

The others

Reference citation accuracy in the *Journal of Anesthesia*

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Abstract: To determine the accuracy of the bibliographic citations in the *Journal of Anesthesia*, all references appearing the years 1987 (Vol. 1; $n = 548$) and 1994 (Vol. 8; $n = 1839$) were sequentially numbered and 100 references from each year were randomly selected. After citations of non-journal articles were excluded ($n = 8$ in 1987; $n = 7$ in 1994), the remaining 185 citations were scrutinized. The authors' names, article title, journal title, volume number, page numbers, and year were examined for each reference. A reference was deemed correct if each element of the citation was identical to its source. Of the references examined, 41% and 42% in 1987 and 1994, respectively, contained one or more errors. The elements that were inaccurate most often were, in descending order of frequency, article title, author, and page number. No significant differences existed in the error rate between the two years. We have demonstrated a considerable level of citation error in the reference lists of the *Journal of Anesthesia* articles, and no improvement over the last seven years. We recommend that contributors to the *Journal of Anesthesia* should carefully check the accuracy of their reference listings.

Key words: Publications, Documentation, *Journal of Anesthesia*

Introduction

The accuracy of reference lists is one criterion of a good scientific journal. A report published in 1992 indicated that four anesthesia journals with established worldwide reputations had many citation errors in the reference lists. The journals were *Anesthesiology*, the *Canadian Journal of Anaesthesia*, *Anesthesia and Analgesia*, and the *British Journal of Anaesthesia* [1]. However, no report has been published on the accuracy of reference lists in the *Journal of Anesthesia*, which is the official journal of the Japan Society of Anesthesiology. Thus, we conducted the present study to examine and

compare the variety and frequency of citation errors in this journal, based on volumes published in 1987 and 1994.

Materials and methods

The *Journal of Anesthesia* was first published in 1987. We chose this as the first year for our study and, beginning with the first reference in the first issue (issue No. 1) and ending with the last reference in the last issue (issue No. 2), numbered every citation sequentially ($n = 548$). Using a random number generator (PC-G801, Sharp, Osaka, Japan), we chose 100 references. References to nonjournal items, such as books and book chapters, were excluded from the analysis, leaving a total of 92 references for scrutiny.

A reference form was prepared, which helped identify any citation by its sequential number and the journal issue in which it appeared. Data fields for the cited references corresponded to six standard elements of bibliographic citation: authors (including correct number, order, initials, and spelling), article title, journal title (including proper *Index Medicus* abbreviation), volume number, page number, and year.

Citations were verified by comparison with the original publication (primary source). If our institution did not own the source, it was obtained through the interlibrary loan system.

Citations containing no errors were classified as "correct." If an error existed in any element, the citation was classified as "incorrect." We defined a citation that contained more than one error as having "two or more errors." If the citation contained two or more mistakes in one element only, it was assigned to the category of "one error."

An error that would potentially impede retrieval of the original paper was regarded as "major." This included (1) errors that were completely different from the original (not typographic errors), and (2) typographic errors in the "volume," "year," or "page" (the first page of a reference) fields. If only the last page was

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different, it was regarded as a minor error. In contrast, punctuation errors and typographic errors in other fields (author, title, journal, or the last page of a reference) were regarded as minor. These errors probably do not prevent readers from retrieving the original manuscript.

Similarly, we identified 100 references from 1994 issues (issue Nos. 1–4; $n = 1839$) of the journal, and analyzed 93 of those references; the other seven references pertained to non-journal items.

Data are presented as frequency or percent, overall and by element, for each year. Differences in frequency and percent of errors between the years 1987 and 1994 were tested for statistical significance using the χ^2 test. Fisher's exact test with an $r \times c$ contingency table was used when assumptions underlying the χ^2 method were not met. $P < 0.05$ was deemed significant.

Results

As shown in Table 1, many references contained an error in at least one element of the citation (41% in 1987 and 42% in 1994). In 1987, 8.7% of references contained two or more errors. In 1994, this figure was 7.5%. Error rates did not differ between the two years.

Table 2 shows the distribution of errors in the six chosen bibliographic elements. "Title" errors were the most common in both years, occurring in nearly 36% of the incorrect references. Errors in the authors' names was the second most common fault, followed by page number errors. Errors in journal title, volume number, and year were less frequent. The distribution of errors was similar in the two years.

Most of the citation errors were minor. However, four of the references from 1987 and 1994 had major

Table 1. Number of errors per citation in each year

Number of errors per citation	1987		1994	
	Frequency	Percent	Frequency	Percent
0	54	58.7	54	58.1
1	30	32.6	32	34.4
2 or more	8	8.7	7	7.5
Total	92	100	93	100

Table 2. Distribution of errors among each of the six chosen bibliographic elements

Bibliographic element	1987 ($n = 92$)		1994 ($n = 93$)	
	Frequency	Percent	Frequency	Percent
Title	17	18.5	21	22.6
(spelling or typographic)	(13)		(15)	
(different or missing word)	(4)		(6)	
(incomplete title)	(1)		(2)	
Author	17	18.5	13	14.0
(spelling or typographic)	(17)		(12)	
(missing author)	(4)		(1)	
Page	6	6.5	7	7.5
(different or missing page)	(1)		(5)	
(different only last page)	(5)		(5)	
Journal	4	4.3	2	2.2
(spelling or typographic)	(3)		(1)	
(incomplete journal name)	(1)		(0)	
(different journal)	(0)		(1)	
Volume	2	2.2	3	3.2
(different volume)	(2)		(2)	
(missing volume)	(0)		(1)	
Year	2	2.2	3	3.2
(missing year)	(2)		(2)	
(different year)	(0)		(1)	
Total	48	52.2	49	52.7

errors such as incorrect page numbers, volume, or year. Two references in 1994 had serious errors: in one case, only "title" and "author" fields were correct; the other four elements were incorrect. In another, the "volume", "page", and "year" were missing. We had great difficulty in retrieving these references and had to use computer retrieval (MEDLINE, IGAKU-CHUO-ZASSHI) to find them. We show the two references as printed in the Journal, and the corrections necessary, in the appendix.

Discussion

Accurate reference lists provide readers with useful information for their studies. Nothing could be more frustrating for readers than to uncover an unidentifiable reference. Reference lists with which care has obviously been taken prevent this sort of frustration. Thus, reference accuracy in a paper is essential. We believe that the correct citation of references will upgrade the quality of a journal. Although contributors to any journal have an obligation to cite references accurately, many of them fail to do so.

In 1992, McLellan et al. [1] called the attention of authors and readers in the field of anesthesiology to the inaccuracy of the reference lists observed even in the aforementioned esteemed journals. Thus, we compared the frequency of citation errors in the *Journal of Anesthesia* between 1987 and 1994 to determine whether or not the accuracy of the reference lists had improved after the study by McLellan et al. We found many citation errors in both years. Between the two years, there were no differences in the frequency (41% and 42%) and variety of the errors. However, the error rates in the *Journal of Anesthesia* seem no higher than those in the four anesthesia journals examined previously (44%–56%) [1].

We conducted a similar study for the years 1990 and 1994 on the *Canadian Journal of Anaesthesia*, *Anesthesia and Analgesia*, and the *British Journal of Anaesthesia*. In the *Canadian Journal of Anaesthesia*, the error rate has decreased from 48% to 22% ($P < 0.05$) [2]. After McLellan's report, the editors of the *Canadian Journal of Anaesthesia* began to ask contributors to verify reference citation accuracy and submit photocopies of the first page of each of the references

quoted when they were requested to revise their manuscripts. In the other journals, which did not change their editorial policy after the warning, the rate of citation errors did not decrease significantly (from 36% to 38% in *Anesthesia and Analgesia* [3] and from 47% to 36% in the *British Journal of Anaesthesia*, $P > 0.05$). Thus, this improvement of citation accuracy in the *Canadian Journal of Anaesthesia* may be due to the reference check system now used by editors and contributors. Such an editorial strategy may be necessary to decrease the citation errors in the *Journal of Anesthesia*. Furthermore, contributors should check the accuracy of the reference lists thoroughly, especially of the "title" and "author" elements, because errors in these field seem particularly common.

In conclusion, we found many citation errors in the reference lists of the *Journal of Anesthesia* and no reduction in this carelessness in the last seven years. Any contributors to the *Journal of Anesthesia* should carefully check the accuracy of their reference lists so that the value of the journal may be further enhanced.

Appendix

The **underlined parts** in (a) are incorrect; corrections are shown in square brackets.

- (a) Owen H, McMillan V, Rogowski D (1989) Postoperative pain therapy: a survey of patients' expectations and experiences. Anesth Analg 68:645–648 [1990, Pain, 41:303–307]
- (b) Sakura S, Nonoue T, Nomura T, et al. Differences in the assessment of postoperative pain when evaluated by patients and doctors. *J Anesth* [(1993), 7:287–292]

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3. Nishina K, Asano M, Mikawa K, Maekawa N, Obara H (1995) Accuracy of reference in *Anesthesia and Analgesia* does not improve. *Anesth Analg* 80:641–642