

Experience, Expertise, or Specialty? Uses and Misuses of a Reference

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- **OBJECTIVES:** We wanted to analyze systematically the manner in which the results of a published study are presented in subsequent publications that refer to it.
- **STUDY DESIGN:** We identified a convenience sample of 121 scientific papers that referred to an often-cited 1996 study by Kitahata and colleagues. This study reported that greater primary care physician experience with AIDS was associated with lower mortality among their patients with AIDS.
- **OUTCOMES MEASURED:** We determined the manner in which the results of the Kitahata and coworkers study were presented, the type of article, and whether its focus was on HIV care.
- **RESULTS:** Most of the articles reviewed (78%) appropriately referred to the study as evidence of improved outcomes with increasing provider experience. However, 8% of the articles reviewed referred to the study as evidence of improved outcomes with specialty care and 3% referred to it as evidence of the benefits of expert care. Articles that referred to the study as evidence of improved outcomes with specialty care were more likely to be review articles and articles with a non-HIV focus.
- **CONCLUSIONS:** This study demonstrates that misrepresentation of the findings of published studies is not uncommon. More needs to be done to ensure the accuracy of references in scientific publications.

key words Publication; peer review; primary health care; specialty; AIDS. (J Fam Pract 51:168)

References provide the foundation for scientific publications, particularly for review articles and editorials. Readers must rely on the honesty and integrity of the authors or go through the painstaking work of finding and verifying the references themselves. Previous research indicates that errors in references are common but usually minor and do not necessarily detract from the authors' argument or conclusions.^{1,2} More serious errors have been found, however, in the form of misleading or erroneous quotations.^{3,4}

In 1996, Kitahata and colleagues published a study "to determine whether more experience with the management of AIDS on the part of primary care physicians is associated with increased survival among their patients with AIDS."⁵ They found that patients with AIDS cared for by physicians who had the least experience with AIDS survived for significantly less time than did those cared for by physicians with the most experience. The least-experienced physicians were defined as those who had only 1 patient with AIDS and a low level of residency experience with AIDS. The most-

experienced physicians had either 6 or more patients with AIDS or 2 to 5 such patients and a high level of residency experience. This study was not a comparison of generalists with specialists; most of the physicians (85%) were general or family practitioners and the remainder were internists.

Since then, the study has been frequently cited in a variety of contexts, from discussions of HIV and AIDS care to more general discussions on the relationship between physician experience and patient outcomes. We undertook the current study after observing that some articles referred to the Kitahata study as evidence of the benefits of specialty care. The goal of this study was to review systematically the articles that refer to this publication and to analyze the conclusions that authors draw from the paper.

■ METHODS

We identified articles that referred to the Kitahata et al study through the Scientific Citation Index (maintained by the Institute for Scientific Information). We reviewed a convenience sample of articles—those in journals available in 1 of 2 major local health sciences libraries (including online links). Letters to the editor were excluded. Each article was reviewed by the authors and the following information collected: (1) type of article (original research, review, editorial, or other); (2) whether the focus of the article was on HIV care or another topic; and (3) the passage in which the Kitahata et al article was first mentioned. Each passage was independently assessed by the authors and classified by the assertion made; namely, whether patient outcomes are related to experience, expertise, specialty, or none of the above. If there was initial disagreement on the classification of the passage, the final decision was made by consensus. The relationship between the type and focus of the article and the assertion made was investigated using Fisher's exact test.

■ RESULTS

As of July 31, 2000, 142 articles were listed on the Scientific Citation Index that had referred to the paper by Kitahata and coworkers. Twelve (8%) were in journals not accessible through either of 2 major local health sciences libraries. Nine letters were excluded from the analysis. A total of 121 articles were reviewed (85% of total); the results are summarized in **Table 1**. Ninety-four of the articles reviewed (78%) were focused on HIV-related topics. Sixty-three (52%) of the articles were original research papers; 35 (29%) were review articles; 15 (12%) were editorials; and 8 (7%) were other types (4 program descriptions, 1 program proposal, 1 conference report, and 2 commentaries).

Ninety-four of the papers reviewed (78%) referred to the Kitahata et al study as evidence of the association between experience and patient outcomes ("experience articles"). Ten of the papers (8%) referred to the study as evidence of the benefits of specialty or specialized care ("specialty articles"); quotations from those papers are shown in **Table 2**.⁶⁻¹⁵ Four of the papers reviewed (3%) referred to the study as evidence of the benefits of expertise or expert care ("expert articles"); these quotations are shown in **Table 3**.¹⁶⁻¹⁹ Thirteen of the articles reviewed (11%) listed the study as a general reference or cited it for reasons other than making an assertion about the relationship between health care provider characteristics and patient outcomes. On the initial review, the authors' classification of the passage differed for only 5 (4%) of the 121 articles reviewed; all of these were ultimately classified as "experience" or "other" articles.

"Specialty articles" were more likely to be non-HIV related (80%) than HIV related, while "experience articles" were more likely to be HIV related (81%); this difference was statistically significant ($P < .001$). "Specialty articles" were also more likely to be reviews or editorials (80%); most of the "experience articles" were original research (59%); the P value for this difference was 0.02 by Fisher's exact test.

■ DISCUSSION

This study illustrates the various ways in which the results of a single study are interpreted and conveyed to readers of scientific papers. The study by Kitahata and colleagues was a comparison of generalists with varying levels of experience. It was not a study of specialists or specialized care; nevertheless, it was presented as such in 8% of the articles reviewed. Another 3% cited the study as evidence of the benefits of "expert care"; this is perhaps justifiable, but the study did not measure expertise, and the leap from experience to expertise is questionable, at best.

There are a few possible explanations for the authors' misrepresentation of the article by Kitahata et al. The most obvious explanation is that the authors in these situations were willing to manipulate the results of the study to bolster their argument. Most of the articles that referred to this study as evidence of the benefits of specialized care (8 of 10) were review articles on the topic of specialized care^{8,15} and half of those were focused on hospitalism^{9,11-13}; these are settings in which the authors may have had an incentive to present the study in this manner. It is possible, however, that the authors felt free to extrapolate from the results of this study and argue that since a relatively modest increase in experience improves outcomes, an even greater increase (ie, specialization) would improve outcomes even more. However, this argument was never explicitly made in these examples. A few of the articles reviewed did make this type of argument, but we classified these as "experience" articles. A final possible explanation is that the authors used a previous author's reference without reviewing the study themselves; however, this seems less likely, since the title of the study clearly states that physician experience was the variable studied.

Limitations

Our study has a number of limitations. The source article was not chosen randomly, but was based on an observation of misrepresentation, so the frequency of misuse may be higher than with other articles. However, the misquotation rate found in this study is consistent with previous studies. One analysis of 6 journals reported a misquotation rate of 15%; 8% of these were felt to be major errors.³ A second study found 37 major quotation errors in 150 randomly selected references from 137 different articles.⁴ Another limitation of this study is that not all the articles that cited the study were analyzed; however, the number of unanalyzed studies is fairly small (8%) and unlikely to affect the overall conclusions.

■ CONCLUSIONS

Authors of scientific papers have a responsibility to convey accurately the information they have gathered to their readers. This study suggests that some authors are willing to bend or break this rule. It is unlikely that reminders about adherence to the responsibilities of authorship will alter this habit. Increased scrutiny of references in the peer-review process, although difficult, is most likely the only way to guard against these types of manipulations and misrepresentations.

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