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Original Article

Turkish Publications in Science Citation Index and Citation Index-Expanded Indexed Journals in the Field of Anaesthesiology: A Bibliographic Analysis

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Abstract

Objective: Our study aimed to assess Turkish publications in Science Citation Index (SCI) and Science Citation Index Expanded (SCI-E) indexed journals in the field of 'anaesthesiology'.

Methods: Journals related to 'anaesthesiology' in the Science Citation Index-Expanded database of 'Thomson Reuter Web of Science' were searched. The search engine of Institute for Scientific Information (ISI) Web of Science (WoS) was used in the advanced mode by typing 'IS=ISSN number' to identify publications in the journal. By typing 'IS=ISSN number AND CU=Turkey', Turkish papers on anaesthesiology were found. If Turkish and non-Turkish authors had collaborated, the article was included in the search when the corresponding author had provided a Turkey-based address. The catalogue information and statistics were used to determine Turkish publications as the percentage of total publications and the annual mean number of Turkish publications. In WoS, 'SU=anesthesiology' was used to determine the number, country, year and topic distributions of publications from 1975 to date and within the last 10 years. The citation numbers and h-indices were determined based on the country for publications within the last 10 years.

Results: From 1975 to the early 2000s Turkey was 20th in the list of countries with highest number of publications on anaesthesiology, however in the last 10 years Turkey moved up to 18th place. Its mean citation number has been 4.64, and it remains the 2nd lowest country pertaining to citations among the 22 countries with the most number of publications. According to the percentage of publications in the field of anaesthesiology, the journals with highest rate of Turkish publications were Revista Brasileira de Anestesiologia, European Journal of Anaesthesiology and Journal of Anesthesia.

Conclusion: In the field of anaesthesiology, the highest number of articles from Turkey was published in Revista Brasileira de Anestesiologia, European Journal of Anaesthesiology and Journal of Anesthesia. The mean citation number from these publications was 4.64.

Keywords: Anaesthesiology, Science Citation Index, Science Citation Index Expanded, Turkey

Introduction

The number of scientific publications in internationally recognized indexes is one of the important indicators of the scientific activity of a country (1). The publications produced as a result of scientific researches are among the most used parameters to evaluate the scientific performances of individuals, institutions, or countries. By evaluating the number of publications of the countries in different disciplines, the development of a country can be monitored in certain periods of time and comparisons with other countries can also be made (1-4). While bibliometric studies in this regard are commonly encountered in the literature, these types of publications are very limited in the field of anaesthesiology (5).

It is not easy to assess the scientific research performance of a person, an institution, or a country in the field of health. For this purpose, the number of publications produced as a result of scientific researches can be determined and the quality of publications can also be assessed with some parameters developed (2, 3). On the other hand, in recent years, studies evaluating our international scientific publishing performance have also been started to be conducted in various branches such as general surgery, emergency medical science, and oncology in our country (6-10). Bas et al. (7) examined the scientific performance of our country in the field of transplantation. They have found that our country has shown a significant increase in terms of scientific articles published in the field of transplantation in the past 30 years and has improved ranking among the other countries in the last 10 years. They have emphasized that such studies can answer societal questions. On

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the basis of the Web of Science data, Onat (11) reviewed 160 publications that received 40 or more citations from Turkey by the end of July 2015 in the study he conducted in the field of cardiovascular medicine to identify the publications that made the most contributions from the Turkish institutions. In the result of this study, it was identified that Turkey's contribution to the field of cardiovascular medicine was insufficient, and according to this assessment, it was remarked that it somewhat regressed especially after 2006. The authors have emphasized the need for a profound and multifaceted effort to shape an environment that focuses on researches that can contribute to medicine.

The purpose of this study is to evaluate the quantity and quality of the publications from Turkey in anaesthesiology journals within the scope of the Science Citation Index (SCI) and SCI-Expanded (SCI-E) as well as to compare these data with the world data.

Methods

Our study is a retrospective observational study. It has been conducted after the approval (Decision no. 2015/28-05) of Non-interventional Ethics Committee of Dokuz Eylül University.

In the first phase of our study, the list of journals in the SCI/SCI-E index and the International Standard Serial Number (ISSN) numbers were reached by selecting "anaesthesiology" in the SCI and SCI-E journals on the "Thomson Reuters Web of Science" database. All the publications and issues of the journal were specified by selecting "IS = ISSN number" in the advanced mode of the WoS search engine of the Institute for Scientific Information (ISI). The words "IS=ISSN number AND CU=Turkey" were written, and the articles published in the field of anaesthesiology in Turkey were determined (dated 28 January, 2016). The same procedure was also applied in the PubMed database to provide double control. In the articles in which the Turkish and non-Turkish authors worked together, the article was included in the study only when the responsible author was from Turkey. The catalogue information, the duration of publication, the total number of issues, and the number of publications from Turkey were determined. The ratio of publications from Turkey was determined in the total annual publications of the journal, and the relation between the journals and the "Impact" factor (IF) was investigated (10, 12).

The percentage of publications accepted from Turkey
It is the ratio which is calculated by multiplying the number of publications published in Turkey by 100 and dividing the result by the determined total number of publications of the same journal. It shows the percentage of article publications from Turkey among the publications which the journal publishes and it has been defined as the publication acceptance percentage of the related journal.

Turkey's annual publication average
It is the number that is calculated by dividing the number of publications from Turkey published in a journal by the duration of publication, considering the year given in the catalogue as the first year of publication. It shows how many articles the journal publishes from Turkey in a year, and it has been defined as the yearly publication average of Turkey origin in the related journal.

In the second phase of our study, all the publications indexed in WoS in the field of anaesthesiology were reached by writing "SU=anaesthesiology" in the advanced mode of the WoS search engine of ISI, and all related publications were determined and listed according to countries, years, field of publication, and subject through the "Analyze Results" tab. The distributions of subjects were determined to cover the years as of 1975 as well as the last 10 years. Then, in the WoS search engine of ISI, the last 10-year h-index values of all countries were determined through the "Citation Report" tab by writing "SU=anaesthesiology AND CU=country name" in advanced mode. In addition, the publications of only our country were determined and listed according to the years and subjects through "SU=anaesthesiology AND CU=Turkey" "Analyze Results" tab.

No publications about intensive care were received at any stage of this study.

The primary endpoint of this study is to determine the rate of publication and the annual publication average in Turkey in the field of anaesthesiology in the journals of SCI/SCI-E index and the secondary endpoint is to compare the number of citations and h-indexes of Turkish publications with those of the other countries.

Statistical analysis
The data of the study were analyzed using the package program of Statistical Package for the Social Sciences 15.0 (SPSS Inc., Chicago, IL). The Mann–Whitney U test was used for the statistical evaluation of the percentages and annual average of the publications in the journals that were grouped with different criteria and originated from Turkey. The relation between the IF of the journals and the percentage and annual publication average of the publications from Turkey was analyzed by the Pearson correlation test. P value of less than 0.05 was considered as a significant difference.

Results

In the field of anaesthesiology, *Revista Brasileira de Anestesiologia*, *European Journal of Anaesthesiology*, and *Journal of Anaesthesia* were determined as the journals that accepted publications at the highest rate according to the percentage of publication acceptance from our country. According to the annual number of publication acceptance, the *European Journal of Anaesthesiology*, *Pediatric Anaesthesia,* and *Journal of Cardiothoracic and Vascular Anaesthesia* were determined as the journals that accepted the highest number of studies. No

articles from our country were published in *Schmerz*, *Anasthesiologie* & *Intensivmedizin*, and the *Anaesthesia Critical Care & Pain Medicine*. The total number of publications from our country is below 5 in 5 (16.6%) of 30 journals in the field of anaesthesiology in SCI/SCI-E (Tables 1 and 2).

There was a significant relationship between the language of the journal and the percentage and annual publication average of the publications from Turkey. In the English-language journals, the percentage of publications from Turkey (p=0.012) and the annual publication average of Turkey

Table 1. Catalogue information of journals indexed in anaesthesiology SCI/SCI-E

Journal name	Language	ISSN	SCI/SCI-E	Year of first publication	Frequency of publication	Country	IF
Revista Brasileira De Anestesiologia	English	0104-0014	SCI-E	1951	Once a month	Brazil	0.510
European Journal of Anaesthesiology	English	0265-0215	SCI-E	1984	Once a month	England	2.792
Journal of Anaesthesia	English	0913-8668	SCI-E	1987	4 times a year	Japan	0.867
Pediatric Anaesthesia	English	1155-5645	SCI-E	1991	Once a month	France	2.436
Pain Practice	English	1530-7085	SCI-E	2001	4 times a year	USA	2.605
BMC Anaesthesiology	English	1471-2253	SCI-E	2001	Irregular	England	1.188
Journal of Clinical Anaesthesia	English	0952-8180	SCI-E	1988	8 times a year	USA	1.145
Journal of Neurosurgical Anaesthesiology	English	0898-4921	SCI	1989	4 times a year	USA	2.99
Journal of Cardiothoracic and Vascular Anaesthesia	English	1053-0770	SCI	1991	Once a month	USA	1.482
Journal of Clinical Monitoring and Computing	English	1387-1307	SCI-E	1988	8 times a year	Holland	1.985
Acta Anaesthesiologica Scandinavica	English	0001-5172	SCI	1957	10 times a year	England	2.322
Pain Physician	English	1533-3159	SCI-E	1999	6 times a year	USA	3.542
International Journal of Obstetric Anaesthesia	English	0959-289X	SCI-E	1991	4 times a year	Holland	1.799
Regional Anaesthesia and Pain Medicine	English	1098-7339	SCI-E	1998	Once a month	USA	3.089
Anaesthesia and Intensive Care	English	0310-057X	SCI	1972	Once a month	Australia	1.396
Anaesthesia and Analgesia	English	0003-2999	SCI	1957	Once a month	USA	3.472
Clinical Journal of Pain	English	0749-8047	SCI-E	1985	9 times a year	USA	2.552
Minerva Anestesiologica	Italian English	0375-9393	SCI-E	1953	Once a month	Italy	2.134
European Journal of Pain	English	1090-3801	SCI-E	1997	10 times a year	England	3.067
Pain	English	0304-3959	SCI	1975	21 times a year	USA	5.644
Canadian Journal of Anaesthesia	English French	0832-610X	SCI	1987	11 times a year	USA	2.527
Current Opinion in Anaesthesiology	English	0952-7907	SCI-E	1988	Once a month	USA	1.979
British Journal of Anaesthesia	English French German	0007-0912	SCI	1923	Once a month	England	4.853
Anaesthesia	English	0003-2409	SCI	1946	Once a month	England	3.382
Anaesthesist	English German	0003-2417	SCI-E	1952	Once a month	Germany	0.847
Anaesthesiology	English	0003-3022	SCI	1940	Once a month	USA	5.879
Anasthesiologie Intensivmedizin Notfallmedizin Schmerztherapie	German	0939-2661	SCI-E	1991	Once a month	Germany	0.438
Anaesthesia Critical Care & Pain Medicine	English	2352-5568	SCI-E	2015	6 times a year	France	-----
Anasthesiologie & Intensivmedizin	German	0170-5334	SCI-E	1960	Once a month	Germany	1.09
Schmerz	German	0932-433X	SCI	1987	Once a month	Germany	1.017

Table 2. Publications from Turkey in journals indexed in anaesthesiology SCI/SCI-E

Journal name	Number of total publications	Number of publications from Turkey	Accepted publications from Turkey %	Mean annual number of publications from Turkey
Revista Brasileira de Anestesiologia	1,614 (PubMed)	114 (PubMed)	7.05 (PubMed)	1.75 (PubMed)
European Journal of Anaesthesiology	4,493 (WoS) 4,196 (PubMed)	244 (WoS) 185 (PubMed)	5.43 (WoS) 4.40 (PubMed)	7.62 (WoS) 5.78 (PubMed)
Journal of Anaesthesia	1,596 (WoS) 2,800 (PubMed)	97 (WoS) 95 (PubMed)	6.07 (WoS) 3.39 (PubMed)	3.34 (WoS) 3.27 (PubMed)
Pediatric Anaesthesia	4,711 (WoS) 4,544 (PubMed)	206 (WoS) 111 (PubMed)	4.37 (WoS) 2.44 (PubMed)	8.24 (WoS) 4.44 (PubMed)
Pain Practice	624 (WoS) 1,028 (PubMed)	16 (WoS) 24 (PubMed)	2.56 (WoS) 2.33 (PubMed)	1.06 (WoS) 1.60 (PubMed)
BMC Anaesthesiology	439 (WoS) 523 (PubMed)	10 (WoS) 11 (PubMed)	2.27 (WoS) 2.10 (PubMed)	0.66 (WoS) 0.73 (PubMed)
Journal of Clinical Anaesthesia	3,549 (WoS) 3,758 (PubMed)	80 (WoS) 77 (PubMed)	2.25 (WoS) 2.04 (PubMed)	2.85 (WoS) 2.75 (PubMed)
Journal of Neurosurgical Anaesthesiology	1,484 (WoS) 1,569 (PubMed)	39 (WoS) 32 (PubMed)	2.62 (WoS) 2.00 (PubMed)	1.44 (WoS) 1.18 (PubMed)
Journal of Cardiothoracic and Vascular Anaesthesia	4,394 (WoS) 5,286 (PubMed)	113 (WoS) 104 (PubMed)	2.57 (WoS) 1.96 (PubMed)	4.52 (WoS) 4.16 (PubMed)
Journal of Clinical Monitoring and Computing	749 (WoS) 1,153 (PubMed)	13 (WoS) 17 (PubMed)	1.73 (WoS) 1.47 (PubMed)	0.46 (WoS) 0.60 (PubMed)
Acta Anaesthesiologica Scandinavica	9,315 (WoS) 7,811 (PubMed)	140 (WoS) 107 (PubMed)	1.50 (WoS) 1.36 (PubMed)	2.37 (WoS) 1.81 (PubMed)
Pain Physician	1,030 (WoS) 1,485 (PubMed)	22 (WoS) 19 (PubMed)	2.13 (WoS) 1.27 (PubMed)	1.29 (WoS) 1.11 (PubMed)
International Journal of Obstetric Anaesthesia	1,890 (WoS) 1,943 (PubMed)	33 (WoS) 22 (PubMed)	1.74 (WoS) 1.13 (PubMed)	1.32 (WoS) 0.88 (PubMed)
Regional Anaesthesia and Pain Medicine	2,382 (WoS) 2,437 (PubMed)	33 (WoS) 26 (PubMed)	1.38 (WoS) 1.06 (PubMed)	1.83 (WoS) 1.44 (PubMed)
Anaesthesia and Intensive Care	6,614 (WoS) 6,327 (PubMed)	52 (WoS) 49 (PubMed)	0.78 (WoS) 0.77 (PubMed)	1.18(WoS) 1.11 (PubMed)
Anaesthesia and Analgesia	26,038 (WoS) 22,711 (PubMed)	180 (WoS) 110 (PubMed)	0.69 (WoS) 0.48 (PubMed)	3.05 (WoS) 1.86 (PubMed)
Clinical Journal of Pain	2,416 (WoS) 2,420 (PubMed)	15 (WoS) 11 (PubMed)	0.62 (WoS) 0.45 (PubMed)	0.48 (WoS) 0.35 (PubMed)
Minerva Anestesiologica	1,706 (WoS) 8,397 (PubMed)	44 (WoS) 37 (PubMed)	2.57 (WoS) 0.44 (PubMed)	0.69 (WoS) 0.58 (PubMed)
European Journal of Pain	2,190 (WoS) 2,080 (PubMed)	10 (WoS) 9 (PubMed)	0.45 (WoS) 0.43 (PubMed)	0.52 (WoS) 0.47 (PubMed)
Pain	9,253 (WoS) 2,080 (PubMed)	7 (WoS) 9 (PubMed)	0.07 (WoS) 0.43 (PubMed)	0.17 (WoS) 0.21 (PubMed)
Canadian Journal of Anaesthesia	7,474 (WoS) 7,147 (PubMed)	23 (WoS) 20 (PubMed)	0.30 (WoS) 0.27 (PubMed)	0.79 (WoS) 0.68 (PubMed)
Current Opinion in Anaesthesiology	970 (WoS) 1,947 (PubMed)	1 (WoS) 4 (PubMed)	0.10 (WoS) 0.20 (PubMed)	0.03 (WoS) 0.14 (PubMed)
British Journal of Anaesthesia	20,439 (WoS) 17,341 (PubMed)	172 (WoS) 32 (PubMed)	0.84 (WoS) 0.18 (PubMed)	1.84 (WoS) 0.34 (PubMed)

Table 2. Publications from Turkey in journals indexed in anaesthesiology SCI/SCI-E (continued)

Journal name	Number of total publications	Number of publications from Turkey	Accepted publications from Turkey %	Mean annual number of publications from Turkey
Anaesthesia	20,782 (WoS) 18,099 (PubMed)	46 (WoS) 28 (PubMed)	0.22 (WoS) 0.15 (PubMed)	0.65 (WoS) 0.40 (PubMed)
Anaesthesist	6,541 (WoS) 7,829 (PubMed)	9 (WoS) 6 (PubMed)	0.13 (WoS) 0.07 (PubMed)	0.14 (WoS) 0.09 (PubMed)
Anaesthesiology	31,309 (WoS) 22,211 (PubMed)	29 (WoS) 12 (PubMed)	0.09 (WoS) 0.05 (PubMed)	0.38 (WoS) 0.15 (PubMed)
Anasthesiologie Intensivmedizin Notfallmedizin Schmerztherapie	2,569 (WoS) 2,935 (PubMed)	5 (WoS) 1 (PubMed)	0.19 (WoS) 0.03 (PubMed)	0.21 (WoS) 0.04 (PubMed)
Anaesthesia Critical Care & Pain Medicine	79 (WoS) 101 (PubMed)	0 0	0 (WoS) 0 (PubMed)	0 (WoS) 0 (PubMed)
Anasthesiologie & Intensivmedizin	2,571 (WoS)	0	0 (WoS)	0 (WoS)
Schmerz	1,444 (WoS) 1,802 (PubMed)	0 (WoS) 0 (PubMed)	0 (WoS) 0 (PubMed)	0 (WoS) 0 (PubMed)

Table 3. Evaluation of journals indexed in anaesthesiology SCI/SCI-E according to their categories

	Category	Total publications	Total publications in Turkey	Publications from Turkey %	Ratio of publications from Turkey
Journal name	English (n=26)	5786.15±6652.70	4.7.46±48.54	1.44±1.59	1.43±1.50
	Non-English (n=4)	3836.75±3105.71	9.50±18.33	0.11±0.21	0.15±0.28
	P (language)	0.951	0.044*	0.012*	0.012*
SCI-SCI/E	SCI (n=11)	1,018.418±279.16	45.72±41.49	0.69±0.74	1.08±1.20
	SCI-E (n=19)	2829.52±2189.54	40.47±51.37	1.59±1.81	1.36±1.61
	P (SCI/SCI-E)	0.014*	0.366	0.182	0.880
Geographical location	Europe (n=16)	5455.87±5478.09	38.43±52.24	0.93±1.21	1.07±1.66
	Non-Europe (n=14)	5606.64±7328.87	46.92±42.45	1.64±1.84	1.47±1.22
	P (geographical location)	0.755	0.328	0.129	0.096

*p<0.05.

(p=0.012) were found to be significantly higher. In the journals issued in languages other than English, the percentage of publications from Turkey and the annual publication average in Turkey were determined to be lower (Table 3).

Although the percentages and annual publication average of the publications from Turkey are low in SCI journals (compared to SCI-E journals) and European journals (compared to non-European journals), there is not a significant difference between (p>0.05). Although a negatively correlated relationship was found between the IF and the percentages (r=–0.301; p=0.113) and the annual publication average (r=–0.131; p=0.498) of the publications from Turkey, no statistically significant correlation could be found (p>0.05) (Table 3).

Among the countries with the highest number of publications in the field of anaesthesiology, Turkey is in the 20th place in the ranking as of 1975 and in the 18th place in the last 10-year ranking. The average number of citations is 4.64, and it is the second country with the lowest number of citations among the 22 countries with the highest number of publications.

The publication fields in anaesthesiology of Turkey and the world between 1975 and 2016 are shown in Table 4. The publications in the field of anaesthesiology, the average numbers of citations by years and h-index of the countries such as Turkey, the United States, the United Kingdom, Germany, France, Canada, Japan, Australia, Sweden, the Netherlands, Scotland, Italy, Switzerland, Denmark, Austria, Federal Germany, Belgium, India, China, Finland, Spain, and South Korea are shown in Table 5. The distribution of publications of

Table 4. Anaesthesiology fields of publications from Turkey and other countries across the world between 1975 and 2016

	In Turkey				In the World			
	Between 1975 and 2016		Between 2007 and 2016		Between 1975 and 2016		Between 2007 and 2016	
	Total number	%	Total number	%	Total number	%	Total number	%
Pediatrics	216	10.86	110	10.27	4,943	2.46	2,744	4.25
Neuroscience, Neurology	129	6.48	79	7.37	20,062	9.98	10,145	15.72
Cardiovascular system	118	5.93	57	5.32	4,668	2.32	2,295	3.55
Internal Diseases	110	5.53	75	7.00	14,498	7.21	5,645	8.75
Respiratory system	118	5.93	57	5.32	4,564	2.27	2,295	3.55
Surgery	39	1.96	15	1.40	1,707	0.84	680	1.05
Obstetrics and gynecology	33	1.65	14	1.30	1,883	0.93	994	1.54
Pharmacology	---	---	86	0.13	481	0.23	86	0.13
Emergency medicine	---	---	33	0.05	209	0.10	33	0.05
Psychiatrics	---	---	8	0.01	8	0.00	8	0.01
Substance abuse	---	---	8	0.01	116	0.05	8	0.01
Medical informatics					358	0.17	8	0.01
Biochemistry and molecular biology					320	0.15		
Physiology					281	0.14		
Endocrinology metabolism					36	0.01	---	
Pathology					21	0.01	---	
Medical laboratory technology					43	0.02	---	
History of science philosophy					92	0.04	---	---
Rehabilitation					64	0.03	---	---
Experimental medicine					51	0.02	---	
Oncology					47	0.02	---	
Anaesthesiology	1,989	100	1,071	100	200,943	100	64,516	100

Turkey and the world in the field of anaesthesiology between 1975 and 2016 and in the last 10 years is given in Table 6. While it was found that the most publications in the field of anaesthesiology were made in 2013 (11.63%) in the world in the last 10 years, it was determined that the most publications (16.99%) were made in the year 2015 in Turkey.

Discussion

There was a significant relationship between the language of the journal and the percentage and the annual publication average of the publications from Turkey. Although the percentage and the annual publication average of the publications from Turkey were low in the SCI journals and in the journals published in Europe, no significant difference was found between. There was no significant correlation between the IF and the percentage and the annual publication average of the publications from Turkey. Among the countries with the highest number of publications in the field of anaesthesiology, Turkey ranked 20th in 1975 and 18th in the last 10-year ranking. The average number of citations is 4.64, and it is the second country with the lowest number of citations among the 22 countries with the highest number of publications.

The number of publications, the number of citations, h-index, and the number of publications in indexed journals are the most important parameters in evaluating the scientific productivity (12). The number and the quality of publications show how much new information the countries contribute to science. This situation is associated with the budget allocated to research, the support given to institutions for scientific productivity, and the academic environment, in addition to the factors such as individual motivation, incentive, or increased income and economic development (13).

In our study, the publications from Turkey were evaluated in the journals indexed in SCI/SCI-E in the field of "Anaesthesiology." In the research that we conducted under the field

Table 5. Total publication numbers, mean citation, and h-index according to years in Turkey and in the world

	Between 1975 and 2016		Between 2007 and 2016			
Country	Total number of publications	Total rate of publications	Total number of publications	Total rate of publications	Mean citation	h-index
United States of America	61,471	30.59%	16,814	26.06%	----	----
England	25,883	12.88%	7,376	11.43%	7.27	83
Germany	17,471	8.69%	6,644	10.29%	7.72	78
France	11,999	5.97%	4,914	7.61%	5.49	62
Canada	10,536	5.24%	3,869	5.99%	10.29	75
Japan	9,153	4.55%	2,696	4.17%	5.39	42
Australia	7,538	3.75%	2,458	3.81%	9.22	56
Sweden	4,671	2.32%	1,180	1.82%	10.80	47
Holland	3,960	1.97%	1,847	2.86%	11.72	57
Scotland	3,885	1.93%	1,144	1.77%	6.97	40
Italy	3,861	1.92%	2,236	3.46%	8.77	53
Switzerland	3,607	1.79%	1,439	2.23%	10.36	54
Denmark	3,565	1.77%	1,422	2.20%	13.17	57
Austria	3,035	1.51%	807	1.25%	11.36	44
Federal Republic of Germany	2,933	1.46%	----	----	----	
Belgium	2,852	1.41%	1,129	1.75%	12.06	53
India	2,679	1.33%	1,554	2.40%	2.28	21
China	2,467	1.22%	1,911	2.96%	7.02	43
Finland	2,436	1.21%	569	0.88%	13.14	39
Turkey	1,989	0.99%	1,071	1.66%	4.64	28
Spain	1,904	0.94%	908	1.40%	9.46	42
South Korea	1,588	0.79%	1,175	1.82%	5.82	29
Total	200,943	100%	64,516	100%	-----	-----

name of anaesthesiology, we found that the publications from our country were published in *Revista Brasileira de Anestesiologia*, *European Journal of Anaesthesiology, and Journal of Anaesthesia*.

A bibliometric study in the field of anaesthesiology was done previously. Boldt et al. (4) examined the articles published in SCI journals between 1997 and 1998. The researchers also carried out their second study on the same subject between the years 2007 and 2008 (5). A total of 23 countries were included in the last study of the authors. In this study, our country ranked 7th with 127 articles and with a percentage of 3.5 among all studies. As a result, they stated that middle-income countries had more commonly appeared in the lists in comparison to the last 10 years but had not been similar to low-income countries. The researchers thought that very few studies from low-income countries were in fact a measurement related to their research productivity and that this result might, in some cases, increase the number of publications of low-income countries. Thus, they emphasized that questions specific to such societies could be answered (5).

Yılmaz et al. (12) evaluated the scientific publication performance of Turkey and the world in the field of anaesthesiology with a bibliometric study. According to the results of this study, it was determined that the total number of publications in the journals of anaesthesiology with high citations from Turkey significantly decreased from 2004 to 2009 and increased again after 2009. They reported that Turkish authors preferred *Pediatric Anaesthesia* the most in comparison to other journals. In reference to this study, the first five countries with publications in the field of anaesthesiology are the developed countries such as the United States, United Kingdom, Germany, France, and Canada; Turkey ranks 14th in this study. In the light of all the findings they obtained, the authors concluded that it is necessary to establish continuous and consistent scientific publishing policies supported by the

Table 6. Distribution of publications in the field of anaesthesiology in the last 10 years in Turkey and in the world

	In Turkey		In the World	
Years	**Total number**	**%**	**Total number**	**%**
2007	114	10.64	6,533	10.12
2008	131	12.23	6,121	9.48
2009	100	9.33	6,481	10.04
2010	90	8.40	6,188	9.59
2011	67	6.25	6,309	9.77
2012	100	9.33	7,037	10.90
2013	111	10.36	7,504	11.63
2014	98	9.15	6,950	10.77
2015	182	16.99	7,175	11.12
2016	78	7.28	4,218	6.53

state to ensure our country to be in a certain scientific position in the world (12). In our study as well, the countries with the highest number of publications in the field of anaesthesiology were examined as of 1975 as well as in the last 10 years, and it was found that the developed countries such as the United States, Britain, Germany, France, and Canada were in the top five. Turkey ranked 20th in 1975 and 18th in the last 10 years. Denmark, Finland, Belgium, the Netherlands, and Austria were the top five countries with the highest average citation rate (between 11.36 and 13.17).

The countries with the highest number of publications and the countries with the highest number of citations are not the same. The results are not the same for the citation rates of the countries with high numbers of publications. Another parameter that is as important as the number of publications is how far these publications are followed and evaluated. Citations are very important to evaluate the quality of a publication (12). The average number of citations in Turkey was 4.64. In our assessment, our country's publication average was 1.99% as of 1975 but increased to 1.66% in the last 10 years. While 10.64% of the publications from Turkey were made in 2007, this ratio increased to 16.99% in 2015. However, the second lowest rate in terms of average citations belongs to our country. In a similar study conducted in the past years, it was emphasized that the average number of citations of our country was higher than that of the United Kingdom, France, Japan, and India which were in top places in terms of the number of publications and that the publications from our country were quality, although the number was low (12). However, in our recent analysis, although an increase in the number of publications is remarkable, the fact that our country is the second to have the lowest citation average in the last 10 years indicates that the publications have not reached a sufficient quality. We also agree that the results of our study support the study of Onat (11) in this regard and that a deep and multifaceted effort should be made to shape an environment that focuses on research that can contribute to medicine in the field of anaesthesiology.

Over the past 10 years, China, South Korea, and Brazil have been experiencing growth in their economies, and thus, an increase in the numbers of publications draws attention. This result has been found similar to the study performed by Yilmaz et al. (12). These developing countries acknowledge the scientific publishing policy as a state policy and the economies of strong countries provide finance more easily for this business that brings cost (12).

When examined as of 1975, it was determined that while there were more publications related to neuroscience and neurology in the whole world in the field of anaesthesiology, the publications in pediatrics were more prevalent in Turkey. This result was found similar to the results of the study (12) conducted between 2004 and 2013. The researchers have stated that this result is due to the fact that there are more children and young people in our country. We share the same thoughts with the researchers.

However, this study was evaluated using only the "Thomson Reuters Web of Science" database and the "PubMed" database was not included; in our study, both the "Thomson Reuters Web of Science" and the "PubMed" database were included, and the publication ratios in SCI/SCI-E journals from our country and the factors affecting it were also investigated.

Some scientific journals also publish poster presentations of related congresses in the database of "Thomson Reuters Web of Science." In this case, because the data obtained will also include the poster presentations, they may be scientifically controversial. In this study, we evaluated both databases, and in statistical analysis, we only used data from the "PubMed" database for more accurate data analysis and presentation because it did not have posters.

In addition, Yilmaz et al. (12) provided the numbers of only those publications from Turkey which appeared in journals. No information was presented about the annual publication average of Turkey. To have a more objective guidance, we also determined the percentage and the annual publication average of the publications from Turkey in the journals indexed in SCI/SCI-E in the field of anaesthesiology.

In our study, *Revista Brasileira de Anestesiologia*, *European Journal of Anaesthesiology*, and *Journal of Anaesthesia* were determined as the ones that accepted the highest percentage of publications from our country according to the acceptance rates. According to the annual number of publication acceptance, the *European Journal of Anaesthesiology*, *Pediatric Anaesthesia*, and *Journal of Cardiothoracic and Vascular Anaesthesia* were determined as the journals that accepted the highest number of studies. No articles from our country were

published in *Schmerz, Anasthesiologie & Intensivmedizin,* and the *Anaesthesia Critical Care & Pain Medicine*.

There are a total of 30 journals in the field of anaesthesiology in SCI/SCI-E. In 5 (16.6%) of these journals, the total number of publications from our country is below 5 (Table 1). In general, there is a widespread belief among the authors that the acceptance of publications is more difficult in SCI journals (when compared to SCI-E journals). However, the results of this study do not support this view. Although the percentage of publications and the annual average of publications from Turkey were low in SCI journals in comparison to SCI-E journals, it was not significantly different. Even though the ratios of publications from Turkey and the annual publication average were low in European journals, when compared with non-European journals in terms of percentage and annual publication averages from Turkey, this difference was not statistically significant.

Another common opinion among authors is that as the IF of anaesthesia journals increases, the possibility of accepting or publishing the articles decreases. In this study, however, the results do not support this opinion, and there is no correlation between the IF and the percentages of publications and the annual publication average from Turkey.

We think that when our study is evaluated with the catalogue information of the journals, the duration of publications, the total number of publications, publications from Turkey, and all the results obtained by using IF, it could provide a guidance for the authors of our country who are especially at the stage of sending the article to a journal, which is the first step to turn it to a publication.

The limitations of this study is that while the percentage of publications from Turkey and the annual average of publications from Turkey were evaluated, the publications were not classified as original article, compilation, letter to the editor, or case report. The result obtained was given as a total number. In the articles for which Turkish and non-Turkish authors worked together, the article was included in the study if the responsible author was from Turkey; others were excluded. Another limitation is that the subjects were not classified under certain headings of anaesthesia (airway, obstetric anaesthesia, regional anaesthesia, etc.). In addition, the field of "Intensive Care" in which many of our colleagues interested in Anaesthesiology and Reanimation make publication is a separate section in the SCI and SCI-E in the Thomson Reuters WoS database, and this was not included in our study. Only 30 journals on the date of January 28, 2016, under the title "Anaesthesiology" were examined in our study.

The first condition among the developed countries in terms of scientific publication in the world is to do a lot of quality researches. The number of articles published in the field of anaesthesiology in the last 10 years and the rate of publications in indexed journals have increased with the contribution of the countries that understand the importance of this issue (12-15).

Conclusion

While such bibliographic articles offer the possibility of objective evaluation of the publication performances in certain areas of our country, on the other hand, they have the potential to be a guide in selecting the journal especially for our colleagues who have made and have been making publications. It is also suggested that such studies should be updated and rewritten at certain intervals to be able to provide healthy data.

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