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Analysis of the publication rate of the abstracts presented at a national gastroenterology meeting after 6 years

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Abstract

Background/Aims—Abstract presentations at scientific meetings provide an opportunity to convey the results of important research. Unfortunately, many abstracts are not eventually published as full manuscripts. We evaluated factors associated with publication of abstracts as manuscripts up to 6.5 years after presentation at the 73rd scientific meeting of the American College of Gastroenterology in 2008.

Methods—All abstracts, excluding case reports, presented at the meeting were evaluated. We systematically searched for matching manuscripts indexed in PubMed or EMBASE up till May 2015. We used logistic regression models to determine factors associated with manuscript publication and calculated odds ratios (OR) and 95% confidence intervals (CI).

Results—Of included 791 abstracts, 249 (31.5%) were published as manuscripts within 6.5 years.

Oral presentation (OR=2.11; 95%CI: 1.15-3.87), multicenter studies (OR=2.67; 95%CI: 1.44-4.95), abstracts by University-based authors (OR=1.80; 95%CI: 1.20-2.72), and funded research (OR=2.15; 95%CI: 1.43-3.23) were more likely to be published. Winning an award at the meeting was not associated with manuscript publication (OR=1.09; 95%CI: 0.57-2.06).

Conclusions—There is an urgent need to improve dissemination of scientific knowledge through publication of abstracts presented at gastroenterology meetings as manuscripts. Mentors should endeavor to encourage their mentees to complete this final stage of their scholarly activities.

Keywords

Scientific meeting; information; Abstracts; manuscripts; publication

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Introduction

Abstract presentations at annual scientific meetings provide opportunities to rapidly convey the results of important research. Typically, abstracts submitted for presentation at these meetings undergo peer review to identify the most important scientific information. Most abstracts are presented as posters while the top ranking abstracts enjoy wider publicity at the podium in appropriate sessions. The best abstracts also get awards, a mark of recognition for the importance of those studies.

Abstract presentation is expected to be the preliminary step towards publication as a full length manuscript in a peer reviewed journal. Unfortunately, many abstracts never make it to publication as a manuscript many years after presentation at a national scientific meeting. The rates of publication of abstracts presented at scientific meetings which focused on the field of Gastroenterology and Hepatology have ranged from 25% to 70% up to 6 years after presentation [1-6]. Low manuscript publication rate is problematic because these abstract results may be known only to attendees of the meetings, or published only in proceedings of the meetings, or are found only in special issues or supplements of the journals. In general, the abstracts are not indexed in important databases. Therefore, they cannot be readily accessed by fellow researchers, policy makers and other stakeholders.

The annual scientific meeting of the American College of Gastroenterology (ACG) provides one of the most important platforms for presentation of clinical and basic science findings in the field of Gastroenterology and Hepatology in the United States. This meeting is particularly popular among trainees at all levels. It often serves as the major stepping stone for medical students, for internal medicine residents seeking gastroenterology fellowship positions, for gastroenterology fellows seeking advanced sub-specialty training positions and for those seeking outstanding employment opportunities in academia, industry or private practice. The number of presented abstracts has been increasing steadily and has now reached 2,097 abstract presentations at the just concluded 80th Annual Scientific Meeting in 2015 in Honolulu, Hawaii.

However, little is known about the fate of the presented abstracts at ACG scientific meetings. To the best of our knowledge, no prior study has investigated the abstract to manuscript publication ratio of presented research at these meetings. We sought to determine the percentage of abstracts that were published as full manuscripts in peer reviewed journals and factors associated with publication 6.5 years after presentation at the 73rd annual scientific meeting of the ACG in Orlando, Florida in October 2008.

Materials and Methods

The current study was approved by the Institutional Review Board of Howard University (IRB-14-MED-28). All abstracts, excluding case reports, presented at the 73rd annual scientific meeting of ACG in 2008 were analyzed. We excluded case reports (clinical vignettes) because they typically have low publication potential since a substantial percentage of high ranking peer reviewed journals do not publish case reports anymore. The year 2008 was chosen to allow enough time for publication of the abstracts into peer

reviewed manuscripts. We searched for manuscripts indexed in PubMed (MEDLINE) and EMBASE up to May 1st, 2015 by cross referencing the first author, senior author and key words from the abstract title. If a published article had at least the first, second or last author listed and had a similar title, objective, and method, the abstract was classified as published. If two abstracts dealing with the same topic and data were combined into one final manuscript, both abstracts were considered published for ease of analysis.

Information collected included abstract category, subject category (clinical vs basic science), country of origin (U.S.A. or non- U.S.A. or multinational), sponsored or funded research (yes or no), number of centers (multicenter vs single center vs unspecified), university based authors (yes or no), prospective study design (yes or no), use of publicly available database for research (yes or no), number of subjects in the study, type of presentation (oral vs poster), statistically significant results (yes or no or not applicable) and ACG annual scientific meeting award recipient abstracts. Statistical significance was defined by p value < 0.05, or by the reported 95% confidence interval (CI) for outcomes of the study. Results were defined as “not applicable” for descriptive studies without results depicting statistical significance of the outcomes of the study. “Unspecified” center category refers to those studies without clear description of the number of centers or performed by a pharmaceutical company or a laboratory using their database. ACG award winning abstracts included: ACG Governors Award, ACG/Auxiliary Award, ACG/Olympus Award, ACG/ Naomi Nakao Gender Based Research Award, ACG/AstraZeneca Senior Fellow Award, ACG International Award, ACG/Centocor IBD Abstract Award, ACG Obesity Award, ACG Lawlor Resident Award and ACG Presidential Poster Award.

For published manuscripts, information collected included date of publication (year and month), whether the paper was published in a gastroenterology or Hepatology journal and name of the publishing journal. Time to publication in months was defined as the interval between the ACG meeting (October, 2008) and the time of publication as defined in the published article.

Statistical analysis

We used STATA statistical software version 11.2 (College Station, Texas) for all analysis and calculated the publication rate (defined as the ratio of the number of abstracts published as manuscripts to the total number of presented abstracts). We used chi square statistics to compare the characteristics of the abstracts by whether they were published or not and used logistic regression models to calculate odds ratios and 95% confidence intervals (CI).

Results

A total of 791 research abstracts were presented at the ACG meeting in October 2008. Of these, 753 (95.2%) were on adults subjects, 30 (3.8%) pediatric age group and 8 (1%) were animal studies. A total of 249 (31.5%) were published as full-length, peer reviewed articles as of May 1st 2015 (6.5 years of follow up). The mean time to full manuscript publication was 21.5 months (SD = 14.6). Figure 1 summarizes the number of abstracts published over time (in months). Approximately two-thirds of the manuscripts were published in the first 2 years and ninety percent were published within four years after presentation at the ACG

meeting. Figure 2 summarizes the percentage of abstract published as manuscripts according to the subject category. Publication rate varies among the subject categories. Pediatrics category (56.3%) has the highest publication rate while Outcomes Research category (17.8%) has the lowest publication rate. Most of the manuscripts (88.8%) were published in gastroenterology or hepatology journals (221/249).

Overall, oral presentation (OR = 2.11; 95% CI: 1.15-3.87), multicenter studies (OR = 2.67; 95% CI: 1.44-4.95), abstracts by University-based authors (OR = 1.80; 95% CI: 1.20-2.72), and funded research (OR = 2.15; 95% CI: 1.43-3.23) were more likely to be published (Table 1). Abstracts without rigorous statistical methods such as descriptive studies have 48% reduced odds of being published as manuscripts (OR = 0.52; 95% CI: 0.30-0.91). Disappointingly, among award winning abstracts (n = 61), only 25 (41%) were published and this was not different from non winners (OR = 1.09; 95% CI: 0.57-2.06).

Discussion

We evaluated the rate of publication of abstracts presented at the ACG meeting in 2008 and investigated factors that were associated with manuscript publication within 6.5 years of the meeting. Less than one third of the abstracts were published as full length articles in peer reviewed journals. Our analysis also revealed that studies with podium presentations, funded research, those conducted at multiple centers and those by University-based authors were more likely to be published as full manuscripts. Given that ACG meeting is an important clinical gastroenterology meeting, it is essential to encourage presenters to complete the process of their research by publishing their work as manuscripts in peer reviewed journals.

In previous studies, publication rate ranged from 25.1% to 69.8% for different gastroenterology society meetings with follow up of 4 to 5 years (Table 2). Some studies have evaluated place of origin of abstracts as a factor for manuscript publication and have reported higher publication rate among non-US originated studies [1, 3, 5]. We did not find a statistically significant association with place of origin of the abstracts; however, multinational studies had higher percentage of manuscript publication.

Abstracts selected for oral presentations or ACG awards are believed to have undergone more rigorous evaluations. We postulated that these should translate to higher rates of manuscript publication as full length articles. This was confirmed for abstracts presented at the podium in our study as they had a two-fold increased odds of being published as manuscripts. However, award recipients were as likely not to publish their research as non winners. This is quite disappointing. We note that the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) mandates all scientific session podium presenters to submit a full manuscript to the journal *Surgical Endoscopy* prior to the annual scientific meeting and failure to submit a completed manuscript results in forfeiting their privilege to submit a scientific abstract in future meetings (<http://www.sages.org/meetings/sages-presenter-information/>). We acknowledge that many authors do present preliminary data at annual scientific meetings and may still need additional time to complete their study. Therefore, it is difficult for us to recommend similar approach for presenters at all gastroenterology scientific meetings. Nonetheless, we opine that award winners and those

whose articles were selected for oral presentations should be encouraged to publish their manuscripts within 2 years of presentation. This will improve dissemination of important scientific information since these studies actually represent the best of the research presented at the meeting and getting their results to the public domain is of paramount importance. It is well known that academicians need to publish in peer-reviewed journals for career advancement and grantees need to publish to be competitive for future grants. Therefore, our finding that abstracts from University-based authors and funded research were more likely to be published is consistent with this.

Some authors have discussed possible explanations for the observed low manuscript publication rates from abstracts presented at scientific meetings. These included not having enough time or difficulty in collaborating with co- investigators, poor data or results that cannot pass vigorous peer-review process [3, 7]. Anecdotal evidence suggests that authors are less motivated to publish their studies particularly when the results are negative or contrary to their hypothesis or when their findings go against popular beliefs or generally accepted outcome. This underreporting of research is a major problem and negatively affects the public health benefits from scientific research such as limitations in including them in systematic reviews and meta-analysis [8]. Therefore, it is helpful if journals publish important negative studies.

As part of our evaluation of non publication of published abstracts, we randomly selected 180 (33%) of 542 unpublished abstracts in our study. The sample included 45 negative studies. We made multiple attempts to find email addresses of first and last authors of each selected abstract via a comprehensive online search of their names and affiliations. We also explored using correspondence email addresses provided by authors for other publications when available. In the end, we were only able to email authors of 99 (55%) abstracts. In the emails that we sent out, we asked the authors whether a full length manuscript was published for their presented abstracts in case we missed them. If publication occurred, we asked for the citation. For abstracts that were not published, we inquired whether a full manuscript was written for the presented abstract and submitted to a journal for publication. If not accepted for publication, we also inquired the number of times the manuscript was submitted to a journal for publication.

We believe that the difficulties in finding authors' email addresses are likely due to changes in institutional affiliations and non-public email addresses. This may be in part due to the reasonably long interval since abstract presentation. However, we believe this is necessary to give adequate time for authors to publish their work. Unfortunately, we only received 24 (24.2%) emails from authors. Of these, 12 (50%) abstracts were never written up while 3 abstracts were submitted up to 3 times and were rejected by journals before the authors gave up. However, 9 abstracts were published with some substantial modifications including changes in titles and authorship, which in part explained why we did not find them as published in our initial evaluation. Of the authors of the 23 negative studies contacted, only 2 authors responded and both stated that they did not write the manuscript for publication at all.

Nonetheless, even if we go by this analysis, only 9/24 (37.5%) of these abstracts made it to publication as full manuscripts. Hence, our inference is essentially unchanged. We need to improve the completion process of this essential dissemination of scientific knowledge.

There are notable strengths of our study. Our study included a large numbers of abstracts presented in a single year. The follow-up time of 6.5 years for all abstracts is the longest follow-up time that we are aware of on this topic. We also searched for publications in databases with good reputation for indexing articles of importance. However, our study has weaknesses. We did not analyze the abstracts rejected for presentation at the 2008 ACG meeting. However, it is more likely that publication rate would be lower among rejected abstracts, based on previously published studies [1, 3]. Although it will be quite unusual, but it is conceivable that some articles might have been published with a completely different title and/or taken over by other authors after presentation at the ACG meeting which may be why we could not find them in PubMed or EMBASE database. We did not interview authors of abstracts that we deemed not published to confirm whether they published their manuscripts and inquire about reasons why the studies were not published as full length articles. There may be some articles that were published only in other databases that we did not evaluate such as Google Scholar. However, we felt that these articles probably would not have undergone rigorous peer-review when compared to articles indexed in the databases we searched. Furthermore, we did not study time trend of publication rates from multiple ACG meetings which may demonstrate a change in publication rates over time. Of note, it has been reported that abstracts presented at the British Society of Gastroenterology during 1994-2002 showed a downward trend in full publication from 57.6% to 30.7% [4]. Similarly, a study of International Liver Transplantation Society meeting [5] reported a downward trend from 50.2% in 2004 to 30.3% in 2008. These reports are disturbing as they suggest a decline in dissemination of results of gastroenterology research.

In conclusion, less than a third of abstracts presented at ACG meeting in 2008 were published as manuscripts within 6.5 years after presentation. There is an urgent need to improve this important aspect of dissemination of important scientific information. Mentors should encourage their mentees to publish their presented abstracts as full manuscripts. This can be accomplished by having mentees draft their manuscripts before presentation at the scientific meeting. They can then incorporate the feedback received during the meeting in their manuscripts and submit them soon after wards. All researchers have moral obligations to disseminate the results of their research to the community, and publishing in peer reviewed journals is a way of accomplishing this.

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Figure 1. Time to manuscript publication after presentation at ACG meeting in 2008
- No. (%) of abstracts published

Figure 2. Manuscript publication according to subject category

Table 1
Characteristics of the published abstracts

Characteristics (n)	Number (%) of abstracts published	Univariate analysis (95% CI)	Multivariate analysis (95% CI)
Country of origin			
Non USA (n=100)	31 (31%)	Reference	Reference
USA (n=618)	184 (29.8%)	0.94 (0.60-1.50)	0.77 (0.46-1.29)
Multinational (n=73)	34 (46.6%)	1.94 (1.04-3.63)	1.38 (0.61-3.1)
Subject category			
Basic science (n=45)	12 (26.7%)	Reference	Reference
Clinical (n=746)	237 (31.8%)	1.28 (0.65-2.52)	1.69 (0.55-5.16)
Facility			
Community Hospital (n=227)	45 (19.8%)	Reference	Reference
University Hospital (n=564)	203 (36.2%)	2.29 (1.59-3.31)	1.80 (1.20-2.72)
Number of centers			
Unspecified (n=163)	41 (25.2%)	Reference	Reference
Single center (n=532)	152 (28.6%)	1.20 (0.80-1.78)	1.69 (1.03-2.78)
Multicenter (n=96)	56 (58.3%)	4.17 (2.43-7.14)	2.67 (1.44-4.95)
Prospective			
No (n = 446)	132 (29.6%)	Reference	Reference
Yes (n=345)	117 (33.9%)	1.22 (0.90-1.65)	1.06 (0.76-1.50)
Randomized studies			
No (n=636)	187 (29.4%)	Reference	Reference
Yes (n=155)	62 (40%)	1.6 (1.11-2.30)	1.21 (0.79-1.87)
Type of data			
Study data (n=747)	224 (30%)	Reference	Reference
Publicly available data (n=44)	25 (56.8%)	3.07 (1.66-5.69)	1.91 (0.93-3.96)
Funded research			
No (n=598)	159 (26.6%)	Reference	Reference
Yes (n=193)	90 (46.6%)	2.41 (1.72-3.38)	2.14 (1.43-3.23)
Statistical significance			
No (n=92)	33 (35.9%)	Reference	Reference
Yes (n=405)	150 (37.3%)	1.06 (0.66-1.70)	0.81(0.48-1.38)
Not applicable (n=294)	65 (22.1%)	0.52 (0.31-0.84)	0.52 (0.30-0.91)
Type of presentation			
Poster (n=728)	214 (29.4%)	Reference	Reference
Oral (n=63)	35 (55.6%)	3.00 (1.78-5.06)	2.11 (1.15-3.87)

Characteristics (n)	Number (%) of abstracts published	Univariate analysis (95% CI)	Multivariate analysis (95% CI)
ACG award winning abstracts			
No (n=730)	224 (30.7%)	Reference	Reference
Yes (n=61)	25 (41%)	1.57 (0.92-2.68)	1.09 (0.57-2.06)

Table 2
Abstract to Publication rate from different gastroenterology society meetings

Annual Scientific Meeting	Number of included abstracts in study	Publication rate	Duration of follow up (in years)
American Society of Gastrointestinal Endoscopy (ASGE) 1994 (1)	451	25%	4
European Pancreatic Club (EPC) 1994-95 (2)	340	59.7%	4-5
American Pancreatic Association (APA) 1994-95 (2)	254	54.3%	4-5
Digestive Disease Week (DDW) 1992-95 [*] (3)	836	54%	6
British Society of Gastroenterology (BSG) 1994-2002 (4)	4096	38%	4
International Liver Transplantation Society (ILTS) 2004-08 (5)	2345	38.9%	4
British Society of Gastroenterology (BSG) 1994 (6)	255	69.8%	5
Current study	791	31.4%	6.5

^{*} Analysis included only random sample of abstracts.