Citation Accuracy in Obstetrics and Gynecology Journals indexed in the Web of Science

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ABSTRACT

The accuracy of the citations is crucial in scientific writing. The present study aims to investigate the accuracy of citations in the obstetrics and gynecology journals indexed in the Web of Science. Major and minor citation errors, type of errors, and citation errors in the Q1 to Q4 journals investigate as the objectives. The journals were retrieved by searching the “Obstetrics & Gynecology” category in the Journal Citation Report (JCR) in the Web of Science, and journals in different quartiles (Q1-Q4) were identified by applying the JIF Quartile filter. Eight hundred forty citations were selected from articles in the first five Q1 to Q4 journals using systematic sampling and article type citations were included in the study (730 citations). Bibliographic elements were assessed for citation errors. Findings show that 554 citations (75.89 %) involved errors. Only 24.1 per cent of the citations had no errors. The highest citation errors were related to the volume and issue, with 582 major errors (79.72 %). The citation accuracy in the Q2 and Q3 journals is higher than in other journals. The high rate of citation errors, especially in volumes and numbers, indicates that the journals need to pay attention to citation accuracy in these sections and the use of valid and complete citation styles.

Keywords: Citation errors; Citation accuracy; References; Articles; Journals; Gynecology; Obstetrics

1. INTRODUCTION

Citation is one of the key elements in scientific writing. It can place a scientific work within a broader context to make it possible to compare it with other similar works1. Citations or references, like a bibliography, create a link between readers and resources and articles related to the topic under discussion, and if they do not have the necessary accuracy, they cannot create this link properly2-3. It is not very pleasant for the reader not to access the resources mentioned in the references4. Citation errors have long been a challenging issue in scientific writing5. If these errors are not taken seriously by authors and journals, we should anticipate an increase in them6. Citation errors make it difficult for managers and editors of journals to find the cited articles, prolonging the article refereeing process and sometimes rejection7. Sometimes, the reason for the uncited articles is citation errors8. In order to solve the citation problems, various citation styles have been developed, and medical journals usually accept Vancouver’s style. Also, reference management software, such as Endnote and Mendeley, was provided to help the authors. These programs prevent waste of time, organises references, and facilitates the automatic listing of references9. Databases have also made it possible to import article information to these applications. However, in many cases, the information transmitted to these programs is not complete and involves errors that, if the author is not careful, will cause errors in the citations5. Therefore, due to the limitations of the software, if not enough attention is paid by the authors of articles and journal referees and editors, the problem of citation errors will remain predominantly strong, and this can be one of the examples of research misconduct and plagiarism10-11. Meanwhile, correct citation can be effective in retrieving information and combating plagiarism12. According to Taylor, citation errors are divided into two general groups: minor errors that do not affect the retrieval of citations, such as displacement of authors’ names, and major errors that cause serious problems for retrieving a document or even make it impossible, such as incorrect or missing authors’ names13. Hence, the authors have to thoroughly check the references with the main sources, the peer reviewers should verify references, and editors need to a checking mechanism of citation accuracy14.

Journals in the Web of Science (WoS) are divided into four quartiles based on the Journal Impact factor (JIF). Q1 journals are the top 25 per cent and most reputable journals and are expected to have the least errors. Nevertheless, there is no enough evidence for this. Only one study showed that JIF does not affect the number of major errors. Furthermore, journals with a higher JIF showed fewer minor citation errors15. Obstetrics and gynecology are a specialty of medicine that is focused on woman’s care during pregnancy and childbirth. It is also related to the diseases of the female reproductive system and women’s health16. Because of its importance, “obstetrics
and gynecology is a crucial subject category of the journals indexed in WoS. However, the current status of citation errors in these journals is not clear. Some errors may be found in the references of the articles published in these journals that interfere with their retrieval, causing problems for the readers. Journal editors need to be aware of citation errors in order to plan for more citation accuracy. Therefore, the researchers intend to investigate this issue in the journals indexed in the WoS. The findings can determine the type and rate of citation errors in obstetrics and gynecology journals, provide the ground for eliminating these errors, reduce scientific misconduct, and increase the accuracy of citations and the quality of journals.

2. LITERATURE REVIEW

Citation errors have been one of the challenges of scientific publication and an example of research misconduct for a long time. Many studies have been done in this field in recent years, and some previous studies have examined citation errors in dissertations. For example, the results of Harinarayana’s study on the citation accuracy of psychology dissertations showed that 77 per cent of citations contained errors. Azadeh and Vaez showed that there are citation errors in more than half of the doctoral dissertations reviewed, emphasizing educating students in this area.

Another group of previous studies has examined the citations accuracy in journals in various fields, including various fields of medicine. Asano, in the study of citation errors in the Journal of Anesthesiology, concluded that there was no significant difference in the rate of citation errors in 1990 and 1994. However, the rate of errors in the title of the article and the author’s name indicates a slight improvement. In another study, she points out that more careful authorship and checking references by the editor could reduce citation errors. The only study to investigate citation errors in obstetrics and gynecology journals was conducted by Roach, which showed that most references in the three major journals have errors in this area. Reducing these errors requires more attention from the authors and staff of the journals. Taylor (1998) showed that 45.8 per cent of citations in nursing journals have errors, mostly of significant errors. Doms concluded that references in almost half of dental journals are inaccurate.

In 2008, Reddy reported citation errors in general surgery journals at 11.1 per cent. Examining citation errors in two leading journals in radiology, Hansen concluded that there are small but relatively significant errors in journals.

Al-Benna et al. investigated the citation accuracy of burn journal articles. The citation error rate was reported to be 13.3%. The results showed that the percentage of citation errors in this study was significantly lower than the reports provided by other medical fields due to the collaboration of the authors and the more detailed process of reviewing the articles. Luo indicated that citation errors in orthopedic journals are 41%, and technical editing may help reduce these errors.

Cimen et al. investigated citation errors in the urology journal and showed that about 24 per cent of articles in this journal have citation errors. Reducing these errors requires not only the author’s attention but also the attention of the editor and the referee. Gupta and Babel also showed that the study of citation errors in some medical-related journals, indicating a high rate of citation errors. In general, history shows that citation errors still exist as a problem in the publishing area despite the antiquity of this issue.

3. RESEARCH OBJECTIVES

The following objectives drive this research:
- To determine the minor and major citation errors in obstetrics and gynecology journals, including the errors in the article title, journal title, authors’ name, publication year, volume and issue, and page numbers
- To determine the minor and major citation errors in Q1 to Q4 journals of obstetrics and gynecology
- To specify the types of citation errors in obstetrics and gynecology journals.

4. METHODOLOGY

This cross-sectional study was carried out to check the
citations errors in articles published in 2018 in the obstetrics and gynecology journals. The research population included all references (citations) of obstetrics and gynecology articles published in journals indexed in the WoS, including 74 journals at the time of the study (November 2019). These journals were retrieved by searching “Obstetrics & Gynecology” in the Subject category filter of the Journal Citation Reports (JCR) in the WoS database. Journals in different quartiles (Q1-Q4) were identified by applying the “IF Quartile filter.”

Sampling was performed systematically. The first five journals in each quartile (a total of 20 journals) were selected (Table 1). Then, the third issue of each volume of the journal in 2018 was retrieved, and the third to sixth articles of this issue were retrieved. Citation counts of five to 14 of each article were reviewed to investigate the citation errors. One of the journals was published in two volumes in one year, in which case the third issue of both volumes was reviewed (840 citations in total). Among them, only citations of the article were included in the study (730 citations), and other documents, including books, conference papers, and dissertations (110 citations), were excluded from the study.

The full text of citations was retrieved via Google Scholar and the link to the original article. We analysed the following bibliographic elements of each selected citation for identifying citation errors: authors’ names, article title, journal title, publication year, volume and issue number, and the page number. Citation errors were divided into two groups: Minor errors and Major errors.

Citation errors were identified by direct observation and comparison of citations with the original article. To investigate the citation errors in the abbreviated journal’s title, we used the PubMed abbreviation or journal’s website.

Data entered into Excel, and the findings were presented in the form of frequency tables. The chi-square test was performed to compare the error rate in journals of different quartiles with the help of SPSS software.

5. RESULTS

5.1 Citation Errors in the Obstetrics and Gynecology Journals

Table 2 shows that the most major citation errors are found in the volume and issue (79.72 %), followed by the publication year error in 9.32 per cent of the citations. The least observed major citation error in these journals is related to the article title and journal title with one error (0.13 %). In total, 674 major and 58 minor citation errors were identified (some citations have two errors). Table 3 shows that 554 citations (75.89 %) involved errors. Only 24.1 per cent of the citations had no errors.

5.2 Comparison of Citation Errors in Q1-Q4 Journals of Obstetrics and Gynecology

Table 4 shows that the rate of error-free citations in the Q2 and Q3 journals is 24.85 and 18.23 percent, respectively, which is much higher than the Q1 and Q4 journals. Only 2.36 per cent of citations in Q1 journals are error-free, and there are no error-free citations in Q4 journals.

The chi-square test showed that the ratio of minor and major errors and error-free cases vary significantly in Q1 to Q4 journals (p-value <0.001). For example, as Table 3 shows, in Q1 and Q4 journals, the number of error-free cases is lower,

<table>
<thead>
<tr>
<th>Citation errors</th>
<th>Major errors</th>
<th>Minor errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors’ name</td>
<td>7</td>
<td>43</td>
</tr>
<tr>
<td>Article title</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Journal title</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Publication year</td>
<td>68</td>
<td>0</td>
</tr>
<tr>
<td>Volume and issue</td>
<td>582</td>
<td>0</td>
</tr>
<tr>
<td>Page number</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>Total*</td>
<td>674</td>
<td>58</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Citation errors</th>
<th>Citations with errors</th>
<th>Error-free citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors’ name</td>
<td>50</td>
<td>680</td>
</tr>
<tr>
<td>Article title</td>
<td>3</td>
<td>727</td>
</tr>
<tr>
<td>Journal title</td>
<td>1</td>
<td>729</td>
</tr>
<tr>
<td>Publication year</td>
<td>68</td>
<td>662</td>
</tr>
<tr>
<td>Volume and issue</td>
<td>582</td>
<td>148</td>
</tr>
<tr>
<td>Page number</td>
<td>28</td>
<td>702</td>
</tr>
<tr>
<td>Total*</td>
<td>554</td>
<td>176</td>
</tr>
</tbody>
</table>

*Total, is not the algebraic sum of the number of various citation errors. It is related to the number of citations with errors.

<table>
<thead>
<tr>
<th>Journal quartile</th>
<th>Major errors</th>
<th>Minor errors</th>
<th>Citations with errors</th>
<th>Error-free</th>
<th>Total citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>220</td>
<td>15</td>
<td>207 (97.64)</td>
<td>5 (2.36)</td>
<td>212</td>
</tr>
<tr>
<td>Q2</td>
<td>124</td>
<td>3</td>
<td>127 (75.15)</td>
<td>42 (24.85)</td>
<td>169</td>
</tr>
<tr>
<td>Q3</td>
<td>143</td>
<td>39</td>
<td>139 (81.77)</td>
<td>31 (18.23)</td>
<td>170</td>
</tr>
<tr>
<td>Q4</td>
<td>187</td>
<td>2</td>
<td>179 (100)</td>
<td>0 (0)</td>
<td>179</td>
</tr>
</tbody>
</table>
Table 5. Types of citation errors in obstetrics and gynecology journals

<table>
<thead>
<tr>
<th>Component</th>
<th>Major error</th>
<th>Minor error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors’ names</td>
<td>Misspelled or incorrect authors’ names or initials</td>
<td>Displacement of authors’ names</td>
</tr>
<tr>
<td>Journal title</td>
<td>Missing journal title</td>
<td>No minor error</td>
</tr>
<tr>
<td>Article title</td>
<td>Misspelling in the title of the article that causes the article not to be retrieved through the title</td>
<td>Adding or deleting “articles” including “the, a, an” in the title</td>
</tr>
<tr>
<td>Publication year</td>
<td>Incorrect year of publication, missing one of the numbers of the year, or deleting it altogether</td>
<td>No minor error</td>
</tr>
<tr>
<td>Volume and issue (number)</td>
<td>Deleting or miswriting the volume or issue</td>
<td>No minor error</td>
</tr>
<tr>
<td>Page number</td>
<td>Error in the first-page number or deleting it altogether</td>
<td>Error in ending page number</td>
</tr>
</tbody>
</table>

and the number of major errors is significantly higher than in other journals.

5.3 Types of Citation Errors in Obstetrics and Gynecology Journals

Table 5 shows the types of major and minor citation errors observed in the reviewed journals. Volume and issue errors include deleting the volume or issue number or mentioning them incorrectly. The errors in the publication year, which include the incorrect publication year and deleting or not mentioning the publication year, are all classified as major errors. Some examples are also in the following:

- The major error in the volume and issue, and the minor error in the page number (The issue number (6) and the end page number (1261) are not mentioned): Bielfeld P, Anderson RA, Mack SR, De Jonge CJ, Zaneveld LJD. Are capacitation or calcium ion influx required for the human sperm acrosome reaction. Fertil Steril 1994; 62:1255.

6. DISCUSSION

Investigation of citation errors in the reviewed journals revealed that a tiny percentage of the articles reviewed (10.41%) did not involve any citation errors, and the articles with major or minor errors made up almost 90 per cent of the articles. The highest numbers of major errors were related to volume and issue number, followed by an error in a publication year. For example, in one of the citations investigated, the publication year of the article was 2012, but it was incorrectly mentioned as 2013.

The findings show that most of the studies examined involve major errors in the journal’s volume and issue. These errors include missing the volume or issue. Also, in the reviewed journals, the error has occurred more in issue number than in volume number. The high rate of errors will prolong the retrieval time of citations. Examining the citation style of the reviewed journals and comparing it with Vancouver’s style, it was found that only one of the journals studied was fully compliant with Vancouver’s style and those other journals used their instructions for citation. These journals do not mention the issue number of the journal in their citation styles. This has enlarged the number of errors in most journals investigated.

Despite the importance of the issue, the citation error in authors’ names is observable in about 7 per cent of the surveyed citations, which is less than that mentioned in the study of Roch et al. on three titles of obstetrics and gynecology journals. In this case, the major error is related to the surname and initials of the author(s) name, and the minor error is related to a misspelling in the author’s name(s). These errors interfere with data retrieval and can damage the authors’ credibility. Authors’ awareness of the importance of correctly mentioning the names, as well as accuracy in the reviewing and editing steps and rereading the citations before publication dramatically reduces these errors. The lack of precise guidelines for the author(s) is another factor in citation errors. For example, one of the most common citation errors in the authors’ names is related to citations with multiple authors, in which the names of all authors are not fully mentioned. Errors of this type even affect the indexing and abstracting process. To reduce this error in the Vancouver method, up to 6 authors should be mentioned in full, and anything more than six authors should be mentioned through the phrase “et al.” inside the brackets. In this regard, Adhikari’s findings indicated that a large percentage of citation errors are related to the authors’ names. They concluded that authors, editors, and reviewers need to accurately check references before publication to reduce a large percentage of these errors. Of course, the authors’ responsibility is more than the editors and reviewers, and the ultimate responsibility for citations lies with the author, but the editors and reviewers of the journals are careful about citation errors. Journals often use methods to check and verify citations, and a citation or technical editor is responsible for this in some journals.

In the study by Harinarayana et al., the article title’s errors accounted for a significant percentage of citation errors. Roach et al. (1997) also showed the highest citation errors in obstetrics and gynecology articles are related to the title of the article. However, the present study’s findings demonstrated that the citation error rate in the title of the article is very low, which shows the accuracy in recording the information of the titles of the articles in citations. These errors are significant errors that include misspellings in the article’s title that cause the article not to be retrieved through the title, as well as adding or deleting information such as “articles” (a, an, or the) in the title of the article.
It is worth noting that Q2 and Q3 journals involve fewer errors than Q1 journals. We found that the most of the errors in the Q1 journals are due to not mentioning the issue. This error is one of the major errors; while according to the citation style of these journals, mentioning only the volume number is enough. The results also show that Q2 and Q3 journals have paid more attention to the accuracy of citations. Perhaps the reason is that these journals need to improve their reputation to reach the top situation, but Q1 journals have a high international reputation and are less concerned about the issue. Q4 journals are less reputed and need more improvement regarding the content and citations. Since journals are categorised into different quartiles based on their JIF, citation accuracy along with increasing the content quality of articles can undoubtedly help improve the quality of scientific communication and reduce research misconduct. This affects the number of received citations. In this regard, Lok et al. (2001) found that JIF is a significant predictor for minor citation errors, but it is not the factor that alerts the incidence of major errors. They concluded that this is because the authors are more efforts to prevent major errors.

The reasons for the citation errors observed in the reviewed articles, as Gupta has pointed out, can be divided into two general categories: Factors related to the author and Factors related to the journal. Some of the factors related to the author can be attributed to the author’s inattention to the details of citations, haste in the writing of the article, obtaining citations from unreliable sources, typographical errors, and failure to use reference management software. Factors related to the journal include non-compliance with valid citation styles and lack of up-to-date referencing guidelines, as well as inattention of referees, editors, and executive directors of journals in verifying citations. Many journals have added a DOI number or article access link to the references section in recent years. As previous studies indicated, DOI may reduce citation errors. It can minimise existing problems and reduce the adverse effects of citation errors in retrieval and can be used as an appropriate method in all journals. Considering the limit on the number of references can be another way for journals to reduce the number of errors.

7. CONCLUSION
The present study indicated that there is no citation error in only a tiny percent of references. Most articles involve major citation errors, mostly of errors in volume and issue. The sections of volume and issue, publication years, page numbers, and authors’ names had the most number of errors, respectively. It is advised to authors to use reputable reference manager software. It is also suggested to the journals to use a valid and complete citation style.

The present study investigated the citation errors based on one year. Since the time may affect the results, setting a time window could help to depict the authentic performances of the journals regarding citation errors. Therefore, periodic review of citation errors in journals is necessary.

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