversion of an abstract to a JP and TP. However, because all funded abstracts were published, and owing to the large number of geographical locations, inclusion into the regression models and an appropriate statistical analysis could not be performed. Still, it should be noted that projects from the Midwest (n = 32) region exceeded the number from any other region, and, together with the Great Lakes region (n = 15), the two accounted for nearly half of the accepted abstracts over the conference years analyzed. Although projects from the Pacific (n = 14), Gulf (n = 12), and Tri-State (n = 12) regions were fairly equally represented, projects from the Big West (n = 8), Southeast (n = 7), Northeast (n = 6), and Mid-Atlantic (n = 2) regions were scarcer. At least 1 oral abstract from each of the college regions (but no more than 4) failed to achieve JP. However, the total number of JPs from the Midwest (n = 28) still exceeded the total number from the Tri-State (n = 11), Big West (n = 6), Southeast (n = 3), Northeast (n = 3), and Mid-Atlantic (n = 1) regions combined, and ironically, the 3 regions with the lowest publication incidence (50%) were also the least represented at the conference. Secondary analysis revealed that many of the projects and subsequent JPs were frequently from only a few institutions within each respective region.

Regarding the author-specific variables, a significant association was identified between the absence of a research degree and the successful conversion of an oral abstract to a JP (p = .002) (Table 2). A trend was also identified with respect to the number of prior JPs hence, projects led by authors with previous publication experience were more likely to achieve JP, irrespective of any formal research training (doctoral or masters). Over the conference years analyzed, most of the accepted projects (72%) were led by attending faculty. Twelve (11%) projects were led by fellows; 17 (16%) by residents, most of whom were in their third postgraduate year of training; and 1 (1%) by a student. Of the 25 abstracts that failed to achieve JP, only 5 were led by either a fellow (n = 2) or a resident (n = 3), whose prior publications ranged from 2 to 8 and from 0 to 5, respectively. Secondary analysis revealed predictably, however, that in most instances, FASs with considerable publication experience were also involved in the project. This explains, to some extent, the lack of an identifiable association between the level of the primary authors' training (faculty, fellow, resident, or student) and the conversion of an oral abstract to a JP. Although not directly assessed in this study, the value of the guidance, mentorship, and bulwark of support provided by the involvement of these research-focused FASs cannot be overstated, especially considering the inherent difficulties in conducting research for trainees of any surgical specialty during their years of graduated responsibility (7,8).

This study has several limitations inherent to its design. These include selection biases, as discussed in the original publication (1). For each abstract (n = 108) presented at the ACFAS conference from 2010 to 2014, PubMed, Goggle Scholar, and Scopus searches were initially performed to confirm the publication status (published or unpublished) identified previously (1). Manual searches ([www.google.com](http://www.google.com)) for the primary authors were then performed, utilizing any and all available online resources, to identify and record both the abstract- and author-specific predictor variables at the time of the respective conference.

These efforts were exhaustive and especially difficult for abstracts that failed to achieve JP. In particular, determining funding for unpublished abstracts was problematic, and it is plausible that an unpublished abstract deemed “unfunded” might indeed have received funding. During the searches, inconsistencies between an abstract and the final publication (title, author names, primary author, and number of authors) were identified in some instances. These inconsistencies were usually with respect to the designated primary author of the abstract and subsequent JP. In most of these instances, the eventual primary author of the publication had initially been designated as a coauthor on the original abstract, and the abstract- and author-specific predictor variables of that individual at the time of the respective conference were utilized. This is illustrated by 1 example, where a fellow initially presented a project at the conference but was removed from the subsequent publication by the fellowship director (designated primary author) the following year. Although we acknowledge the potential biases this may have introduced, we are confident that our results were not affected significantly. Other unidentified factors may have also contributed to the JP of an oral abstract and therefore represent potential confounding variables. Furthermore, the comparison made between FASs with and without a formal research degree obviously risks being underpowered, owing to the small number of FASs who possessed a formal research degree. The strengths of the present study include the duplicate database searches, duplicate assessments of the data reliability, and multiple accuracy checks of the data entered (logic checks). Interestingly, 1 oral abstract originally deemed unpublished (1) was inadvertently discovered during the present study, despite significant inconsistencies between the abstract and the final publication (title, primary author, and number of authors). However, direct communication could not be established with the author prior to the manuscripts submission for JP and therefore, verification of the previously unidentified publication was not confirmed.

In conclusion, the present study broadens our understanding regarding the factors associated with the JP and TP of oral abstracts from the ACFAS. However, it remains unclear why almost a quarter of the abstracts (n = 25) accepted by the ACFAS selection committee ultimately failed to achieve JP. Given the essential role of research within the health care system, the onus is on all of us to conduct research, and identifying the publication barriers remains a necessary first step in helping to form recommendations aimed at improving the future publication incidence for abstracts presented at the ACFAS conference.

## References

1. Rushing CJ, Galan GP, Ivankiv R, Oxios AJ, Rathnayake VJ, Ramil MC, Chussid F, Spinner SM. Publication rates for oral manuscript and poster presentations from the American College of Foot and Ankle Surgeons: 2010 to 2014. *J Foot Ankle Surg* 2018;57:716–720.
2. Roukis TS. Publication rates of manuscript presentations at the American College of Foot and Ankle Surgeons annual scientific conference between 1999 and 2008. *J Foot Ankle Surg* 2011;50:416–419.
3. Bradley PA, Donnenwerth MP, Borkosky SL, Plovianich EJ, Roukis TS. Publication rates of poster presentations at the American College of Foot and Ankle Surgeons annual scientific conference between 1999 and 2008. *J Foot Ankle Surg* 2012;51:45–49.
4. Williams BR, Kunas GC, Deland JT, Ellis SJ. Publications rates for podium and poster presentations from the American Orthopedic Foot & Ankle Society: 2008–2012. *Foot Ankle Int* 2017;38:558–563.
5. Smart RJ, Susarla SM, Kaban LB, Dodson TB. Factors associated with converting scientific abstracts to published manuscripts. *J Craniofac Surg* 2013;24:66–70.
6. R Core Team. *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing: Vienna, Austria; 2018.
7. Rushing CJ, Roland D, Pham A, Bodden V, Epstein S, Soldano S, Rushing DC, Ramil M, Chussid F, Spinner SM, Hardigan P. A formal work hour analysis of the resident foot and ankle surgeon. *J Foot Ankle Surg* 2019;50:80–85.
8. Rushing DC, Rushing CJ, Ospina A, McClure S, Cummings N. Publication incidence for oral abstracts and posters from the American Association of Oral and Maxillofacial Surgeons: 2010–2014. *J Oral Maxillofac Surg* 2018;76:2051–2056.