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## Indexing rheumatology journals: filling gaps in the publishing landscape

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### ABSTRACT

Over the past decades, rheumatology has shaped as a rapidly developing scientific discipline with a wide range of interests and evolving priorities. Initial reports on the use of the first generation of biological agents for rheumatoid arthritis and other inflammatory rheumatic diseases in the early 2000s opened up new avenues for research at the interface of immunology, medical chemistry, and rheumatology. By improving the outcomes of suppressing autoimmunity and inflammation, rheumatologists across the world have increased the lifespan of their patients and encountered a number of new challenges. One such challenge is comorbidity, which necessitates multidisciplinary

approach to rheumatic diseases, implementation of knowledge and skills from allied fields of science (i.e., cardiology, oncology, hematology). Authors of research studies covering the issue of comorbidity in rheumatic diseases are now targeting not only periodicals in rheumatology but also in allied fields of science with editorial and reviewer boards competent to process multidisciplinary research reports.

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With the evolving therapeutic options and changing clinical picture of rheumatic diseases, the mainstream rheumatology periodicals as hubs for scientific evidence are transforming and prioritizing large-scale clinical trials, cohort studies, and practice guidelines of large professional societies. In the era of biological therapy, *Annals of the Rheumatic Diseases* and *Arthritis & Rheumatology* have become the big two references for researchers seeking the highest level of evidence in the field. These journals have become influential and increased their impact indices by publishing systematic reviews and guidelines, containing the highest level of evidence and statements of the world's leading professional societies – the European League Against Rheumatism (EULAR) and the American College of Rheumatology (ACR). The two big journals have gradually increased rejection rates of small research reports, case studies, and items of peripheral professional and regional interest, all of which are known to negatively affect the notorious impact factor.<sup>1</sup> In fact, the 12% acceptance rate, which is currently displayed on the website of the *Annals of the Rheumatic Diseases*, speaks about high selectivity of this journal (<http://ard.bmj.com/site/about/>).

The ‘information deluge’ and accumulation of evidence, stemming from the latest large multicenter trials and cohort studies, have urged most leading scientists to express their own opinion, synthesize new evidence, and publish review articles, which have educational

value and are still highly readable items.<sup>2</sup> As a result, periodicals predominantly publishing reviews have flourished as authoritative sources and have boosted their citation indices. Examples of such influential periodicals are *Seminars in Arthritis & Rheumatism*, *Current Opinion in Rheumatology*, and *Nature Reviews Rheumatology*.

Authors whose original research and reviews are rejected by top-tier rheumatology journals may target lower-rank, indexed, and even unindexed, but still widely visible, valuable sources of evidence. They are advised to familiarize with the potential factors of the global visibility of rheumatology journals (**Table 1**). A simple search for periodicals in rheumatology and rheumatic diseases through the Catalog of the National Library of Medicine (NLM) yields 293 records ([http://www.ncbi.nlm.nih.gov/nlmcatalog/?term=rheumat\\*+and+p+eriodicals](http://www.ncbi.nlm.nih.gov/nlmcatalog/?term=rheumat*+and+p+eriodicals)). Of these, only 35 periodicals are indexed by MEDLINE, the leading bibliographic database of evidence base, and only 8 have their contents archived by PubMed Central, the global digital repository of publicly available full-texts of biomedical literature.

Citations of rheumatology journals are currently tracked by Google Scholar, Scopus, and Web of Science. Most old and new journals proudly display information about their presence on Google Scholar, which is a search platform (but not a bibliographic database) offering basic visibility for items deposited on properly functioning primary websites. The platform

**Table 1.** Platforms, databases and libraries for global visibility of rheumatology journals

• Google Scholar
• Scopus
• SCImago Journal & Country Rank
• Web of Science (Thomson Reuters)
• Journal Citation Reports (Thomson Reuters)
• National Library of Medicine (NLM) Catalog
• MEDLINE
• PubMed Central
• Specialist biomedical and other bibliographic databases (e.g., Global Health, Chemical Abstracts Service, SafetyLit)
• Abstract aggregators and database vendors (e.g., EBSCO, ProQuest, OVID)
• National, regional and global libraries (e.g., The British Library, The Library of Congress, National Library of Greece)

automatically processes metadata, abstracts, and full-texts of individual journals articles. Likewise, references and citations are also tracked and automatic reports on citation metrics and journal ranks are displayed ([https://scholar.google.co.uk/citations?view\\_op=top\\_venues&hl=en&vq=med\\_rheumatology](https://scholar.google.co.uk/citations?view_op=top_venues&hl=en&vq=med_rheumatology)). Google Scholar has major drawbacks, including the lack of selectivity toward the tracked items and citations, making it difficult to synthesize evidence and calculate reliable citation indices by solely relying on this platform.<sup>3,4</sup>

Scopus, as a highly selective and the most comprehensive bibliographic database, offers much more reliable accounts on publications and their citations. The current list of rheumatology journals on the Scopus-based SCImago Journal & Country Rank platform ([http://www.scimagojr.com/journalrank.php?area=0&category=2745&country=all&year=2014&order=sjr&min=0&min\\_type=cd](http://www.scimagojr.com/journalrank.php?area=0&category=2745&country=all&year=2014&order=sjr&min=0&min_type=cd)) includes citation indices of 57 periodicals. The ranking of the twenty most influential journals in the category, which is based on values of the H index, is presented in **Table 2**. Of these, only two

**Table 2.** The twenty most influential Scopus-indexed rheumatology journals

Rank	Journal titles	H index
1	<i>Arthritis and Rheumatism/Arthritis and Rheumatology</i>	241
2	<i>Annals of the Rheumatic Diseases</i>	157
3	<i>Journal of Rheumatology</i>	139
4	<i>Rheumatology (Oxford)</i>	124
5	<i>Osteoarthritis and Cartilage</i>	108
6	<i>Arthritis Care and Research</i>	104
7	<i>Arthritis Research and Therapy</i>	104
8	<i>Seminars in Arthritis and Rheumatism</i>	85
9	<i>Current Opinion in Rheumatology</i>	83
10	<i>Lupus</i>	76
11	<i>Clinical and Experimental Rheumatology</i>	71
12	<i>Best Practice and Research in Clinical Rheumatology</i>	70
13	<i>Nature reviews. Rheumatology</i>	69
14	<i>Rheumatic Disease Clinics of North America</i>	69
15	<i>Scandinavian Journal of Rheumatology</i>	61
16	<i>Clinical Rheumatology</i>	59
17	<i>BMC Musculoskeletal Disorders</i>	54
18	<i>Joint Bone Spine</i>	53
19	<i>Connective Tissue Research</i>	52
20	<i>Rheumatology International</i>	50

journals are open access – *Arthritis Research & Therapy* and *BMC Musculoskeletal Disorders*, both published by BioMed Central. The oldest periodicals and those mostly publishing reports on clinical trials and large cohort studies, such as *Arthritis & Rheumatology* and *Annals of the Rheumatic Diseases*, have the greatest values of the H index – 241 and 157, respectively.

The values of the popular 2-year impact factors (IFs) are calculated and publicized on the Journal Citation Reports (JCR; Thomson Reuters). Annually updated lists of the most influential journals are based on citation analyses from the Science Citation Index database (Web of Science Core Collection, Thomson Reuters). Currently, there are only 30 rheumatology journals with published IFs. Of these, *Annals of the Rheumatic Diseases* (10.377) and *Nature Reviews Rheumatology* (9.845) have outstandingly high IFs. Authors who wish to publish in rheumatology journals with IFs are aware that the top periodicals accept articles with the highest level of evidence and reject most submissions of limited interest to their readers. Indexers of Thomson Reuters, in turn, rarely accept new journals for coverage in the Web of Science database, with *Revista Brasileira de Reumatologia* and *Current Rheumatology Reports* being the latest additions to the JCR in 2012 and 2013, respectively. Interestingly, a study of the changes in IFs of 22 rheumatology journals from 1999 to 2008 showed a gradual increase of the impact of all English periodicals, and especially ‘review journals’ and those published in Europe.<sup>5</sup>

The launching of the new database of Thomson Reuters in November 2015 – the Emerging Sources Citation Index (ESCI) – and providing visibility on the Web of Science platform for 6 additional rheumatology journals raise hopes for expanding the list of the mainstream journals in this category further (<http://science.thomsonreuters.com/cgi-bin/jrnlst/jlresults.cgi?PC=EX&SC=WH>). The list of ‘emerging sources’ includes *Reumatismo* (MEDLINE-indexed official organ of the Italian Society for Rheumatology) and *Therapeutic Advances in Musculoskeletal Disorders* (PubMed Central-archived; SAGE). Both are open-access sources. Apparently, the expanded visibility will help attract citations and pave the way to the Science Citation Index Expanded database and JCR for promising journals.

The relatively small number of indexed rheumatology journals and their focus on potentially citable, top priority items make authors of small studies or those working on emerging topics consider journals from other subject categories as possible venues for their works. A landmark study of 1,810 articles on rheumatoid arthritis (RA), systemic lupus

erythematosus (SLE) and ankylosing spondylitis (AS), published in 1991, demonstrated that about 45% of the items appeared in non-rheumatology journals.<sup>6</sup> Although no updated study is available, it is likely that many valuable articles are increasingly processed and published by allied, general medical, non-rheumatology, and even nonmedical journals. Internal medicine, immunology, laboratory medicine, physical medicine, rehabilitation, orthopedics, sports medicine, pharmacy, pharmacology, and medicinal chemistry are areas where authors often publish their rheumatology articles. Journals of the allied subject categories can be primary and secondary targets for authors, who choose them by searching through multidisciplinary and specialist bibliographic databases. Consequently, editors who aim to attract more submissions should expand indexing of their journals in relevant databases. Admittedly, current research studies in rheumatology are increasingly covering issues of rational pharmacotherapy, toxicology, patients’ safety and ecology, risk management, and economic burden of musculoskeletal disorders. The task of journal editors is two-fold: to actively seek submissions on cutting-edge topics and list information about their journals on related databases. Although there is no specifically designed database for rheumatology, many other specialist bibliographic databases may index rheumatology journals either selectively or comprehensively and increase their visibility. Examples of the specialist databases with strict selection criteria and advanced search engines include, but not limited to the Chemical Abstracts Service (CAS), Global Health (Centre for Agriculture and Biosciences International), The CIRRIE Database of International Rehabilitation Research, SafetyLit, RePEc (Research Paper in Economics), and Compendex (COMPUterized ENgineering INDEX).

Switching from the traditional print to electronic publishing, which came to the fore in the last two decades, necessitates advanced digital processing and permanent archiving.<sup>7</sup> Journals with ethical processing practices and advanced digital technologies are now listed in the Directory of Open Access Journals (DOAJ), which serves as the platform for distinguishing legitimate open-access sources from ‘predatory’, or ‘vanity’ press.<sup>8</sup> More than 11,000 open-access periodicals are currently listed on the DOAJ website (<https://doaj.org/>). Essential attributes of the listed journals are digital identifiers from the CrossRef (Digital Object Identifiers [DOI]), permanent archiving in an internationally recognized repository (i.e., PORTICO, CLOCKSS, LOCKSS), Creative Commons Attribution License for free distribution of the contents, etc. Search through the Directory retrieves 25 rheumatology journals, but

the list can be expanded further by adding related online periodicals from internal medicine, immunology, and general medicine categories (e.g., *Lupus Science & Medicine*).

Experts recognize the growing global economic burden of rheumatic disorders, which is accompanied by intensified research funding in the developed world.<sup>9</sup> Leading grant funders such as the Wellcome Trust now mandate public access to the emerging evidences and sequester funds for open-access publishing. In line with this, in 2015, EULAR and the BMJ Group launched a new open-access journal, *RMD Open*, which has a potential to accommodate the best articles rejected by the subscription journal of the Association. Although the gold open access with article processing charges above £1700 was chosen as a publishing model, it is expected that the journal will rapidly increase submissions of highly citable items from all over the world. *RMD Open* set an example for other rheumatology associations and publishers aiming to increase the visibility of their research.

The launching of new journals or rebranding of old ones points to the fact that there are still gaps in the publishing landscape of rheumatology (Table 3). To fill these gaps, several national and regional journals have changed their titles and publishing models over the past few years. The most successful example is the *APLAR Journal of Rheumatology*, the official organ of the Asia

Pacific League of Associations for Rheumatology, which has been published as the *International Journal of Rheumatic Diseases* since 2008, and online-only since 2012. The leading publishers such as Springer Nature and Elsevier opted for hybrid or fully open access models for their journals. One of the best publishing schemes - the platinum open access – where readers and authors do not pay and all processing charges are covered by sponsors, is still underemployed in the field. Many emerging multidisciplinary topics such as the issue of comorbidities, nursing, and students' research are poorly represented. Successful regional cooperation of practicing rheumatologists, which is evident from well-attended American, European, Mediterranean, and Asia Pacific congresses, is still insufficiently translated into collaborative publication rates. All these challenges can be resolved by expanding capacities of the existing periodicals, launching new, and rebranding old ones.

#### CONFLICT OF INTEREST

The authors declare no conflict of interest.

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**Table 3.** Perspectives of the development of the publishing landscape in rheumatology

• Launching new comprehensive periodicals supported by professional societies
• Opting for open access models
• Securing more space for multidisciplinary issues
• Reflecting on issues of caring in rheumatology
• Providing platform for medical students' research
• Nurturing culture of interviewing for recording experts' opinion
• Developing audiovisual contents and publishing video articles
• Improving publishing ethics and expanding indexing in multidisciplinary and specialist bibliographic databases
• Widening visibility in institutional repositories, libraries, and social media (ResearchGate, LinkedIn, Facebook, Wikipedia)

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