

A bibliometric analysis of two PubMed-indexed high-impact factor endodontic journals: A comparison of India with other countries

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Abstract

Aim: The present study was conducted with an aim to determine the number and trends of published articles in the International Endodontic Journal (IEJ) and Journal of Endodontics (JOE) from 2009 to 2014. **Settings and Designs:** A retrospective observational study was conducted for IEJ and JOE. **Subjects and Methods:** All issues of IEJ and JOE were electronically and hand searched for the following parameters: Amount of papers, publication year, affiliated organizations, and countries. **Statistical Analysis Used:** The data were organized and analyzed using software SPSS version 21.0; descriptive statistics was used. **Results:** A total of 872 articles were analyzed in the IEJ and JOE with 1606 papers. Brazil had the largest number of articles (170) mainly in IEJ, and the USA (350) in JOE. Indians published more of their research in JOE than IEJ. **Conclusions:** Original articles in endodontic publication from different universities in India have considerably increased, showing that research is becoming more important.

Key words: Bibliometry, endodontics, impact factor, Scientometric

INTRODUCTION

The rise in research articles in dentistry is making it increasingly difficult for academicians and clinicians to remain updated with the recent technological advances.^[1] Dentists are depending on these research articles to achieve evidence-based clinical decisions.

Dental journals are also significant in assessing the value of researcher's scientometric output, which today greatly affects their status and progress in the academic environment.^[2]

Indexation and citation criteria assess the publication quality. In the scientific society, the concept of impact factor is probably the most widely used in bibliometric construction.^[2]

Bibliometric assessment in dental field analyzes quantitative and qualitative aspects of scientific articles and also generates data to design policies, which promote scientific output.^[3] Bibliometric studies also take in account the expert opinions and judgments within any given discipline and provide useful, objective tools that study the evolutionary processes at work in the results of scientific activity.^[4,5]

In scientific journals, bibliometric indicators play a vital role in outlining the course of scientific progress in a certain region or country. New techniques for data

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assimilation and analysis are more developed, and they might be used as a foundation for the construction of reliable data.^[6]

Journal impact factor is a quantitative tool for evaluating journals. Impact factors are published every year in the Journal Citation Report (JCR) and were created by Thomson Reuters (former Institute for Scientific Information). The impact factor is calculated based on a 3-year period, and can be considered to be the average number of times the published papers are cited up to 2 years after publication.^[7]

In addition, the SCImago Journal and Country Rank is a portal that includes the journals and country-scientific indicators developed from the information contained in the Scopus database.^[7]

These indicators can be used to assess and analyze scientific domains.

According to the JCR SCImago Journal and Country Rank in the subject area of dentistry, the International Endodontic Journal (IEJ) and Journal of Endodontics (JOE) are among the top ten journals of dentistry, with maximum citable documents and high impact factor.^[7]

The objective of this brief report is to describe the bibliometric analysis of these two high-impact factor endodontic journals, and therefore, attempt to demonstrate that the substantial developments in the field have been reflected in the scientific documentation generated in the period of 2009–2014, to examine the distribution of publication types and to identify the contribution of India in these most productive journals over the 6-year time span.

METHODOLOGY

A retrospective observational study was conducted for the IEJ and JOE from 2009 to 2014.^[8]

All issues of the IEJ and JOE were hand-searched for articles published from 2009 to 2014 and assessed by a chief investigator [Figure 1].

The published articles in the IEJ and JOE were categorized as shown in Figure 2.

Each article of the journal was also classified into the countries and the continents to which it belonged. All these classifications were coded and data were interpreted using Statistics software package (SPSS version 20, Inc, Chicago, IL, USA). The coded data

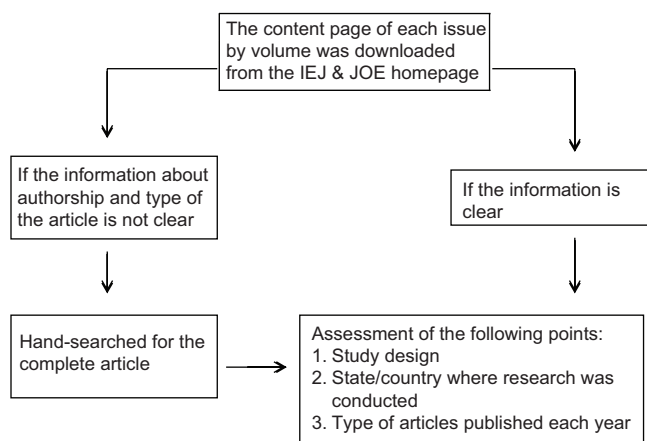


Figure 1: Flowchart depicting the methodology followed in the assessment of the International Endodontic Journal and Journal of Endodontics between 2009 and 2014

were analyzed using frequency procedure and placed in tabular and graphic forms for interpretation.

RESULTS

International Endodontic Journal

Distribution of articles by country and continents

There were 872 articles published in the IEJ over 6 years, i.e., from 2009 to 2014. The Brazilians had the highest contribution of articles (170 numbers), which was about 1/5th of the total articles (19.5%). The United Kingdom and China had the second and the third highest contributions of 10.4% and 8.8%, respectively. The contributions of Turkey (5.3%), the USA (4.8%), and Germany (4.7%) were next in order. These six countries together accounted for more than half of the research articles (53.6%). Indians have contributed 27 articles only (3.1%) [Figure 3]. In total, 49 countries had contributions in this journal over 6 years, out of which 22 countries accounted for 90% and the remaining 27 countries for 10%.

Distribution of article by continents showed that Europe has the major share of the articles, i.e., 39.1% followed by Asia (30.8%) and South America (20.2%). These three continents have together shared about 90% of the articles.

The total contribution of Asian countries was 269 articles, out of which China had the largest share comprising 28.6% followed by Turkey (17.1%), Iran (13%), and Japan (11.5%). These four countries together accounted for 70% of the articles. India being the second populous country in Asia and the world even occupied sixth position in terms of contribution of research articles among the Asian countries [Figure 4].

Distribution of articles by type

Out of 872 articles, 678 were original scientific articles (OSAs), which constituted 77.8% of the total articles. The case report, editorial, and review article have < 10% share each [Figure 4].

Indian authors published mainly OSAs and case reports. In the year 2012, there was a dip in the publication of OSA, but by the year 2014, 100% of the publication was based on OSA [Figure 5].

Journal of Endodontics

Distribution of articles by country and continents

There were 1606 articles published in the JOE for 6 years, i.e., from 2009 to 2014. The USA had the highest contribution of articles (350), which was about one-fifth of the total articles (21.8%). Brazil and China had the second and the third highest contribution of 15.5% and 12.1%, respectively. The contributions of Korea (6.4%), India (3.9%), and Japan (3.8%) were next in the order. These six countries together accounted

for nearly two-third (63.4%) of the research articles. Indians have contributed 63 articles only [Figure 6].

India being the second populous country in Asia and the world even occupied third position in terms of contribution of research articles among the Asian countries. The contribution of India was far and far behind China and Korea.

Distribution of articles by type

Out of 1606 articles, 633 were basic research technology (BRT), which constituted 39.4% of the total articles. The basic research biology (BRB) and clinical research article have 22.5% and 20.3% of the share, respectively [Figure 7].

The distribution of articles by type in the top 15 countries is shown in Figure 7. In all these countries, the focus of publication was BRT, BRB, and clinical research in the respective order.

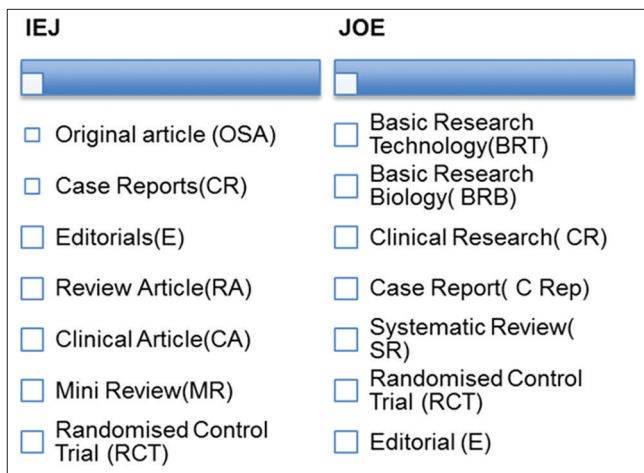


Figure 2: Types of articles published by the International Endodontic Journal and Journal of Endodontics

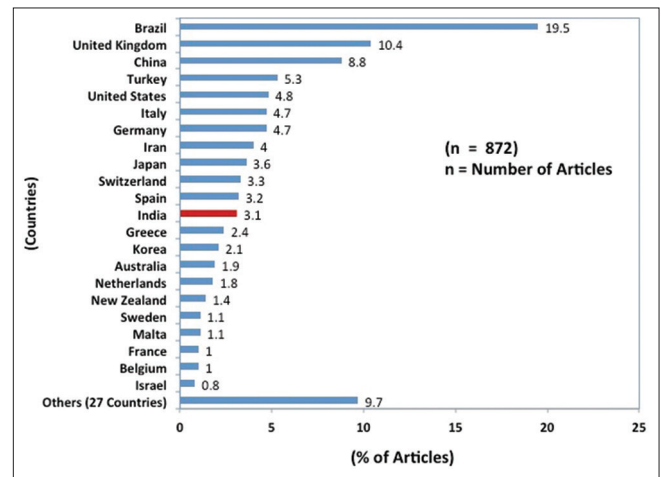


Figure 3: Distribution of articles by countries in the International Endodontic Journal (2009–2014)

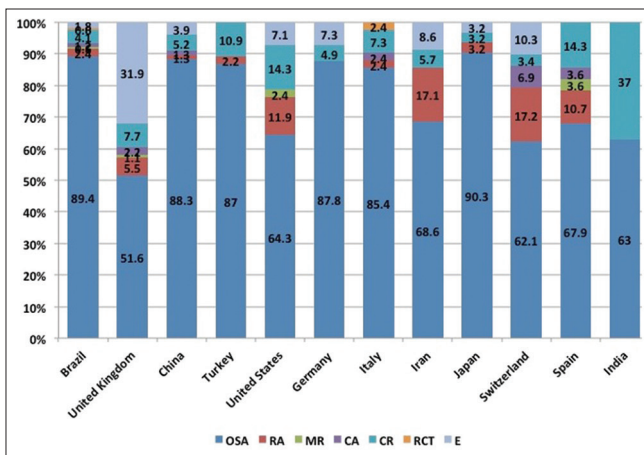


Figure 4: Distribution of type of articles published by top 12 countries in the International Endodontic Journal for the past 6 years

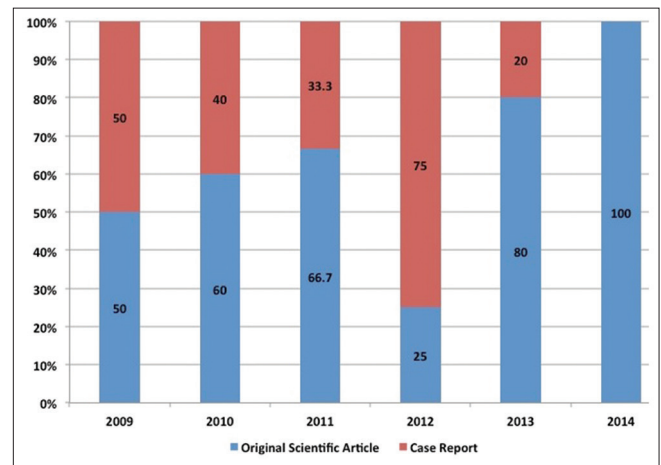


Figure 5: Year wise contribution of the type of articles published by Indians in the International Endodontic Journal

Figure 8 shows year wise articles by Indians. This revealed that the contribution of Indians has an increasing trend during 2009–2011, which has

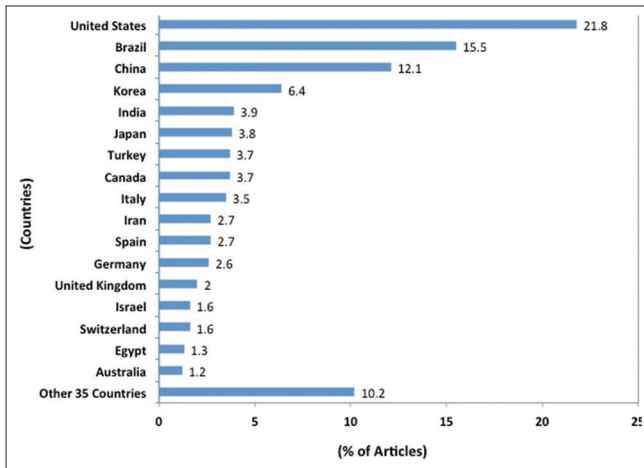


Figure 6: Distribution of articles by countries in the Journal of Endodontics (2009–2014)

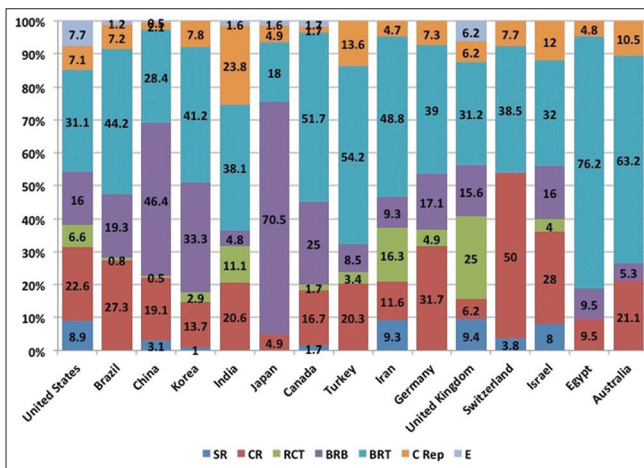


Figure 7: Distribution of type of articles published in the Journal of Endodontics for the past 6 years

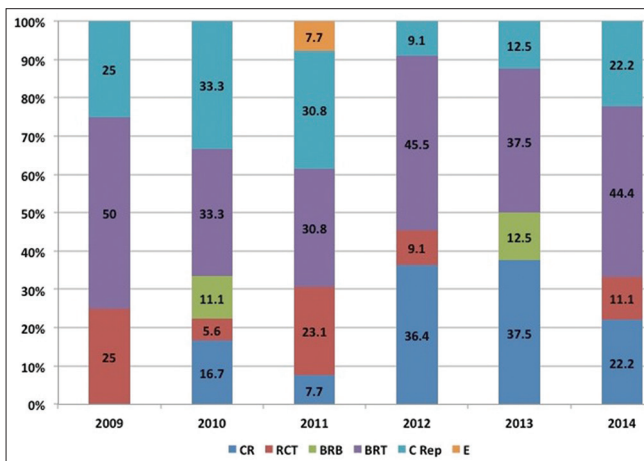


Figure 8: Year wise contribution of type of articles published by Indians in the Journal of Endodontics

started declining since then. Indians publish more of BRT articles followed by case reports. Whereas BRB and editorials are the least type of articles published.

DISCUSSION

Scientific development of any society is judged through scientific activities of the researchers. Such evaluation is extremely necessary for research programming and implementation in each country.

Identification of the most influential academic organizations, universities, individuals, and other factors related to the scientific production can increase collaborations in line with scientific improvements. Scientometry is an important aspect in research and scientific production so that production and use of information in different societies is considered as an index for national growth and development.

The journal’s impact factor and research methodology are decisive factors when assessing the strength of the evidence produced. Basic research studies, such as cell studies or analysis of the properties of materials, are important to advance scientific knowledge, but they are not adequate to promote an evidence-based endodontics. This practice requires more of clinical studies and systematic reviews, which are considered to be the highest levels in the evidence pyramid, suitable to consolidate scientific knowledge and properly answer the professional questions.^(9,10)

Bibliometric analysis is one of the scientometry tools to assess the scientific activities, which is based on four major variables of authors, citations, references, and publications.

The data obtained from the present bibliometric analysis reveal that OSA in the IEJ and BRT articles are published at maximum numbers in JOE.

The acceptance rate is very low and rejection rate of these journals is extremely high because of the high standard of publication guidelines set by these journals. Since these two journals are English language-based, this could also be one of the reasons of less publication rate by Indians as English not being our first language.

There is a drastic change in the publication pattern of Indians in these two journals. More importance is given in the publication of OSAs than case reports. The publication activity is developing at an immense pace in this specialty, reflecting an increasing aptitude toward new research and surveys. Second, the change in regulation regarding publications by dental teaching

faculty in India by the Dental Council of India accounts for an increase in the publication of the scientific articles.^[8,9]

As mentioned in the earlier text that in scientific evidence pyramid, created to illustrate the quality of scientific evidence originating from different types of study, systematic reviews and meta-analyses come first while expert opinion/anecdotal experience are ranked at the lowest [Figure 9].^[9,11]

There is a dearth of publication of systematic review and randomized control trial (RCT) articles by Indians in both the journals. The systematic review and RCT which are considered as the gold standard among evidence-based research methodologies formed only a minor portion of the study published.^[8] This shows a lack of imagination or inclination toward high level of evidence-based research. Hence, the need to diversify the resources and workforce with appropriate knowledge is taken to offer the epitome of evidence-based dentistry.

Both journals gradually increased their impact factor, maintaining it at a high level at the end of 2014. This fact reflects the high quality of published articles in both journals, despite the observed differences of research direction and the number of articles published.^[12]

An important limitation of the present study is that it explored the publications only in IEJ and JOE, although there are many other specialty journals with an exclusive or special interest in endodontology such as the Australian Endodontic Journal, Restorative Dentistry and Endodontics Journal, and Dental Traumatology. Moreover, endodontic articles were or are still being published in general dental journals such as the Journal of Dental Research, Dental Materials, and Journal of Dentistry. Nevertheless, JOE and IEJ



Figure 9: Schematic representation of the level of evidence

are undisputedly the leading journals of endodontology in terms of IF and the main representatives of the specialty in the literature. Under this perspective, conclusions drawn by the study of bibliometric indexes of these two journals can be considered relevant and plausible.^[12]

CONCLUSION

The present reviewing process showed that progress by Indian authors was apparent and highly motivated in the past 6 years. There are also trends and shifts in research orientation of Indian researchers. There is a considerable increase in publication potential, and efforts are seen to publish high-quality research articles to provide evidence-based endodontic care in clinical practice in endodontic journals.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Yang S, Needleman H, Niederman R. A bibliometric analysis of the pediatric dental literature in medline. *Pediatr Dent* 2001;23:415-8.
2. Jaćimović J, Živković S. A bibliometric analysis of Serbian dental journal: 2002-2009. *Serbian Dent J* 2010;57:76-85.
3. Moraga J. Bibliometric analysis of dental education journals, web of science, 2007-2013. *J Oral Res* 2014;3:109-13.
4. Bordons M, Zulueta MA. Evaluation of the scientific activity through bibliometric indices. *Rev Esp Cardiol* 1999;52:790-800.
5. Gutiérrez-Vela MM, Díaz-Haro A, Berbel-Salvador S, Lucero-Sánchez A, Robinson-García N, Cutando-Soriano A. Bibliometric analysis of research on regenerative periodontal surgery during the last 30 years. *J Clin Exp Dent* 2012;4:e112-8.
6. Ferraz VC, Amadei JR, Santos CF. The evolution of the journal of applied oral science: A bibliometric analysis. *J Appl Oral Sci* 2008;16:420-7.
7. Journal Citation Report 2012. New York: Thomson Reuters; 2013.
8. Jain S, Patthi B, Singla A, Singh S, Singh K, Kundu H. Bibliometric analysis of two journals of community dentistry. *J Indian Assoc Public Health Dent* 2014;12:256.
9. Sampaio FC, Alencar AH, Chein RD, Decurcio DD, Estrela C. Profile of scientific production in endodontics in high-impact journals. *Stomatos* 2013;19:10-9.
10. Jonas WB. The evidence house: How to build an inclusive base for complementary medicine. *West J Med* 2001;175:79-80.
11. Eghbal MJ, Davari Ardakani N, Asgary S. A Scientometric study of PubMed-indexed endodontic articles: A comparison between Iran and other regional countries. *Iran Endod J* 2012;7:56-9.
12. Tzanetakis GN, Stefopoulos S, Loizides AL, Kakavetsos VD, Kontakiotis EG. Evolving trends in endodontic research: An assessment of published articles in 2 leading endodontic journals. *J Endod* 2015;41:1962-8.