

ARTICLES

Publications after conference presentations: A systematic review of published studies

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Abstract

Background and aims: Conferences provide an opportunity to present findings to an audience of experts in the field and get feedback for putting the research in context. Since conference proceedings provide limited space for presenting the findings, research publications are able to provide a better platform for the wider reach, scrupulous peer evaluation, and temporal consolidation of the medical scientific material. This review attempts to collate the studies which have evaluated the abstract publication ratio of the conference presentations.

Methods: The systematic review and meta-analysis included peer reviewed publications which quantitatively reported the publication rate of conference presentations.

Results: A total of 28 studies were included, with sample sizes ranging from 82 to 1897 abstracts (total 17,172 abstracts). The publication rate ranged from 3.8% to 78.0%, with weighted mean publication rate of 41.8% (95% confidence interval of 34.1% to 49.5%). Oral presentations had a greater chance of being published as compared to poster presentations (odds ratio of 2.693, 95% confidence intervals of 1.285 to 5.646). There was high degree of heterogeneity in the findings.

Conclusions: A small proportion of the conference presentations is published. Efforts should be made to improve the abstract publication ratio to improve the wider dissemination of the available research.

Keywords: Abstracts, conferences, oral, poster, publication

Introduction

Conference presentations are an important step in the process of dissemination of scientific findings. These presentations are able to provide a glimpse into the current topical research of interest in the field and also provide an opportunity for discussion and deliberation over the findings (1). Conference presentations also provide a platform for younger researchers to showcase their work and get familiar with the process of dissemination of scientific insights. The natural corollary of conference presentations would be publication in peer-reviewed journals (2).

Publication of the conference presentations in journals helps to make scientific material available in a more rigorous manner to a wider audience. The process of peer review during the publication phase provides critical, unfettered inputs for putting the findings in context and spelling out the inaccuracies and limitations. Despite publication being a preferred outcome of conference presentations, not all such presentations are published. There could be several reasons for non-publication, including the waning interest of the researchers, difficulties in securing a reasonable outlet for publication, and/or presentations being of limited academic value. Yet knowing the extent to which research presentations are published would give an estimate of the "translation" of conference presentations into publications.

From an ethical standpoint as well, publication of conference material has two connotations. On the one hand, it can provide information on scientific research undertaken and presented, which in turn, would make available to society in general in a more rigorous format data about patients, thus enabling further scientific discourse. Publication of the abstracts of papers would, therefore, mean justice is being done to the patient time consumed in the process (though it may not apply when secondary data is used). On the other hand, low publication rates of conference proceedings may mean that work being presented is of low scientific interest and may not substantively justify the time of the professionals with regard to the scientific content (though conferences may have other ancillary advantages like

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networking). Further, many institutes financially support their faculty and residents to attend various conferences with the rider that they should have a presentation to make. Little is known about how many of these presentations culminate in full research publications for wider dissemination. To initiate and inform about these considerations, an accurate idea of scientific proceedings being published in the literature is required. Hence, this systematic review and meta-analysis attempts to collate to what extent research presentations are published.

Methods

The present systematic review utilised the PubMed database to identify studies. Additional studies were identified using the Google Scholar database. Keywords used for the searches in varying combinations were "Conference Proceedings," "abstracts," "publication rate," "abstract publication ratio," "publication ratio," and "publication." The criteria for being included in this systematic review were: the study had to be in English; it had to be published in a peer-reviewed medical journal which had been evaluated with a publication rate for conference presentations; and it should have presented its data in usable quantitative format. Those studies which did not have numerical data of the rate of conference presentations being published were excluded. The search was carried out in March 2019.

To be included in the meta-analysis, the studies were required to present data of abstract publication ratio, that is, provide data about the number of abstracts presented in a conference that were subsequently published. Studies just reporting the content of the abstracts and other related topics were excluded.

Information was extracted from the included studies by two of the authors (SG and ND). Information regarding the author name, name of the conferences, years of the conferences, number of abstracts evaluated, time lag allowed, search engines, and strategies used to identify publications, and publication rate was extracted using a pre-determined proforma. Where available, the publication rates of oral and poster presentations, respectively, were extracted. The extracted data were analysed using OpenMetaAnalyst software. The effect sizes were generated using the proportions method of the software. Weighted mean effect sizes of the entire sample along with 95% confidence intervals were computed to generate the pooled publication rate. A random effects model was used for computing the overall publication rate. I² test of heterogeneity was used to ascertain the heterogeneity of the included studies and their effect sizes. Quality of the studies was reported based upon JBI Critical Appraisal Checklist for Studies Reporting Prevalence Data (3). This has nine items and was found to be most closely aligned to the methods of the study. Separate analysis was run to find differences between the publication rate of oral presentations and poster presentations by generating pooled odds ratios and their confidence intervals. Meta-regression

using Comprehensive Meta-Analysis software was used to see whether the duration of ascertainment of the publication status (ie waiting for a longer duration after the conference to assess whether an abstract was finally published) had an impact on the publication rate.

Results

An initial search yielded 479 studies, abstracts of which were screened; of these, 28 were found to fulfil the criteria for the meta-analysis, and these studies were included (Table 1 and Figure 1*). The number of abstracts in the included studies ranged from 82 to 1897, and the total number of abstracts included in all the studies, cumulatively, added up to 17,172. The publication rate ranged from 3.8% to 78%, with weighted mean publication rate of 41.8% (95% confidence interval of 34.1% to 49.5%), as shown in Figure 2*. Four studies had explicitly compared publication rates of oral and poster presentations. Oral presentations had a greater chance of being published as compared to poster presentations (odds ratio of 2.693, 95% confidence intervals of 1.285 to 5.646) (Figure 3*).

The time frame for assessment of publication was available for 23 studies and ranged from 2 to 8 years.

The regions of the conference(s) and the field and quality analysis of the studies are presented in Table 2. Most of the conferences included in the review were held in North America, followed by Europe, and then other countries. The most common fields of medicine were radiology, followed by orthopaedics. Most of the studies were fair in quality, while the item in which many studies faltered was "Were valid methods used for the identification of the condition?" A funnel plot was drawn to find evidence of publication bias (Figure 4*), and the distribution of the studies did not suggest publication bias.

Meta-regression was used to ascertain whether greater duration in the time frame of assessment or publication year was associated with greater publication rate (Table 3).

Random effects model was used due to high heterogeneity, and separate meta-regression analyses were carried out for each of the two variables with the publication rate. However, the duration of time frame available did not predict the publication rate. Also, publication year did not have a significant impact on the publication rate (Table 3).

Subgroup analyses were conducted to find whether the region of the conference or the discipline was related to publication rates (Figures 5 and 6, respectively). It was seen that presentations in North America/ United States had higher publication rates than those in Europe, which in turn had greater publication rates than those in other regions. Also, when comparing fields, gastroenterology conference presentations had the highest publication rates, while primary care had the lowest. However, these were represented by one study each.

Table 1:
Summaries of the studies

Authors	Names of the conferences	Years of the conferences	Number of abstracts evaluated	Time lag allowed	Search engines and strategies used to identify publications	Publication rate (only those published as full articles)
Gorman, Oder daet al, 1990 (4)	American Association of Poison Control Centers, The American Academy of Clinical Toxicology, The American Board of Medical Toxicology, and the Canadian Association of Poison ControlCenters	1984 and 1986	296		MEDLARS	Total: 49.8%
Scherer et al, 1994 (5)	Association for Research in Vision and Ophthalmology or the American Acadmy of Ophthalmology annual meetings	1988, 1989	149	3 years	MEDLINE	66% of the confirmed RCT abstracts published
Wang et al, 1999 (6)	North American Spine Society (NASS), Scoliosis Research Society (SRS), and International Society for the Study of the Lumbar Spine (ISSLS).	NASS 1990 to 1992, SRS 1991 to 1993, and ISSLS 1991 to 1993	1186	NASS: 8 years; SRS and ISSLS: 7 years	Melvyl Medline Plus	Overall: 43.5% (NASS: 40 % SRS: 47 % ISSLS: 45%)
Roy et al, 2001 (7)	The Oto-rhino-laryngolocal Research Society (ORS) meetings, UK	1978 to 1995	660	456	MEDLINE	Total. 69.09%
Sprague et al, 2003 (8)	Meeting of the American Academy of Orthopaedic Surgeons.	1996	465	Not known	MEDLINE, PubMed	Total: 15.48%
Arrive et al, 2004 (9)	Radiological Society of North America	1995	1897	1-5 years	MEDLINE	Total: 33%
Miguel-Dasit et al, 2006 (10)	European Congress of Radiology	2000	1020	5 years	MEDLINE	Total: 47%
Secil et al, 2006 (11)	European Society of Gastrointestinal and Abdominal Radiology (ESGAR) meetings	2000, 2001	276	4 years	MEDLINE, PubMed	Total: 39.5%
Macmillan et al, 2007 (12)	British Association of Emergency Medicine and the Faculty of Accident and Emergency Medicine	2001, 2002	404	3 years	Ovid	Total: 30 % (Oral papers: 57% Posters: 14%)
Ha et al, 2008 (13)	Annual meetings of the Korean Radiological Society (KRS) and abstracts presented by Korean investigators at the annual meetings of the Radiological Society of North Amerca (RSNA) and European Congress of Radiology (ECR)	2001, 2012	1,097	7.6 years	PubMed, Korean Medical Database	Total: 27.4% (KRS: 23.6% RSNA: 35.4% ECR : 50.5%)
Kottachchi et al, 2010 (14)	Randomized Clinical Trials in Inflammatory Bowel Disease Presented at Digtive Disease Week	1998-2003	82		MEDLINE, PubMed, EMBASE, Google Scholar	Total: 78%

**Table 1 continued :
Summaries of the studies**

Authors	Names of the conferences	Years of the conferences	Number of abstracts evaluated	Time lag allowed	Search engines and strategies used to identify publications	Publication rate (only those published as full articles)
Donegan and Kim, 2012 (15)	American Academy of Orthopaedic Surgery (AAOS)	2001	756	5 years	PubMed, MEDLINE,	Total: 49% (Poster presentations :47% Podium presentations: 52%)
Winnik et al, 2012 (16)	European Society of Cardiology Congress	2006	1020	4 years	MEDLINE	Overall: 31% (38% for accepted papers and 24 % for rejected papers)
Yoon et al., 2012 (17)	Urological Society of Australia and New Zealand (USANZ) Annual Scientific Meeting	2005 to 2009	614	3 years	PubMed	Total: 29.8%
Walsh et al, 2013 (18)	North American medical education conferences (Research in Medical Education Conference [RIME] and the Canadian Conference on Medical Education [CCME])	2005 and 2006	449#	6.3 years	MEDLINE, EMBASE, ERIC, Google Scholar	Total: 34.7%
Jorgens et al, 2014(19)	European Association of studies of Diabetes	2004	493##	4 years	MEDLINE Authors contacted by email	Total: 42.4% (51.1% for accepted abstracts and 26.7% for rejected abstracts)
Mutlu et al, 2015 (20)	National Congress of Child and Adolescent Psychiatry (NCCAP), Turkey	2005-2008	214\$	5 years	PubMed, Google Academic databases	Total 25.2%
Elliott et al, 2016 (21)	Annual meeting of the Congress of Neurological Surgeons, Canada, 2005	2005	754	5.3 years	MEDLINE, Scopus, Google Scholar	Total: 50.8%
Kay et al, 2016 (22)	American Shoulder and Elbow Surgeons' (ASES) annual meetings	2005-2010	266	5 years	PubMed, Ovid, EMBASE	Total: 49.2%
Shergill et al, 2017(23)	Cardiovascular and Interventional Radiology Society of Europe (CIRSE) and the Society of Interventional Radiology (SIR).	2012	421	3 years	PubMed and Google Scholar	Total: 44.9%
Hosseini-Zijoud, 2017 (24)	First International Congress of Nephrology and Urology, Tehran, Iran, 2015	2015	210	1 year	Scopus, PubMed ISC (for Persian language published papers)	Total: 23.3% Oral papers: 41.3% Posters: 15.6%
Orr et al, 2017 (25)	Society of Military Orthopaedic Surgeons (SOMOS), USA	2009-2013	592\$\$	2 years	PubMed	Total: 58.6%
Hoelscher et al, 2017 (26)	AACAP Annual Meeting, USA	2012- 2013	658	Not known	PubMed, Google Scholar	Total: 46%
Basu et al, 2017 (27)	American Academy of Pediatrics, Pediatric Academic Societies, and Society of Critical Care Medicine national meetings.	2007-2011	267\$\$\$	5 years	PubMed search	Total: 41%
Nwachukwu et al, 2018 (28)	International Society for Hip Arthroscopy (ISHA)	2011- 2014	674	3 years	PubMed, MEDLINE, Google Scholar	Total: 46.85% Podium presentations: 53.6% Poster presentations 40.1%

**Table 1 continued :
Summaries of the studies**

Egloff et al, 2017 (29)	Society of General Internal Medicine 2009 Annual Meeting.	2009	578	5 years	MEDLINE	Total: 47.4 %
Komagamine and Yabuki, 2018 (30)	Japan Primary Care Association Annual Meetings	2010-2012	1003	5 Years	MEDLINE	Total: 3.8 %
Raudenbush et al, 2018 (31)	North American Spine Society (NASS)	2009 to 2011	671	4 years	PubMed	Total: 51%
# 6 abstracts were excluded (4 withdrawn, 1 missing, 2 published before abstract deadline) ## Evaluated 493 out of the 2008 submitted abstracts, of which 1306 were accepted for the conference \$ Included only poster presentation \$\$ Excluded poster presentation \$\$\$ Only paediatric critical care medicine abstracts were included						

Discussion

The two major findings of this meta-analysis are that a substantial proportion of conference presentations may not find an outlet as subsequent publications and that oral presentations are more likely to be published, as compared to poster presentations. Several factors can explain these findings. One, there was considerable heterogeneity across the studies. There were differences in methodology of ascertainment, the duration of follow-up for publication, and the search engines utilised. Yet, even in the best-case scenario, there were several presentations (more than 20%) that were not published. Thus, it is possible that the authors either are not interested in publication or are not able to secure a suitable journal for publication of their presented material. It is also possible that the presentation was of preliminary material which the authors knowingly withheld from publication, pending the conduct and publication of the full study. Furthermore, sometimes presentations are opportunities for younger members in research teams to present a piece of the entire work, while the more comprehensive results are published together. Hence, while some presentations not being published can be intentional, others may be unintentional.

Oral presentations being published more frequently can be ascribed to several factors. Scientific committees of conferences generally allocate better and more impactful studies to oral presentations (32). Also, oral presentations give more focussed and intense feedback through the discussion during the presentation process. This may provide a first line of peer review for the work under consideration. Furthermore, it can be speculated that those who are less likely to publish the findings per se (due to the preliminary nature of findings or the presentation being a small part of the entire project) are likely to prefer poster presentation.

Publication of conference presentations can be a useful method to enrich the scientific field. The presentation abstract gives leads to researchers working in the field about work done on a particular topic. Access to further details through a scrutinised report in the form of publication can help in planning better research, avoiding the pitfalls experienced

previously by others, and developing on the theoretical construct. Thus, encouragement of research publication from conference presentations is desirable. Yet, one of the important functions of academic conferences is facilitation of the meeting and intermingling of a variety of experts in the field, and organisers may be practically constrained for accommodating a range of presentations with myriad perspectives. Hence, expecting all presentations to be duly published might be utopian.

Though the present systematic review and meta-analysis aim to present the publication rate of conference proceedings, some limitations need to be highlighted. The review included only English language papers and excluded those studies where quantification of the publication rate could not be done. Also, there was one study with fair weight but low publication rate, which could have skewed the findings (30). Additionally, we did not look for publication biases or use a structured instrument for assessment of risk of bias. Despite the limitations, the present review presents a collation of findings of the publication rate of presentations made in conferences.

***Note:** Figures 1 to 6 are available in the online version of this article from: <https://ijme.in/articles/publications-after-conference-presentations-a-systematic-review-of-published-studies/>

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Table 2 :
Quality analysis of the included studies

Authors	Region	Field	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Gorman and Oderda et al, 1990 (4)	North America/ USA	Toxicology	Y	Y	Y	Y	Y	Y	Y	Y	Y
Scherer et al, 1994 (5)	North America/ USA	Ophthalmology	Y	Y	U	Y	Y	Y	Y	Y	Y
Wang et al, 1999 (6)	North America/ USA	Spine	Y	Y	Y	Y	U	Y	Y	Y	Y
Roy et al., 2001(7)	Other	Otorhino-laryngology	Y	Y	Y	Y	Y	U	Y	Y	Y
Sprague et al., 2003 (8)	North America/ USA	Orthopaedics	Y	Y	Y	Y	Y	U	Y	Y	Y
Arrive et al, 2004 (9)	North America/ USA	Radiology	Y	Y	Y	Y	Y	Y	Y	Y	Y
Miguel-Dasit et al., 2006 (10)	Europe	Radiology	Y	Y	Y	Y	Y	U	Y	Y	Y
Secil et al., 2006 (11)	Europe	Radiology	Y	Y	Y	Y	Y	U	Y	Y	Y
Macmillan et al., 2007 (12)	Europe	Emergency medicine	Y	Y	Y	Y	U	U	Y	Y	Y
Ha et al., 2008 (13)	Other	Radiology	Y	Y	Y	Y	Y	Y	U	Y	Y
Kottachchi et al, 2010 (14)	North America/ USA	Gastroenterology	Y	Y	U	Y	Y	Y	Y	Y	Y
Donegan and Kim, 2012 (15)	North America/ USA	Orthopaedics	Y	Y	Y	Y	Y	Y	Y	Y	Y
Winnik et al, 2012 (16)	Europe	Cardiology	Y	Y	Y	Y	Y	Y	Y	Y	Y
Yoon et al, 2012 (17)	Other	Urology	Y	Y	Y	Y	Y	Y	Y	Y	Y
Walsh et al, 2013 (18)	North America/ USA	Medical education	Y	Y	Y	Y	Y	U	Y	Y	Y
Jorgens et al, 2014 (19)	Europe	Diabetes	Y	Y	Y	Y	Y	U	U	Y	Y
Mutlu et al, 2015 (20)	Other	Child Psychiatry	Y	Y	Y	Y	Y	U	Y	Y	Y
Elliott et al, 2016 (21)	North America/ USA	Neurosurgery	Y	Y	Y	Y	Y	Y	Y	Y	Y
Kay et al, 2016 (22)	North America/ USA	Surgery	Y	Y	Y	Y	Y	Y	Y	Y	Y
Shergill et al, 2017 (23)	Europe	Radiology	Y	Y	Y	Y	Y	U	Y	Y	Y
Hosseini-Zijoud, 2017 (24)	Other	Nephrology	Y	Y	Y	Y	Y	Y	Y	Y	Y
Orr et al, 2017 (25)	North America/ USA	Orthopaedics	Y	Y	Y	Y	Y	U	Y	Y	Y
Hoelscher et al, 2017 (26)	North America/ USA	Child Psychiatry	Y	Y	Y	Y	U	Y	U	U	Y
Basu et al, 2017 (27)	North America/ USA	Paediatrics	Y	Y	Y	Y	Y	Y	U	Y	Y
Nwachukwu et al., 2018 (28)	Other	Arthroscopy	Y	Y	Y	Y	Y	U	Y	Y	Y
Egloff et al, 2017 (29)	North America/ USA	Internal medicine	Y	Y	Y	Y	Y	Y	Y	Y	Y
Komagamine and Yabuki, 2018 (30)	Other	Primary care	Y	Y	Y	Y	Y	U	Y	Y	Y
Raudenbush et al, 2018 (31)	North America/ USA	Spine	Y	Y	Y	Y	Y	U	Y	Y	Y

(Based upon questions in Munn Z, Moola S, Lisy K, Riitano D, Tufanaru C. Methodological guidance for systematic reviews of observational epidemiological studies reporting prevalence and incidence data. *Int J Evid Based Healthc*. 2015; 13:147–153. (3)
(Key: U Unknown, Y Yes)

Table 3:
Meta-regression analysis

Variable	Coefficient	Lower Bound	Upper Bound	Z value	P value	Tau2	I2	R2
Duration of time frame (k = 27)	-0.049	-0.184	0.086	-0.71	0.477	0.265	97.33%	0.00
Publication year (k= 28)	-0.022	-0.059	0.019	-1.16	0.245	0.269	97.34%	0.00

Analysis run using Comprehensive Meta-Analysis software, using random effects model due to high heterogeneity

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