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Original Investigation

Overview of the publications of rheumatologists after the millennium

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Abstract

Objective: Scientific progress can be directly measured by the growth of the scientific archive. To our knowledge, there has never been a systematic evaluation of the number and properties of the publications of rheumatologists. In this paper, we aimed to evaluate the properties of these papers.

Material and Methods: All papers that were published between 2000 and 2011 by at least one rheumatologist author and that were indexed in Science Citation Index Expanded were evaluated. For this purpose, we used the ISI web of knowledge web of science software.

Results: Original articles were the most common document type. Most of the papers were published in rheumatology journals. From the point of the number of published papers, the top 3 countries were United States, England, and Germany; the top 3 journals were Annals of Rheumatic Diseases, Rheumatology, and Arthritis and Rheumatism, and the top 3 institutes are Harvard University, Leiden University, and The Imperial College of Science, Technology. Moreover, the publications of rheumatologists increased annually between 2000 and 2011.

Conclusion: This paper is an overview of the publications of rheumatologists between 2000 and 2011. The results indicate an increasing trend of scientific productivity for rheumatologists. The outcomes about countries, institutions, and journals are in concordance with the general medical publication trends. More than half of the publications written by rheumatologist were published by rheumatology journals. We consider only quantitative data about publications; new research is required to qualitatively evaluate the data.

Keywords: Rheumatology, rheumatologist, publication, rheumatic diseases

Introduction

Scientific progress can be directly measured by the growth of the scientific archive, and science policy can be based upon the bibliometric analyses of the number of authors, citations, or research sites that clusters of papers have in common (1). To our knowledge, there has never been a systematic evaluation of the number, coverage, and source of the publications of rheumatologists.

In this paper, we aimed to provide an overall glance of the publications of rheumatologists after the millennium, especially with an emphasis on journal categories, countries, institutes, and publication year.

Material and Methods

All papers that were published in the journals that are indexed in Science Citation Index Expanded between 2000 and 2011 and that have at least one of the authors as a rheumatologist were evaluated. For this purpose, we used ISI web of knowledge web of science software to obtain the number and properties of the papers published by rheumatologists. For determining these publications, we used the search the term "rheum" in the affiliation field. Also, the publication date was selected between 2000 and 2011. Moreover, Science Citation Index Expanded was selected in the citation databases field. Following that, all the retrieved papers from this search were individually evaluated according to the author affiliations, publication date, origin country, journal type, and document type. Also, improper papers with respect to our inclusion criteria were excluded after further evaluation. Statistical Package for Social Sciences (SPSS) version 17.0 (SPSS Inc., Chicago, IL, USA) was used for statistics. Only percentages were calculated. This study was approved by the regional research ethics committee.

Results

A total of 69551 papers fulfilled the inclusion criteria for further evaluation. Original articles were the most frequent document type comprising 59.0% of all papers. Other document types following original articles were meeting abstracts with 23.4% and reviews with 7.7%. Moreover, more than half of the papers (51.9% of all papers) were published in rheumatology journals. The top 10 journal categories in which these pa-

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Table 1. Top 10 journal categories

Journal Categories	Number of Publications	(%)
Rheumatology	36151	51.97
Immunology	8097	11.64
General internal medicine	4201	6.04
Biochemistry and molecular biology	2893	4.16
Endocrinology and metabolism	2711	3.89
Cell biology	2165	3.11
Research experimental medicine	1716	2.46
Pharmacology	1690	2.43
Orthopedic	1622	2.33
Hematology	1581	2.27

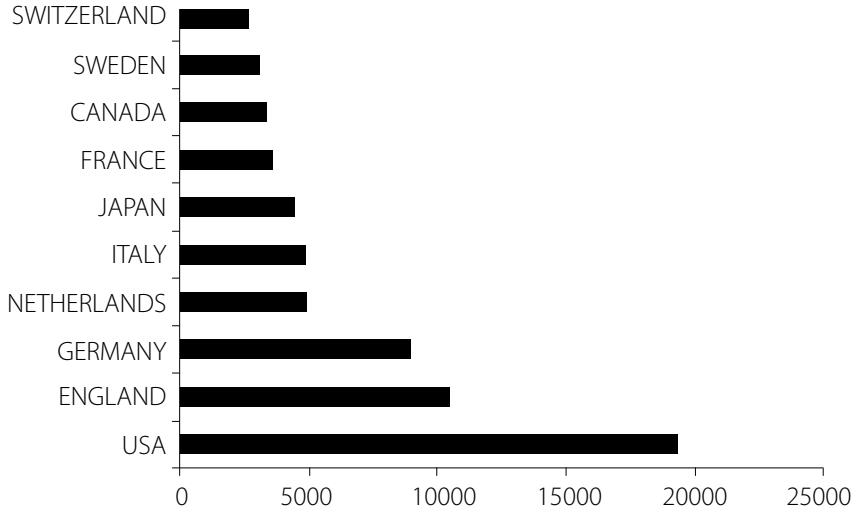

Figure 1. Top 10 countries publishing rheumatology papers

pers were published are shown (Table 1). Separately, the top 3 countries for the number of published papers were United States, England, and Germany. These three countries published more than half of all the papers. Figure 1 shows the 10 countries publishing the highest total number of papers. Likewise, Annals of Rheumatic Diseases with 10.6%, Rheumatology with 7.6%, and Arthritis and Rheumatism with 5.9% were the top 3 journals in terms of quantity. On the other hand, 2.7% of all the papers were published from Harvard University, 1.6% from Leiden University, and 1.6% from The Imperial College of Science, Technology and Medicine. In 2000, rheumatologists published only 3278 papers; this number increased annually, and after increasing more than twofold, reached the number of 7461 in 2011. Figure 2 illustrates the distribution of published documents between 2000 and 2011.

Discussion

The results of our report show that the scientific productivity of rheumatologists annually increased. After the first eleven years of the millennium, the number of papers that were published by rheumatologists increased more than twofold compared with that published in 2000. This may indicate that the knowledge of rheumatologists in their practice is prominently growing. Also, this may show an increasing interest for the science of rheumatology. Furthermore, scientific publications about new disease assessment methods such as ultrasonography, molecules, and immunological pathways that become current issues, such as the IL-17/Th17 pathway, and new treatment methods of rheumatological diseases, such as new biological drugs, may be the reason for the increasing trend of published scientific documents on the issue of rheumatology.

Research that can change the practice of a disease is usually published as original articles (2), and according to a study, 63% of the studies initially presented as meeting abstracts are published as full original papers (3). Herein, these two types of documentations constitute 82.4% of all papers. Others are reviews, letters, or editorial materials. Therefore, most of the papers that were published by rheumatologists have the potential to bring innovation to the field of rheumatology. Furthermore, the high number of full original papers and meetings abstracts also indicates the increasing number of new fields for study.

More than half of the reviewed papers were published in rheumatology journals. It is understandable that rheumatologists publish their papers primarily in rheumatology journals. Moreover, the other two most frequent journal types are immunology and general internal medicine, which may be regarded as fields relevant to rheumatology. The remaining one third of the papers was published in other journal types, which may indicate the collaboration of rheumatologists with colleagues from other branches of medicine. This may also indicate the rheumatologist published scientific documents in issues of other medical branches beside rheumatology because of rheumatology's common relationship with other medical branches.

Like general medical publications, the top 3 countries where rheumatologists publish the highest number of papers are USA, England, and Germany. Between 2000 and 2010, these three countries were also in the top 3 for publishing the highest number of medical papers (4). Therefore, the data about the publications of rheumatologists are compatible with data for general medical publications.

Annals of Rheumatic Diseases, Rheumatology and Arthritis, and Rheumatism are the top 3 journals that publish rheumatology-related papers. All these 3 journals are rheumatology journals. Therefore, rheumatologists tend to submit their scientific documents to these journals. Between 2000 and 2011, these 3 journals also published highest number of the papers in the field of rheumatology (4). This may also be due to the fact that these journals usually publish scientific documents related rheumatology.

Rheumatologists in Harvard University, Leiden University, and The Imperial College of Science, Technology and Medicine publish the highest number of papers compared with the number of papers by rheumatologists from

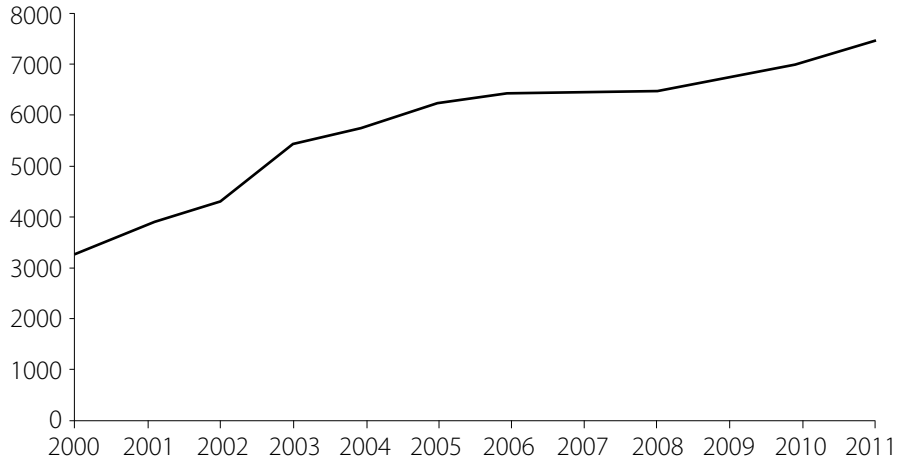

Figure 2. Distribution of published documents between 2000 and 2011

other institutes. Moreover, 33 institutes from USA are in the top 100 list of the highest number of papers from rheumatologists. Similarly, 13 institutes from Germany, 11 from England, 8 from Holland, and 5 from Sweden, Italy, and Japan each are also in the top 100. The distribution of institutes is similar to the top 10 countries.

In this paper, we only considered the number and properties of publications. The quality of the papers was out of the scope of this study. The quality of papers becomes an important and attractive topic while evaluating the characteristics of publications (5-8). Further evaluations are required for assessing the quality of papers of rheumatologists. Likewise, the topics of publications may also be evaluated to understand the trending topics in rheumatology.

There were several limitations of this study. We did not evaluate the quality of publications. Also, the scopes of the publication were not examined. Only journals present in the ISI Web of Knowledge Web of Science and Science Citation Index Expanded were selected. Therefore, journals in other databases were not evaluated.

This paper is an overview of the publications of rheumatologists between 2000 and 2011 to assess the scientific productivity of the rheumatology society. In an effort to elucidate the properties of published papers, emphasis was put on journal categories, origin countries, institutes, and publication year. Consequently, these results only present the quantitative aspects and not the qualitative data about publications. New research is required to evaluate the qualitative status in order to further understand and augment the scientific contribution of the rheumatology society.

Ethics Committee Approval: Ethics Committee approval was received for this study from regional research ethics committee.

Informed Consent: N/A.

Peer-review: Externally peer-reviewed.

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

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