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LETTER TO THE EDITOR

How accurate are references in *Trace Elements and Electrolytes*?

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Sir, – Providing background material for the subject of any kind of scientific article is done by citing references. They demonstrate to the reader that the author has researched the topic in question comprehensively. Therefore, the accuracy of journal article references should be of significance to all authors, reviewers, and readers. Biebuyck [1] stated that “the purpose of scientific citation is at least 3-fold: to credit the original workers in the field; to relate to the authors’ methods and findings; and, importantly, to enable readers to locate and consult the referenced materials.” It has now been more than a century since a library assistant complained about insufficient verifying of references by medical writers [2]. Unfortunately, ever since citation errors continued to appear [3]. Previous studies have shown that references in published articles frequently contain mistakes; reference error rates of 8% up to 66% have been found in journals of several medical or scientific specialties, see for example [4, 5, 6, 7, 8]. A recently published study found a mean rate of major errors of 11.9% [9].

To my knowledge, no study has been done to assess the accuracy of references in trace element medical journals [9]. The aim of this study was to determine the reference error rate in *Trace Elements and Electrolytes*. Volume 31 (2014) of the journal was

selected for the study. It comprised 26 originals, 34 abstracts, 5 letters to the editor, and 1 book review. All contributions containing references, ranging from 1 to 70 items and summing up to 879 references, were edited. However, cited books, government documents or web pages were excluded, resulting in 810 references of which 643 (79.4%) were verified by comparing the bibliographic citation with the original publication. Citations were reviewed with regard to six standard elements of bibliographic citation: authors, article title, journal title, year, volume numbers and page numbers. A judgement was made for every incorrect reference: according to Raja and Cooper [6] and Siebers [7] an error was considered as a major error when finding the information to which the reference referred to was hampered. That is, because searching through wrong journals, volumes, and pages is tedious and consumptive of time. If multiple errors occurred in a single element, only 1 error was noted.

Subsequent data are presented as frequencies of number of errors per citation and as percentage (%). 26 (4.0%) of all references examined contained at least 1 error and 5 (0.8%) contained 2 mistakes (Table 1); no reference displayed 3 or more mistakes within different standard elements of bibliographic citation.

The most frequently occurring mistakes were found in the bibliographic element “author’s name” with 16 cases (44.4%), followed by wrong “pages” with 8 cases (22.2%) and incorrect “volume number” or “journal title” both with 4 cases (11.1%). Only 3 cases (8.3%) were found to be wrong in “article title” and 1 case (2.8%) displaying a wrong year.

To illustrate one case, although rarely occurring, with two major errors within one citation, the following example is given (flawed words are underlined):

*Boza JJ, Moendoz D, Vuichoud J, Jarret AR, Gaudard-Weck D, Fritsche R, Donnet A, Schiffrin EJ, Perruisseau G, Ballever O. Food deprivation [...]. *Am Sc for Nutritional Sciences*. 1999; 129: 1340-1346.*

The correct bibliographic citation should have been as follows:

*Boza JJ, Moënnoz D, Vuichoud J, Jarret AR, Gaudard-de-Weck D, Fritsché R, Donnet A, Schiffrin EJ, Perruisseau G, Ballèvre O. Food deprivation [...]. *J Nutr*. 1999; 129: 1340-1346.*

Table 1. Number of major errors per citation.

Number of major errors per citation	Frequency	Percent
0	612	95.2
1	26	4.0
2	5	0.8
Total	643	100

Accurate lists of references provide readers with useful information and in the case of extended incorrectly cited references the credibility of a journal may be damaged. Copying a reference citation from bibliography of another publication, rather than obtaining the original source and verifying the accuracy of the citation, is a common practice in medical writing [9]. Fortunately, the results presented here showed much more lower faultiness in citing references than in other medical journals. Less than 5% of the scrutinized references (of a total of 643) contained only 1 or 2 major errors. The reasons for this encouraging finding are, however, unclear. One may speculate that editing of submitted manuscripts within the editorial office as well as increased responsibility of authors (and reviewers) had enhanced freedom from errors. On the other hand, the influence of the booming of open access publications [10] as well as general online journals in the digital age [11] is uninvestigated regarding citation patterns yet. Further studies within the field of trace elements remain.

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