

# The Bibliometric Analysis of Studies on Color in Prosthodontics Indexed in TR Dizin

## TR Dizin'de İndekslenen Protetik Diş Tedavisinde Renk Üzerine Yapılan Çalışmalara İlişkin Bibliyometrik Analiz

Hamiet GÜNGÖR ERDOĞAN<sup>1</sup> 

<sup>1</sup>Department of the Prosthetic Dentistry,  
Lokman Hekim University, Ankara,  
Türkiye

Elizan DEMİRHAN<sup>1</sup> 

<sup>1</sup>Department of the Prosthetic Dentistry,  
Lokman Hekim University, Ankara,  
Türkiye

### ABSTRACT

**Objective:** The aim of this bibliometric analysis is to evaluate studies related to color in the field of prosthetic dentistry published in dental journals indexed in the TR Dizin database.

**Methods:** The keyword "color" was searched in both Turkish and English in the TR Dizin database, and all publications directly related to the field of prosthodontics between January 2000 and December 2023 were analyzed. Publications not directly related to prosthodontics, but concerning other areas of dentistry, were excluded from the study. The publications were recorded based on criteria such as journal name, publication year, article type, language, and citation count. The Shapiro-Wilk test was used when the normality assumption was met, and the Mann-Whitney U test and Kruskal-Wallis test were used when the normality assumption was not met. Data were evaluated using IBM SPSS 25 software.

**Results:** The search yielded 4253 publications. After filtering for dental journals, 217 publications related to the field of dentistry were identified, of which 93 were in the field of prosthodontics. The majority of the studies were research articles, and most of them were published in Turkish. It was found that the journal with the highest number of publications was Atatürk University Faculty of Dentistry Journal. The analysis revealed statistically significant differences between publication types, publication languages, and journals ( $P < .05$ ).

**Conclusion:** The findings suggest that color is an important topic in prosthodontics and that research on this subject continues to increase.

**Keywords:** Bibliometric analysis, dentistry, color, prosthodontics

### Öz

**Amaç:** Bu bibliyometrik analiz, TR Dizin veritabanında yer alan diş hekimliği dergilerinde yayımlanan protetik diş hekimliği alanındaki renk ile ilgili çalışmaları değerlendirmeyi amaçlamaktadır.

**Yöntemler:** TR Dizin veritabanında 'renk' anahtar kelimesi Türkçe ve İngilizce olarak aratılarak Ocak 2000 ile Aralık 2023 arasındaki dönemde ulaşılan protetik diş tedavisi alanını direkt olarak ilgilendiren bütün yayınlar analiz edildi. Protetik diş tedavisi ile direkt olarak bağlantısı bulunmayan, diğer diş hekimliği bölümlerini ilgilendiren yayınlar çalışma dışı bırakıldı. Yayınlar, dergi adı, yayım yılı, makale türü, makale dili ve atıf sayısı gibi kriterlere göre kaydedildi. Normallik varsayımının karşılandığı durumlarda Shapiro-Wilk testi, karşılanmadığı durumlarda ise Mann-Whitney U testi ve Kruskal-Wallis testi kullanılmıştır. Veriler IBM SPSS 25 programında değerlendirildi.

**Bulgular:** Yapılan araştırma sonucu 4253 adet yayına ulaşılmıştır. Diş hekimliği dergileri filtrelenerek çalışmalar diş hekimliği alanına indirgenmiş olup 217 yayın belirlenmiş ve bunlardan 93'ü protetik diş tedavisi alanındadır. Çalışmaların büyük çoğunluğu araştırma makalelerinden oluşmuş ve büyük bir kısmı Türkçe olarak yayımlanmıştır. En çok yayın sayısının Atatürk Üniversitesi Diş Hekimliği Fakültesi Dergisi'ne ait olduğu bulunmuştur. Yapılan analiz sonucu yayın türü, yayın dili ve dergiler arasında istatistiksel olarak anlamlı bir fark olduğu tespit edilmiştir ( $P < .05$ ).

**Sonuç:** Elde edilen bulgular, renk konusunun protetik diş tedavisinde önemli bir konu olduğunu ve bu konuda yapılan araştırmaların artarak devam ettiğini göstermektedir.

**Anahtar Kelimeler:** Bibliyometrik analiz, diş hekimliği, renk, protetik diş tedavisi

### INTRODUCTION

The primary goal of prosthetic dental treatment is to restore lost natural teeth and dental tissues, providing the patient with both an aesthetic and functional smile.<sup>1</sup> Achieving aesthetics plays a crucial role in this objective. For an aesthetic restoration to blend harmoniously with the other natural teeth in the



Geliş Tarihi/Received 18.12.2024  
Revizyon Talebi/Revision  
Requested 27.03.2025  
Son Revizyon/Last Revision 10.04.2025  
Kabul Tarihi/Accepted 14.04.2025  
Yayın Tarihi/Publication  
Date 21.07.2026

Sorumlu Yazar/Corresponding author:  
Hamiet Güngör Erdoğan

E-mail: gngr.hamiet@gmail.com

Cite this article: Güngör Erdoğan H,  
Demirhan E. The Bibliometric Analysis of  
Studies on Color in Prosthodontics  
Indexed in TR Dizin. *Curr Res Dent Sci.*  
2026; 36(3):242-246. DOI:  
10.17567/currresdentsci.1603539



Content of this journal is licensed under a  
Creative Commons Attribution-NonCommercial-  
NoDerivatives 4.0 International License

mouth, proper color selection is essential. Correct color selection is one of the fundamental elements for successful prosthetic treatment, while incorrect color choice is one of the most common causes of restoration failure and the need for re-treatment.<sup>2</sup> Today, patients frequently visit dental clinics requesting aesthetic restorations. The overall form, surface texture, light transmittance, and color of a restoration are the components that define its aesthetic appearance. Studies have shown that the greatest difficulty arises in achieving color harmony among these characteristics.<sup>3,4</sup>

TR Dizin is a database systematically indexing academic publications and research works in Turkey, managed and operated by the Council of Higher Education.<sup>5</sup> TR Dizin is a platform that includes scientific articles, research, theses, and other academic works published in the journals of universities and other research institutions in Turkey.<sup>5</sup> This platform helps make scientific research in Turkey more visible and creates a national academic resource pool. TR Dizin consists of journals from major scientific fields, including dentistry, pharmacy, engineering, basic sciences, health sciences, veterinary medicine, social sciences, and humanities, as well as subfields related to these areas.<sup>5</sup>

Bibliometric analysis is the process of quantitatively analyzing scientific publications, research, and academic works. It aims to reveal the distribution and trends of literature based on factors such as countries, authors, publication years, subjects, languages, citation counts, and more.<sup>6</sup> Bibliometric analysis is primarily used to understand the interactions within academic studies, track research trends, evaluate scientific productivity, and guide research policy.<sup>7,8</sup> The purpose of this bibliometric analysis was to assess studies related to color in prosthetic dentistry published in dental journals indexed in TR Dizin.

## METHODS

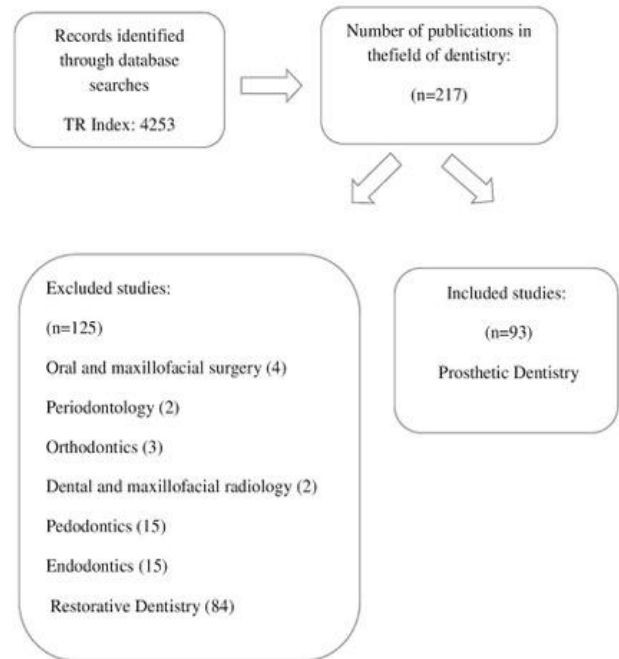
On the national database TR Dizin (<https://trdizin.gov.tr/>), all studies were searched using the keyword "color" (n=4253). Between January 2000 and December 2023, only publications from dental journals, in both English and Turkish, were filtered (n=217). The publications were classified according to criteria such as journal name, publication year, article type, article language, and citation count, and the data were recorded using Microsoft Office Professional Plus 2010 (USA) software in Excel. After reviewing the obtained records, publications related to prosthetic dentistry were included in this study (n=93) (Figure 1).

The descriptive statistics of the current study data (frequency, percentage, mean, standard deviation, median, minimum, and maximum) have been calculated. The assumption of normality was tested using the Shapiro-Wilk test. In cases where the normality assumption was not met, the Mann-Whitney U test was used for comparing two independent groups; for comparing three or more independent groups, the Kruskal-Wallis test was used. Post hoc adjustment Bonferroni tests were performed to identify the groups responsible for the differences. Analyses were conducted using IBM SPSS 25 software.

## RESULTS

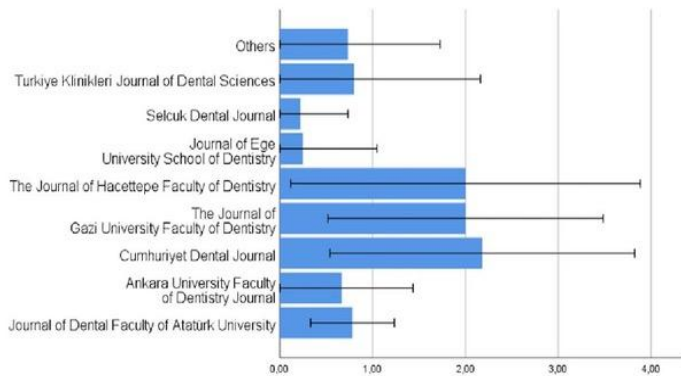
When the data in the research was analyzed, it was found that 93 out of 217 studies (42.8%) in the "dentistry" field in the TR Index database are related to the field of prosthetic dentistry. This is followed by 84 publications (38.7%) in restorative dentistry, 15 in pedodontics (6.9%) and in endodontics (6.9%). It was also observed that the research article published in 2004 by the Ankara University Faculty of Dentistry

Journal was jointly published by both the Restorative Dentistry and Prosthetic Dentistry departments (Figure 1).

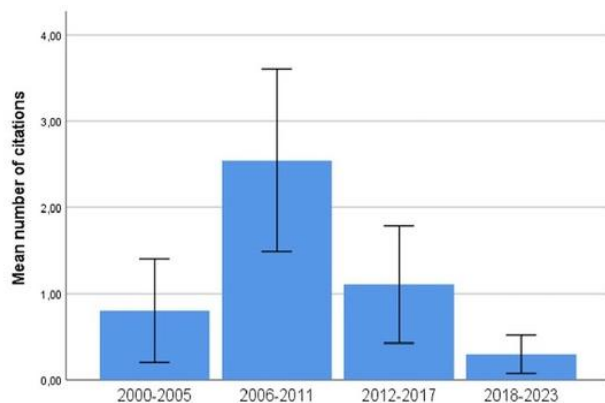


**Figure 1.** Flow diagram showing the selection process of studies identified in the TR Dizin database and the distribution of included and excluded publications according to dental specialties.

The distribution of the studies based on their characteristic features is presented in Table 1. Regarding the type of article, it was observed that original research articles were published in higher numbers. Out of the 93 articles, 73 (78.5%) were research papers, 11 (11.8%) were reviews, 2 (2.2%) were case reports, and the remaining 7 (7.5%) were in other categories (Table 1). 78.5% of the publications were research articles, 11.8% were reviews, 2.2% were case reports, and 7.5% were published in other categories. Among the most frequently published journals, Atatürk University Faculty of Dentistry Journal ranked first with 24.7%, followed by Cumhuriyet Dental Journal with 11.8%, and Ankara University Faculty of Dentistry Journal and Hacettepe Faculty of Dentistry Journal (Clinical Dentistry and Research) with 9.7% each. 88.2% of the publications were in Turkish, while 11.8% were in English. The citation ratios are as follows: 0.8 between 2000 and 2005, 2.55 between 2006 and 2011, 1.1 between 2012 and 2017, and 0.3 between 2018 and 2023 (Figure 2). The average citation count was  $1.08 \pm 1.68$ , and the median value was calculated as 0.



**Figure 2.** Mean citation counts of studies on color in prosthodontics according to the journals in which they were published.



**Figure 3.** Distribution of mean citation counts according to publication year intervals between 2000 and 2023.

**Table 1.** Descriptive statistics based on the characteristic features of the studies

|                      |                                                                    | n  | %    |
|----------------------|--------------------------------------------------------------------|----|------|
| Publication Type     | Original research                                                  | 73 | 78.5 |
|                      | Review                                                             | 11 | 11.8 |
|                      | Case Report                                                        | 2  | 2.2  |
|                      | Others                                                             | 7  | 7.5  |
| Journal              | Ankara University Faculty of Dentistry Journal                     | 9  | 9.7  |
|                      | Journal of Dental Faculty of Atatürk University                    | 23 | 24.7 |
|                      | Cumhuriyet dental journal                                          | 11 | 11.8 |
|                      | Current research in dental sciences (Online)                       | 3  | 3.2  |
|                      | Journal of Ege University School of Dentistry                      | 4  | 4.3  |
|                      | The Journal of Gazi University Faculty of Dentistry                | 8  | 8.6  |
|                      | The Journal of Hacettepe Faculty of Dentistry                      | 9  | 9.7  |
|                      | Journal of Istanbul University Faculty of Dentistry                | 4  | 4.3  |
|                      | Meandros Medical And Dental Journal                                | 4  | 4.3  |
|                      | Journal of Dental Faculty of Necmettin Erbakan University (Online) | 1  | 1.1  |
|                      | Journal of Dental Faculty of On DokuzMayis University              | 3  | 3.2  |
|                      | Selçuk Dental Journal                                              | 9  | 9.7  |
| Publication Language | Turkish                                                            | 82 | 88.2 |
|                      | English                                                            | 11 | 11.8 |
| Year                 | 2000-2005                                                          | 15 | 16.1 |
|                      | 2006-2011                                                          | 22 | 23.7 |
|                      | 2012-2017                                                          | 19 | 20.4 |
|                      | 2018-2023                                                          | 37 | 39.8 |

The distribution of citation counts based on the characteristic features of the studies is presented in Table 2, and Mann-Whitney U and Kruskal-Wallis tests were used for comparisons. As a result of the analyses, statistically significant differences were found between citation counts based on publication language, journals, and publication year ( $P < .05$ ). Citations for Turkish publications were higher than those for English publications. According to the Bonferroni tests for years, a statistically significant difference was found between the 2006 and 2011 and 2018 and 2023 groups ( $P < .001$ ). Citation counts for studies published between 2006 and 2011 were higher than those published between 2018 and 2023. According to the Bonferroni tests for journals, statistically significant differences were observed between Selçuk University Faculty of Dentistry Journal and other journals, including Hacettepe Faculty of Dentistry Journal, Cumhuriyet Dental Journal, and Gazi University Faculty of Dentistry Journal ( $P = .020$ ,  $P = .009$ ,  $P = .007$ ,  $P = .038$ ,  $P = .016$ , and  $P = .013$ ). Citation counts for Hacettepe Faculty of Dentistry Journal, Cumhuriyet Dental Journal, and Gazi University Faculty of Dentistry Journal were higher than those for Selçuk University Faculty of Dentistry Journal and other journals (Figure 3).

**Table 2.** Distribution and comparison of citation counts based on the characteristic features of the studies.

|                      |                                                     | Min.- Maks. | Mean±S.D.(Median) | Test Statistics | P      |
|----------------------|-----------------------------------------------------|-------------|-------------------|-----------------|--------|
| Publication Type     | Original research                                   | 0-8         | 0.97±1.58(0)      | 7.168           | .067   |
|                      | Review                                              | 0-7         | 2.27±2.28(2)      |                 |        |
| Journal              | Case Report                                         | 0-0         | 0.00±0.00(0)      |                 |        |
|                      | Others                                              | 0-2         | 0.57±0.98(0)      |                 |        |
|                      | Journal of Dental Faculty of Atatürk University     | 0-3         | 0.78±1.04(0)      |                 | .037*  |
|                      | Ankara University Faculty of Dentistry Journal      | 0-2         | 0.67±1.00(0)      |                 |        |
| Journal              | Cumhuriyet Dental Journal                           | 0-8         | 2.18±2.44(2)      |                 |        |
|                      | The Journal of Gazi University Faculty of Dentistry | 0-5         | 2.00±1.77(2)      |                 |        |
|                      | The Journal of Hacettepe Faculty of Dentistry       | 0-7         | 2.00±2.45(1)      |                 |        |
| Journal              | Journal of Ege University School of Dentistry       | 0-1         | 0.25±0.50(0)      |                 |        |
|                      | Selçuk Dental Journal                               | 0-2         | 0.22±0.67(0)      |                 |        |
| Journal              | TürkiyeKlinikleri Journal of Dental Sciences        | 0-2         | 0.80±1.1(0)       |                 |        |
|                      | Others                                              | 0-6         | 0.73±1.79(0)      |                 |        |
| Publication Language | Turkish                                             | 0-8         | 1.20±1.74(0)      | -2.301          | .021*  |
|                      | English                                             | 0-2         | 0.18±0.60(0)      |                 |        |
| Year                 | 2000-2005                                           | 0-3         | 0.80±1.08(0)      | 19.323          | <.001* |
|                      | 2006-2011                                           | 0-8         | 2.55±2.39(2)      |                 |        |
|                      | 2012-2017                                           | 0-4         | 1.11±1.41(0)      |                 |        |
|                      | 2018-2023                                           | 0-3         | 0.30±0.66(0)      |                 |        |

\* $P < .05$

Table 1 shows the number of publications and citation counts related to color in prosthetic dentistry in dentistry journals indexed in the TR Index from 2000 to 2023. Among the 93 publications included in the study, it was observed that the highest number of publications, 12, occurred in 2019. The year with the highest citation count was 2006, with 20 citations (Table 1).

According to the results of the analysis, the total citation count for the 93 evaluated articles was found to be 100. When the journals in which the articles were published were compared based on their citation counts, the journal with the most citations was Cumhuriyet Dental Journal, with 24 citations. It was followed by Hacettepe University Faculty of Dentistry Journal with 21 citations and Atatürk University Faculty of Dentistry Journal with 18 citations. It was observed that the publications in Current Research in Dental Sciences, Meandros Medical and Dental Journal, and Journal of Dental Faculty of Necmettin Erbakan University did not receive any citations (Table 2).

## DISCUSSION

Color is one of the most important factors that directly influences aesthetic outcomes in dentistry. Selecting the right color in dental treatments increases the overall aesthetics of the patient's smile by helping the treated tooth to be produced in harmony with the adjacent teeth. Additionally, color harmony increases the patient's self-confidence, thereby boosting patient satisfaction.<sup>9</sup>

TR Dizin is a national indexing system that scans academic journals and scientific publications in Turkey, supporting scientific communication. This study conducted a bibliometric analysis of color-related studies published in prosthetic dentistry journals indexed in TR Dizin. The existence of studies conducted by different faculties and departments indicates that color is a topic studied within a multidisciplinary approach. A bibliometric analysis of the published articles on color in prosthetic dentistry is important for providing a systematic and holistic perspective on studies in this field.<sup>10</sup>

The bibliometric analysis, covering a 24-year period from January 2000 to December 2023, revealed a significant number of original research articles, case reports, and review papers published in dental journals. A large portion of these publications (78.4%) consists of research articles (Table 1). The abundance of research papers may indicate that the topic of color is one that allows for the production of new knowledge, scientific progress, and innovative ideas. When we examined the articles in terms of their types, it was observed that research articles received more citations compared to other types.

In this study, after filtering for both English and Turkish languages, it was found that the majority of the publications were in Turkish (88.2%) (Table 1). It has been observed that Turkish publications outnumber English publications in most categories in TR Dizin. However, publishing in English is crucial, as it allows for a wider reach within the global academic community and helps research gain international recognition.

Using the keyword "color" in the TR Dizin database, a total of 4,253 articles were found in both Turkish and English. Among these, 217 articles were published in dental journals. Of these publications, 42.8% were in the field of prosthetic dentistry. In our analysis, there was one publication where prosthetic dentistry and restorative dentistry collaborated. Such studies will contribute to the development of new materials, techniques, and treatment protocols in restorative and prosthetic dentistry.

In terms of color, the reason why there are more publications in prosthetic dentistry compared to other dental specialties could be

because color is a fundamental factor that directly affects patient satisfaction and focuses on aesthetics in prosthetic dental treatments.<sup>11</sup>

In this study, a fluctuating trend was observed in the number of publications over the years. It is particularly noteworthy that the number of publications was quite limited in the early 2000s, but in the following years, significant increases occurred during certain periods. It is thought that various scientific, technological, and sociocultural factors may underlie these fluctuations in publication numbers. The low number of publications between 2000 and 2005 may be associated with a relatively limited interest in aesthetics and color during that period. A remarkable increase in both the number of publications and citations was observed in 2006. This increase may be related to the growing integration of technology into dentistry and the rising aesthetic expectations within society. At the same time, the diversification of materials used in prosthetic treatments and the widespread adoption of digital measurement systems may have contributed to the increase in studies in this area.

Overall, it can be seen that interest in the topic of color in prosthetic dentistry has grown over time. In particular, digitalization, rising aesthetic demands, and academic requirements have played a significant role in this growth. This trend suggests that the number of publications in this field will continue to increase in the future, along with the production of higher-quality studies.

When examining citations across all years, a decrease in citation numbers was observed in recent years. This may be due to the fact that newer publications have not had enough time to receive citations. It is also found publication numbers do not always correlate with citation numbers, as the content and appeal of the publication also play a significant role in citations.

In the Current Research in Dental Sciences, Meandros Medical and Dental Journal, and Journal of Dental Faculty of Necmettin Erbakan University, it was observed that publications received no citations. This may be due to the relatively low number of related publications in these journals, as seen in Table 1.

This bibliometric analysis has some limitations. Since the research filtered publications in Turkish and English languages and within the years 2000 to 2023, publications in other languages and those outside the specified time frame were not included. In addition, the study did not examine which authors published more. This study was conducted using a national database. Therefore, for more comprehensive results on the topic of color in prosthodontics, studies using international indexes would be beneficial.

## CONCLUSION

It is widely acknowledged in the literature that selecting the correct and appropriate color is crucial for achieving successful treatment outcomes and enhancing patient satisfaction in dentistry. It has been observed that nearly all branches of dentistry have conducted color-related studies in the TR Index. Among these, prosthetic dentistry has been a branch that focuses heavily on the topic of color. As a result of the research, it was found that the number of studies in this field has increased over the years. The notable increase in the number of publications in recent years highlights that this topic remains a current and compelling area of research, both academically and clinically. It has been determined that the number of studies has increased over the years, with most of them being research articles that have received citations and attracted attention. Among the research articles, the two most frequently discussed topics were the effects of polishing and

mouth rinses on color stability. When journals, publication language, and publication year were evaluated in terms of citations, significant differences were found.

In conclusion, analyses focusing on the topic of color in the field of prosthetic dental treatment are considered to be valuable in identifying trends and research focuses within the field. Moreover, the data obtained are expected to serve as a reference for future studies and contribute to the existing literature.

**Ethics Committee Approval:** Ethical approval was not required because this study did not involve human participants, patient data, biological specimens, or experimental interventions.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept- H.G.E.; Design-; Supervision- H.G.E.; Resources- H.G.E., E.D.; Data Collection and/or Processing-E.D.; Analysis and/or Interpretation-E.D.; Literature Search-E.D.; Writing Manuscript-E.D.; Critical Review-H.G.E.

**Conflict of Interest:** The authors have no conflicts of interest to declare.

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

**Use of Artificial Intelligence:** The authors have stated that no artificial intelligence model was used in this study.

**Etik Komite Onayı:** Çalışmada insan katılımcılar, hasta verileri, biyolojik örnekler veya deneysel uygulamalar yer almadığından etik kurul onayı gerekmemektedir.

**Hakem Değerlendirmesi:** Dış bağımsız.

**Yazar Katkıları:** Fikir- H.G.E.; Tasarım-;H.G.E.; Denetim- H.G.E.; Kaynaklar- H.G.E., E.D.; Veri Toplama ve/veya İşleme-E.D.; Analiz ve/veya Yorumlama-E.D.; Literatür Taraması-E.D.; Makale Yazımı-E.D.; Eleştirel İnceleme-H.G.E.

**Çıkar Çatışması:** Yazarlar, çıkar çatışması olmadığını beyan etmiştir.

**Finansal Destek:** Yazarlar, bu çalışma için finansal destek almadığını beyan etmiştir.

**Yapay Zeka Kullanımı:** Yazarlar bu çalışmada herhangi bir yapay zekâ modelinin kullanılmadığını beyan etmişlerdir.

## REFERENCES

1. Mehulić M, Mehulić K, Kos P, Komar D, Katunarić M. Expression of contact allergy in undergoing prosthodontic therapy patients with oral diseases. *Minerva Stomatol.* 2005;54(5):303-309.
2. Goldstein RE, Lancaster JS. Survey of patient attitudes toward current esthetic procedures. *J Prosthet Dent.* 1984;52:775-780.
3. Samorodnitzky-Naveh GR, Geiger SB, Levin L. Patients' satisfaction with dental esthetics. *J Am Dent Assoc.* 2007;138:805-808.
4. Akarslan Z, Sadik B, Erten H, Karabulut E. Dental aesthetic satisfaction, received and desired dental treatments for improvement of esthetics. *Indian J Dent Res.* 2009;20:195-200.
5. Arslan A, Yılmaz B. TR Dizin: Türkiye'nin Bilimsel Yayın İndeksleme Sistemi. *Türk Akademik Yayıncılık Dergisi.* 2020;7(2):123-135.
6. Güler H. Bilimsel iletişim ve bibliyometrik çalışmalar: Tanımlar, kavramlar ve yöntemler. *Türk Kütüphaneciliği.* 2006;20(1):3-20.
7. Lorusso F, Inchingolo F, Scarano A. Scientific production in dentistry: the national panorama through a bibliometric study of Italian academies. *BioMed Res Int.* 2020;2020:3468303.

8. Hicks D, Melkers J. Bibliometrics as a tool for research evaluation. In: *Handbook on the Theory and Practice of Program Evaluation.* Edward Elgar Publishing; 2013:323-349.
9. Öztürk M. Estetik Uygulamalarda Renk. *Türkiye Klinikleri* 2020;29(4):45-50.
10. Özdoğan A, Gülek E, Aslan Ö. RezinSimanların Diş Hekimliği'nde Araştırma Eğilimleri ile İlgili Bir Bibliyometrik Analiz. *Türk Diş Hekimleri Birliği Uluslararası Dişhekimliği Kongresi,* 2022;451-455.
11. Yılmaz B, Demirtaş E. Protetik Tedavide Renk Seçim Yöntemleri. *Türkiye Klinikleri.* 2021;36(5):205-210.