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Reference Accuracy in Four Respiratory Medical Journals

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References are essential components of published articles [1, 2] and serve a number of important and useful functions [3]. Thus, the accuracy of references is critical [4]. Our study aimed to evaluate the current frequency of reference errors in the field of respiratory medicine over a 5-year period.

The four widely circulated major peer-reviewed respiratory medical journals: *Respiratory Medicine*, *European Respiratory Journal*, *Thorax*, and *Respiration* were selected for investigation. All issues of the journals between 2004 and 2008 were investigated. For each journal, references from articles were consecutively numbered, and, using a random number generator, 100 references were selected from each journal. Each cited reference was then compared against the MEDLINE and checked for accuracy, including the authors' names, the title of the article, the title of the journal, volume and page numbers, and publication date. Errors were graded as suggested by Sutherland et al. [5]: grade I errors are those that have little or no impact on the value of the reference (error in author initials, missing author, wrong journal abbreviation or spelling); grade II errors are those detract significantly from the value of the references (missing subtitle, missing page numbers, wrong page numbers, or inaccurate title), and grade III errors are those that prevent the quoted paper from being located.

The citation error numbers are recorded as number and percentage according to the error grade.

The total number of citations with errors among all published journals was 103 (25.8%). The number of references with errors ranged from the lowest error rate of 22% for the *European Respiratory Journal* to the highest of 31% recorded for the *Respiratory Medicine* and bibliographically classified errors for all journals are presented in table 1.

Our study of respiratory medical journals gave a prevalence of citation errors of 25.8%. The rate of citation errors in respiratory medicine is lower than the median rate of biomedical journals (median 36%, range 4–66.7%) [6]. Errors in citation reflect poorly on the author, the validity of the article, the peer review process, and the reputation of the journal [1, 3, 7].

The problem of inappropriate citations is not so easily solved, and would require prodigious effort on the part of reviewers, editors or journal staff members [2]. The ultimate responsibility for and solution to the problem of citation inaccuracies and misuse must lie with authors themselves [8]. Authors must be more vigilant and precise in their referencing practices and in the final review and reading of galley proofs [2, 9]. They should also always check the original source when citing references used in other articles [2, 9].

How can errors in references be reduced? Obviously, submission of photocopies of the first and last page of all references cited in the submitted article [2, 3, 8, 9] and this has been effective in reducing citation errors [1]. Alternatively, spot checks of the references by editors or reviewers may also be effective [1, 3, 4]. The direct downloading of references from MEDLINE [1, 2, 4] downloadable E-Journals [2, 7], or the use of referencing software (such as End-note) [2, 7] to avoid errors instead of copying them manually from the original article may help to avoid errors [1, 3, 9], although computerized databases can themselves contain errors [2]. Other precautions may include citational or quotational con-

Table 1. Incidence of citation errors in three respiratory medical journals and distribution of citation errors among each of the five bibliographic parameters

Journal	Number of references		Number of citations with			Total number of citation errors	Number of citation errors					Not found
	published over 5-year period	actually reviewed	grade I errors	grade II errors	grade III errors		authors	title	journal	volume	pages	
RM	38,985	100	19	12	–	31	16	13	1	–	2	–
ERJ	67,340	100	12	7	3	22	6	11	–	2	1	–
T	38,905	100	14	7	3	24	12	6	–	1	2	–
R	17,705	100	17	7	2	26	16	7	–	–	1	2

RM = *Respiratory Medicine*; ERJ = *European Respiratory Journal*; T = *Thorax*; R = *Respiration*.

sultants in the editorial offices [2, 4, 9], limitations of the number of references [2, 4, 9, 10], or adopting a uniform system of citation for all journals in a given field, thereby creating a standard by which citations could be compared electronically against a scrupulously accurate database [2, 9]. Additionally, technical editing may therefore improve the accuracy of citations [2, 6]. All of these suggestions have the potential to further decrease the frequency of errors.

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