Cumhuriyet Dental Journal

A Bibliometric Analysis of the Most Cited Articles Published in the Cumhuriyet Dental Journal[#]

Gonca Deste Gökay[1,a],*, Perihan Oyar[2,b], Rukiye Durkan[3,c]

[1]Department of Prosthodontics, Faculty of Dentistry, Bursa Uludağ University, Bursa, Turkey.
[2]Dental Prosthesis Technology, School of Health Services, Hacettepe University, Ankara, Turkey
[3]Department of Prosthodontics, Faculty of Dentistry, Istanbul Okan University, Istanbul, Turkey
*Corresponding author

Research Article

ABSTRACT

Objectives: The aim of this study was to evaluate the bibliometric profile of the most cited articles published in Cumhuriyet Dental Journal (CDJ).

Materials and Methods: TR Dizin database was used to search the most frequently cited articles. After the screening process, a researcher organized the articles according to the citation counts. The citation counts, publication year, authorship, contributing institutions and countries, manuscript language, field of dental research, study type and design, data analysis method and keywords were evaluated.

Results: 123 citations were made to 76 articles. The citation counts ranged from 1 to 6. While the highest citation counts (n=17) were in 2012, the highest citation prevalence (1.93) was in 2011. There was a predominance of research area of Dental Materials (23.7%), original articles (69.7%), experimental studies (38.2%) and analytical data analysis method (90.2%). Original research articles in Dental Materials (88.9%) and Behavioral, Epidemiological and Health Services Research (100%), review articles in Prosthodontics (37.5%), and case reports in Diagnostic Research (57.1%) was more common. The highest citation prevalence was found in Periodontology (2.75). Most of the articles (28.9%) have 3 authors. Most of the articles (90.8%) originated from Turkey with the greatest contributions from Cumhuriyet University Faculty of Dentistry (22.4%). The manuscript language was Turkish at a rate of 57.9%. Among a total of 282 keywords, the most frequently used keywords were ''bond strength'' (n=6) and ''composite resin'' (n=5).

Conclusions: The profile of citations in CDJ shows that original research in the research areas of Dental Materials and Behavioral, Epidemiological and Health Services Research is predominant, with growing participation of local authors.

Keywords: Bibliometric Analysis, Bibliographic Databases, Journal Article.

Cumhuriyet Dental Journal'da Yayınlanan ve En Çok Atıf Alan Makalelerin Bibliyometrik Analizi[#]

ÖZ

Amaç: Bu çalışmanın amacı, Cumhuriyet Dental Journal (CDJ)'de yayınlanan ve en çok atıf alan makalelerin bibliyometrik profilini analiz etmektir.

Yöntem: CDJ'de yayınlanmış ve atıf alan makaleleri belirlemek için TR Dizin veri tabanı kullanıldı. Tarama sürecinden sonra, bir araştırmacı makaleleri atıf sayılarına göre düzenledi. Makaleler; atıf sayıları, yayın yılı, yazar sayıları, katkıda bulunan kurum ve ülkeler, metin dili, dental araştırma alanı, çalışma tipi ve tasarımı, veri analiz yöntemi ve anahtar kelimeler açısından değerlendirildi.

Bulgular: Tarama sonucunda 76 makaleye 123 atıf yapıldığı belirlendi. Atıf sayıları 1 ile 6 arasında değişmekteydi. Atıf sayısı en çok (n=17) olan yıl 2012 iken, atıf prevalansı (1,93) en yüksek olan yıl 2011 idi. Çalışmaların özellikleri ile ilgili olarak, Dental Materyaller araştırma alanının (%23,7) orijinal makalelerin (%69,7), deneysel çalışmaların (%38,2) ve analitik veri analizi yönteminin (%90,2) ağırlıklı olduğu görüldü. Orijinal araştırma makaleleri Dental Materyaller (%88,9) ve Davranışsal, Epidemiyolojik ve Sağlık Hizmetleri Araştırmaları (%100) alanlarında, derleme makaleleri Protetik Diş Tedavisi alanında (%37,5) ve olgu sunumu makaleleri Diagnostik Araştırmalar alanında (%57,1) daha yaygındı. Tek makale ile temsil edilen makaleler dışlanarak hesaplanan atıf prevalansında en yüksek değer Periodontoloji (2,75) alanında bulundu. Makalelerin çoğu (%28,9) 3 yazarlıydı. Sorumlu yazarların çoğu (%90,8) Türkiye kaynaklı iken en büyük katkı Cumhuriyet Üniversitesi Diş Hekimliği Fakültesi'den (%22,4) sağlanmıştı. Metin dili %57,9 oranında Türkçe idi. Toplam 282 anahtar kelime arasında en sık kullanılanların ''bağlanma dayanımı'' (n=6) ve ''kompozit rezin'' (n=5) olduğu görüldü.

Sonuçlar: CDJ'de atıf alan makalelerin profili, yerel araştırmacıların artan katılımıyla Dental Materyaller ve Davranışsal, Epidemiyolojik ve Sağlık Hizmetleri Araştırmaları alanlarında yürütülen orijinal araştırmaların baskın olduğunu göstermektedir.

Anahtar Kelimeler: Bibliyometrik Analiz, Bibliyografik Veritabanları, Dergi Makalesi.

[a] goncadeste@hotmail.com https://orcid.org/0000-0002-5481-0063   [b] poyar73@gmail.com https://orcid.org/0000-0003-3849-9153
[c] rukiye_durkan@hotmail.com https://orcid.org/0000-0002-3381-4073

Introduction

Bibliometrics is a method that is used to statistically evaluate the publications that can be accessed through medical databases, and to measure scientific activities on the basis of individuals, departments or institutes, universities and countries.[1] By focusing on the type, impact and quality of scientific literature with bibliometric analysis, it can establish a reference for future studies. The number of publications published in a certain time period, the number of citations, the effect of the publication in relation to the impact factor of the relevant journal are the parameters that can be used in this method. It can help map changes in a scientific community over time. Bibliometric analysis has been an important method to measure the level of development of a particular scientific field. It allows researchers to identify key study topics and explore current ideas in a particular field.[2]

Citation analysis, one of the most common methods in bibliometric analysis, deals with how often other authors cite a scientific article.[3] It serves to assess the clinical and scientific significance of a article.[4] In addition, citation analysis recognizes significant contributions from authors, institutions, countries, and journals within a given scientific community.[5,6] Research results presented as a result of citation analyzes, study designs and topics of highly cited scientific articles have the potential to influence trends in future research.[7,8]

Cumhuriyet Dental Journal (CDJ) has been published 4 times a year since 1998 by Cumhuriyet University Faculty of Dentistry. The journal accepts original research articles, reviews, and case reports. It has been indexed in TR Dizin since 2011 and Scopus since 2010. CDJ publishes in the ''Science'' category and ''Dentistry'' subject area in the TR Dizin database.[9] While the citation average is 0.31 citations/article, the number of self-citation is 53 and the self-citation rate is 42.06%. It is indexed in the field of ''General Dentistry'' in Scopus database and its 2020 cite score is 1.0.[10] Although the language of the article is currently English, it was previously accepting articles in Turkish and English.

With the increase in the number of studies using the bibliometric analysis method in the international scientific field, the importance of this method in the national science field has increased and various publications have begun to be made on this subject.[11-13] Number of publications published in scientific journals scanned in TR Dizin is increasing rapidly. In the literature review, no study was found regarding the quantity of the articles published and cited in the CDJ. The aim of this study is to analyze the bibliometric profile of the most cited articles published in CDJ.

Materials and Methods

TR Dizin database was used to identify articles published and cited in the CDJ. TR Dizin search parameters filtered by selecting ''descending by citation count''. Electronic bibliometric searching was completed on 14 October 2021.[14] Articles that received at least one citation were recorded in descending order according to the number of citations. There was no restrictions/exclusions of publication year or study design of the article. Bursa Uludağ University Social and Human Sciences Research and Publication Ethics Committee decided that an ethics committee decision is not required for this study (decision date: 24.12.2021 ID number: 2021/11).

The following bibliometric parameters of each article were recorded and analyzed: publication title, citation count, publication year, number of authors, corresponding author's affiliation and country, manuscript language, field of Dentistry according to the International Association for Dental Research (IADR)[15], study type (original scientific article, review article and case report), study design (observational, experimental and documentary), data analysis method (descriptive and analytical) and keywords.

Initially, the abstract of each article was analyzed, and in cases where this analysis was not sufficient for data extraction, the full text of the article was read. The categorization was made by one researcher (G.D.G.), when undecided, it was taken by consensus with other researchers.

Data were recorded in a standardized form in Microsoft Office Excel 2010 (Microsoft Press, Redmond, WA, USA) and statistical evaluation was performed using the program's calculation toolbar. A descriptive analysis was performed for categorical variables and central tendency (mean, median, largest, smallest) and frequency measurements for quantitative variables.

Results

According to the TR Dizin database, 76 articles which published in CDJ and received at least one citation were accessed. 76 most cited articles received a total of 123 citations with a citation range of 1-6 citations. The first-ranked most cited paper with 6 citations was "Assessment of periodontal condition and systemic diseases in patients with periodontal diseases visiting periodontology clinic''. The highest number of cited articles published in 2012 (n=17 articles). The articles with the highest number of citations were published in 2011 (29 citations). The publication year with the highest prevalence of citations (i.e. number of citations/number of articles=1.93) was 2011 (Figure 1).

Regarding authorship, 76 articles included of a total of 283 authors, with a mean of 3.72±1.26 authors/articles, a median of 4.00, a minimum of 1, and a maximum of 6 authors. There was a greater number of articles with 3 authors (28.9%). Based on the affiliation of the corresponding author, researchers from four countries contributed to the articles. Among these, Turkey had the highest number of articles (90.8%), followed by India (4.0%), Cyprus (4.0%) and Iran (1.2%). Among 31 institutions, the greatest contribution was made by the Cumhuriyet University Faculty of Dentistry (n=17), followed by the Erciyes University Faculty of Dentistry (n=5), Gazi University Faculty of Dentistry (n=5) (Figure 2). The manuscript languages were Turkish (n=44) (82 citations) and English (n=32) (41 citations).
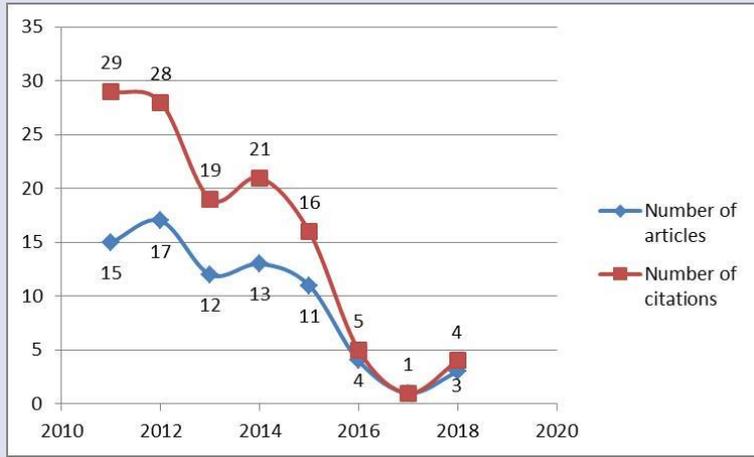
Figure 1. Number of articles and citations published in CDJ according to publication year.
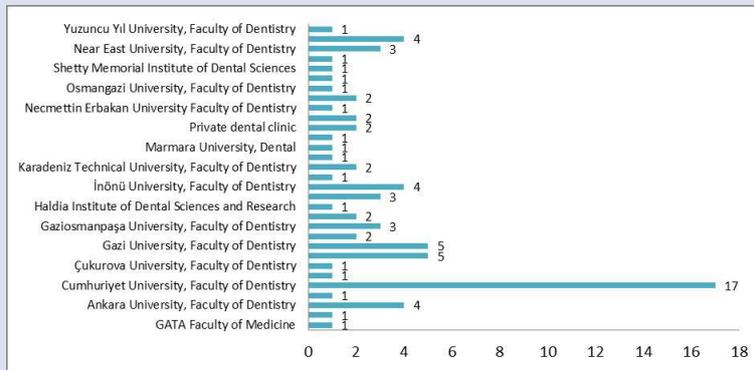

Figure 2. Distribution of the cited articles according to corresponding author affiliations

Table 1. Distribution of the cited articles according to the characteristics of the studies

Variables	N	%
Article type		
Original scientific article	53	69.7
Review article	14	18.4
Case report	9	11.9
Study design		
Observational	26	34.2
Experimental	29	38.2
Documentary	21	27.6
Data analysis method		
Descriptive	7	13.7
Analytical	44	86.3

Regarding the characteristics of the cited articles, there was a predominance of original scientific articles (69.7%) (92 citations), experimental studies (38.2%) (35 citations) and analytical data analysis method (86.3%) (73 citations) (Table 1).

The predominant areas of dentistry in the cited articles were Dental Materials (23.7%), followed by Behavioral, Epidemiological & Health Services Research (14.5%) and Prosthodontics (10.5%). While the most cited research area was Dental Materials (28 citations),

Periodontology had the highest prevalence of citations with 2.75 citations/articles (Figure 3) (calculated by excluding research areas represented by one article).

Original scientific articles represented the article type most used in the area of Behavioral, Epidemiological & Health Services Research (100%), Practice-Based Research (100%) and Dental Materials (88.9%), and review articles in Microbiology/Immunology (50%) and Mineralized Tissue Research (50%) and case reports in Diagnostic Research (57.1%) (Table 2).

Figure 3. Number of articles and citations published in CDJ according to area of Dentistry.

Table 2. Distribution of the characteristics of the cited articles according to area of Dentistry

Dental Research Area	Article type			Study design			Data analysis method	
	OS	R	CR	O	E	D	DP	A
Forensic Dentistry	1	0	0	0	0	1	0	1
Nutrition Studies	1	0	0	0	1	0	0	1
Behavioral, Epidemiological & Health Services Research	11	0	0	7	0	4	4	7
Dental Anesthesiology Research	0	1	0	0	0	1	0	0
Dental Materials	16	2	0	0	16	2	0	15
Dental Occlusion	1	0	0	1	0	0	0	1
Diagnostic Research	2	1	4	4	0	3	0	2
İmplantology	3	0	1	3	1	0	1	2
Cariology Research	2	1	0	0	2	1	0	2
Microbiology/İmmunology	1	1	0	0	1	1	0	1
Mineralized Tissue Research	1	1	0	0	1	1	0	1
Oral Health Research	1	0	0	1	0	0	0	1
Orofacial Pain and Related Disorders Methodology	1	1	1	2	0	1	0	1
Orthodontics Research	1	1	1	2	0	1	1	0
Periodontal Research	3	1	0	3	0	1	1	2
Prosthodontics	3	3	2	4	1	3	0	2
Pulp Biology and Regeneration	3	1	0	0	3	1	0	3
Practice-Based Research	2	0	0	2	0	0	0	2

OS: Original scientific; R: Review; CR: Case report; O: Observational; E: Experimental; D: Documentary, DP: Descriptive; A: Analytical;

Figure 4. Frequency of keywords in cited articles. Keywords shown in large fonts are used more frequently, keywords shown in small fonts are used less frequently.

Observational studies stood out as the design most frequently used in the area of Practice-Based Research (100%), Implantology (75%) and Periodontal Research (75%) and experimental studies in Dental Materials (88.9%) and Pulp Biology and Regeneration (75%) and documentary studies in Microbiology/Immunology (50%) and Mineralized Tissue Research (50%) (Table 2).

There was no research area in which the descriptive analysis method was dominantly used. Analytical data analysis method was predominant in the area of Practice-Based Research (100%) and Dental Materials (83.3%) (Table 2).

A total of 282 keywords of the 76 most cited articles were identified. The most frequently using keywords were bond strength (n=6) and composite resin (n=5) followed by color stability (n=3) and zirconium post (n=3). All keywords of most cited articles published in the journal is shown in Figure 4.

Discussion

This bibliometric study is the first to identify the most cited articles and their key features in the CDJ. Analysis of cited articles revealed some trends and set directions for future research.

The foundation of the evidence pyramid in evidence-based dentistry consists of levels I to IV: generalizable studies, conceptual studies, descriptive studies, and a single case report.[16] The types of articles published and cited in CDJ are listed as original scientific article, case reports, and review. The most cited articles are original article (n=53, 92 citations), review (n=14, 20 citations) and case reports (n=9, 11 citations), respectively. According to the results obtained, it has seen that the study type with the highest number of citations and citation prevalence was the original studies and the lowest was case reports in CDJ.

At the bottom of the evidence pyramid, case reports provide information about treatment protocols in which interesting symptoms are defined, diagnosis and treatment of diseases are evaluated.[13] It is stated that the importance of case reports in establishing treatment protocols or directing clinical practices is very low. For these reasons, case reports are no longer published in some journals.[12] On the other hand, case reports and series supported by literature information and explained with visual elements attract the attention of readers.[17] Researchers who want to share interesting and different cases, fulfill academic promotion conditions and increase the number of publications continue to prepare and send case reports. However, as shown in the present study, among the article types that were published and cited in CDJ, case reports show the least representation in prevalence.

The systematic reviews and meta-analyses provide the highest quality evidence according to the hierarchy of research evidence.[16] It is noticeable that no systematic review or meta-analysis was included among the cited articles, and it can be said that the level of evidence of the articles is low. This study also supported the fact that many of the most cited articles had the lowest level of evidence shown in other studies.[18,19] However, consideration should be given to including articles higher in the evidence hierarchy, such as randomized controlled trials, systematic reviews, and/or meta-analyses in CDJ.

Number of authors in the articles was among the parameters examined in present study. It is stated that there has been an increase in the rate of multi-author articles published in journals and the number of authors in the articles over the years. With the increase of multi-authorship, cooperation in academic progress, positive aspects of teamwork and complexity of the work can be achieved.[20] On the other hand, it is known that there are authors who are mentioned in the articles and are called "senior authors" although they do not fulfill the criteria for authorship.[20] With an average of 3.72 authors/articles, it is possible to say that the tendency to multi-authorship is also observed in the articles published and cited in CDJ.

In the CDJ, the most frequently studied area of Dentistry has been Dental Materials. Dental materials science investigates the toxicological effects of biomaterials to be used in the oral cavity and aims to develop and explore these materials.[21] This area may be related to the high competition among technological innovation companies, particularly in the field of nanotechnology. New dental materials are introduced to the market every day. The increasing interest in this field can be explained by the need to investigate material properties such as the interaction of the biomaterial and biological tissues and the mechanical properties of the material due to the application of dental biomaterials to the gingiva, mucosa and hard tissues. Advances in this area will increase the clinician's confidence in new materials.

The field of Epidemiology showed significant representation in the present study. Although a relatively new field, epidemiology studies have been spurred by growing public health concern.[22] These studies are important for the purpose of deepening and improving the understanding of public health with the numerous applications in the field of public health related to the planning and evaluation of health services and for the purposes of identifying the causes of disease.[22] In the light of the results of the present study, it could be suggested that researchers who plan to publish in this journal and who want to get high citations should focus on the original research article type and Dental Materials or Epidemiology study areas.

Keywords are an integral component of a scientific article. When searching the literature, the use of keywords brings more relevant results than using sentences or phrases. They serve as a descriptive code to source scientific research articles with a common denominator.[23] Therefore, it is essential to select and include keywords that can easily reach references related to the research topic within the rich literature.[24] The purpose of identifying the most frequently used

keywords is to guide researchers in searching for most cited articles on CDJ while using the TR Dizin database.

The present study has limitations because there is no mechanism to limit the number of citations for self-citing articles. TR Dizin was used to evaluate the most cited articles. In further studies, more databases such as Scopus and Google scholar could be included to search that published and cited articles in CDJ. Although the number of citations received by a published article indicates the influence the article has had, the citations received may not always be consistent with the findings of that article. This can be considered as a possible limitation of citation analysis without in-depth analysis of each citation. These limitations could provide an avenue to researchers for further research to complement the present study.

Conclusions

The profile of published and cited articles in CDJ shows a predominance of original scientific articles conducted in the areas of Dental Materials and Behavioral, Epidemiological and Health Services Research, with increased participation from local researchers. The present study illustrated some of the scientific contributions of published and cited in the CDJ, providing an insight into evidence-based dentistry for researchers. It can be a guide for researchers who want to publish in this journal indexed in TR Dizin by showing the bibliometric characteristics of the cited articles.

Conflict of Interest Statement

There is no conflict of interest.

References

1. Oelrich B, Peters R, Jung K. A bibliometric evaluation of publications in urological journals among European Union countries between 2000-2005. Eur Urol 2007;52:1238-1248.
2. Wu Y, Jin X, Xue Y. Evaluation of research topic evolution in psychiatry using co-word analysis. Medicine 2017;96:e7349.
3. Zhang Q, Yue Y, Shi B, Yuan Z. A Bibliometric analysis of cleft lip and palate-related publication trends from 2000 to 2017. Cleft Palate Craniofac J 2019;56:658-669.
4. Liu B, Liu S, Alastra AJG, Mahato D, Tayag EC, Cortez VA, et al. The 100 most cited vs. most relevant articles in the journal of neurosurgery: a bibliometric analysis. Cureus 2019;11:e4498.
5. van Wesel M. Evaluation by citation: Trends in publication behavior, evaluation criteria, and the strive for high impact publications. Sci Eng Ethics 2016;22:199-225.
6. Moed HF. New developments in the use of citation analysis in research evaluation. Arch Immunol Ther Ex. 2009;57:13-18.
7. Hachem LD, Mansouri A, Juraschka K, Taslimi S, Pirouzmand F, Zadeh G. Citation classics in neuro-oncology: assessment of historical trends and scientific progress. Neuro Oncol 2017;19:1158-1172.
8. Moghimi M, Fathi M, Marashi A, Kamani F, Habibi G, HirbodMobarakeh A, et al. A scientometric analysis of 20 years of research on breast reconstruction surgery: a guide for research design and journal selection. Arch Plast Surg 2013;40:109-115.
9. TR Dizin Dergi Listesi. Available from: https://app.trdizin.gov.tr/dergi/TnpFM053PT0/cumhuriyet-dental-journal- Last accessed date: 29 Nov 2021
10. Scopus Journal List. Available from: https://www.scopus.com/sourceid/21100211749 Last accessed date: 29 Nov 2021
11. Meriç G, Ozan N. A bibliometric analysis of publications from Turkey in Prosthetic Dentistry in International Literature. Turkiye Klinikleri J Dental Sci 2012;18:23-27.
12. Aydın U, Bulut A. Bibliometric Analysis of ADO Journal of Clinical Sciences. ADO Journal of Clinical Sciences 2012;6:1067-1075.
13. Onat H, Altan A, Goztaş Z. Bibliometric analysis of the Journal of Dental Faculty of Ataturk University. J Dent Fac Atatürk Uni 2015;25:66-70
14. TR Dizin Dergi Listesi. Cumhuriyet Dental Journal. Available from: https://app.trdizin.gov.tr/dergi/TnpFM053PT0/cumhuriyet-dental-journal-?orderPaper=6 Last accessed date: 14 Oct 2021
15. International Association for Dental Research. IADR Scientific Group/Network Awards. Available from: https://www.iadr.org/IADR/Awards/Scientific-Group-Network-Awards. Last accessed date: 16 Oct 2021
16. Daly J, Willis K, Small R, Green J, Welch N, Kealy M, et al. A hierarchy of evidence for assessing qualitative health research. J Clin Epidemiol 2007;60:43-49.
17. Brennan PA, Mitchell DA, Walker TW, Cascarini L, Oeppen RS. Short communication articles published in BJOMS during 2008-2009 an analysis of types of submission and subject material. Br J Oral Maxillofac Surg 2010;48:167-172.
18. Feijoo JF, Limeres J, Fernández-Varela M, Ramos I, Diz P. The 100 most cited articles in dentistry. Clin Oral Investig 2014;18:699-706.
19. Fardi A, Kodonas K, Gogos C, Economides N. Top-cited articles in endodontic journals. J Endod 2011;37:1183-1190.
20. Yuan JC, Lee DJ, Knoernschild KL, Campbell SD, SukotjoCortino. Authorship characteristics in prosthodontic literature: proliferation and internationalization. A review and analysis following a 10-year observation. J Prosthet Dent 2010;104:158-164.
21. Weilenmann U. Dental materials. A critical assessment from the viewpoint of alternative medicine. Schweiz Monatsschr Zahnmed 2009;119:143-167.
22. Veiga N, Coelho I. The Importance of Epidemiology in Dental Medicine. J Dent Oral Health 2015;1:1-4.
23. Natarajan K, Stein D, Jain S, Elhadad N. An analysis of clinical queries in an electronic health record search utility. Int J Med Inform 2010;79:515-522.
24. Asghari S, Navimipour NJ. Nature inspired meta-heuristic algorithms for solving the service composition problem in the cloud environments. Int J Commun Syst 2018;31:e3708.