

Analysis And Visualisation Of Research Trends In Intentional Replantation: A General Review

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Abstract: *Intentional replacement procedure involves removal of tooth and replacement or reinsertion by surgical procedure into the tooth socket. This method is generally considered as a last resort or in cases where conventional surgery is impossible. The bibliometric analysis had been conducted to understand the active authors, organizations, journals, and countries involved in the research domain of “Intentional replantation treatments” by using the published articles from “Scopus”. The resources were analyzed using the VOS viewer to develop analysis tables and visualization maps. The most active journal in this research domain was identified as the Journal of Endodontics; and Dental Traumatology. The most active country of the research domain was the United States of America, Brazil, and Turkey. The leading organizations were the University of Pennsylvania of the United States of America and Yonsei University of South Korea. The most active authors were Filippi A, Von Arx T., Kim E., and Lee S.J*

Keywords: *Intentional replantation treatments, Bibliometric analysis, VOS viewer, Health*

1. INTRODUCTION

Endodontic is the diagnosis, treatment, and prevention of diseases of the dental pulp and the surrounding tissues¹⁻². In other words “Endodontic” deals with the inside portion of teeth, various diseases associated with the dental pulp and surrounding tissues, its treatment, surgery, skills, and equipment. Endodontic procedures can be surgical or non-surgical. The non-surgical Endodontic procedures are called Endodontic surgery treatments. The endodontic surgery includes periapical surgery, hemisection or root resection, and intentional replantation³. Intentional replacement procedure involves removal of tooth and replacement or reinsertion by surgical procedure into the tooth socket. This method is generally considered as a last resort or in cases where conventional surgery is impossible. The teeth are implanted after careful endodontic management and repair⁴⁻⁵. This study focuses on consolidating literature regarding “Intentional replacement” by identifying the leading authors, countries, journals, and organizations engaged in research regarding “Intentional replacement”. The first section is the introduction, followed by the discussion of the methodology by which the research was conducted. The third section deals with results. The fourth section deals with the discussion and conclusion.

1.1 Research Objectives

- a) To consolidate the literature regarding the “Intentional replantation”
- b) To find out the trends related to research in the “Intentional replantation”

The following research questions are framed for conducting bibliometric analysis systematically.

1.2 Research Questions

- a) Who are the active researchers working on “Intentional replantation”?
- b) Which are the main organizations and countries working on “Intentional replantation”?
- c) Which are the main journals related to “Intentional replantation”?

2. RESEARCH METHODOLOGY

This bibliometric analysis had drawn resources only from the Scopus. For the article selection, the Boolean used was TITLE-ABS (Intentional replantation) on 30/12/2020. All the tables in this paper were created by using Microsoft Excel and VOS Viewer. Grammarly was used for spelling and grammar checks. Mendeley was used for article review and citation. This paper had been inspired by bibliometric analysis in its presentation style, analysis, and methodology from the works.⁶⁻¹⁰

3. RESULTS

This first round of search produced an outcome of 198 documents, in eight languages, out of which 186 documents were in English. The classification of document categories is shown in Figure 1. For improving the quality of the analysis, we had selected only the peer-reviewed articles and all other documents had not been considered. Thus after using filters “Article” and “English” the second round search produced an outcome of 164 English articles (both open access and others) and had been used to conduct bibliometric analysis and visualization using VOS Viewer. The English research articles in this domain since 1965 had been shown in Figure 2.

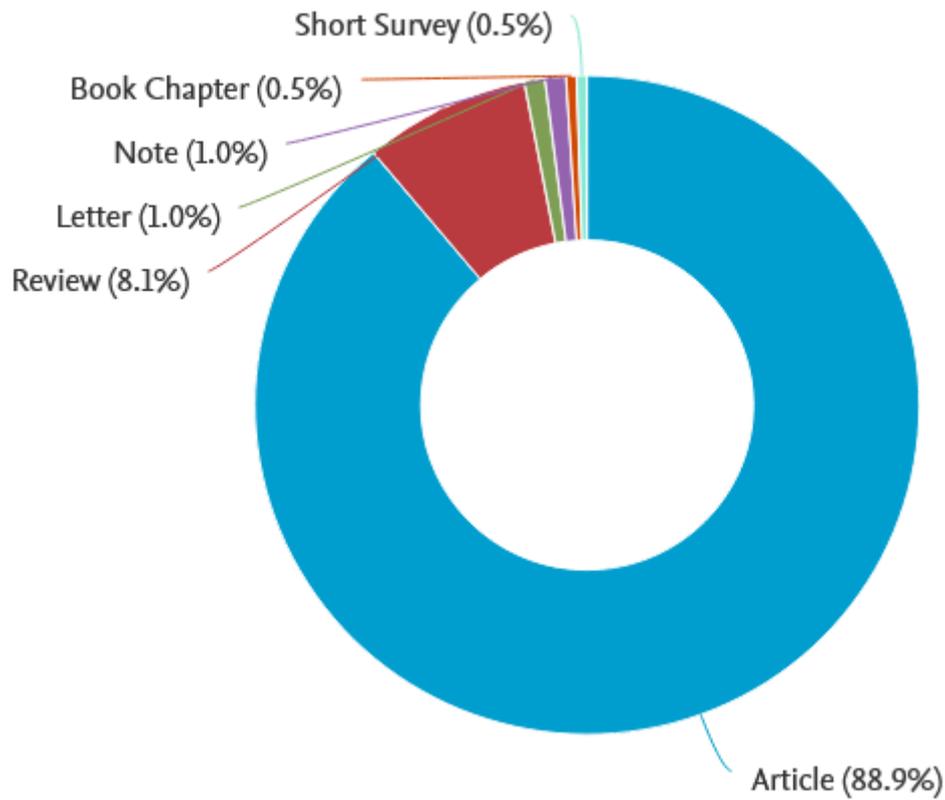


Figure 1: Classification of the documents on “Intentional replantation”, Source: www.scopus.com

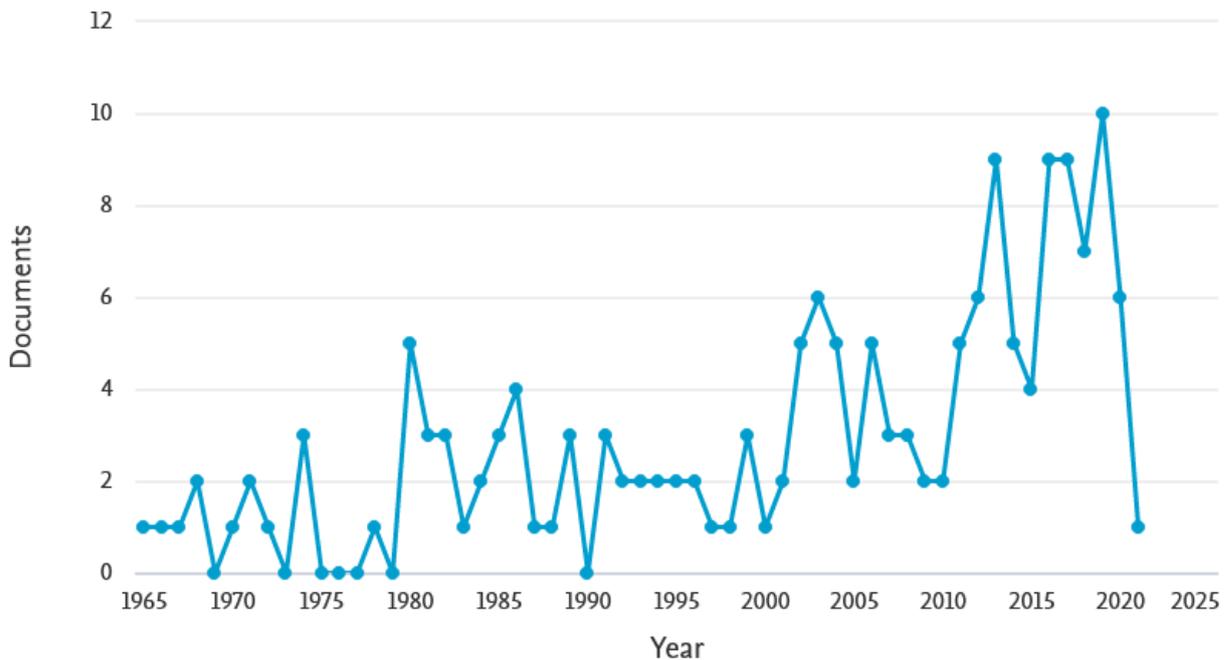


Figure 2: Period wise publication of English articles, Source: WWW.scopus.com

3.1 Who are the leading authors on “Intentional replantation”?

Co-authorship analysis, publication volume, and citation analysis had been used to spot out the leading authors on Intentional replantation. The results of co-authorship analysis and

citation analysis using VoS viewer are shown in figure 3 and figure 4 respectively. Leading authors based on publication volume are shown in Figure 5. For a better presentation of the analysis, the parameters used were the minimum number of documents of an author as 10 and the minimum number of citations of authors as one. This combination plotted the map of 35 authors, in seven clusters.

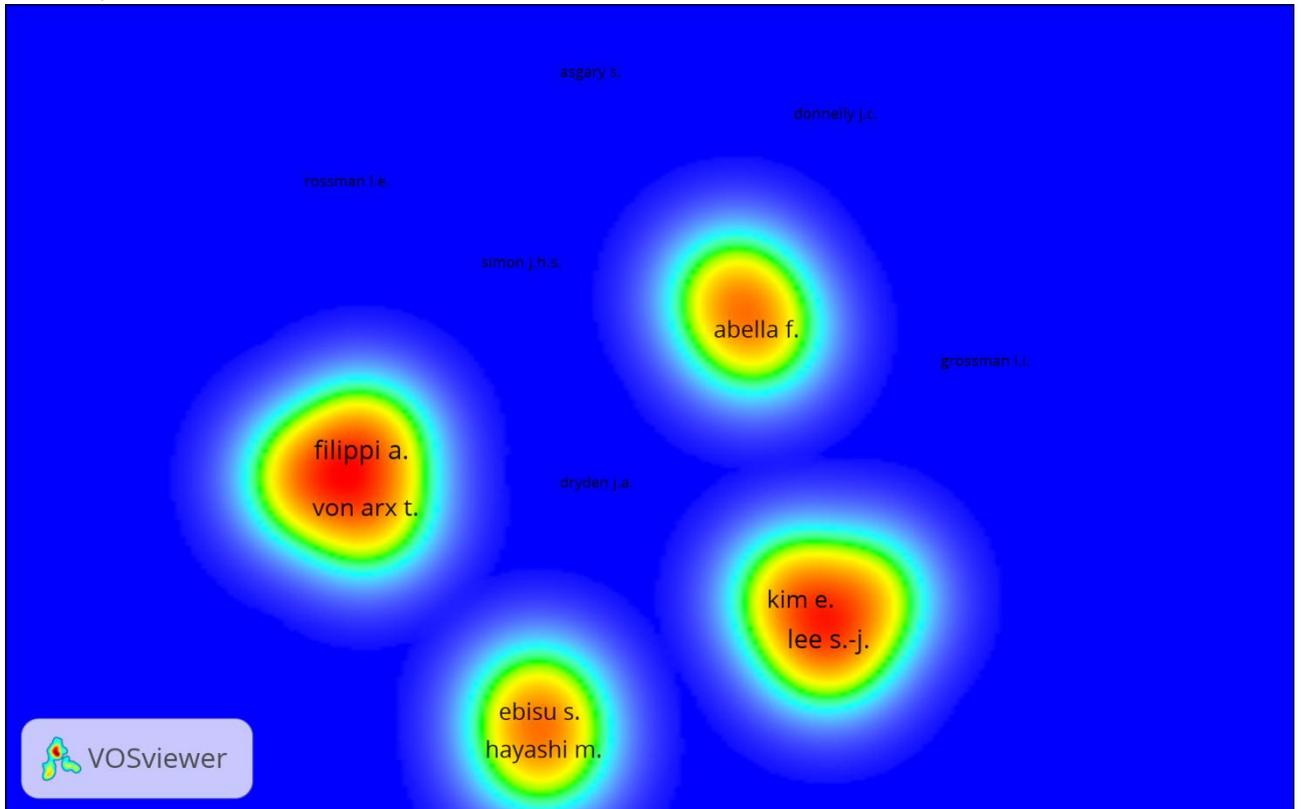


Figure 3: Co-authorship analysis on basis of authors

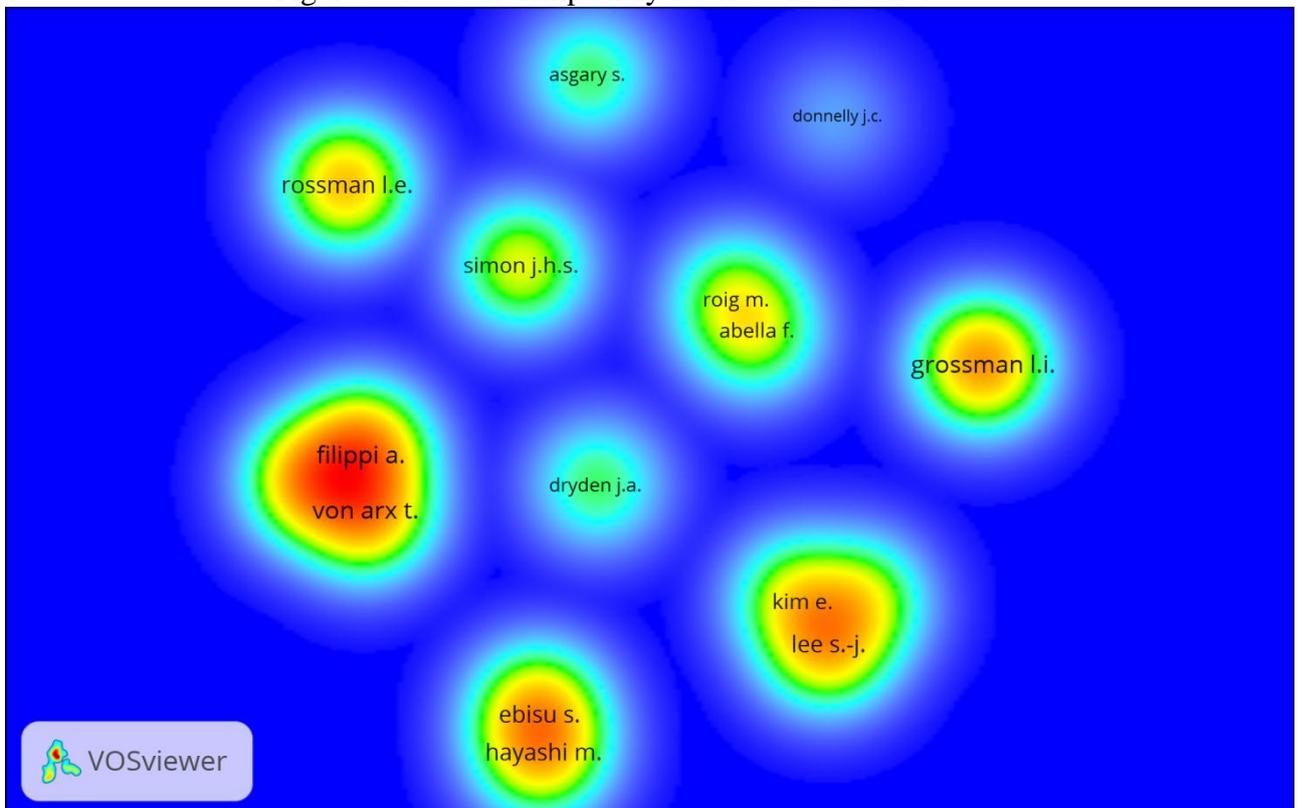


Figure 4: Citation analysis based on authors.

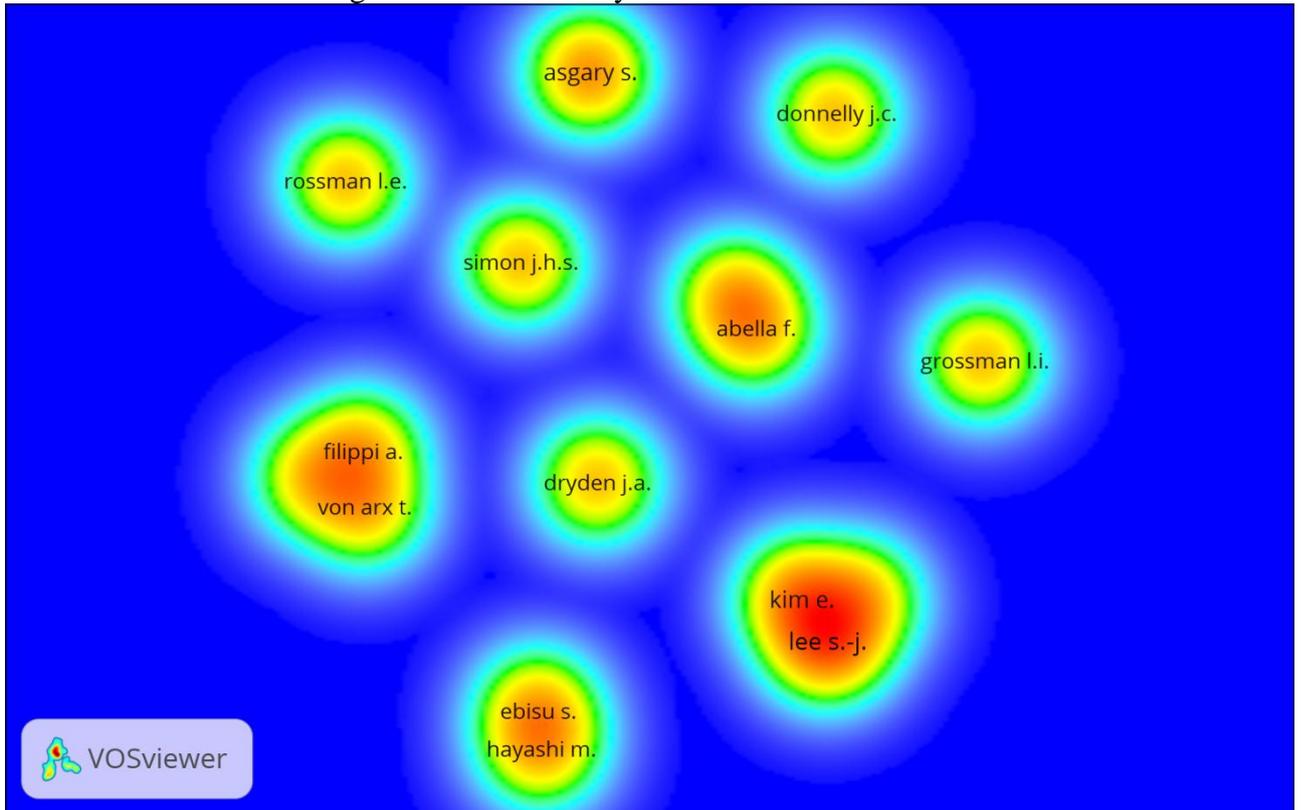


Figure 5: Leading authors based on the publication of documents

In Co-occurrence analysis, we had used all keyword analyses, by keeping the minimum number of occurrences of a keyword as 30. This combination plotted the map of 34 thresholds, in five clusters. The overlay visualization of co-occurrence analysis of keywords has been shown in Figure 6.

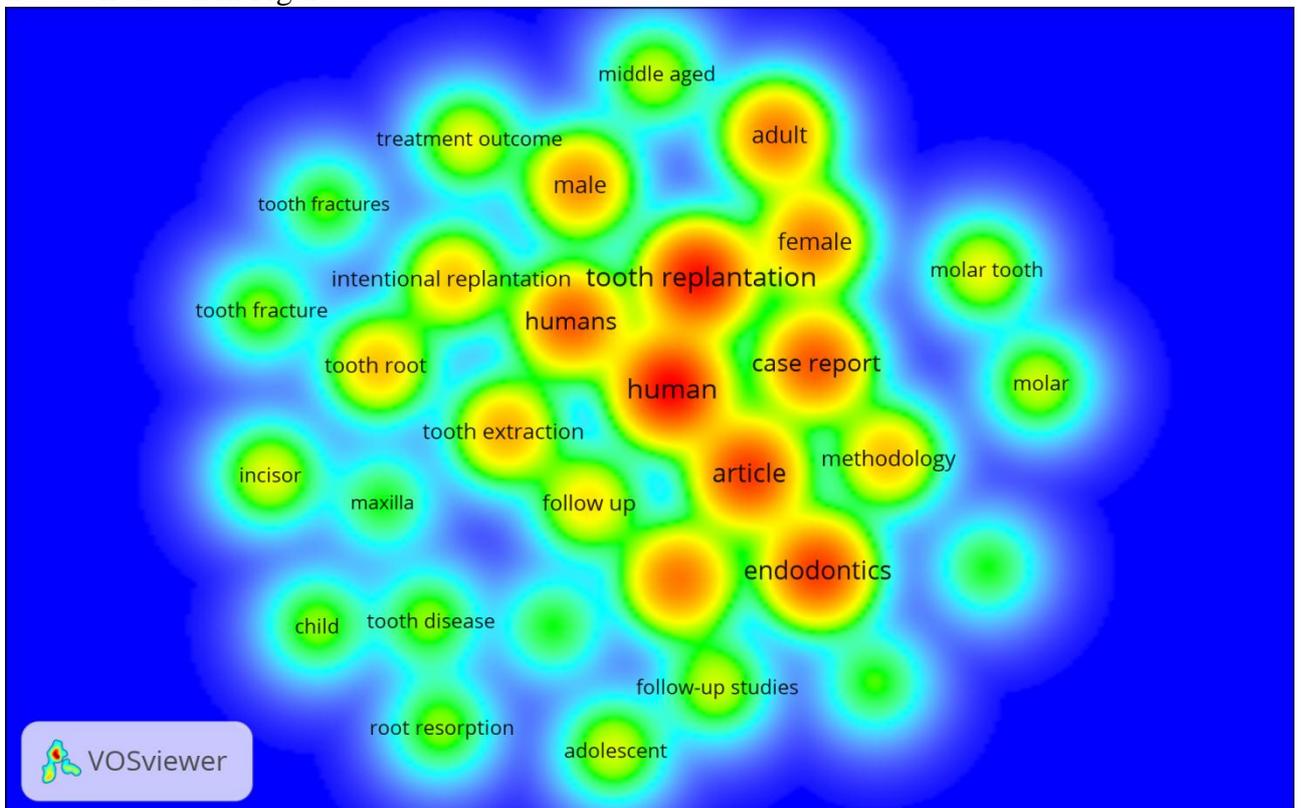


Figure 6: Co-occurrence analysis on basis of all keywords

3.2 Which are the top organizations and countries researching “Intentional replantation”?
 The most leading organizations engaged in research on “Intentional replantation” had been found out by the citation analysis and basis of publication. The result of the above analysis is shown in table 1.

Table 1: Highlights of the most active organization

Organizations	Country	Documents	Citations	Average Citations per document
University of Pennsylvania	United States of America	6	137	15.3
Yonsei University	South Korea	6	82	13.6

Co-authorship analysis and citation analysis of the countries engaged in the research on “Intentional replantation” had been shown in Figure 7 and Figure 8. Volume analysis is shown in figure 9. For a better presentation of the analysis, the parameters used were the minimum number of documents of an author as two and the minimum number of citations of authors as one. This combination plotted the map of 20 countries, 11 clusters.

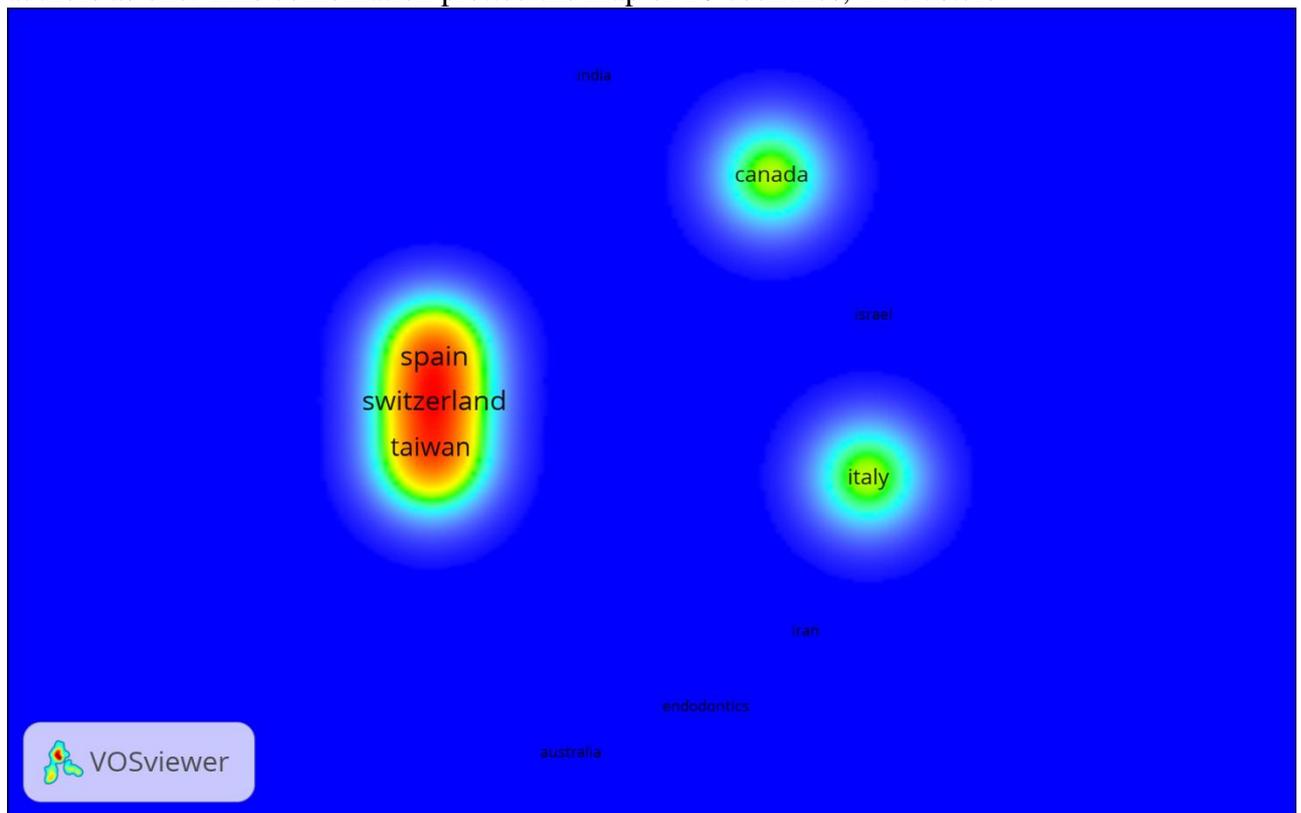


Figure 7: Co-authorship analysis on basis of countries

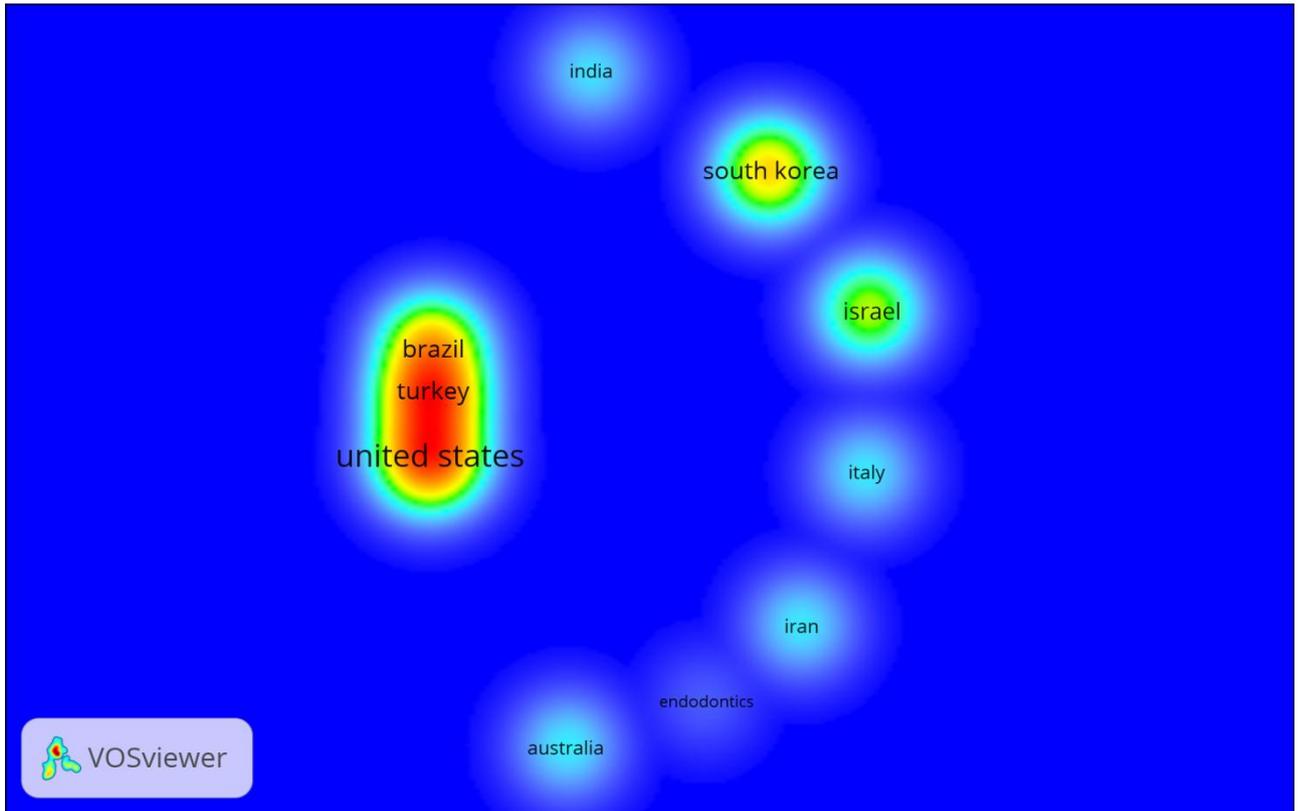


Figure 8: Citation analysis on basis of countries

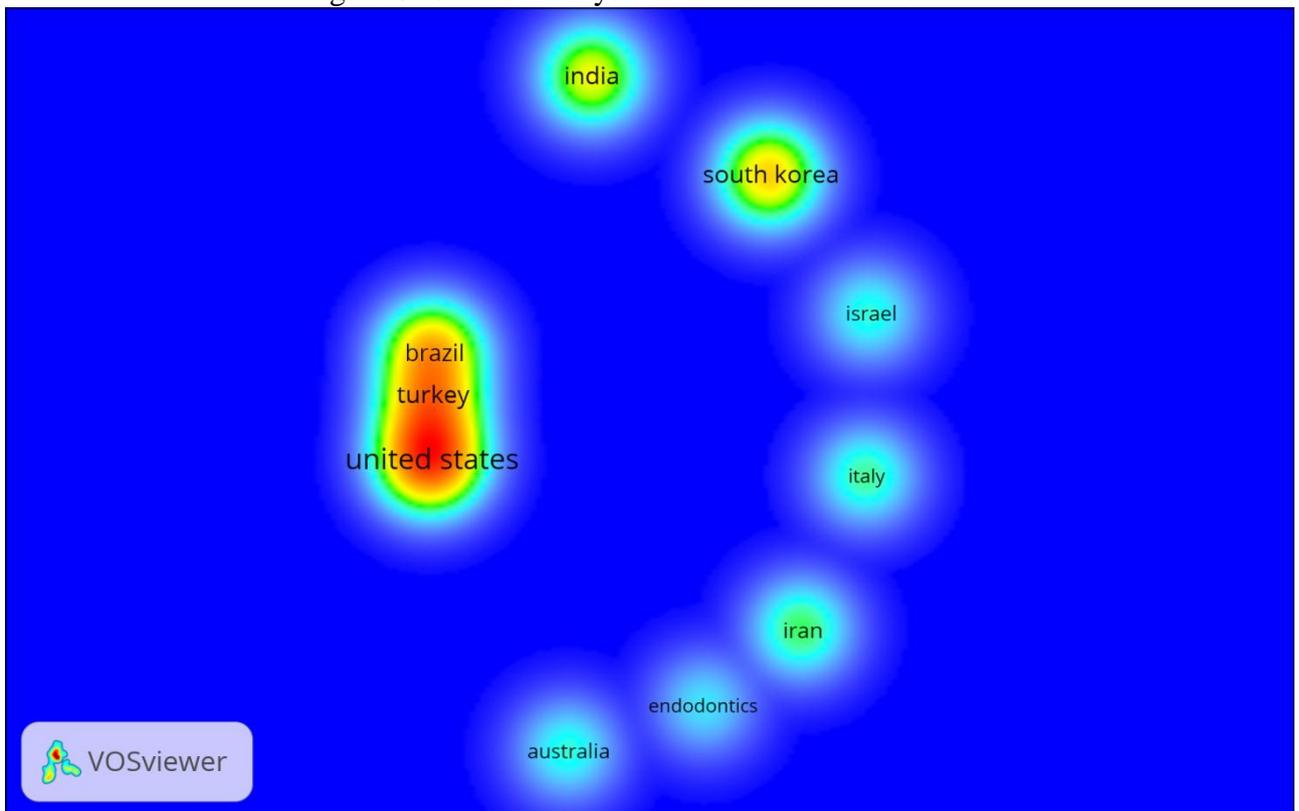


Figure 9: Leading countries in the publication of documents

3.3 Which are the leading journals on “Intentional replantation”?

Link analysis and citation analysis were used to identify the most active journal in this research domain. We have also used publication volume to identify the leading journals in this research domain. We have taken the parameters of the minimum number of documents of a journal as two

and the minimum number of citations of a journal as one for the link analysis and citation analysis. The citation analysis of top journals relating to “Intentional replantation” had been shown in Figure 10. Link analysis is shown in Figure 11 and the analysis of journals based on publication volume in Figure 12.

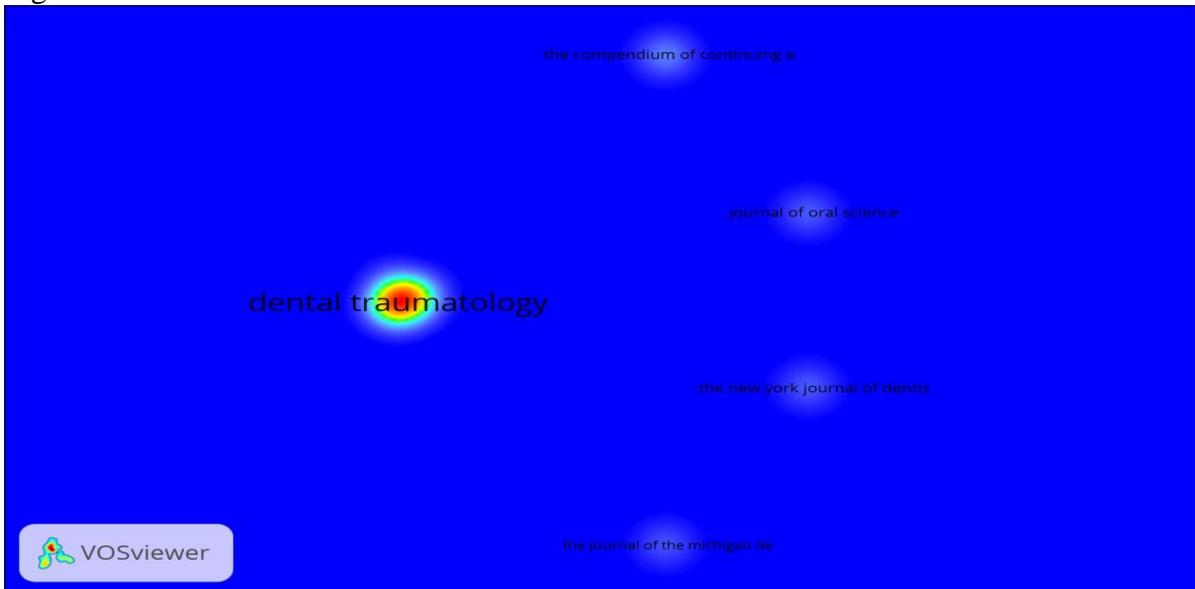


Figure 10: Leading journals based on citation

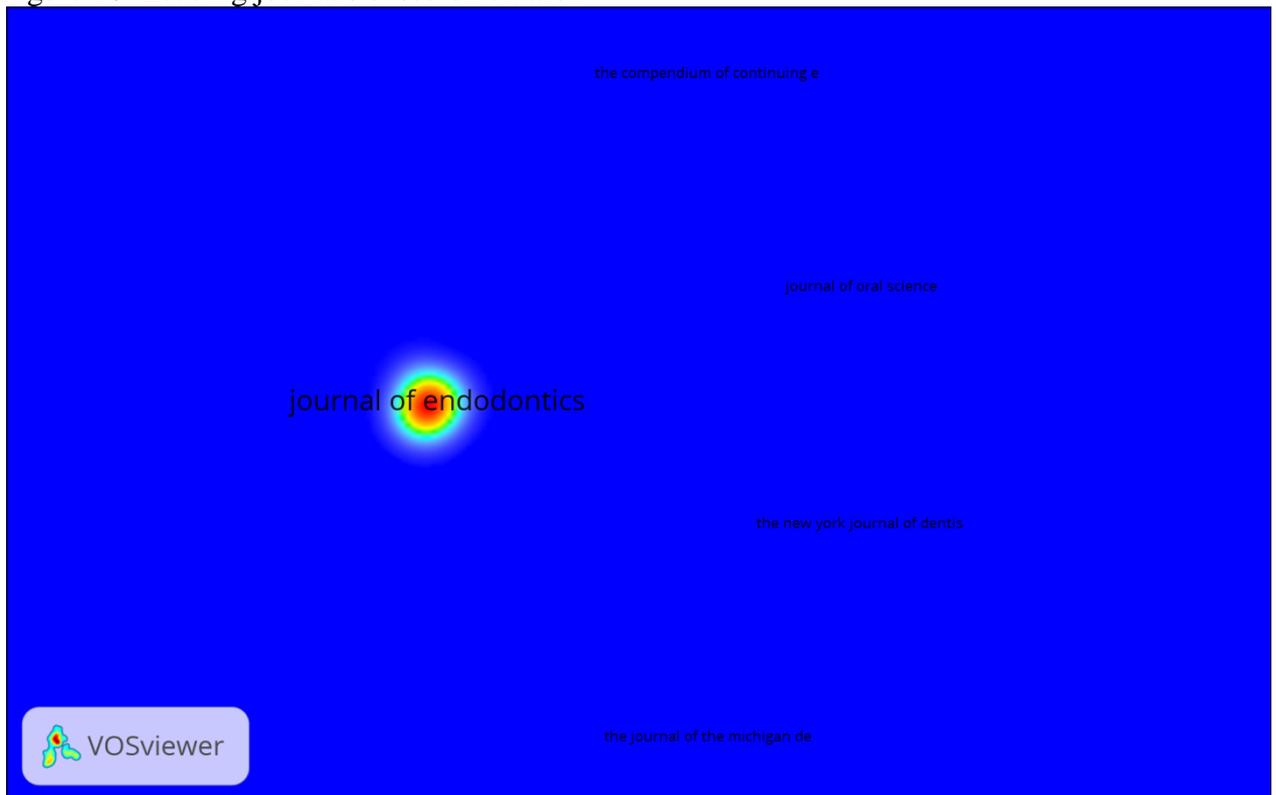


Figure 11: Leading journals based on co-authorship links

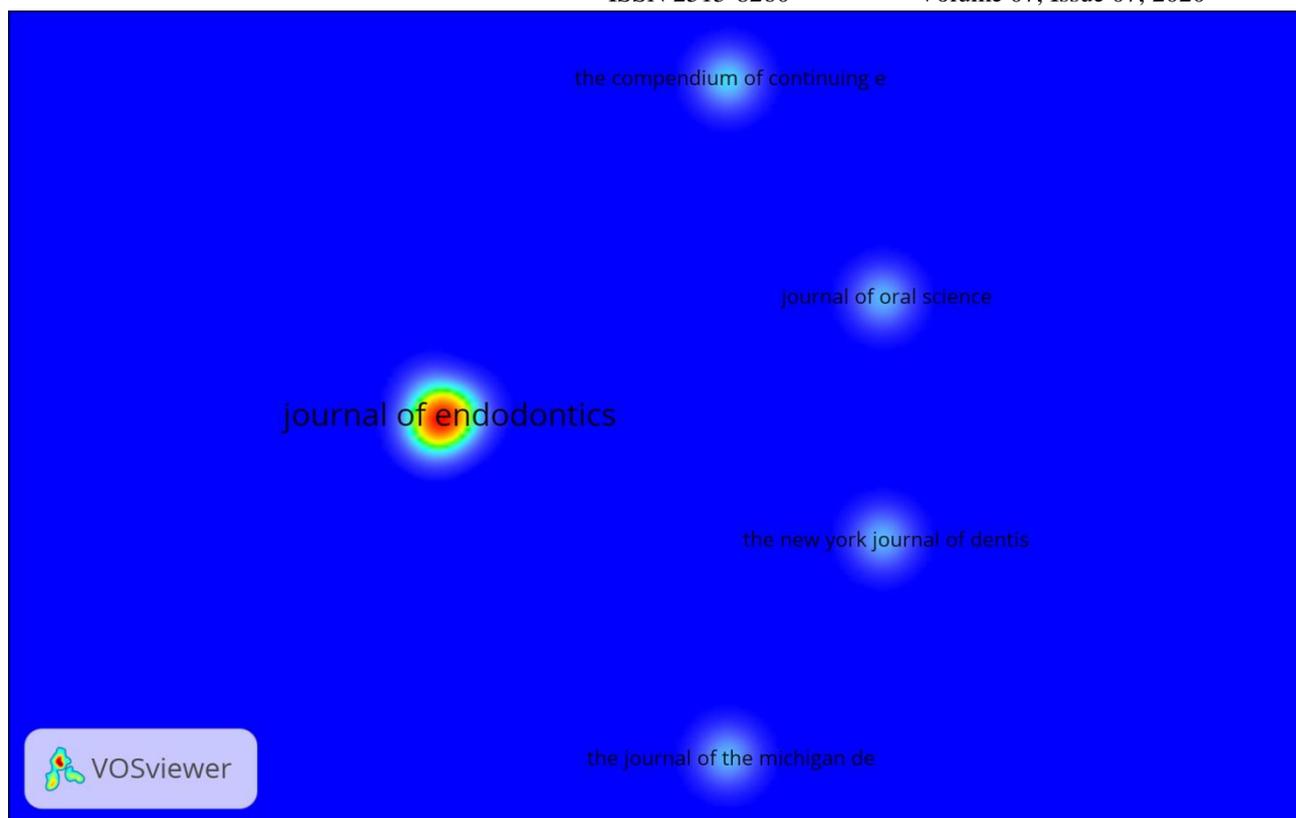


Figure 12: Leading journals based on publication volume

4. DISCUSSION AND CONCLUSION

Intentional replantation is an interesting research domain and the most active journal was the Journal of Endodontics; and Dental Traumatology. The most active country of the research domain was the United States of America, Brazil, and Turkey with the leading position in the citation, publication volume, and co-authorship links. The leading organizations engaged in the research regarding “Intentional replantation” were the University of Pennsylvania of the United States of America and Yonsei University of South Korea. The most active authors who had made valuable contributions related to “Intentional replantation” were Filippi A, Von Arx T., Kim E., and Lee S.J with the leadership in publications, citations, and co-authorship links. This research domain offers a new avenue for researchers regarding future research. From the above discussion regarding the bibliometric patterns in the research regarding the “Intentional replantation”, this research had observed a gradual increase in research interest regarding the “Intentional replantation” from the starting of the millennium and the momentum is going on positively. This points out the relevance and potential of this research domain (Refer to Figure 2).

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