The American Journal of Surgery (2016) 211, 166-171

The American Journal of Surgery®

Clinical Science

The fate of research abstracts submitted to a national surgical conference: a cross-sectional study to assess scientific impact

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KEYWORDS:
Publication rate;
Scientific conference;
Surgical research;
Research abstract;
Publication bias;
5-Year abstract-to-publication ratio

Abstract

BACKGROUND: Conference abstracts often lack rigorous peer review, but potentially influence clinical thinking and practice. To evaluate the quality of abstracts submitted to a large surgical conference, presentation and publication rates were investigated to assess scientific impact.

METHODS: A Cross-sectional study of abstracts submitted to Dutch Surgical Society meetings from 2007 to 2012 was conducted. Presentation rates, publication rates in MEDLINE-indexed journals using PubMed Central database, and actuarial times to subsequent publication were investigated.

RESULTS: Of 2,174 submitted abstracts, 1,305 (60%) abstracts were accepted for presentation. Actuarial 1, 3, and 5-year publication rates were 22.4%, 62.2%, and 68.6% for presented abstracts, compared with 20.9%, 50.3%, and 57.7% for rejected abstracts, respectively (log-rank x^2 23.728, df1, $P < .001$). Publications resulting from abstracts presented at the conference had a significantly higher mean (±standard error) impact factor (4.4 ± .2 vs 3.4 ± .1, $P < .001$), compared with publications from previously rejected abstracts.

CONCLUSIONS: We advocate critical appraisal of the use of findings of scientific abstracts and conference presentations. The 5-year abstract-to-publication ratio is proposed as a novel quality indicator to allow objective comparison between scientific meetings.

Scientific meetings are important for the rapid dissemination of current research findings. Abstracts submitted for consideration, however, often present preliminary results and are limited in conveying and interpretation of the data.[1–3] Despite this limitation, conference abstracts may influence clinical practice because when published in proceeding volumes or in journal supplements they can be cited along with fully published papers.[4] In addition, when a study is reported at a conference the abstract might provide the only permanent information accessible to most readers. Especially in some parts of the world where

The authors declare no conflicts of interest.

Part of the data from this manuscript has been orally presented at the Biannual Dutch Surgical Society Meeting, May 30, 2013, Veldhoven, Netherlands, and 48th Congress of the European Society for Surgical Research, May 31, 2013, Istanbul, Turkey.

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Manuscript received March 21, 2015; revised manuscript May 31, 2015

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http://dx.doi.org/10.1016/j.amjsurg.2015.06.017

medical professionals often have access to the abstracts only, healthcare decisions may be made on the basis of research abstracts. This emphasizes the importance of conference abstracts, and thus the ability to judge their scientific value.

While the selection criteria for abstracts submitted to scientific meetings may often be rigorous, they fall short of the comprehensive peer-review process required by most scientific journals.[5,6] A significant proportion of abstracts presented at scientific meetings is never subjected for publication or fails the scrutiny of peer review and will never be published.[7] In addition, the fate of research abstracts rejected for presentation is largely unknown.

It has been proposed that the proportion of abstracts that are subsequently published in full could be used as a quality indicator for scientific meetings.[8,9] Unfortunately, variation in reported publication rates per fixed follow-up interval results in difficult interpretation and subjective comparison.[7] We, therefore, examined all research abstracts submitted to the biannual Dutch Surgical Society meetings to investigate the presentation and publication rate of submitted abstracts and determine its scientific impact. Moreover, we estimated the time course of subsequent full publication of abstracts and investigated the fate of rejected abstracts that were subsequently published in full.

Methods

The biannual Dutch Surgical Society meeting is the major national scientific surgical meeting visited by around 1,500 surgeons and residents. The scientific meeting comprises oral and poster presentations based on submitted research abstracts, as well as panel discussions, invited speakers, and symposia. Submitted research abstracts were blinded for author's name and affiliated institution. Subsequently, each submission was evaluated by at least 5 blinded members of the abstract screening committee (selected for their relevant expertise) and ranked on a 5-point Likert scale. Abstracts were divided into subspecialties and selection for acceptance was based on an average score. Abstracts with the highest scores were chosen for oral presentation. Abstracts that ranked lower were chosen for poster presentation. The number of available oral and poster presentation varied per meeting. All scientific abstracts submitted from 2007 to 2012 (10 meetings in total) were retrieved and data were collected in a computerized database (Microsoft Excel; Microsoft, Inc, Redmond, WA). Data gathered included abstract title, presenting author's name, affiliated institution name, type of presentation (oral or poster), and abstract field (divided into vascular surgery, trauma surgery, gastrointestinal surgery, surgical oncology, and other).

A fixed search algorithm was developed and 2 reviewers (J.A.D., B.M.E.) independently adhered to the algorithm to search the MEDLINE database for published articles from January 1, 2007 to August 8, 2014 using the PubMed Central interface (US National Library of Medicine, National Institutes of Health).[10] The author's name was searched, limited to the selected time window. When the search identified 20 or fewer published articles, all abstracts were scanned by title and keywords. A match was considered successful only if the authorship and the title and content of the published manuscript abstract corresponded with the submitted research abstract. If the initial search revealed more than 20 publications, the search was expanded by adding additional keywords until 20 or fewer publications were identified. The search algorithm was continued until a match was found or it was determined that there was no match. In rare cases when there was some doubt about the abstract publication status, the principal investigator (V.E.M.) served as the adjudicator.

Bibliometric data retrieved from the MEDLINE database were collected and added to the computerized database. The 5-year journal impact factor (IF), the "Eigenfactor" score, and the "Article Influence" score were retrieved for each scientific journal using the ISI Web of Knowledge Journal Citation Reports (2011).[11] Time between presentation and publication was calculated and modeled using Kaplan–Meier survival analysis.[12] The month of publication was used as the cut-off point for censoring. Distribution of survival time and time to publication were analyzed in relation to the different variables collected. Univariate tests (log-rank [Mantel Cox]) were used to test for differences in these distributions by any single factor. The factors that solely appeared to have a significant impact were selected for entrance into a Cox proportional hazards model to analyze their effect on survival while adjusting for each other.[13] A backward elimination procedure was used for further covariate selection in the Cox proportional hazards model. Differences between 2 continuous variables were assessed using the unpaired 2-tailed Student t test, or if nonparametric, by using the Mann–Whitney U test. Datasets involving more than 2 groups were assessed by analysis of variance. Categorical variables were tested using Pearson's chi-square test. Data are expressed as mean ± standard error of the mean. Significance was determined at the 95% confidence interval (95% CI, $P < .05$). The analysis was performed using SPSS Statistics (version 21, IBM Corporation, Armonk, NY) and figures were created using GraphPad Prism (version 5.0, GraphPad Software, Inc, La Jolla, CA) software.

Results

A total of 2,174 submitted abstracts were evaluated, of which 1,305 (60.0%) abstracts were accepted for presentation. Of these, 870 (66.7%; 95% CI 64.1 to 69.2) abstracts went on to successful publication with a median actuarial time to publication of 25.0 months (95% CI 23.0 to 27.0). Of the 869 abstracts rejected for presentation, 488 (56.2%; 95% CI 52.9 to 59.5) abstracts went on to successful publication after a median time of 36.0 months (95% CI 30.1 to 41.9). Fig. 1 depicts the proportion of submitted