Turkish Archives of Otorhinolaryngology
Türk Otorinolarengoloji Arşivi

Turk Arch Otorhinolaryngol 2017; 55: 166-71

Citation Analysis of Turkish Otorhinolaryngology Publications and Comparison with Five Countries

Original Investigation

Taner Kemal Erdağ, Ömer Faruk Zengin, Emrah Uğurlu
Department of Otorhinolaryngology, Dokuz Eylül University School of Medicine, İzmir, Turkey

Abstract

Objective: In this cross-sectional study, it was aimed to analyse quantitatively citations of articles written by Turkish authors in the publications of Turkish otorhinolaryngologists. For comparison, the same investigation was performed for publications from five countries from different regions of the world.

Methods: References of publications belonging to the 2015 issues of four selected Turkey-based Otorhinolaryngology (ORL) journals were reviewed. The number and properties of references of articles published by Turkish authors in ORL journals belonging to the Science Citation Index (SCI) were investigated. Finally, a similar investigation was performed for ORL journals published in the five selected countries.

Results: In the 2015 issues of the ORL Forum Electronic Journal of Otorhinolaryngology and Head and Neck Surgery, The Turkish Journal of Ear Nose and Throat, Journal of Otorhinolaryngology and Head Neck Surgery, and the Turkish Archives of Otorhinolaryngology; the number of references was 2708 and the number of references in which the first author was Turkish was 460; 149 of these were from Turkish journals. During the same period, 85 publications in which the first author was Turkish were found in the ORL journals belonging to SCI. In these publications, 271 of 2252 references belonged to Turkish authors and 18 of them were included in Turkey-based journals. When the references of articles published in five ORL journals of the National ORL Societies in Brazil, India, Iran, Italy, and Japan were investigated, the most national citations were observed in publications in Brazil, Italy, and Japan.

Conclusion: In this cross-sectional study, citations from Turkey and other countries of the world were quantitatively evaluated in publications made by Turkish authors in the Turkey-based and SCI ORL journals. To our knowledge, our study is the first that is based on this subject. Increasing the number of similar studies might provide important contributions to Turkish ORL publishing.

Keywords: Bibliometrics, publication, citation analysis, publication ethics

Cite this article as: *Erdağ TK, Zengin ÖF, Uğurlu E. Makale başlığı. Citation Analysis of Turkish Otorhinolaryngology Publications and Comparison with Five Countries. Turk Arch Otorhinolaryngol 2017; 55: 166-71.*

This study was presented at the 39th Turkish National Otorhinolaryngology and Head and Neck Surgery Congress, 8-12 November 2017, Antalya, Turkey.

Address for Correspondence:
Ömer Faruk Zengin
E-mail: drfrkzngn@gmail.com

Received Date: 17.10.2017
Accepted Date: 24.11.2017

DOI: 10.5152/tao.2017.2958

Introduction

When scientific publications such as articles, book chapters, or books are published, previous scientific writings used are cited at the end of the study under the name of references. The use of an earlier publication in scientific writing is called as citing that publication. The number of citations that a scientific article receives is very important in terms of showing the importance and quality of that article (1-3).

While the number of citations that scientific writings receive has an increasing importance, the performances of individuals, working groups, institutions, and countries in various branches of science can be evaluated with the systematic citation analysis performed (1, 2).

While the number of citations is an important criterion in the academic promotion and rewarding of scientists, they also play an active role in providing new jobs or positions in academic settings (1-3).

Citation is also very important for a scientific journal. In recent years, the impact factor that has been widely used to reveal the importance or quality of the journals is the calculation of citations that the articles published in that journal receive at certain periods. As the impact factor that is directly related to the number of citations rises, the importance, quality, or popularity of that journal increase, too. Similar to the academic promotions of scientists, the number of citations received is very important for the scientific journals in order to be accepted in more important academic indexes (1, 4).

In this cross-sectional study, the citations made by Turkish Otorhinolaryngology (ORL) doctors in their publications to the articles written by Turkish authors were investigated. The same survey was also conducted for five other countries selected from various regions of the world. In conclusion, the citations that Turkey and the other countries generally received to their publications were quantitatively evaluated.

Methods

In the first part of the study, primarily four ENT journals originating from Turkey and with a publishing life of more than 10 years were chosen. The journals published in Turkey, which were the medical publishing organ of an institution originating from Turkey and whose editor was a Turkish otorhinolaryngologist, were considered as journals originating from Turkey. The references in the publications that were made in 2015 were manually reviewed in the ORL Forum Electronic Journal of Otorhinolaryngology and Head and Neck Surgery (ENT Forum), The Turkish Journal of Ear Nose and Throat (TJENT), Journal of Otorhinolaryngology and Head Neck Surgery (ORL-HNS), and the Turkish Archives of Otorhinolaryngology (TAO). For this purpose, only original research papers, case reports, and review articles were considered, and each article was evaluated in terms of the number of references and the number of references with a Turkish first author. In the cited articles with a Turkish first author, it was investigated whether the article was from a Turkey-based journal or non-Turkey-based journal and whether it was an ORL or a non-ORL journal.

Subsequently, in the ORL journals that were in the scope of the Science Citation Index (SCI), the publications with a Turkish first author and published in 2015 were explored using the PubMed search engine. At this stage, original researches, case reports, and review articles were considered, and the investigation was again manually performed in terms of the number of references and the above-mentioned parameters regarding the quality of references in these articles.

At the end of the first part, five non-native English speaking countries were selected from different regions of the world, and the journals published as official scientific publishing organs of the national ORL associations of these countries were identified. During this selection, it was taken into account that the publication was in English with an annual number of articles more than 50 and that it was possible to access all the contents of the journals through the internet. In accordance with these criteria, Brazilian Journal of Otorhinolaryngology (BJORL) of the National ORL Association of Brazil, The Indian Journal of Otolaryngology and Head & Neck Surgery (IJO-HNS) of the National ORL Association of India, Iranian Journal of Otorhinolaryngology (IJO) of the Iranian National ORL Association, Acta Otorhinolaryngologica Italica (Acta ORL Italy) of the Italian National ORL Association, and the Auris Nasus Larynx International Journal of ORL & HNS (Auris Nasus Larynx) of the Japanese National ORL Association were included in the study. Original research, case report, and review articles published in the issues between January 2015 and December 2015 of these journals were determined in terms of number of references and the country of the first author's institution for each reference, considering the difficulty in determining the nationality of the person only through the name. For each article, the institution of the first author was evaluated and if it belonged to the country where the journal was published, the number of publications made from the institutions of that country was also determined in the references of that article.

Throughout the study, a detailed assessment was not done in few Turkish non-article references such as books or book chapters during the evaluation of the article references in the Turkey-based journals, and they were accepted as article references.

In the second part of the study, the number of articles and the citations to these articles that were published between January 1, 2015 and July 25, 2017 by Turkey and the other five countries in the category of ORL in the journals included in Web of Science indexes were investigated. Further, the citations to the articles published at the specified time in the four Otolaryngology journals originating from Turkey were investigated.

No statistical method was used while evaluating the data of the study. Data were presented with arithmetic average, frequency, and ratio calculations.

Results

In the first stage of the first part of the study, four Turkey-based journals (ORL Forum, ORL-HNS, TAO and TJENT) were examined. It was found that in a total of 153 publications including original researches, case reports, and reviews and were published in 2015, the number of references belonging to all these publications was 2708 and the average number of references per article was 17.69 (Table 1). While the total number of references with a Turkish first author was 460, 149 of them belonged to Turkey-based journals. Of these 149 cited articles, 73 were from Turkey-based ORL journals. The numbers related to each of these journals are separately shown in Table 1 in terms of the average citations with a Turkish author per article, the citations from an article published in a Turkey-based journal, and the citations from a Turkey-based ENT journal.

In the second stage of the first part, 85 publications with a Turkish first author in the ORL journals within the scope of SCI in 2015 were determined. A total of 2252 references were cited in the publications, and an average of 26.49 references per article was calculated. Of the total 2252 cited articles, 271 belonged to Turkish authors, 18 were published in Turkey-based journals, and 11 belonged to Turkey-based ORL journals. The average number of citations per article written by Turkish authors in the ORL journals covered by SCI in 2015 is separately shown in Table 2.

In the last stage of the first part, five journals of the National ORL Associations of Brazil, India, Iran, Italy, and Japan were reviewed. A total of 457 publications (original research, case

report, and reviews) were made in 2015 in the BJORL, IJO-HNS, IJO, Acta ORL Ital, and Auris Nasus Larynx journals belonging to these countries, respectively. In each country's journal the number of publications made from an institution belonging to that country were 86, 63, 53, 59, and 50, respectively. It was found that the total of 311 publications had 6833 references (Table 3).

Later, in the journal of each of these countries, the number of citations from that particular country to the publication made from the institution belonging to that country was also counted (by checking the addresses of the institutions). Accordingly, 86 out of 100 articles that were in 6 issues of BJORL in 2015 were written by authors from Brazilian medical institutions. While the total number of the references for these publications was 2272, 603 of them belonged to the Brazilian health institutions. In this journal, the average number of citations made by Brazilian institutions to each publication originating from Brazil was calculated as 7.01. The related figures and average citations of other journals are shown in Table 3.

In the second part of the study, the number of ORL articles published between January 1, 2015 and July 25, 2017 in the journals covered by the Web of Science indexes in Turkey and the other five countries and the citations to these articles were investigated. While most publications were made by Turkey in

Table 1. Analysis of the article references of four Turkey-based ORL journals

No.	Turkey-based ORL journal	No. of articles	No. of references	No. of references whose first author is Turkish	Average no. of references with a Turkish author per article	No. of references received from Turkish journals	Average no. of citations received from Turkish journals per article	No. of citations received from Turkey-based ORL journals per article	Average no. of citations received from Turkey-based ORL journals per article
1	ENT-HNS	28	430	76	2.71	39	1.39	17	0.60
2	ENT Forum	17	247	36	2.11	17	1.00	9	0.52
3	TJENT	70	1241	163	2.32	50	0.71	26	0.37
4	TOA	38	790	185*	2.21**	43	1.13	21	0.55
Total		153	2708	460/359**	2.34	149	0.97	73	0.47

*112 of 185 citations were in the article of "Erdağ TK, Kurtoğlu G., 100 Turkish articles that received the most citations in Web of Science Otolaryngology Journals. Turk Arch Otorhinolaryngol 2015; 53: 112-9."

**Calculation was made after the exclusion of 101 references of the above article.

ORL: Otorhinolaryngology; ORL-HNS: journal of Otorhinolaryngology and Head Neck Surgeryl; ENT Forum: ENT Forum Electronics Ear, Nose, and Throat and Head and Neck Surgery Journal; TJENT: The Turkish Journal of Ear Nose and Throat; TAO: Turkish Archives of Otorhinolaryngology

Table 2. Reference analysis of the articles written by Turkish authors in journals covered by Science Citation Index

No. of articles	No. of references	No. of references whose first author is Turkish	Reference whose first author is Turkish			Average no. of citations per article (first name is a Turkish author)		
			Non-Turkey-based journals	Turkey-based ORL journals	Turkey-based non-ORL journals	Average no. of citations per article taken from non-Turkey-based journals	Average no. of citations per article taken from Turkey-based ORL journals	Average no. of citation per article taken from Turkey-based non-ORL journals
85	2252	271	253	11	7	2.97	0.12	0.09

ORL: Otorhinolaryngology

Table 3. Reference analysis of the articles in ORL journals of five countries

No.	Journal	Total no. of articles	No. of articles included in the study	Total no. of references	No. of references of the same country	Average no. of the references of the same country per article
1	Brazil (BJORL)	100	86	2272	603	7.01
2	India (IJO-HNS)	119	63	963	79	1.25
3	Iran (IJO)	69	53	1121	112	2.11
4	Italy (Acta ORL Ital)	72	59	1628	313	5.30
5	Japan (Auris Nasus Larynx)	97	50	849	176	3.52

BJORL: Brazilian Journal of Otorhinolaryngology; IJO-HNS: The Indian Journal of Otolaryngology and Head and Neck Surgery; IJO: Iranian Journal of Otorhinolaryngology; Acta ORL Ital: Acta Otorhinolaryngologica Italica

Table 4. The number of publications of the six countries with the citations received from the articles belonging to the journals that are in the Web of Science indexes (January 1, 2015-July 25, 2017)

Country	No. of articles	No. of citations to the articles	No. of citations per article
Turkey	868	641	0.74
Japan	771	843	1.09
Italy	741	1022	1.38
Brazil	499	482	0.97
India	298	260	0.87
Iran	134	96	0.72

the specified period and although the number of publications was limited, Italy had the highest average number of citations per publication (Table 4). With the investigation of the citations that the Turkey-based ORL journals received from the journals in the Web of Science indexes, it was found that 27 articles of TJENT received 34 citations and 5 articles of TAO received 6 citations in the specified time.

Discussion

This study is important to demonstrate the level that citations made by the Turkish authors to the publications of Turkish authors in the Turkey-based and non-Turkey-based journals and to compare it with the ORL journals of the other five countries. To the best of our knowledge, no similar study related to ORL or another branch was found through literature review.

In the first stage of the first part of the study, four Turkey-based ORL journals were examined. Firstly, the use of the term "Turkey-based journal" has been preferred rather than the term "national journal" as the concept of national and international journals is getting increasingly complex nowadays. The use of the term "Turkey-based" was considered to be more appropriate for the following reasons: (a) the four journals that were examined were included in some other international indexes, (b) the articles of foreign authors were also acceptable to the journals, and (c) the publications that were written in English were also included. At the same time, these four journals whose editors were Turkish doctors were published by Turkey-based medical associations and the publishing companies were also from Turkey.

While the average number of references per article was found to be 17.69 in the original research, case report, and review articles of the ORL-HNS, ORL Forum, TAO and TJENT journals in 2015, the average citation to Turkish authors per article was found to be only 2.34. While the average number of citations per article from Turkey-based journals was 0.97, this average was only 0.47 for the Turkey-based ORL journals.

On the other hand, 85 publications with a Turkish first author were identified in the ORL journals covered by SCI in 2015. When the 2252 references of these 85 publications were evaluated, while the average number of references per article was found to be 26.49, the average number of citations to Turkish authors per article was only 3.18. While the average number of citations per article from Turkey-based journals was 0.21, this average was only 0.12 for the Turkey-based ORL journals.

In the publications made by Turkish authors in the four Turkey-based ORL journals and in the ORL journals covered by SCI, the ratios were found to be close to each other in terms of citations to Turkish authors (2.34/3.18). However, when the citation rates to Turkey-based journals (0.97/0.20) and Turkey-based ORL journals (0.49/0.12) were considered, the fact that these citations significantly decreased in the publications made by Turkish authors in the journals included in SCI was noticed.

Through the findings obtained in the first two stages of the first part of the study, the extent to which citations were made by Turkish authors to the publications of Turkish authors in Turkey-based and non-Turkey-based journals was determined. Owing to the lack of similar studies in the field of ENT in the English literature, it was not possible to compare the obtained data with those of the other countries. However, at the second stage of the study, the citations made in 2015 to the publications in the ORL journals of their own ORL associations of the five selected countries were also determined. Thus, the rates of citations that these five countries and Turkey made to their own publications could be partially compared at a national level. One of the reasons why this comparison could not completely be carried out under the same conditions was that only one journal from each selected country and four journals from Turkey were examined. Owing to the limited number of articles and the limited number of annual issues of Turkey-based ORL journals, calculating the data average of the four journals was found to be more appropriate. The second reason was that the journals of BJORL, Acta ORL Ital, and Auris Nasus Larynx were in the Science Citation Index Expanded and the journals of IJO-HNS and IJO were in the PubMed Central indexes. However, out of the Turkey-based ORL journals that we examined till 2015, only TJENT was in the PubMed Central index.

The necessity of the first author to be Turkish was considered during the analysis in the part of the study related to our country, but there were difficulties in determining the first author and nationality in the analysis of the other five countries. For this reason, in the publications of each country, it was required that the first author's institution belonged to that country. When the countries were evaluated in terms of citing to their country's publications, while the average citation from the article of another Brazil-based institution to a publication of a Brazilian institution was found as 7.01 in BJORL of Brazil, this average was 5.30 for Acta ORL Ital, 3.52 for Auris Nasus Larynx, 2.11 for IJO, and 1.25 for IJO-HNS. This calculated mean was 2.34 for the four examined Turkish ORL journals.

It is vital to utilize appropriate references while writing about a scientific study. Using references that provide the most important contributions to the article and using qualified and latest

references as much as possible constitute the basis of scientific writing. In scientific writing, there are ethical rules to be considered in this matter (5, 6). Inaccessible and unread information (article, book, and book chapter) should not be provided as a reference. While using the references supporting the obtained results or the suggested opinions in the study, the references that include opposing or different opinions or that present different outcomes should also be used. This situation is very important in terms of preventing bias. On the other hand, referring to the studies of those who have made significant contributions to the subject is also necessary in terms of showing respect to a scientist during scientific writing (5-7).

While referring to scientific studies, national bias is also considered as an ethical misconduct. For this reason, as long as it does not make a significant contribution to the study, it is not fair for the authors to make inappropriate citations to the publications of their own countries (8, 9). The inclusion of nationally biased citations may put the authors and journals in trouble. The best example of this is the situation that was experienced in some Brazilian journals in 2012. Having agreed to quickly increase the impact factors, four Brazilian journals made unnecessary and many citations to each other's articles. This situation of these journals whose impact factors rapidly increased was noticed in 2012, and they were subjected to serious embargo by Thomson Reuters for committing ethical misconduct (10).

A similar situation was also experienced by Folia Phoniatrica et Logopaedica, a Swiss journal that deals with a branch of ORL. It was detected that journal's impact factor increased surprisingly by 119% from 2006 to 2007 in the citation analyses. Later it was determined that 66 self-citations in a single editorial article led to the rapid increase (11).

In this cross-sectional study, it was found that the citations made by Turkish authors to the articles of Turkish authors in Turkey-based or non-Turkey-based journals are at reasonable levels. However, it is noteworthy that the average number of citations per article from the four Turkey-based ORL journals to other Turkey-based ORL journals was still 0.47, and this average was as low as 0.12 in the publications made by Turkish authors in ORL journals covered by SCI. This case may be owing to the drawback that using references from the articles in the national journals will reduce the acceptance possibility of an article sent to a non-Turkey-based journal. Failure in getting accustomed to the use of ULAKBİM Turkish index for searching national publications may be another reason. In addition, we may also have authors who question the quality of our publications in Turkey-based journals and who, therefore, refer to them in a lesser extent. By investigating the reasons with questionnaires, the attitudes of Turkish ORL physicians can be revealed. When the Web of Science data were analyzed, it was remarkable that Turkey was highest among six countries in terms of the number of publications, but second to last in terms of the number of citations per publication within a period of approximately 19 months between January 1, 2015 and July 25, 2017. Considering the fact that citations are made to important and good-quality articles, it is obvious that increasing the quality of our publications is the first step to increase the number of citations to our publications. However, there are studies in the literature suggesting that different factors such as the geographical location, level of development, and culture of science development are also important for providing citations (12-15).

In our study, when the Turkey-based ORL journals were examined, the published articles were observed to receive citations at a low level from both Turkish and foreign authors. From January 1, 2015 to July 25, 2017, the number of citations from the journals covered by SCI to the articles published in four Turkey-based ORL journals was only 40.

Therefore, it is important to firstly improve the quality of publications in Turkey-based ORL journals. The number of studies investigating the quality of publications made in these ORL journals is extremely limited. In this respect, in a study conducted in 2012, the scientific articles published in Turkey-based ORL journals were evaluated in terms of evidence-based medicine, and it was demonstrated that the level of evidence in our articles was generally very low (16). Further studies may reveal the steps that are to be carried out to increase the quality of publication.

Another issue that is as important as increasing the quality of publication is the language of publication. It is obvious that the articles published in non-English journals cannot receive citations from those of the other countries. Our journals should be included in major international indexes to increase the visibility of the publications in our Turkey-based ORL journals. In recent years, Turkey has achieved a very good improvement worldwide in terms of the number of ORL publications, but it is worrisome that there is only one Turkey-based ORL journal in PubMed Central, which currently is one of the major international indexes. However, the publication quality and journal language are the most important factors that can allow journal inclusion in these indexes.

Lastly, it is also important to increase the educational opportunities, particularly for young authors, regarding preparing scientific articles and publishing. For this purpose, courses on scientific study planning, writing scientific articles, good peer-review, and publishing ethics may be useful, particularly under the leadership of our National ORL Association.

Conclusion

As a result, in this cross-sectional study, the citations made from our own country and other countries to the publications made by Turkish authors in Turkey-based and non-Turkey-based ORL journals have been quantitatively evaluated. To the best of our knowledge, this study is the first research that has been carried out regarding this subject. Increasing the number of similar studies may provide significant contributions to Turkish ORL publishing.

Ethics Committee Approval: N/A.

Informed Consent: N/A.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - T.K.E., Ö.F.Z., E.U.; Design -T.K.E., Ö.F.Z., E.U ., Supervision - T.K.E., Ö.F.Z., E.U.; Resource - Ö.F.Z., T.K.E., E.U.; Materials - T.K.E.; Data Collection and/or Processing - Ö.F.Z., E.U.; Analysis and/or Interpretation - T.K.E.; Literature Search - Ö.F.Z., E.U.; Writing - T.K.E., Ö.F.Z., E.U.; Critical Reviews - T.K.E., Ö.F.Z.

Acknowledgements: The authors would like to thank Mr. Ali Şahin, publishing director of AVES Publishing, for his contributions to bibliometric analysis of the work.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

References

1. Erdağ TK, Kurtoğlu G. Web of Science Kulak Burun Boğaz dergilerinde en çok atıf alan 100 Türk makalesi. Turk Arch Otorhinolaryngol 2015; 53: 112-9.
2. Roy D, Hughes JP, Jones AS, Fenton JE. Citation analysis of otorhinolaryngology journals. J Laryngol Otol 2002; 116: 363-6. [CrossRef]
3. Frankerberger R, Van Meerbeek B. The importance of citations and citation metrics in science J Adhes Dent 2015; 17: 487.
4. Sangwal K. Some citation-related characteristics of scientific journals published in individual countries. Scientometrics 2013; 97: 719-41. [CrossRef]
5. Moustafa K. Aberration of the Citation. Account Res 2016; 23: 230-44. [CrossRef]
6. Masic I. The importance of proper citation of references in biomedical articles. Acta Inform Med 2013; 21: 148-55. [CrossRef]
7. Gasparyan AY, Yessirkepov M, Voronov AA, Gerasimov AN, Kostyukova EI, Kitas GD. Preserving the integrity of citations and references by all stakeholders of science communication. J Korean Med Sci 2015; 30: 1545-52. [CrossRef]
8. Campbell FM. National bias: a comparison of citation practices by health professionals. Bull Med Libr Assoc 1990; 78: 376-82.
9. Grange RI. National bias in citations in urology journals: parochialism or availability? BJU Int 1999; 84: 601-3. [CrossRef]
10. Van Noorden R. Brazilian citation scheme outed. Nature 2013; 500: 510-1. [CrossRef]
11. Foo JY. Impact of excessive journal self-citations: a case study on the Folia Phoniatrica et Logopaedica journal. Sci Eng Ethics 2011; 17: 65-73. [CrossRef]
12. Utrobičić A, Chaudhry N, Ghaffar A, Marušić A. Bridging knowledge translation gap in health in developing countries: visibility, impact and publishing standards in journals from the Eastern Mediterranean. BMC Med Res Methodol 2012; 12: 66. [CrossRef]
13. Man JP, Weinkauf JG, Tsang M, Sin DD. Why do some countries publish more than others? An international comparison of research funding, English proficiency and publication output in highly ranked general medical journals. Eur J Epidemiol 2004; 19: 811-7. [CrossRef]
14. Meijaard E, Cardillo M, Meijaard EM, Possingham HP. Geographic bias in citation rates of conservation research. Conserv Biol 2015; 29: 920-5. [CrossRef]
15. Annalingam A, Damayanthi H, Jayawardena R, Ranasinghe P. Determinants of the citation rate of medical research publications from a developing country. Springerplus 2014; 3: 140. [CrossRef]
16. Erdağ TK, Doğan E, Ecevit MC, Durmuşoğlu M, Güneri EA, İkiz AÖ. Quantitative and qualitative analysis of four national otorhinolaryngology journals between 2002 and 2010. Kulak Burun Bogaz Ihtis Derg 2013; 23: 260-7.[CrossRef]