

Bibliometric Analysis of Endocrown Studies Published in Endodontic Journals within The Scope of Sci-Expanded

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Abstract

Aim:This study aimed to make a bibliometric analysis of endocrown studies published in the International Endodontic Journal (IEJ), Journal of Endodontic (JOE) and Australian Endodontic Journal (AEJ) within the scope of Science Citation Index Expanded (Sci-Exp).

Methods: Studies published in IEJ, JOE and AEJ journals were determined using the keyword 'endocrown'. The article title, keywords and content of the articles were examined. The publications were recorded, including the journal, publication year, countries where the authors were located, type of publication, number of citations.

Results: One abstract, three research articles, and four reviews, were retrieved. Five of these studies were published in the IEJ and the remaining three were in the JOE, any publication related to endocrowns could not be found in the AEJ. JOE was superior to IEJ in terms of the number of citations. The number of researchers participating in studies was the highest in Brazil.

Conclusion: Limited number of articles were found on endocrowns in the endodontic journals within the scope of sci-expanded. All reviews and the abstract were included in IEJ whereas all of the research articles were published in JOE. The most cited publication was a research article in JOE.

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Keywords: Bibliometrics, crowns, database, endodontics, publications.

Introduction

The restoration of endodontically treated teeth with excessive coronal material loss is one of the most common clinical problems faced by dentists. These teeth lose their mechanical properties significantly compared to vital teeth, and in these cases, regaining function and aesthetics may require complex treatments (1). Tooth tissue loss does not only occur as a result of extensive caries, preparation of the access cavity for endodontic treatment can also lead to weakening of the tooth tissue. Following the removal of the pulp tissue, the loss of the tooth's neurosensory feedback system reduces the protection of the tooth against chewing forces (2). The importance given to the priority of minimally invasive principles has led to the development of restoration

options to be applied to the teeth after the endodontic treatment process. Endocrowns are among the leading choices in this sense. In addition to replacing the coronal anatomy, it shows that endocrowns are an important alternative in terms of preventing bacterial microleakage by performing successful sealing at root canal entrances and obtaining aesthetic and conservative restoration (3). Clinical and in vitro studies on the subject would be important.

Studies conducted in journals within the scope of Science Citation Index Expanded (Sci-Exp) in the field of endodontics also contribute to the research and development of endocrowns. Within the scope of Sci-Exp, there are three journals in the field of endodontics: International Endodontic Journal (IEJ), Journal of

Endodontics (JOE) and Australian Endodontic Journal (AEJ) (4). The International Endodontic Journal is published monthly on behalf of the British Endodontic Society. Original scientific articles are published on biomedical science, applied materials science, bioengineering, epidemiology and endodontic problems and their treatment, and restoration of root canal treated teeth. In addition, review articles, clinical case reports, book reviews, scientific meeting summaries are also accepted. All studies are subject to peer review (5). Journal of Endodontics belongs to the American Association of Endodontists. The monthly published journal includes clinical studies, studies on biological aspects of endodontics, studies on endodontic techniques, case reports, or research articles on scientific or applied aspects of endodontics (6). The Australian Endodontic Journal deals with the morphology, physiology and pathology of the human tooth, particularly pulp, root and peri-radicular tissues, and is published three times a year (7).

Bibliometric research has a prominent role in assessing the scientific chain, with the way researchers measure the scientific productivity of communities. Published data work is widely applied in assessment and summarizes bibliometric data to present the academic activity structure and emerging trends of a research topic or field (8). In this study, it was aimed to make a bibliometric review of endocrown studies published in the International Endodontic Journal (IEJ), Journal of Endodontics (JOE) and Australian Endodontic Journal (AEJ) within the scope of Sci-Exp.

2. Materials and Methods

Studies published in IEJ, JOE and AEJ journals were listed using the keyword 'endocrown'. The articles published between the publication start date of the journals and January 2023 on endocrown were classified as including the journal name, publication year, countries where the authors were located, type of publication, number of citations, and recorded in the Excel software package (Microsoft). The results were evaluated.

3. Results

A total of 8 studies on endocrowns were found in endodontic journals within the scope of Sci-Exp. While five of these studies were published in the International Endodontic Journal and the remaining three were published in the Journal of Endodontics, no publications on endocrowns were found in the Australian Endodontic

Journal. It was determined that the published articles consisted of one abstract, three research articles and four reviews. All studies are shown in table 1. It was seen that all reviews and abstracts were included in IEJ, whereas it was determined that all of the studies in JOE were published as research articles. The first study on endocrown was published in IEJ in 2019, however it was seen that the first study in JOE was published in 2009. The most cited publication was a research article in JOE, and the least cited publication was a review published in IEJ. When evaluated in terms of the number of citations, it was determined that JOE was superior to IEJ. Number of researchers participating in studies on endocrowns was highest in Brazil, followed by Taiwan and the United Kingdom, which had the same number of participants (Figure 1).

Table 1. Endocrown studies published in JOE and IEJ.

D Angerame, M De Biasi, G Marchesi, A Frassetto, L Bevilacqua. Influence of restorative material and margin relocation on the fracture resistance of teeth restored with CAD/CAM endocrowns. <i>Int Endod J</i> . 2019;52: 3-41. doi.org/10.1111/iej.13172
Bhuva B, Giovarruscio M, Rahim N, Bitter K, Mannocci F. The restoration of root filled teeth: a review of the clinical literature. <i>Int Endod J</i> . 2021;54(4):509-535. doi:10.1111/iej.13438
European Society of Endodontology developed by:, Mannocci F, Bhuva B, Roig M, Zarow M, Bitter K. European Society of Endodontology position statement: The restoration of root filled teeth. <i>Int Endod J</i> . 2021;54(11):1974-1981. doi:10.1111/iej.13607
Mannocci F, Bitter K, Sauro S, Ferrari P, Austin R, Bhuva B. Present status and future directions: The restoration of root filled teeth. <i>Int Endod J</i> . 2022;55(S4):1059-1084. doi:10.1111/iej.13796
Patel S, Bhuva B, Bose R. Present status and future directions: vertical root fractures in root filled teeth. <i>Int Endod J</i> . 2022;55(S3):804-826. doi:10.1111/iej.13737
Dartora NR, de Conto Ferreira MB, Moris ICM, et al. Effect of Intracoronal Depth of Teeth Restored with Endocrowns on Fracture Resistance: In Vitro and 3-dimensional Finite Element Analysis. <i>J Endod</i> . 2018;44(7):1179-1185. doi: 10.1016/j.joen.2018.04.008
Lin CL, Chang YH, Pa CA. Estimation of the Risk of Failure for an Endodontically Treated Maxillary Premolar with MODP Preparation and CAD/CAM Ceramic Restorations. <i>J Endod</i> . 2009;35(10):1391-1395. doi: 10.1016/j.joen.2009.06.020
Lin CL, Chang YH, Hsieh SK, Chang WJ. Estimation of the Failure Risk of a Maxillary Premolar with Different Crack Depths with Endodontic Treatment by Computer-aided Design/Computer-aided Manufacturing Ceramic Restorations. <i>J Endod</i> . 2013;39(3):375-379. doi: 10.1016/j.joen.2012.11.042

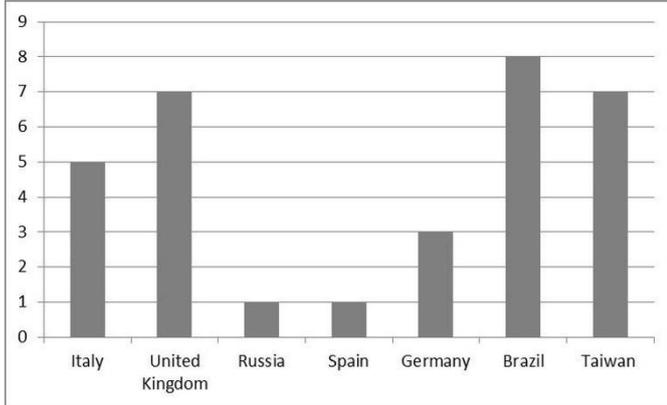


Figure 1. Researcher numbers by countries

4. Discussion

In this study, bibliometric analysis of endocrown-related articles published in the field of endodontics within the scope of Sci-Exp was performed. Endcrowns are reported to be a reliable choice in the restoration of endodontically treated teeth with excessive substance loss. It is possible to describe them as a one-piece restoration with an extension towards the pulp chamber. The retention requirement is met from the axial walls of the pulp chamber. However, it should not be applied in situations that will cause insufficient adhesion, such as a pulp chamber shallower than 3 mm or a finish line narrower than 2 mm. However, there are various opinions about the wall angles that should be formed in the preparation of the pulp chamber (9). The effect of the extension amount of the endocrown on the mechanical properties, the differences in stress distribution and the risk of failure of the restoration when compared to other restoration preferences were also discussed in the research articles on the endocrown published in the journals of Endodontics within the scope of Sci-Exp (3,10,11). In the reviews, it was determined as the main aim of these studies to make the most effective restoration choice in terms of prognosis of the teeth following root canal treatment (12-15). It is thought that the fact that the application history of endocrown restorations is not very old has contributed to the publication of 8 studies, one of which is a summary statement, four reviews and three research articles, in the field of Endodontics within the scope of Sci-Exp. However, it is anticipated that studies on the design, adhesion and mechanical properties of endocrown restorations may be studied more due to the subjects of interest in the field of Prosthetic Dentistry. However,

further analysis is needed to make a comparison on this subject. In a study (16), it was reported that publishment acceptance possibility of research articles were higher in bibliometric analyzes than reviews. However, it has been seen that there are more reviews in studies on endocrowns in endodontic journals within the scope of Sci-Exp. However, while JOE only published research papers, IEJ only published reviews. In this study, the first study in journals with bibliometric analysis was published as a research article in 2009. All studies were conducted between 2009 and 2022. There is no specific period in which researches related to the subject are concentrated. However, there is no study of endocrowns in AEJ.

Bibliometric analyzes contain important results for the analysis of current studies. In addition, informative and guiding data are obtained in terms of publication principles, aims and scopes of journals (8). In the present study, it is concluded that articles on endocrowns in the journals of the field of Endodontics within the scope of Sci-Exp are not preferred much in terms of the scope of publication of the journals. However, it is thought that the need for a bibliometric analysis of the studies on the parameters related to endocrown restorations in the journals in the field of Prosthetic Dentistry will be useful in terms of evaluating academic trends.

5. Conclusion

Endcrowns are an alternative method that can be preferred in addition to post application in root canal treated teeth with crown destruction. When the studies published in the journals within the scope of Sci-Exp in the field of endodontics are examined, endocrowns are generally discussed within the evaluation of the most ideal restoration option in terms of prognosis in teeth that have undergone root canal treatment. In research articles, the evaluation of the stress that may occur in teeth restored with endocrown and the biomechanical changes are examined. While the IEJ published review articles, the research articles had the opportunity to be published in the JOE. JOE seems to be advantageous in terms of the number of citations. However, AEJ had no publications on the endocrowns.

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