The 100 Most Cited Turkish Papers in the Otorhinolaryngology Journals of Web of Science

Original Investigation

Taner Kemal Erdağ, Gökhan Kurtoğlu
Department of Otorhinolaryngology, Dokuz Eylül University School of Medicine, İzmir, Turkey

Abstract

Objective: The aim of the study was to analyze the 100 most cited publications with Turkish origin in the Web of Science Otorhinolaryngology (ORL) journals.

Methods: The Web of Science database was searched in terms of citations for publications originating from Turkey in ORL journals since 1983. After the identification of the 100 most cited articles, analysis was performed for the first author, institution, city, publication type, subject related to subspecialty, and journals having the most cited articles. Moreover, the number of ORL publications and citations of countries was determined in descending order using the same database.

Results: A total of 3948 ORL articles with Turkish origin was identified. The number of citations was 181 for the first and 28 for the last in the 100 most cited articles. As there was more than one article with 28 citations, 101 articles were analyzed. The number of the articles was 76, 22, and 3 for the university, education/research, and state hospitals, respectively. Hacettepe University, Ankara Numune Hospital, and Gazi University were the three leading institutions having the most cited articles, and Ankara was the first city. While 98 of 101 articles were original research, the number of case reports and review articles were 2 and 1, respectively. Thirty-five articles were related to otology, 23 to pediatric ORL, 20 to rhinology and head and neck surgery, and 3 to facial plastic surgery. Laryngoscope, Otolaryngology-Head and Neck Surgery, and International Journal of Pediatric Otorhinolaryngology were the leading 3 journals with the most cited articles coming from Turkey. The evaluation of countries revealed that Turkey was among the first 10 countries in terms of number of ORL articles but fell behind for the number of citations.

Conclusion: This bibliometric study is the first one regarding the contribution of Turkish authors and institutions to ORL literature. Similar studies might be periodically repeated to determine national development in the field of ORL and place of Turkey in the world.

Keywords: Otorhinolaryngology, bibliometrics, citation analysis, publication

Introduction

Citations are the demonstration of the knowledge of a published scientific study included as a reference in another scientific study such as an article, book, or chapter of a book (1, 2). While the number of citations that a scientific paper receives is one of the most important factors for showing the value and quality of that study, it also plays an important role in the reputation and promotion of the researchers who conducted the study, as well as their respective institutions. In addition, the number of citations that a scientific paper receives is an important criterion used for calculating the impact factor of the journal in which it is published (1-4).

Recently, in many branches of medicine, the scientific productivity or levels of journals, authors, institutions, or countries have been evaluated at the national and international levels through bibliometric processes (1, 2, 5). One of the most frequently conducted studies is to analyze the most cited papers in a specific area (1, 2, 6, 7). In the present study, an example of which is nationally unavailable in our branch, it was planned to analyze the 100 most cited papers published in the Otorhinolaryngology (ORL) journals in the Web of Science.

Methods

Using the key words "Otorhinolaryngology" and "Turkey" in the Web of Science database, articles published from 1983 to the present time and the citation numbers for these papers were obtained. After obtaining the 100 most cited papers, they were examined in terms of the first author, gender of author, institution and city, article type, subbranch, and journal of publication. In this stage, the papers in which the first authors were not Turkish and the institutions of the first authors that were not in Turkey were excluded. Finally, the modes of "core collection" and "advanced search" were selected, and the scanning process was performed again on the subject of "SU=Otorhinolaryngology." In total, 157529 articles were analyzed with the choice of "Countries/Territories," and the countries were ranked considering the number of published articles. Then, citation reports for the articles of the chosen countries were formed, and the total number of citations was obtained. However, because citation reports could not be formed

Address for Correspondence: Taner Kemal Erdağ
E-mail: taner.erdag@deu.edu.tr
Received Date: 09.11.2015
Accepted Date: 16.11.2015

DOI: 10.5152/tao.2015.1352

by the system in the presence of recordings above 10000, the total number of citations for some countries, such as the United States of America, Germany, England, and Japan, could not be obtained.

Results

Considering the regular updating of publications and citation numbers in the system, the search was completed using the above-mentioned key words within a single day (October 18, 2015), and then, the parameters were analyzed. Among 3948 papers, the most cited ones were ordered, and it was found that the highest number of citations was 181 and the lowest number of citations was 28 (8-109). Because all articles cited at least 28 times were included, the number of studied publications was 101 (Table 1). Of the most cited papers, the oldest were from 1992 and the newest from 2010. The first authors included in the list of the 101 most cited papers more than once and their studies are presented in Table 2. The distribution of these publications within a period of 5 years is shown in Figure 1. It was detected that the first authors were males in 91 of these 101 papers and females in 10.

It was observed that 76 of the publications were conducted in university hospitals, 22 in traninig and research hospitals, and 3 in state hospitals. With regard to the provinces, Ankara was ranked first, followed by İstanbul with 15 articles and İzmir with nine articles (Table 3). Considering the institutions, the ORL clinics of Hacettepe University Faculty of Medicine, Ankara Numune Hospital, and Gazi University Faculty of Medicine were ranked among the top three (Table 4).

While 98 of the 101 publications were original research, two were case reports (38, 76) and one was a review (74). With regard to the sub-branches of ORL, 35 articles were about otology, 23 were about pediatric ORL, 20 were about rhinology, 20 were about head and neck surgery, and 3 were about facial plastic surgery.

Laryngoscope, Otolaryngology-Head and Neck Surgery, and International Journal of Pediatric Otorhinolaryngology were evaluated as the top three journals publishing the most cited articles (Table 5).

The results of the search made using the Web of Science database, including the number of ORL papers published from 1983 to now for each country, the number of citations received by these papers, and the mean number of citations calculated for each country's publications, are given in Table 6. According to the results, Turkey is among the top 10 countries in terms of the number of publications, but it falls behind with regard to the number of citations per article.

Discussion

This study is the first national investigation of the most cited articles on ORL. With this bibliometric study, recent publications, authors, and institutions that have played an important role in

Table 1. First authors of the most cited articles and the number of citations (8-109)

No	Author	Number of citations	No	Author	Number of citations
1	Sennaroglu L et al.	181	52	Tahamiler R et al.	34
2	Osma U et al.	87	53	Dagli M et al.	34
3	Sapçi T et al.	76	54	Ozcan KM et al.	34
4	Cokkeser Y et al.	66	55	Ozer E et al.	34
5	Hosal AS et al.	57	56	Aslan I et al.	.34
6	Köybasioglu A et al.	55	57	Ikiz AO et al.	34
7	Cengel S et al.	54	58	Yilmaz T et al.	34
8	Ozdek A et al.	53	59	Güneri EA et al.	34
9	Çakmak O et al.	53	60	Dursun G et al.	33
10	Onerci M et al.	53	61	Miman MC et al.	33
11	Unver S et al.	52	62	Ulug T et al.	33
12	Onerci TM et al.	51	63	Koybasioğlu A et al.	33
13	Görür K et al.	50	64	Erkan M et al.	33
14	Unlu HH et al.	49	65	Midilli R et al.	32
15	Soylu L et al.	49	66	Kiliç R et al.	32
16	Özturan O et al.	48	67	Bayazit YA et al.	32
17	Kirkim G et al.	47	68	Kirazli T et al.	32
18	Daldal A et al.	46	69	Bilgen C et al.	32
19	Onal K et al.	46	70	Koç A et al.	32
20	Erkan M et al.	46	71	Unal OF et al.	32
21	Akkuzu G et al.	45	72	Balyan FR et al.	32
22	Unal M et al.	45	73	Ozlugedik S et al.	31
23	Dursun E et al.	45	74	Topuz E et al.	31
24	Teker AM et al.	44	75	Egeli E et al.	31
25	Akif Kiliç M et al.	44	76	Doğru H et al.	31
26	Sennaroglu L et al.	44	77	Saraç S et al.	31
27	Miman MC et al.	42	78	Sennaroglu L et al.	30
28	Belli S et al.	41	79	Bayazit YA et al.	30
29	Gok U et al.	41	80	Akbaş Y et al.	30
30	Ilicali OC et al.	41	81	Seven H et al.	30
31	Günhan O et al.	41	82	Gedikli O et al.	30
32	Erbek SS et al.	40	83	Koç C et al.	30
33	Erisen L et al.	40	84	Turgut S et al.	30
34	Unlü HH et al.	40	85	Erbek SH et al.	29
35	Sennaroglu L et al.	39	86	Karasalihoglu AR et al.	29
36	Ozcan C et al.	39	87	Haberal I et al.	29
37	Sennaroglu L et al.	39	88	Bilgen C et al.	29
38	Kazkayasi M et al.	39	89	Coskun H et al.	29
39	Tosun F et al.	38	90	Celenk F et al.	28
40	Yetiser S et al.	38	91	Kazikdas KC et al.	28
41	Onerci M	38	92	Yilmaz T et al.	28
42	Kaygusuz I et al.	38	93	Bayazit YA et al.	28
43	Kazkayasi M et al.	37	94	Oğretmenoğlu O et al.	28
44	Güneri EA et al.	37	95	Coskun HH et al.	28
45	Kanlikama M et al.	37	96	Vural C et al.	28
46	Cakir BO et al.	36	97	Yetiser S et al.	28
47	Kaygusuz I et al.	36	98	Aygenc E et al.	28
48	Incesulu A et al.	36	99	Ilicali OC et al.	28
49	İnanli S et al.	36	100	Kemaloglu YK et al.	28
50	Kaya S et al.	35	101	Goksu N et al.	28
51	Meric Teker A et al.	34			

Table 2. First authors included in the list of the 100 most cited articles more than once

Author names and their publications	Number	Author names and their publications	Number
Sennaroğlu Levent (8, 33, 42, 44, 85)	5	Kaygusuz İrfan (49, 54)	2
Önerci Metin (17, 19, 48)	3	Kazkayası Mustafa (45, 50)	2
Bayazıt Yıldırım Ahmet (74, 86, 100)	3	Köybaşıoğlu Ahmet (13, 70)	2
Bilgen Cem (76, 95)	2	Miman Murat Cem (34, 68)	2
Coşkun Hakan (96, 102)	2	Teker Ayşenur Meriç (31, 58)	2
Erkan Mustafa (27, 71)	2	Ünlü Halis (21, 41)	2
Güneri Enis Alpin (51, 66)	2	Yetişer Sertaç (47, 104)	2
Ilıcalı Ömer Cenker (37, 106)	2	Yılmaz Taner (65, 99)	2

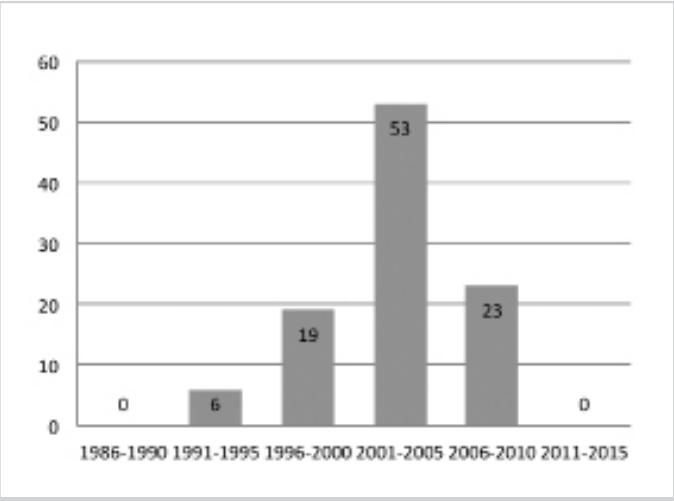

Figure 1. Distribution of the most cited papers within a period of 5 years

the contribution of our country to international ORL literature are highlighted. Moreover, it has been possible to determine prominent work areas and topics by considering the number of citations each work has received.

However, the fact the search only included journals within the Web of Science instead of the whole international literature is an important limitation of the present study, albeit the evaluation of journals with the highest impact factors in ORL increases the value of the most cited papers.

In international literature, articles cited more than 100 times are termed "citation classics" (2, 3). In our study, the most cited article was the one conducted by Levent Sennaroğlu et al. and it was the only citation classic with 181 citations in the list (8). On the other hand, the number of citations received by the articles below the list of the top 100 most cited articles was 28. In a similar study on ophthalmology, which was performed in our country, the highest number of citations among the top 100 articles was 148 and the lowest was 31 (7). This shows that the scientific publication performances of the two similar surgical branches resemble each other in our country.

Table 3. Cities where research for the most cited articles was performed

City	Number	City	Number
Ankara	43	Kayseri	2
İstanbul	15	Konya	2
İzmir	9	Adana	1
Elazığ	4	Denizli	1
Malatya	4	Diyarbakır	1
Mersin	4	Düzce	1
Bursa	3	Edirne	1
Gaziantep	3	Kahramanmaraş	1
Kırıkkale	3	Manisa	1
Isparta	2		

Table 4. Institutions where research for the most cited articles was performed

Institution	Number	Institution	Number
Hacettepe University	16	İstanbul University	3
Ankara Numune Hospital	8	Kırıkkale University	3
Gazi University	7	Şişli Etfal Hospital	3
Dokuz Eylül University	4	Uludağ University	3
Ege University	4	Ankara University	2
İnönü University	4	Başkent University Ankara Hospital	2
Mersin University	4	Başkent University Konya Hospital	2
Ankara Training and Research Hospital	3	Bezmialem Vakıf University	2
Fırat University	3	Erciyes University	2
Gaziantep University	3	Süleyman Demirel University	2
Gülhane Military Medical Academy	3		

Table 5. Journals that published the most cited articles

Name of journal	Number	Name of journal	Number
Laryngoscope	19	Arch Otolaryngol Head Neck Surg	4
Otolaryngol Head Neck Surg	17	Acta Otolaryngol	2
Int J Pediatr Otorhinolaryngol	15	Head Neck	2
Journal of Laryngology Otology	9	Hearing Research	2
Otology Neurotology	8	ORL J Otorhinolaryngol Relat Spec	2
Ann Otol Rhinol Laryngol	6	Rhinology	2
Eur Arch Otorhinolaryngol	6	Clin Otolaryngol	1
Am J Otolaryngol	5	J Otolaryngol	1

Table 6. Countries with the highest number of publications in the Web of Science, the number of citations received by papers, and the mean citation number per article

Country	Number of publications	Percentage	Number of citations	Mean citation number per an article
USA*	55.792	%35.41		
GERMANY*	12.923	%8.20		
ENGLAND*	11.138	%7.07		
JAPAN *	10.191	%6.46		
CANADA	5613	%3.56	68.632	12.22
ITALY	4873	%3.09	40.426	8.29
SWEDEN	4101	%2.60	55.955	13.64
TURKEY	**3948**	**%2.50**	**21.668**	**5.48**
FRANCE	3947	%2.50	42.027	10.64
HOLLAND	3730	%2.36	48.211	12.92
SOUTH KOREA	3096	%1.96	18.631	6.01
AUSTRALIA	2998	%1.90	46.239	15.42
PEOPLE'S REPUBLIC OF CHINA	2699	%1.71	17.427	6.45
FEDERAL REPUBLIC OF GERMANY	2558	%1.62	15.321	5.98
ISRAEL	2137	%1.35	21.050	9.85
BRAZIL	2123	%1.34	12.212	5.75
SWITZERLAND	2026	%1.28	23.879	11.78
BELGIUM	2019	%1.28	20.989	10.39
TAIWAN	1954	%1.24	15.520	7.94
FINLAND	1889	%1.19	21.294	11.27
INDIA	1869	%1.18	7.771	4.15
SPAIN	1710	%1.08	14.717	8.60
DENMARK	1659	%1.05	16.497	9.94
AUSTRIA	1532	%0.97	16.497	10.76
SCOTLAND	1332	%0.84	12.686	9.52
GREECE	1037	%0.65	7.486	7.21
EGYPT	859	%0.54	6.540	7.61

*For number of articles above 10000, evaluation in the Web of Science is impossible.

In the evaluation of first authors who were included in the list of the 101 most cited papers more than once, it was found that one author was included five times, two authors three times, and thirteen authors twice. While the first authors were female only in 10% of articles in the top 101, it is suggested that this rate will increase in similar future studies because of the increasing number of female academicians in our branch.

With regard to the institutions where research for the 101 most cited papers was performed, Hacettepe University Faculty of Medicine was found to be on top with 16 articles. Because the next two institutions were in Ankara, Ankara was ranked in top spot overall.

On the other hand, Hacettepe University Faculty of Medicine was on the top in all categories, i.e., the most cited articles, first authors mostly included in the top 101, and the institution where the highest number of papers were produced, which shows the success of this institution in terms of scientific publications in ORL.

In the 101 most cited articles, all, except three, were research papers, which is not a coincidence and similar to studies of other branches (1, 4, 109). In the evaluation of these articles considering the sub-branches, while otology was found to be in the first place, it was followed by pediatric ORL, rhinology and head and neck surgery, and facial plastic surgery. In another recent study examining citation classics (articles receiving more than 100 citations) in ORL journals within the Web of Science, 51.7% of 905 citation classics were on otology, 37.8% were on head and neck surgery, and 10.5% were on rhinology (110). Different from that study, in our study, the sub-branches of pediatric ORL and facial plastic surgery, which are relatively new in our country, were included in addition to otology, rhinology and head and neck surgery, also including laryngology. All research studies and case reports conducted on patients younger than 18 years were accepted as pediatric ORL publications. All articles in the International Journal of Pediatric Otorhinolaryngology, which was the only journal specific for pediatric ORL among the journals included in the study, were evaluated under the sub-branch of pediatric ORL. Therefore, the number of publications on the sub-branch of pediatric ORL was found to be higher.

Of the journals in which the 101 most cited papers were published, Laryngoscope, Otolaryngology Head Neck Surgery, and International Journal of Pediatric Otorhinolaryngology were ranked among the top three. In the study by Fenton et al. (2), where they evaluated citation classics in ORL in 2002, the first three journals were Laryngoscope, Archives of Otolaryngology - Head and Neck Surgery, and Annals of Otology, Rhinology and Laryngology; the first three journals were reported to be Laryngoscope, Archives of Otolaryngology-Head and Neck Surgery, and Hearing Research in a similar study conducted by Coelho et al. (110) in 2014. This information can be beneficial for authors to choose the journal predicted to draw most attention they will submit their articles to and therefore make their research successful.

Considering the ORL studies published in the journals in the Web of Science since 1983, Turkey is included among the top 10 countries. While 3948 papers were from Turkey, which is in line with the number of studies published by many developed countries, the mean number of citations needs to improve. While the number of ORL publications from our country is the same as that from France, which is one of the most developed countries in the world, the mean number of citations is almost half

of that in France. Undoubtedly, more qualified scientific studies must be conducted to increase the mean citation number. Moreover, researchers can benefit from previously published qualified Turkish papers that are directly related to the subject and can also contribute to increasing the mean citation number for Turkey. However, it is very important to make this contribution in accordance with scientific publication ethics (111, 112).

In our study, the oldest of the most cited papers was from 1992, and it can be seen in the evaluation of five-year periods that the number of the most cited articles gradually increased after 1990, peaking between 2000 and 2005, and then declining again (91, 108). Fifty-three of the 101 most cited papers were published between 2000 and 2005.

Our study is important in because it reveals the articles, authors, and institutions that have contributed most to international literature in ORL in the last 30 years. Similar studies should be repeated across specific periods to observe national development and determine Turkey's place in the research world. In addition, this kind of bibliometric study can help young academicians understand areas and studies draw the most attention to help them choose journals to submit their papers to.

Ethics Committee Approval: Ethics committee approval was not received for this study as it was a bibliometric study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - T.K.E.; Design - T.K.E., G.K.; Supervision - T.K.E; Materials - T.K.E, G.K.; Data Collection and/or Processing - T.K.E., G.K.; Analysis and/or Interpretation - T.K.E.; Literature Search - T.K.E.; Writing Manuscript - T.K.E., G.K.; Critical Review - T.K.E., G.K.

Acknowledgements: We would like to thank the library manager Specialist Abdullah Murat Mete for his help in the data analysis of Web of Science.

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.

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