



Original Article

The 100 Most Cited Studies on Impacted Canines: A Bibliometric Analysis Study

Mehmet Gümüş Kanmaz¹, Genta Agani Sabah²¹Izmir Tınaztepe University Faculty of Dentistry, Department of Periodontology, İzmir, Türkiye²Izmir Tınaztepe University Faculty of Dentistry, Department of Orthodontics, İzmir, Türkiye

Cite this article as: Kanmaz MG, Agani Sabah G. The 100 most cited studies on impacted canines: a bibliometric analysis study. *Turk J Orthod.* 2026; 39(1): 35-42

Main Points

- The most influential literature on impacted canines is predominantly composed of observational studies, highlighting a need for higher-level evidence such as randomized controlled trials and systematic reviews.
- Highly cited research primarily focuses on the etiology, radiographic assessment, and associated dental anomalies of impacted maxillary canines.
- Despite the large body of literature, key areas including mandibular canine impactions, periodontal outcomes, and long-term treatment effects remain underexplored.

ABSTRACT

Objective: To evaluate the scientific literature on impacted canines using bibliometric and altmetric analyses.

Methods: A systematic search of the Web of Science Core Collection was performed using keywords related to impacted canines. Three independent reviewers identified, screened, and evaluated the 100 most-cited articles. Citation data were cross-verified with Scopus and Google Scholar. Extracted information included citation counts, study design, publication year, authors, institutions, journals, and countries. Bibliometric mapping was conducted using VOSviewer, and altmetric indicators were obtained from dimensions. Statistical analysis was performed using Spearman's rank correlation, with significance set at $p < 0.05$.

Results: The 100 most-cited articles received 10,429 citations in the Web of Science, and citation counts were strongly correlated across databases ($p < 0.001$). Most studies were observational (69%), followed by narrative reviews (12%) and interventional studies (10%). Research topics primarily addressed the etiology, radiographic assessments, and associated anomalies. The most cited article in the Web of Science database was Ericson and Kuroi's 1988 study on the interceptive extraction of primary canines. Publications were concentrated in orthodontic specialty journals, with the USA, Italy, and Israel being the leading countries.

Conclusion: Analysis of the 100 most-cited articles revealed that influential research on impacted canines is predominantly, focusing on etiology and diagnosis. Areas such as mandibular impactions, periodontal outcomes, and long-term treatment effects remain underexplored.

Keywords: Cuspid, impacted tooth, bibliometrics

INTRODUCTION

Tooth impaction is defined as the condition in which a fully formed tooth is obstructed from erupting into its intended functional position within the dental arch.¹ Maxillary canines are the second most commonly impacted teeth after third molars,² with a reported prevalence of 0.92% to 2.2% and a female-to-male ratio of approximately 2:1.^{3,4} While maxillary impacted canines are more commonly located on the palatal side than the labial side,⁵ mandibular canine impactions are less frequent, with a reported prevalence of 0.35%.⁴

Corresponding author: Asst. Prof. Genta Agani Sabah, e-mail: genta.agani@gmail.com ORCID: orcid.org/0000-0002-7571-6922

Received: October 10, 2025 **Accepted:** February 06, 2026 **Publication Date:** March 31, 2026



Copyright© 2026 The Author(s). Published by Galenos Publishing House on behalf of Turkish Orthodontic Society.

This is an open access article under the Creative Commons AttributionNonCommercial 4.0 International (CC BY-NC 4.0) License.

Although the etiology of impacted canines is complex and not fully understood, it is thought to arise from the interaction among genetic, systemic, and local factors.^{6,7} Various local factors are believed to be critical, including discrepancies between tooth size and arch length,^{6,8} prolonged retention, early loss or failure of the primary canine root to resorb, and ankylosis of the permanent canine.⁷ Other contributing causes may include the presence of a cyst or neoplasm, or the absence of, or variation in, the size or root formation of the maxillary lateral incisor.⁷ Insufficient arch length is considered the most common cause of labially impacted canines.⁹ In contrast, the widely accepted “guidance theory” proposes that the eruption of maxillary canines is directed by the root of the adjacent lateral incisor. In cases where this incisor is absent or malformed, the canine lacks guidance and becomes palatally impacted.¹⁰⁻¹⁴

The proper positioning of the canine teeth in the dental arch is integral to the development of a stable functional occlusion and contributes significantly to both smile and facial aesthetics. Consequently, an unmanaged canine impaction presents considerable clinical challenges, with potential complications including malocclusion, aesthetic impairment, abnormal craniofacial growth, and root resorption of adjacent teeth.¹⁵

The diagnosis of impacted canines is often made incidentally during routine dental examinations. Early detection and timely intervention, typically involving a combination of surgical and orthodontic procedures, are essential for achieving functional and aesthetic outcomes. Successful management frequently requires a multidisciplinary approach, with collaboration among orthodontists, pediatric dentists, periodontists, oral surgeons, and general practitioners.¹⁵ Consequently, the diagnosis and management of impacted canines have become a central topic in both clinical practice and academic research.

In recent years, bibliometric analysis has become an essential tool for navigating rapidly growing scientific literature. This quantitative approach uses statistical methods to analyze academic publications by revealing research trends, mapping the intellectual structure of a field, and highlighting areas for future investigation.¹⁶ A fundamental aspect of this methodology is the use of citation count to measure scholarly impact. Consequently, citation metrics serve as key indicators of a publication’s influence on both contemporary research and clinical applications.¹⁷⁻¹⁹ As the volume of published research continues to increase, bibliometrics provides a structured means of evaluating the quantity, relevance, and interconnectedness of scholarly work within a given domain.^{19,20}

Altmetric analysis complements traditional bibliometrics by assessing the online attention given to research articles.¹⁶ It collects data from social media, news outlets, and reference managers to calculate the Altmetric Attention Score (AAS), where higher scores indicate greater visibility and engagement. Unlike citation-based metrics, altmetrics enable the rapid recognition of recent studies and provide insights into societal impacts through digital mentions and discussions.^{21,22}

In recent years, there has been a notable increase in studies and reviews investigating the etiology and management of impacted canines. However, to the best of our knowledge, no bibliometric or mapping analyses have been conducted to systematically evaluate the structure, trends, and impact of the scientific literature on this topic. Therefore, the aim of this study was to perform a comprehensive bibliometric and altmetric analysis of publications related to impacted canines.

METHODS

This study adhered to the BIBLIO guidelines for reporting bibliometric research in the biomedical field.²³ Since this study did not involve human participants, animal subjects, or access to personal data, ethical approval was not required. A systematic literature search was conducted in the Web of Science Core Collection (WoS-CC) on August 26, 2025, to identify relevant studies. The studies included were selected based on the following search methodology: ALL=(“impacted canine”) OR ALL=(“ectopic canine”) OR ALL=(“unerupted canine”) OR ALL=(“displaced canine”) OR ALL=(“impacted cuspid”) OR ALL=(“ectopic cuspid”) OR ALL=(“unerupted cuspid”) OR ALL=(“impacted maxillary canine”) OR ALL=(“unerupted maxillary canine”) OR ALL=(“displaced maxillary canine”) OR ALL=(“canine impaction”) OR ALL=(“cuspid impaction”) OR ALL=(“impaction of canine”) OR ALL=(“ectopic eruption of canine”).

The articles were screened according to the predefined inclusion criteria. Studies exploring, describing, or relating to impacted canines in the context of orthodontics and their surgical management were included in this bibliometric analysis, with no restrictions on publication year or language. Publications unrelated to this relationship were excluded.

Articles selected from WoS-CC were sorted by citation count in descending order. The top 100 most-cited studies were reviewed and selected by three independent researchers (M.G.K., G.A.S., and C.S.) based on titles and abstracts and on full

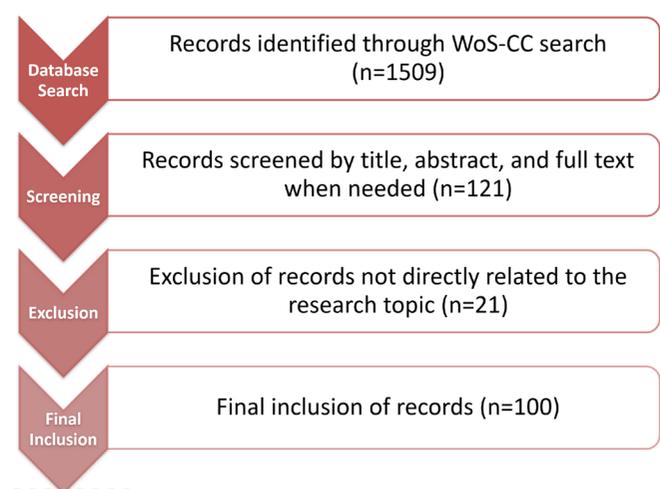


Figure 1. Flow chart of the study selection process.

texts when necessary (Figure 1).¹⁶ Disagreements were resolved through discussion to achieve consensus, which served as the validation method for the screening and classification process. To ensure accuracy, citation counts were compared with data from Scopus and Google Scholar, as these databases differ in indexing, which could affect bibliometric results. For articles with the same number of citations, rankings were determined by dividing the number of citations by the number of years since publication.²⁴

Information extracted from the selected articles included the title, language, number of authors and their names, and citation metrics (total citations and self-citations). Self-citations were defined as citations in which the citing document shared at least one author with the cited document, as identified using the Web of Science Citation Report tool.²⁵ Additionally, affiliated institutions, country of origin, publication year, journal name, 2024 journal impact factor (IF; as reported in Journal Citation Reports), keywords, study design, and topics were recorded. The study designs were categorized as systematic reviews, narrative/literature reviews, interventional studies, observational studies, case reports or case series, and preliminary research. Furthermore, the articles were grouped thematically into the following categories: etiology and prevalence, radiographic assessment and diagnosis, interceptive treatment, surgical-orthodontic management, treatment outcomes and clinical considerations, associated dental anomalies and dentoskeletal characteristics, and complications and risk factors.

Bibliometric networks were visualized using VOSviewer (version 1.6.20, the Netherlands). In the maps generated, the size of each node represents the frequency or strength of the data, whereas items of the same color and those clustered together indicate underlying correlations.

Altmetric indicators were obtained from the Dimensions platform (dimensions.ai) on August 26, 2025, the same day that data were extracted from the WoS-CC. The specific indicators analyzed included the AAS, mentions in news outlets, blogs, policy documents, social media (X/Twitter and Facebook), and reference-manager saves (Mendeley).

Statistical Analysis

Data normality was assessed using the Kolmogorov-Smirnov test, and the relationships between variables were analyzed using Spearman’s rank correlation coefficient. All statistical analyses were performed using SPSS version 26.0 (IBM, Armonk, NY, USA), and statistical significance was set at $p < 0.05$.

RESULTS

Of the 1,509 documents initially found in the WoS-CC database, 121 articles with the highest citation counts were reviewed for relevance by examining their titles, abstracts, and full texts. After screening, 21 articles were excluded because they were not directly related to the research topic. The final selection included the 100 most cited and relevant studies (Supplementary Table 1).

Although no language restrictions were applied during screening, all included articles were published in English.

The 100 most-cited articles received 10,429 citations in the WoS-CC, with citation counts ranging from 48 to 402 and a median of 77.5. Among these, 581 were self-citations, accounting for 5.6% of the total. Approximately 36.0% of the articles had more than 100 citations, and 9.0% had 200 or more. By comparison, the same articles received 28,568 citations in Google Scholar (range: 59-1,353; median: 216.5) and 12,439 citations in Scopus (range: 55-470; median: 89.5). Citation counts across the three databases showed strong positive correlations between WoS-CC and Google Scholar ($\rho=0.878, p<0.001$), Google Scholar and Scopus ($\rho=0.900, p<0.001$), and WoS-CC and Scopus ($\rho=0.929, p<0.001$).

The most-cited article was “Early treatment of palatally erupting maxillary canines by extraction of the primary canines” by Ericson and Kuroi (1988), published in the European Journal of Orthodontics; it received 402 citations in WoS-CC and 470 in Scopus. In contrast, the article with the highest citation count on Google Scholar was “Impacted maxillary canines: a review” by Bishara,³ published in 1992 in the American Journal of Orthodontics and Dentofacial Orthopedics; it received a total of 1,353 citations.

Among the selected studies, the oldest article, “Diagnosis and prevention of maxillary cuspid impaction” by Williams (1981), was published in Angle Orthodontist and has received 51 citations. The most recent article, “Impaction of maxillary canines and its effect on the position of adjacent teeth and canine development: A cone-beam computed tomography study”, by Dekel (2021) was published in the American Journal of Orthodontics and Dentofacial Orthopedics and received 57 citations.

The 100 most cited articles received the largest number of citations in 2001-2010 (4,089 citations, 39.2%), followed by 1991-2000 (2,635 citations, 25.3%), 2011-2021 (2,078 citations, 19.9%), and 1981-1990 (1,627 citations, 15.6%). There was a marked increase in publications after 2000, with 74.0% of the articles published during this period, accounting for 6,578

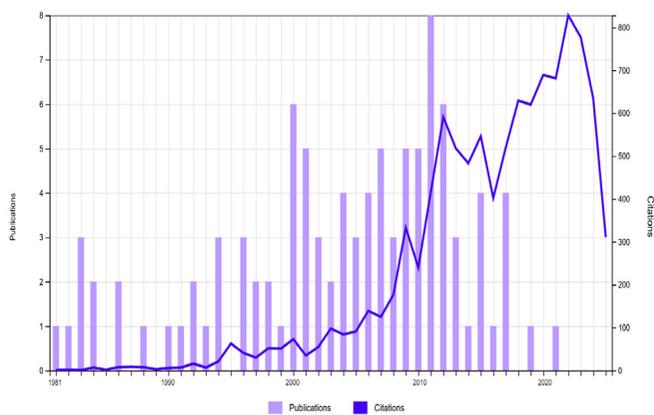


Figure 2. Distribution of publications and citations of the 100 most cited studies on impacted canines over time.

citations (63.1%) (Figure 2). Spearman's correlation showed a weak negative association between the number of citations in the WoS-CC and the year of publication ($p=-0.325$, $p=0.001$).

The American Journal of Orthodontics and Dentofacial Orthopedics was the most prominent journal in terms of the number of publications, with 39 articles (4,011 citations; 38.5%), followed by the European Journal of Orthodontics with 23 articles (2,678 citations; 25.7%) and Angle Orthodontist with 16 articles (1,704 citations; 16.3%). According to the 2024 Journal Citation Reports, the Journal of Dental Research had the highest IF and contributed two of the selected studies (IF 5.9, 223 citations, 2.1%), followed by Dentomaxillofacial Radiology with two of the selected studies (IF 4.1, 192 citations, 1.8%), and the Journal of the American Dental Association with three of the selected studies (IF 3.5, 378 citations, 3.6%) (Table 1).

Most included articles were observational studies (69 publications; 7,014 citations; 67.2%), followed by narrative or literature reviews (12 publications; 1,612 citations; 15.5%) and interventional studies (10 publications; 1,064 citations; 10.2%). Fewer studies were classified as systematic reviews (4 publications; 374 citations; 3.6%) or as case reports/series (3 publications; 231 citations; 2.2%). Additionally, one study used an *in vitro* design (66 citations, <1%), and another was a preliminary study (68 citations, <1%).

The majority of the selected articles focused on associated dental anomalies and dentoskeletal features (25 publications, 2,342 citations, 22.5%). This was followed by radiographic assessment and diagnosis (19 publications, 1,877 citations, 18.0%) and etiology and prevalence (17 publications, 2,296 citations, 22.0%). Studies investigating complications and risk factors accounted for 15 of the articles (1,536 citations, 14.7%), while surgical-orthodontic management was the main topic of 12 studies (1,200 citations, 11.5%). Fewer studies focused on interceptive treatment (9 publications; 991 citations; 9.5%), and only three addressed periodontal outcomes and clinical considerations (187 citations; 1.8%). Most studies focused on maxillary impacted canines, whereas only three specifically investigated mandibular impacted canines, highlighting the limited attention this topic has received in the literature.

A total of 277 authors contributed to the 100 most cited articles on impacted canines. Figure 3 illustrates the frequency of their appearances and their co-authorship relationships. Becker A was the author with the highest number of publications (15 publications; 1,209 citations; 11.6%), followed by Baccetti T (9 publications; 978 citations; 9.4%), and Chaushu S (9 publications; 688 citations; 6.6%) (Table 2).

Table 1. Top 10 journals with the most articles in the 100 most cited article list

Journal	Number of articles	Number of citations (WoS-CC)	Impact factor 2024
American Journal of Orthodontics and Dentofacial Orthopedics	39	4011	3.0
European Journal of Orthodontics	23	2678	2.7
Angle Orthodontist	16	1704	3.2
Journal of the American Dental Association	3	378	3.5
Journal of Dental Research	2	223	5.9
Dentomaxillofacial Radiology	2	192	4.1
Oral Surgery Oral Medicine Oral Pathology Oral Radiology and Endodontology	1	147	-
Community Dentistry and Oral Epidemiology	1	117	2.1
Clinical Oral Investigations	1	114	3.1
Medicina Oral Patologia Oral Y Cirugia Bucal	1	98	2.1

Table 2. Top 10 authors among the 100 most cited article list

Authors	Number of articles published on WoS-CC	Number of citations on WoS-CC
Becker A	15	1209
Baccetti T	9	978
Chaushu S	9	688
Peck S	6	859
Jacobs R	5	508
Alqerban A	4	416
Willems G	4	416
Zilberman Y	4	330
Kataja M	3	635
Peck L	3	635

definitive, evidence-based clinical guidelines. In addition, most of the included studies focused on maxillary canines, with only three of the top 100 most cited studies addressing mandibular impactions. Although this reflects the higher prevalence of maxillary impactions, it also reveals a significant disparity in research: the management of mandibular canines may rely on a more limited body of evidence.

There has been a recent rise in the number of bibliometric analyses in dentistry,^{16,17,20,26-31} reflecting the need to objectively synthesize an increasingly large and complex body of literature. A recent bibliometric study of publications in three major orthodontic journals highlighted that bibliometrics enables a structured evaluation of research trends by examining authorship patterns, keywords, institutions, and citation networks and emphasized that bibliometric approaches are now widely applied across dentistry and its subfields.³⁰ This journal-level mapping further suggested that although overall publication output remained broadly stable across two decades, collaboration patterns intensified and cooperative networks became denser in the more recent decade, accompanied by broader international participation. Furthermore, the growing bibliometric literature increasingly focuses on research design. A contemporary bibliometric visualization of orthodontic randomized controlled trials identified keyword clusters, including periodontal health, and showed that themes such as root resorption and canine retraction have become more prominent in recent years.³² However, this trend is only partially reflected in our findings, which indicate that highly cited research on impacted canines remains dominated by observational designs. Nevertheless, bibliometric evidence from interdisciplinary orthodontic-periodontal research highlights the rapid growth of the orthodontic-periodontal interface.³³ Given that impacted canine management frequently intersects with periodontal considerations, including surgical exposure approaches, long treatment durations, and mitigation of iatrogenic effects, these developments may help guide future research priorities.

The altmetric analysis, which provides a contemporary perspective on scholarly impact, revealed that fewer than half of the 100 most-cited articles had altmetric data, suggesting that the influence of this body of research is largely confined to academic and clinical communities. This may be due to the specialized nature of impacted canines, which likely limits their visibility on broader public-facing platforms such as social media and news outlets. Furthermore, a significant portion of the top 100 cited articles were published before the widespread adoption of social media and digital tracking tools; this likely contributed to the absence of Altmetric data for 56 of the included studies. However, the study by Ericson and Kurol (1988) had the highest AAS, consistent with the bibliometric analysis results. This may be because despite predating modern social metrics, this study remains a central topic of contemporary discussion, as it provides clinical guidelines for interceptive treatment of impacted canines by recommending

extraction of the primary canine as the treatment of choice in young patients, particularly when panoramic radiographs show overlap between the impacted canine and the root of the lateral incisor.

Study Limitations

This study had several limitations that warrant consideration. The analysis was based solely on WoS-CC to identify the 100 most-cited articles. Although WoS is a comprehensive and widely accepted source for bibliometric analysis,^{16,17,19,27} the inclusion of additional databases such as Scopus or PubMed may have yielded a different set of relevant articles. Furthermore, the analysis was limited to the 100 most cited studies, which may have introduced a bias toward older publications, potentially excluding more recent but influential works that have not yet accumulated high citation counts. Finally, although citation metrics are useful indicators of academic impact, they do not necessarily reflect the quality, methodological rigor, or clinical relevance of the studies.

CONCLUSION

This bibliometric study provides an in-depth analysis of the most frequently cited publications on impacted canines. Most of the included studies were observational and focused on etiology, diagnosis, and associated anomalies, with limited contributions from interventional studies or systematic reviews. Research was concentrated in high-impact orthodontic journals and driven by key institutions and authors. However, only a limited number of systematic reviews and interventional studies ranked among the top 100 most-cited articles, and areas such as mandibular impaction, periodontal outcomes, and long-term treatment effects remain underexplored.

Ethics

Ethics Committee Approval: Ethics committee approval was not required for this study, as it consisted of a bibliometric and altmetric analysis of previously published articles and did not involve human participants or animal subjects.

Informed Consent: Not applicable.

Acknowledgments

The authors express their gratitude to Can Sabah, MD for his valuable contributions to this study.

Footnotes

Author Contributions: Surgical and Medical Practices - M.G.K., G.A.S.; Concept - M.G.K.; Design - M.G.K.; Data Collection and/or Processing - G.A.S.; Analysis and/or Interpretation - G.A.S.; Literature Search - M.G.K.; Writing - M.G.K.

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

Financial Disclosure: The authors declared that this study received no financial support.

Supplementary Tables 1-2: <https://cloudfront.net/4615d177-864c-42ed-adf7-32226220a22b/content-images/58f67d26-98bb-4b7f-8f39-c9f52f87dceb.pdf>

REFERENCES

- Kolokitha OE, Balli D, Zarkadi AE, Gizani S. Association between maxillary canine impaction and other dental anomalies: radiological study of a mixed dentition children's cohort from an orthodontic clinic. *Eur Arch Paediatr Dent.* 2023;24(3):401-407. [CrossRef]
- Shapira Y, Borell G, Nahlieli O, Kuftinec MM. Uprighting mesially impacted mandibular permanent second molars. *Angle Orthod.* 1998;68(2):173-178. [CrossRef]
- Bishara SE. Impacted maxillary canines: a review. *Am J Orthod Dentofacial Orthop.* 1992;101(2):159-171. [CrossRef]
- Cooke J, Wang HL. Canine impactions: incidence and management. *Int J Periodontics Restorative Dent.* 2006;26(5):483-491. [CrossRef]
- Fournier A, Turcotte JY, Bernard C. Orthodontic considerations in the treatment of maxillary impacted canines. *Am J Orthod.* 1982;81(3):236-239. [CrossRef]
- Peck S, Peck L, Kataja M. The palatally displaced canine as a dental anomaly of genetic origin. *Angle Orthod.* 1994;64(4):249-256. [CrossRef]
- Jacoby H. The etiology of maxillary canine impactions. *Am J Orthod.* 1983;84(2):125-132. [CrossRef]
- Baccetti T. A controlled study of associated dental anomalies. *Angle Orthod.* 1998;68(3):267-274. [CrossRef]
- Kokich VG. Surgical and orthodontic management of impacted maxillary canines. *Am J Orthod Dentofacial Orthop.* 2004;126(3):278-283. [CrossRef]
- Becker A, Smith P, Behar R. The incidence of anomalous maxillary lateral incisors in relation to palatally-displaced cuspids. *Angle Orthod.* 1981;51(1):24-29. [CrossRef]
- Zilberman Y, Cohen B, Becker A. Familial trends in palatal canines, anomalous lateral incisors, and related phenomena. *Eur J Orthod.* 1990;12(2):135-139. [CrossRef]
- Becker A, Chaushu S. Etiology of maxillary canine impaction: a review. *Am J Orthod Dentofacial Orthop.* 2015;148(4):557-567. [CrossRef]
- Becker A, Peck S, Peck L, Kataja M. Palatal canine displacement: guidance theory or an anomaly of genetic origin? *Angle Orthod.* 1995;65(2):95-102. [CrossRef]
- Al-Nimri KS, Bsoul E. Maxillary palatal canine impaction displacement in subjects with congenitally missing maxillary lateral incisors. *Am J Orthod Dentofacial Orthop.* 2011;140(1):81-86. [CrossRef]
- Hamada Y, Timothius CJC, Shin D, John V. Canine impaction – a review of the prevalence, etiology, diagnosis and treatment. *Semin Orthod.* 2019;25(2):117-123. [CrossRef]
- Pereira CG, Dos Anjos LM, de Oliveira Rocha A, et al. Maxillary sinus lift: a bibliometric and altmetric analysis of the 100 most cited articles. *Clin Implant Dent Relat Res.* 2025;27(3):e70041. [CrossRef]
- dos Anjos LM, Kuerten Gil AC, Magrin GL, et al. The 100 most cited articles on root coverage in periodontology: a bibliometric analysis. *Periodontol and Implant Research.* 2025;9(1):10. [CrossRef]
- Goebel MC, Rocha AO, Santos PS, et al. A bibliometric analysis of the top 100 most-cited papers concerning dental fluorosis. *Caries Res.* 2023;57(4):509-515. [CrossRef]
- Tarazona B, Lucas-Dominguez R, Paredes-Gallardo V, Alonso-Arroyo A, Vidal-Infer A. The 100 most-cited articles in orthodontics: a bibliometric study. *Angle Orthod.* 2018;88(6):785-796. [CrossRef]
- Ferrillo M, Nucci L, Gallo V, et al. Temporary anchorage devices in orthodontics: a bibliometric analysis of the 50 most-cited articles from 2012 to 2022. *Angle Orthod.* 2023;93(5):591-602. [CrossRef]
- Garcovich D, Ausina Marquez V, Adobes Martin M. The online attention to research in periodontology: an altmetric study on the most discussed articles on the web. *J Clin Periodontol.* 2020;47(3):330-342. [CrossRef]
- Garcovich D, Zhou Wu A, Sanchez Sucar AM, Adobes Martin M. The online attention to orthodontic research: an Altmetric analysis of the orthodontic journals indexed in the journal citation reports from 2014 to 2018. *Prog Orthod.* 2020;21(1):31. [CrossRef]
- Montazeri A, Mohammadi S, M Hesari P, Ghaemi M, Riazi H, Shekhi-Mobarakeh Z. Preliminary guideline for reporting bibliometric reviews of the biomedical literature (BIBLIO): a minimum requirements. *Syst Rev.* 2023;12(1):239. [CrossRef]
- Jelicic Kadic A, Kovacevic T, Runjic E, et al. Research methodology used in the 50 most cited articles in the field of pediatrics: types of studies that become citation classics. *BMC Med Res Methodol.* 2020;20(1):60. [CrossRef]
- Budimir G, Rahimeh S, Tamimi S, Južnič P. Comparison of self-citation patterns in WoS and Scopus databases based on national scientific production in Slovenia (1996–2020). *Scientometrics.* 2021;126(3):2249-2267. [CrossRef]
- Ahmad P, Slots J. A bibliometric analysis of periodontology. *Periodontol 2000.* 2021;85(1):237-240. [CrossRef]
- Cheng L, Feng Z, Hao Z, Si M, Yuan R, Feng Z. Molar distalization in orthodontics: a bibliometric analysis. *Clin Oral Investig.* 2024;28(2):123. [CrossRef]
- Firincioğulları EC, Çelik A, Eden E. Myofunctional therapy: a bibliometric study of the most cited 50 articles. *Aust Orthod J.* 2025;41(1):140-154. [CrossRef]
- Lam XY, Ren J, Yeung AWK, Lin Y. The 100 most-cited randomised controlled trials in orthodontics: a bibliometric study. *Int Dent J.* 2024;74(4):868-875. [CrossRef]
- Gao H, Fu D, Wang S, Wei M, Zou L, Liu J. Exploring publications in 3 major orthodontic journals: a comparative bibliometric analysis of two 10-year periods (2002-2011 and 2012-2021). *Am J Orthod Dentofacial Orthop.* 2024;166(1):81-91. [CrossRef]
- Baumgartner S, Pandis N, Eliades T. Exploring the publications in three major orthodontic journals: a comparative analysis of two 5-year periods. *Angle Orthod.* 2014;84(3):397-403. [CrossRef]
- Wang S, Fu D, Zou L, Zhao Z, Liu J. Bibliometric and visualized analysis of randomized controlled trials in orthodontics between 1991 and 2022. *Am J Orthod Dentofacial Orthop.* 2024;165(4):471-487. [CrossRef]
- Zhao J, Feng Z, Liu Y, Sun S, Feng Z. Advances in orthodontic treatment for periodontal disease: a bibliometric analysis, emerging insights and clinical implications. *Front Dent Med.* 2025;6:1600672. [CrossRef]