

References in Indian Pediatrics: Authors Need to be Accurate

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Manuscript received: May 5, 2004, Initial review completed: July 19, 2004;

Revision accepted: July 23, 2004.

To determine the accuracy of references published in Indian Pediatrics, we reviewed the reference lists appended to the original articles published in Indian Pediatrics during the year 2002 (volume 39) for citation and quotation accuracy. A total of 176 references out of 322 cited in 17 original articles could be retrieved from available resources. Errors of citation were found in 69 (39.2%) references while errors of quotation were found in 15 (8.6%) references. The most common errors were those in the name of authors and title of the article. Contributors should make serious efforts to check the accuracy of the references cited in their manuscripts.

Key words: *Citation, Error rate, Indian Pediatrics, Quotation, Reference.*

REFERENCES are an integral part of manuscripts published in scientific journals. They serve as an important tool in providing credibility to the published literature and help in retrieval of the cited and related information. To be useful, references need to be cited and quoted correctly. References are akin to mortar, which not only binds the bricks together in a wall but also lends it the most vital things, *i.e.*, strength and durability.

Inaccurate references reflect poorly on the authors and also hinder search for additional sources of reading. There are two types of reference errors: (a) when the information allowing identification of the source is incorrect (authors' names, article title, journal name, *etc.*), this is an *error of citation*; and (b) when the referenced statement does not reflect the content of its source, this is an *error of quotation*.

Indian Pediatrics publishes over 25 manuscripts in each issue, citing 250-300 references between them. The journal does not

have any full time editorial staff to verify cited articles. Reviewers are not expected to verify each reference from the original source. Doing this exercise at the editorial or office level is not only impractical but would also increase the editorial load leading to publication delay. Thus, the prime responsibility of checking the accuracy of references in the journal articles rests with the authors. Several reports of errors in citation and quotation have been noted in different journals belonging to different specialities(1-11). Satyanarayana and Ratnakar in 1989 reported an error rate ranging from 10-90% in 7 selected Indian journals(12). In the recent years, none of the indexed Indian journals has attempted a dissection of its own reference lists, in a holistic manner. This study was conducted to find the error rate in citation and quotation in original articles published in Indian Pediatrics over a period of one year.

Subjects and Methods

We examined all of the 12 issues of Indian

Pediatrics from year 2002 (Volume 39). Only original articles were chosen for review in each selected issue. Lists of references appended to each of these articles were retrieved and combined into a single list, beginning with those from the first original article of January 2002 issue and ending with the last original article of December 2002. References to non-journal items such as books, book chapters, monographs, dissertations, electronic websites, proceedings of the scientific meetings, dictionaries, and references in journals not found in Index Medicus were excluded because of limitations on their retrieval. For the remaining references, original of each was located from the library. Those not available in the library were acquired from the publishers or the original authors.

Verifying accuracy of citation: Each article, thus retrieved in original was compared to the citation in reference list in respect of each of the following elements: (i) name of the authors including spelling, initials, order and number; (ii) title of the article including spelling and punctuation; (iii) journal including correct abbreviation as listed in Index Medicus; (iv) year; (v) volume and supplement indicator, if applicable and (vi) page numbers including first and last page number as per the guidelines for authors issued by Indian Pediatrics. A citation form was utilized to enter the above items. A citation was labeled as incorrect if there was an error in any of the above elements.

Citation errors were classified as major or minor. *Major citation errors* were defined as those which prevented immediate location of the article cited and included incorrect or omitted volume or supplement number, year of publication and inaccurate pagination not overlying the correct pages. Originals of references with major errors could be

retrieved following their identification using other parts of the citation and PubMed search engine. *Minor citation errors* did not prevent location of the article and included omission or inaccuracy in the name, order or number of co-authors, abbreviated or incomplete article title and incorrect pagination that overlapped the correct page numbers.

Verifying accuracy of quotation: All the articles retrieved in original were also checked for their contents and whether these were quoted correctly in the original articles from Volume 39 of Indian Pediatrics. The errors of quotation were identified by a consensus of all authors and classified in two categories: (a) *irrelevant* where the reference quoted does not relate to the assertion made by the author and (b) *distorted* where the fact in the original reference has been distorted and quoted in the paper. These two types of errors can also be labeled as major and minor quotation error, respectively. Whenever a reference was quoted more than once, all statements were checked.

Verifying sequencing of references in text and reference list. All the original articles in 12 issues of Indian Pediatrics 2002 were also examined for following two items; (i) whether bibliography given at the end of the text was in correct serial number; and (ii) whether the references were quoted in the same serial order in the text, in which they were numbered in the reference list.

Results

A total of 17 original articles were published during 2002. These articles cited 322 references in all. Of these, 242 met our inclusion criteria. We were able to locate the original papers of 176 of these references, which formed the basis of this study. Overall, 122 errors could be identified in 84 (47.7%) references.

Errors of citation were found in 69 (39.2%) references. Major errors were identified in 3 (3.2%) citations. In 2 of these, the journal name was missing; and in the third, year, volume and page number were wrong. A total of 104 minor errors were found in 66 (37.5%) references. The frequency of distribution of these errors in each element of citation is shown in *Fig 1*. Errors were most common in authors' names (31.6%); followed by those in title (10.8%), Journal name (9.7%), pagination (3.4%), volume (2.8%) and year (1.7%). Minor errors in one item were found in 51 references, error in two items in 18, three items in three references and four items in two references. There was no reference with error in all the elements.

Errors of quotation were identified in 15 out of 176 (8.6%) references. Of these, 3 quotations were not relevant to context; while in other 12, the quotations were distorted. Details of errors in quotation are depicted in *Table I*.

Only one error was detected in the sequencing of references in text and/or in the reference list of the 17 original articles published in *Indian Pediatrics* 2002.

Discussion

Inaccuracy of references, both in citation and quotation, continues to plague the scientific publications in medical journals of different specialties. Many studies carried out have found variable rates of errors of citation and quotation. The error rate in citation in these studies varied from 8 to 66.7%. In a recent article, Vargas-Origel, *et al.*(11) compared the accuracy of references in 4 main pediatric journals, *i.e.*, *Acta Paediatrica*, *Archives of Diseases in Childhood*, *Journal of Pediatrics* and *Pediatrics*. The overall error rate was 29.7% with major errors occurring in only 2% references. The error rate in original

articles of *Indian Pediatrics* is definitely higher than other pediatric journals, and is a cause of concern. However, most of the errors in *Indian Pediatrics* are minor citation errors; major citation error rate is comparable with that of other journals. Comparison of quotation errors with another pediatric journal was not possible due to lack of studies. Journals of other specialties have reported errors of quotations in 15-45% references(1,2,4,6). Errors of quotation are more significant academically and usually mislead the reader and make them accept 'untruth'.

Our data is based on only original articles, thus it is possible that our results are positively skewed. Of the 17 original articles selected for this study, all were from teaching institutions in 7 major cities, where retrieval of a cited reference is easier due to better library and other communication facilities. We are sure that the error rate would have been much higher had we included the other categories of articles. Generally, authors are much more careful with their original research papers as compared to case reports or letters to the editors.

Table I reflects the careless handling of reference quotation by the authors. It would appear that in most instances, the author(s) have not read the quoted article at all. They might have used a cross-reference from another article, textbook or on-line database. In this electronic era, abstracts of all articles are available online, while the full-text access is limited and a cost is involved. A general tendency of the author is to just read the title and abstract without verifying the contents from the full text. This needs to be discouraged.

Various suggestions have been given to reduce the inaccuracy in references. Vargas-

Key Messages

- Errors of citation and quotation were found in 69 (39.2%) and 15 (8.6%) references, respectively, appended to 17 original articles published in Indian Pediatrics during the year 2002.
- Authors need to be more careful in checking the accuracy of the references in their manuscripts.

Origel, *et al.*(11) suggested limiting the number of references and submission of the first page of the article cited to verify the reference. Eichorn and Yankauer(2) had earlier observed increased error rates with increased number of references. However, subsequently other studies established that the error rate is independent of the number of references(4,6). On the contrary, limiting the number of references might force the authors to omit some important references. Submission of the first page of the cited article is desired by some journals like Canadian Journal of Anesthesia but in a study conducted by McLellan, *et al.*(5), number of errors in

Canadian Journal of Anesthesia was similar to that in other Journals. We could not ascertain whether the requirement of first page of the cited article was practiced before the study or introduced later.

Recently, many journals have linked their publication process with Medline, so that the reference list is automatically linked and checked with the citation in the electronic database. This system also is not foolproof; moreover, it skips checking of citations from non-indexed journals, books, conference proceedings, monographs, *etc.* PubMed lists only two initials of the authors' name and citation using this source may also induce error.

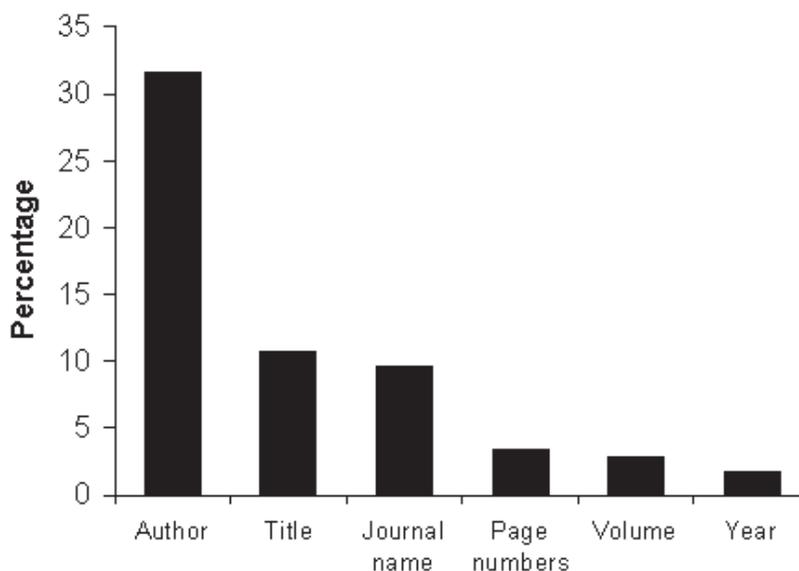


Fig. 1. Distribution of minor citation errors in different bibliographic elements.

TABLE I—*Errors of Quotation in Indian Pediatrics.*

Assertion made by authors	Impression of the quoted study
A. Irrelevant quotations	
1. Bioavailability of iron from breast milk is high before 6 months of age.	Usefulness of serum ferritin as a sole criterion of iron deficiency is limited.
2. Hard activity in third trimester did not influence the fundal height, abdominal girth or gestation.	The quoted article is about infant mortality and congenital malformations in relation to intrauterine growth retardation.
3. Referred to a questionnaire including pre-validated criteria for diagnosis of bronchial asthma	The quoted article was about the effect of environment and passive smoking on respiratory health of children. (? Cross-reference used)
B. Distorted quotations	
1. Non-selective agonist may be a better choice for treating WRTI than a selective beta agonist.	The quoted study compares a non-selective agonist (adrenaline) against a placebo and NOT a selective beta agonist.
2. Clinical diagnosis of bronchiolitis is defined as	The definition suggested in the article is not exactly the same as quoted.
3. Causes for postnatal drip include allergic, non-allergic, post-infectious, vasomotor, sinusitis and environmental irritants.	Postnasal drip is incriminated as a cause of chronic persistent cough.
4. Delayed clamping of cord at birth is suggested a possible strategy to prevent anemia in 4-11 month old infants.	This letter highlights the probable utility of delayed clamping of cord for reducing anemia at 2-5 years of age. (? Cross reference used).
5. Comment on relationship of atopic disorder with infectious diseases.	Comments on relationship of atopic disorder with toxic environment, diet and antioxidant changes.
6. FDA found it necessary to instruct medical practitioners not to co-administer Hib vaccine from the same syringe as DTP vaccine containing acellular pertussis component.	FDA found that a combination vaccine TriHIBit, which has an acellular pertussis component, might not protect fully against Hib.
7. In the present study, bacterial etiology of pneumonia was established in 47.5% by blood culture. This was slightly higher than reported earlier.	Blood culture was positive in only 23% cases which was much lower than quoted.
8. Despite endorsement of recommendation by IAP, financial constraints have delayed implementation of hepatitis B vaccine on a national basis.	Financial constraints not implicated for delayed implementation in the IAP recommendations.
9. Factors influencing auxiological outcome and subgroup of patients that do not benefit from GnRH therapy remain unclear.	Conclusions do not match the quotation.
10. In some studies, treatment with agents like cyproterone acetate and short acting GnRH analogues preceded the use of GnRH analogue.	In the quoted study, treatment was given with long acting GnRH such as triptorelin or leuprolide.

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11. Features of precocious puberty and menarche were restored after a period of 1.2 ± 0.5 year following interruption of GnRH analogue therapy. This is similar to other studies. This study treated for 6 years and did not interrupt treatment or looked at the effects thereafter.
12. Triad of wheezing, paroxysmal cough and decreased air entry was seen in 35% of our cases as compared to 39% in other study. The quoted study is a case report of 3 cases only. Thus figure of 39% is fallacious.

It is generally accepted that the primary responsibility of checking the accuracy of references lies with the authors, especially the senior author. The authors should read the original article before quoting it rather than citing from abstracts or cross-references; this might perpetuate an error committed by the author(s) of the previous article. Finally, authors should utilize the galley proofs as a final frontier to countercheck any transcription errors arising out of the editing or printing process.

Contributors: PG and PC conceived and designed the study. MY listed, retrieved and abstracted the data. AM drafted the article, which was edited by PG and PC. All authors approved the final manuscript. MY also helped in study design and interpretation of results. PG shall act as guarantor.

Funding: None

Competing interests: PG and PC are Associate editor and Editor-in-Chief of Indian Pediatrics, respectively. They do not stand to gain financially by a decline in the error rate of references cited and quoted in Indian Pediatrics.

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