Can the Accuracy of Abstracts Be Improved by Providing Specific Instructions? 
A Randomized Controlled Trial 

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Context.—The most-read section of a research article is the abstract, and therefore it is especially important that the abstract be accurate.

Objective.—To test the hypothesis that providing authors with specific instructions about abstract accuracy will result in improved accuracy.

Design.—Randomized controlled trial of an educational intervention specifying 3 types of common defects in abstracts of articles that had been reviewed and were being returned to the authors with an invitation to revise.

Mean Outcome Measure.—Proportion of abstracts containing 1 or more of the following defects: inconsistency in data between abstract and body of manuscript (text, tables, and figures), data or other information given in abstract but not in body, and/or conclusions not justified by information in the abstract.

Results.—Of 250 manuscripts randomized, 13 were never revised and 34 were lost to follow-up, leaving a final comparison between 89 in the intervention group and 114 in the control group. Abstracts were defective in 25 (28%) and 30 (26%) cases, respectively ($P = .78$). Among 55 defective abstracts, 28 (51%) had inconsistencies, 16 (29%) contained data not present in the body, 8 (15%) had both types of defects, and 3 (5%) contained unjustified conclusions.

Conclusions.—Defects in abstracts, particularly inconsistencies between abstract and body and the presentation of data in abstract but not in body, occur frequently. Specific instructions to authors who are revising their manuscripts are ineffective in lowering this rate. Journals should include in their editing processes specific and detailed attention to abstracts.

THE ABSTRACT is by far the most widely read part of a research article. Much of the time it will be the only part that is read. In view of its importance, the accuracy of information provided by the abstract is critical. The purpose of this study was to test the hypothesis that specific instructions about abstract accuracy, provided to authors when manuscripts are being revised, will reduce the number of defective abstracts.

METHODS

The study was conducted in the main editorial office of Obstetrics & Gynecology, a monthly medical specialty journal. Annual submissions total 1600 to 1700, and the acceptance rate is 25% to 29%. All submissions undergo outside review, and all potentially acceptable papers are screened by a statistician. This journal uses a 4-part structured abstract for research reports (objective, methods, results, and conclusion).

The study population involved manuscripts reporting original research returned to the authors after review with an invitation to revise, from August 12, 1994, to December 5, 1995. For purposes of this study, when an eligible manuscript was to be sent back to the corresponding author, a clerk either did or did not include a printed sheet of instructions related to preparation of the abstract.

The instruction sheet, which represented the intervention, stated the importance of preparing an accurate abstract and identified 3 types of errors found: (1) inconsistency between data in the abstract and the body of the manuscript, (2) data or other information in the abstract not found in the body, and (3) conclusions in the abstract not based on information presented in the abstract. The author was urged to check his or her own abstract carefully for these defects.

When a revision was received, it was evaluated in our routine manner, including checking for completeness and for adequacy of responses by an editorial associate, who then copyedited the manuscript. As part of this process, the editorial associate scrutinized the abstract, verifying every datum or other bit of information in the abstract with those in text, tables, and figures. Any inconsistencies between abstract and body, any data or information in the abstract but not in the body, or any conclusions not based on information in the abstract were identified. If the editor confirmed that the abstract contained 1 or more such discrepancies, making it necessary to either contact the author for resolution or return the manuscript for additional revision, the abstract was considered defective for purposes of this study.

The editorial associate and the editor were masked with respect to assignment to intervention or control group, and there were no instances in which the author’s response unmasked the assignment. At the conclusion of the study, the assignment code was broken, and the
were analyzed by instructed and uninstructed groups proportion of defective abstracts in the losses, we enrolled 250 manuscripts. The 100 in each arm. Because of anticipated and b the intervention, and assuming assumed reduction from 25% to 10% with the intervention, and assuming of .80, we projected a sample size of 100 in each arm. Because of anticipated losses, we enrolled 250 manuscripts. The proportion of defective abstracts in the instructed and uninstructed groups were analyzed by χ² test.

RESULTS

Of 250 manuscripts enrolled, 119 were assigned to receive the instruction sheet and 131 to the uninstructed or control group. Thirteen manuscripts were withdrawn (ie, a revision was not returned) and 34 were otherwise lost to follow-up analysis, leaving for final analysis 89 in the intervention group and 114 controls (Figure). One or another of the types of defects was identified in 25 instructed abstracts (28%); 95% confidence interval [CI], 19%-37%) and in 30 uninstructed abstracts (26%; 95% CI, 18%-34%), insignificant differences (P = .78). With respect to specific type of defect found, 28 of the 55 defective abstracts (51%; 95% CI, 38%-64%) had inconsistencies with the body of the manuscript, 16 (29%; 95% CI, 17%-41%) contained data or other information not found in the abstract, 15 (25%; 95% CI, 10%-39%) had both types of defects, and only 3 (5%; 95% CI, 3%-7%) contained inconsistent or unjustified conclusions. There were no differences apparent between intervention and control groups with respect to type of defect found.

The proportion of manuscripts withdrawn or otherwise lost to analysis was large, and the distribution between intervention groups was disproportional. Of the 13 withdrawals, 4 had been assigned to the instructed groups and 9 to the uninstructed. Of 34 otherwise un

available, 26 had been assigned to the intervention group and 8 to the control group. We recalculated the results with the assumption that none of the 30 withdrawn or unavailable manuscripts assigned to the intervention would have been returned with defective abstracts, and that 9 (56%) of the 16 unavailable or withdrawn manuscripts assigned to control would have had defective abstracts. Under these highly unlikely conditions, the number of defective abstracts would be 25 (21%; 95% CI, 14%-28%) of 119 in the instructed group and 39 (30%; 95% CI, 22%-38%) of 131 in the uninstructed. This difference is still not statistically significant (χ², 2.12; P < .15).

COMMENT

The abstract of a research article, it could reasonably be argued, is the most important part of the article. It is by far more likely to be read than any other section of the report. The ubiquitous availability and widespread use of automated literature search mechanisms, which provide an (often truncated) abstract, have done nothing but increase this likelihood.

Given the importance of the abstract, the proportion of abstracts that are defective should be as low as possible. Roberts and associates examined the quality of abstracts in 4 journals: American Journal of Obstetrics and Gynecology (July 1996 issue), Pediatrics (October 1996 issue), JAMA (July 26, August 2, and August 9, 1995, issues), and The New England Journal of Medicine (August 29, September 5, and September 12, 1996, issues). The results of this analysis of published abstracts are summarized in the Table. Surprisingly, the proportion of abstracts was high.

Abstract Defects in Published Articles

<table>
<thead>
<tr>
<th>Journal</th>
<th>Defective Abstracts, No. (%)</th>
<th>Inconsistency Not in Body</th>
<th>Both conclusion</th>
</tr>
</thead>
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<tr>
<td>American Journal of Obstetrics and Gynecology</td>
<td>19/36 (53)</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>13/20 (65)</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>JAMA</td>
<td>7/14 (50)</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>The New England Journal of Medicine</td>
<td>3/11 (27)</td>
<td>1</td>
<td>2</td>
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Reporting of Randomized Clinical Trial Descriptors and Use of Structured Abstracts

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Context.—Structured abstracts, that is, abstracts that describe a study using requisite content headings, provide more informative content. Concomitant reporting in the text of the report might improve with structured abstract use because of increased awareness by authors or editors of important study areas associated with content headings.

Objective.—To assess whether structured abstract use is associated with improved reporting of randomized clinical trials.


Main Outcome Measures.—We measured the inclusion of 56 criteria derived from Consolidated Standards of Reporting Trials (CONSORT) descriptors (JAMA 1996;276:637-639) in the text of each report and calculated the number of criteria included per report and the proportion of reports including individual criteria. Reports with structured abstracts were compared with those without, and reports published in 1993 and 1994 in the American Journal of Ophthalmology were compared with those published in 1991 and 1992.

Results.—The mean (SEM) number of criteria included by authors was 15.8 (4.0) per report in 125 trial reports. We found no difference in the mean number of criteria included or the proportion of reports that included specific criteria by journal. Following structured abstract use, there was no difference in either the mean number of criteria per report or the proportion of reports including a majority of criteria within each CONSORT subheading. Four criteria were included more often and 2 less often following structured abstract use in individual journals.

Conclusion.—Using CONSORT descriptor criteria to evaluate reporting quality, we found no difference in text reporting associated with structured abstract use in the journals examined.