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Reporting of trials presented in conference abstracts needs to be improved

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Abstract

Objectives: To assess how trial information reported in conference abstracts differs to their subsequent full publication.

Methods: Randomized trials reported at the American Society of Clinical Oncology conference (1992) were identified. *CENTRAL* and PubMed (December 2002) were searched to identify corresponding full publications. A checklist (based on CONSORT) was used to compare abstracts for 37 trials with their full publication.

Results: Some aspects were well reported. Ninety-five percent of study objectives, 92% of participant eligibility, 100% of trial interventions, and 84% of primary outcomes were the same in both abstract and full publication. Other areas were more discrepant. Forty-six percent reported the same number of participants randomized in the abstract and full publication; only 22% reported the same number analyzed (median number analyzed per trial was 96 for abstracts and 117 for full publications). Eighty-two percent of trials were closed to follow-up in the full publication compared to 19% of abstracts. Lack of information was a major problem in assessing trial quality: no abstracts reported on allocation concealment, 16% reported on blinding and 14% reported intention to treat analysis. These figures were 49, 19, and 46%, respectively, for full publications.

Conclusion: The information given for trials in conference proceedings can be unstable, especially for trials presenting early or preliminary results, and needs to be improved.

Keywords: Poor reporting; Publication bias; Systematic reviews; Trial quality

1. Introduction

A large amount of health care research is first presented at conferences and meetings, and published as an abstract in the proceedings. However, only about half of the trials reported in this way are subsequently published in full [1], with failure to publish being associated with the significance of the trial results [2]. There are, however, concerns over the reliability and quality of trials published only in the proceedings of scientific meetings [3], and whether such information should be included in systematic reviews and meta-analyses [4]. Two of these concerns are the lack of sufficient information about the trial in the abstract and the robustness of the results in the abstract compared to those subsequently published in a full article. Our study addresses this by assessing how the content and quality of the information in a conference abstract differs to that reported in the subsequent full publication for a trial.

2. Methods

A total of 209 reports of randomized trials were identified from handsearching the proceedings of the American Society of Clinical Oncology annual conference in 1992. Full publications were identified for 125 of these through the next decade by searching *The Cochrane Central Register of Controlled Trials (CENTRAL)* in *The Cochrane Library* (Issue 4, 2002) and the U.S. National Library of Medicine's PubMed database (December 2002) for the first author (and subsequent authors if this was not successful). Retrieved publications were examined to see if the full report corresponded with the subject matter in the conference abstract. If multiple publications were identified, the full publication most closely corresponding to the conference abstract was selected, in regard to the randomized comparison and outcomes reported. All 40 trials in gastrointestinal cancer ($n = 17$), genitourinary cancer ($n = 11$), and lung cancer ($n = 12$) were selected for further examination.

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Three trials were later excluded; two were reported in full in languages other than English and one was found not to be a randomized trial based on the full publication.

A checklist was devised to extract and compare information in the abstracts with information in the corresponding full publications (Table 1). The checklist was adapted from existing reporting standards such as the CONSORT statement, for improving the quality of journal reports of randomized trials [5], and guidance on the structured reporting of journal abstracts and short reports [6,7]. Two reviewers independently read each conference abstract and full publication and recorded information for each item on the checklist, describing any differences. For example, the reviewers described what the trial objective(s) and primary outcome were (if reported) and whether this was the same in both reports (e.g., yes, no, or unclear). Similarly for numeric data, the number of participants in the abstract and full publication was recorded and differences identified. Any discrepancies were resolved by discussion.

Analyses were done using STATA (version 8.0). For each of the data items, the difference between what was reported in the abstract and in the full publication was tabulated. Statistical significance was assessed using the chi-square test or the Fisher Freeman Halton exact test. The difference between medians was analyzed using a paired *t*-test. A single estimate (%) of agreement was calculated to show how often the same information was reported in both the trial abstract and its corresponding full publication (Table 1).

3. Results

The median time from presentation at the conference to full publication was 31 months (IQR 20–51); range 1 month to 7 years. Changes in authorship between the abstract and the full publication were common. The most common being the addition of new authors; 31 trials had between 1 and 11 new authors listed on the full publication (median three). Seven of the 37 trials had the same title in the abstract and full publication. There was a minor change to the title for 20 trials and a major change to the title for the remaining 10 trials; for example, a different emphasis in the full publication and the conference abstract.

Information on whether a trial was single or multicenter was only available from the full publications. Thirty-four trials were multicenter, one was a single-center trial, and this was unclear for three trials. Information on source of funding was only available from the full publications: eight trials were funded by charitable grants, eight through multiple funding sources, four by industry, and three by the government. Fourteen trials did not describe their sources of funding. Details of ethical approval were also only available from the full publications: for 10 trials ethical approval was obtained either through the local ethics committee or the institutional review board, for seven trials ethical approval was not described in the full publication but was implied as patients gave informed consent before entering the trial, and no details of ethical approval or consent were given for 20 trials.

Most of the 37 trials clearly stated their study objectives with, as would be expected, more detail in the full publication. Just under half (44%) of the abstracts failed to report when the trial was conducted. No abstracts stated or described the method of allocation concealment compared to around half (46%) of the full publications (Table 1). Information on blinding was also poorly reported. Although it is recognized that it can be difficult to blind participants in

Table 1
Summary of agreement between conference abstracts and full publications

Criteria assessed		Abstract (n = 37)	Paper (n = 37)	Level of agreement (%)[a]
Objectives	Study objectives were described	35	37	95%
	Trial name or identifier given	14	13	30%
	Date of trial given	21	32	43%
Study design	"Trial" in the title	13	18	30%
	"Randomized" in the title	20	22	49%
Study quality	Method of allocation concealment was described	0	17	0%
	Method of blinding was described	6	7	16%
Participants	Characteristics of eligible participants were described	34	37	92%
Interventions	Experimental intervention was described	37	37	100%
	Comparator intervention was described	37	37	100%
	Participants randomized to experimental intervention were described	26	37	30%
	Participants randomized to comparator intervention were described	26	37	35%
Outcomes	Primary outcome measure was described	36	37	84%
	Trial status was described (e.g., closed)	7	32	19%
	Number of participants randomized was described	34	37	46%
	Number of participants analyzed was described	25	36	22%
	Intention-to-treat principle was described	5	17	14%
	Important adverse effects were described	26	33	70%
Results	Results for primary outcome were described	37	37	11%
Conclusions	Primary conclusions were described	34	37	73%

[a] This number represents the percentage of agreement between what was reported in the abstract and in the full publication.

some of the cancer trials investigated here, no information was reported for the blinding of outcome assessors, which may have been possible.

The majority of abstracts and full publications described the participants eligible for the trial and provided details of the experimental and comparator interventions. As would be expected, more information was available in the full publication, for example, on the inclusion and exclusion criteria and how the interventions were administered. The majority of trials reported cancer survival, time-to-disease progression or disease recurrence rates as the primary outcome measure, and the same primary outcome was reported for 31 of the 37 abstracts and corresponding full publications. Most trials were described as closed, and the intended period of follow-up had been completed in the full publication. This was the case for only seven trial abstracts; 14 were described as ongoing, and for 16 it was not clear if the intended period of follow-up had been completed.

Most trials included information on the number of participants randomized; this was unclear for three abstracts (Table 2). The median number of participants randomized per trial was similar in both the full publications and conference abstracts (median 120 [IQR 82–217] vs. 117 [IQR 72–233]). However, in the 34 trials that reported the number of participants in the abstract and full publication, six reported an increase of 10% or more in the full publication and three reported a decrease by at least 10%. Only 46% of abstracts and full publications reported the same number of participants randomized. Twelve full publications reported more participants compared to the abstracts, six of these abstracts reported interim analyses, and one failed to report an abandoned arm of a trial, which was reported in the full publication. Five trials described fewer participants randomized in the full publications compared to the abstracts.

The number of participants included in the analysis was less well reported, with only 8 of the 37 abstracts and full publications reporting the same number of participants analyzed (Table 2). For the 25 trials that reported the number analyzed in the abstract and full publication, the median number analyzed per trial was 96 (IQR 53–139) in the abstracts compared to 117 (IQR 73–213) in the full publications. Twelve trials reported an increase of at least 10% in the number analyzed in the full publication, and one trial reported more than 10% fewer analyzed. Approximately half (46%) of the full publications indicated that they had followed the intention-to-treat principle. This was unclear for the majority of the trial abstracts because of a limited amount of information.

Table 2
Number of participants randomized and analyzed

	Abstract (n = 37)	Paper (n = 37)
Number of participants randomized described	34	37
Total number of participants randomized	6,008	6,406
Median number randomized (IQR)	117 (72–233)	120 (82–217)
Range	8–612	8–612
Number of participants analyzed described	25	36
Total number of participants analyzed	3004	6013
Median number analyzed (IQR)	96 (53–139)	117 (73–213)
Range	8–462	6–612

Only four trials reported the same results in both the abstract and full publication. For 11 trials it was difficult to assess if the results would have been the same because of limited data in the abstract. The remaining 22 (59%) trials reported different results. This was primarily because the abstract presented preliminary trial results, follow-up was longer in the full publication, or both. Given that the type of results presented were rarely the same in both the abstract and its corresponding full publication, the type of summary statistic presented was also different. Sixty-six percent of full publications reported the size of the treatment effect and its statistical significance compared to 24% of conference abstracts. Examples of what was reported included the number of events in each group and P-value, survival analysis for each group and P-value, and the mean or median number in each group and P-value. Forty-three percent of abstracts and 32% of full publications only reported the size of the treatment effect, and 30% of abstracts reported only the significance of the trial results. Despite these changes, the conclusions of the abstracts and full publications were similar for 73%, with more detail in the full publication. Two trials reported conclusions in the full publication only, and one abstract reported that it was too early to give conclusions. However, for six trials the conclusions changed in an important way, such that a treatment reported as effective in the abstract was said to be less effective in the full publication, or vice versa.

4. Discussion

Although our study is based on a relatively small sample of trials, its findings are important especially in the context of other research. Just over half of trials presented at the American Society of Clinical Oncology in 1992 have been published in full, which is consistent with other areas of health care [1]. This being the case, many systematic reviewers will need to decide whether they should include information about a trial published in a conference abstract, if a fuller publication is not available.

Our study showed that changes in authorship and title between the conference abstract and full publication were relatively common. This has also been found in other studies [8–11], and may be an indication that research was ongoing at the time of submitting the abstract to the conference, and that a significant contribution to the research or manuscript preparation was made after that time.

Some aspects of trials were well reported, and there was generally a high level of consistency between the

conference abstract and full publication for these aspects. These included details of objectives, eligibility, interventions, and primary outcome measures. Based on these findings and previous research [8–12], it would appear that this type of information is relatively stable, and should allow one to decide if a trial reported as an abstract is eligible for a systematic review.

Other aspects were more poorly reported, and there were major changes between the abstracts and corresponding full publications. The most concerning of these were the number of participants randomized and then analyzed, which has also been noted in other studies [11–14]. Given this high level of disagreement, it was unsurprising that results were rarely consistent between the abstract and full publication. The most likely explanation for this is that many abstracts reported preliminary results of an ongoing trial, which was still recruiting participants or completing the specified period of follow-up. Survival was the principal outcome measure in the trials in our study, and it is therefore not surprising that full publications reported longer follow-up than conference abstracts.

In most cases, changes in the number of participants did not significantly affect the conclusions of the trial, but in a small number the change was sufficient that a treatment described as effective in the conference abstract was described as less effective in the full publication. This could have important implications, if the conclusions in an abstract were used to guide clinical practice. It could also have important implications for systematic reviews, especially for those reviews or meta-analyses containing only a small number of trials and reviews including a high proportion of trials reported only as abstracts. This impact would be particularly important if the abstracts had reported interim findings.

Our study highlights a number of important inconsistencies in the reporting of trials in conference proceedings compared to subsequent full publications. Without basic information about a trial it is difficult to assess the validity of its results and the importance of its conclusions; this may be the case for some conference abstracts. Ultimately, prospective registration of trials will enable systematic reviewers, and others, to identify all trials that have been conducted relevant to a particular health care question [15]. We also propose that, similar to the CONSORT statement for reporting randomized trials in journal articles [5], a modified version of CONSORT (such as a mini-CONSORT or another such pseudonym) should be developed to improve the reporting of trials presented in conference proceedings. This would serve several purposes. It would allow those assessing abstracts for presentation at the meeting to understand better how the trial was conducted. This should lead to higher standards for trials presented at the meeting, and help raise the professional credibility of the conference. A second benefit would be to allow users of the abstracts, such as those conducting systematic reviews, to do so more effectively and to assess the validity of the research more closely.

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