

Publication Trends and Collaborative Patterns in Periodontics Research from Saudi Arabia: A Bibliometric Analysis

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INTRODUCTION

Periodontics, a subspecialty of dentistry that focuses on the supporting tissues of teeth, has experienced a significant increase in research activity, leading to a rise in the number of published papers on periodontal diseases, associated systemic conditions, and surgical procedures. Periodontal disease, triggered by plaque

ABSTRACT **Aim:** To perform a comprehensive bibliometric analysis encompassing all articles published on periodontics from Saudi Arabia. **Materials and Methods:** Using the Scopus database on June 8, 2023, the search term “Periodontic*” was entered in the primary search bar to extract all documents published on periodontics. Following, the year filter was applied to include articles published from the earliest available date until the date of data collection, excluding 2023. Next, we used the country/region filter to limit our documents to Saudi Arabia ($n = 1929$). We used Microsoft Excel (v.16) to examine periodical growth, collaboration patterns, influential institutions, frequently used sources, international research collaboration, and most-cited papers. **Results:** Saudi Arabia ranked 11th in periodontics research, contributing 3.43% to the global research output, reaching a peak of 7.63% in 2022. Notably, there was significant growth observed during the last 5 years of the study, with an average of 232.8 documents per year. The analysis of citations revealed that the selected documents received an average of 13.39 citations per document. Indigenous literature received less citation on average compared to internationally collaborated documents. King Saud University ranked first among the most productive institutions in Saudi Arabia, accounting 40.74% of the total output. The Journal of Contemporary Dental Practice published the highest number of documents, followed by the Saudi Dental Journal and the Journal of Periodontology. In terms of citation impact, the Journal of Periodontology emerged as the most influential, with an average of 32.83 citations per document. Research collaboration was most prevalent with researchers from the United States (22.03%), although Germany ranked first in terms of citation impact. **Conclusion:** Saudi Arabia’s contribution to periodontics research has shown significant growth in recent years. The collaborative efforts with international researchers, particularly those from the United States, have played a crucial role in fostering advancements within the field.

KEYWORDS: *Bibliometric, periodontics, research productivity, Saudi Arabia*

biofilm, leads to chronic inflammation and damage to the periodontium.^[1] Additionally, its inflammatory nature heightens its association with other systemic

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diseases. For instance, the risks associated with rheumatoid disease and periodontitis are assessed using recently recognized biomarkers such as transforming growth factor-Beta 1 and vascular endothelial growth factor.^[2]

In Saudi Arabia, research productivity has recently shown notable growth compared to other Arab countries.^[3] According to Haq *et al.*, Saudi Arabia's dental research output was remarkable, representing around 38% of the total research among 22 Arab countries from 1998 to 2017.^[4] Moreover, a study by Anas *et al.* (2022) highlights Saudi Arabia's significant contribution of 39.19% to dental research in the Arab world.^[5] Moreover, a different study that examines Saudi dental publications using PubMed reveals a promising and continuous growth in research output.^[6] Therefore, shedding light on periodontal publications from Saudi Arabia is of significant importance.

Bibliometrics is a statistical tool for analyzing author productivity patterns and the publishing distribution of scientific articles among journals in specific research fields.^[7-9] It examines the growth of scientific, intellectual, and scholarly publications at several tiers, including global, regional, national, institutional, as well as subject-specific assessments.^[10] While there have been several studies utilizing bibliometric analysis to examine endodontic articles and provide valuable insights into their bibliometric features,^[11-13] there remains a lack of comprehensive bibliometric analysis on all articles published in the field of periodontics from Saudi Arabia.

In the context of periodontics, a previous study conducted by Ababneh *et al.* has provided valuable insights on bibliometric indicators in periodontics research from Saudi Arabia. However, the study had certain limitations.^[14] First, the study focused primarily on the period from 2012 to 2021, excluding earlier publications that date back to the 1980s, which could provide important historical information. Additionally, the study exclusively considered original and review articles, overlooking other types of publications that could contribute significant information to the field of periodontics. Furthermore, the study did not investigate the most productive institutions in Saudi Arabia, which is a crucial aspect in understanding the research landscape and identifying key contributors. Moreover, the study did not explore the comparison of national and international collaboration, which is essential for comprehending global connectivity and knowledge exchange in the field of periodontics research. Therefore, the rationale for the present

study is to address the aforementioned limitations identified in a previous work conducted by Ababneh *et al.* in the field of periodontics.

The aim of this study was to conduct a comprehensive bibliometric analysis of all articles published on periodontics from Saudi Arabia.

MATERIALS AND METHODS

SEARCH STRATEGY AND STATISTICAL ANALYSIS

We conducted quantitative bibliometric analyses using the Scopus dataset, searched on June 8, 2023, with the search term “Periodonti*.” The inclusion criteria for our study were focused on understanding the publication growth and research performance of Saudi Arabia in the field of periodontics. From the Scopus database, we identified a total of 74,079 records. Subsequently, we applied exclusion criteria by removing 1769 records from the year 2023, resulting in 72,310 articles from previous years that were considered for analysis. Among these, we further excluded 70,381 articles from other countries, leaving a total of 1929 articles specifically identified in Saudi Arabia. By applying the country/region filter to Saudi Arabia, we examined the specific characteristics of periodontics documents contributed by Saudi Arabian authors. Microsoft Excel (v.16) software (Redmond, Washington) was employed for the data analysis.

VARIABLES OF INTEREST

The study investigated several key features, including publication growth over the years, national and international research collaboration patterns, the top 15 significant institutions, the top 15 commonly utilized sources, the top 15 countries in international research collaboration, and the top 15 most-cited documents.

RESULTS

GLOBAL SCENARIO OF PERIODONTICS RESEARCH AND SHARE OF SAUDI ARABIA FROM 2001 TO 2022

To quantify the share of Saudi Arabia in global periodontics research, a dataset of documents from 2001 to 2022 has been used. Among the total 55,528 documents identified, it was found that the United States had the highest share, with over one-fourth (27.51%) of the research output, followed by India (12.39%), Brazil (9.24%), Italy (8.79%), and China (6.49%). Saudi Arabia produced 1906 (3.43%) documents and secured the 11th rank worldwide [Figure 1]. University of Michigan, Ann Arbor emerged as the most productive institution, followed by Universidade de São Paulo with 1604 and 1334 documents, respectively. King Saud University of Saudi Arabia stood in the seventh rank with 786 documents. The highest number of documents has

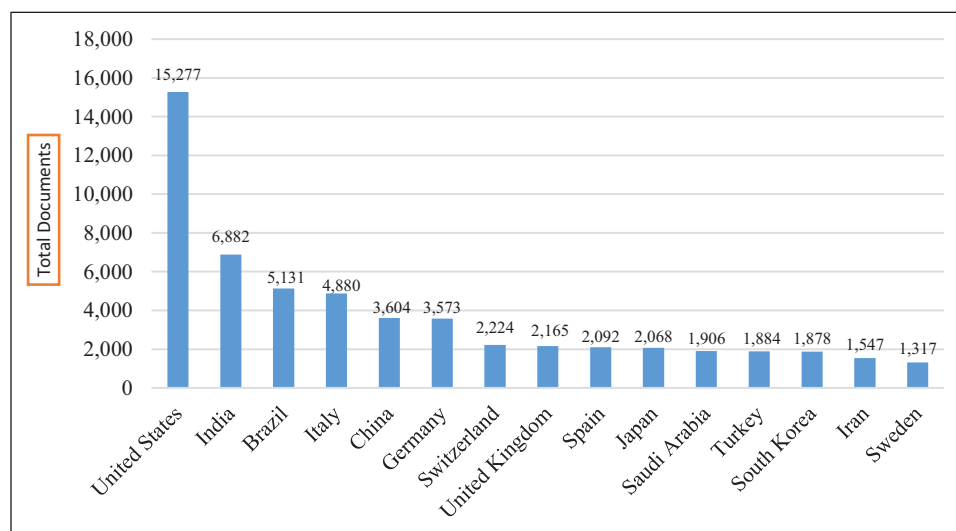


Figure 1: Top 15 most productive countries in periodontics research from 2001 to 2022

Table 1: Distribution of periodontics research in Saudi Arabia from the global perspective

Years	Global research output in periodontics	Share of Saudi Arabia	Percentage
2001	1093	7	0.64
2002	1199	7	0.58
2003	1352	12	0.89
2004	1365	10	0.73
2005	1435	8	0.56
2006	1455	7	0.48
2007	1636	10	0.61
2008	1948	15	0.77
2009	2009	14	0.70
2010	2112	20	0.95
2011	2433	48	1.97
2012	2991	51	1.71
2013	3116	74	2.37
2014	3173	95	2.99
2015	3300	98	2.97
2016	3013	121	4.02
2017	3036	145	4.78
2018	3034	132	4.35
2019	3466	173	4.99
2020	3869	235	6.07
2021	4244	300	7.07
2022	4249	324	7.63
	55,528	1906	3.43

been published in *Journal of Periodontology* ($n = 2684$), followed by *International Journal of Periodontics and Restorative Dentistry* ($n = 1803$), *Clinical Oral Implants Research* ($n = 1704$), *Journal of Clinical Periodontology* ($n = 1637$), and *International Journal of Oral and Maxillofacial Implants* (1511).

Overall, Saudi Arabia contributed 3.43% of the global periodontics research during 22 years (2001–2022). This share was recorded <1% each year during the first

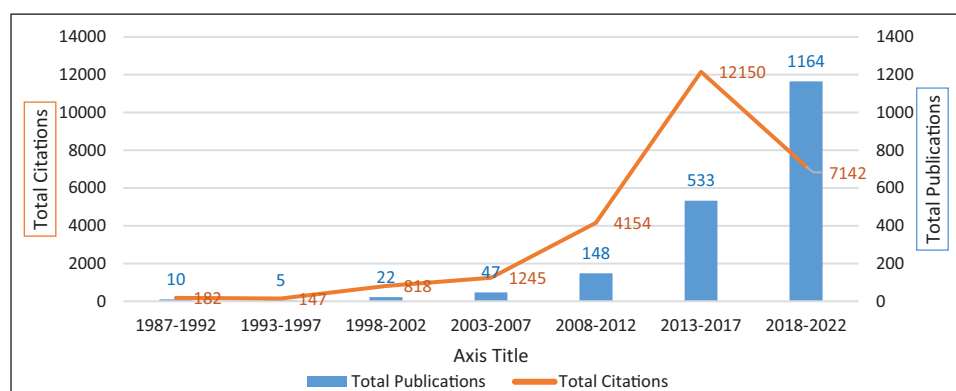
10 years (2001–2010). In 2013, this ratio of shares was crossed by more than 2%. The proportion of the share has been increasing since 2016 and it reached 7.63% in 2022 [Table 1].

PERIODIC GROWTH OF PERIODONTICS RESEARCH IN SAUDI ARABIA

The Saudi Arabian research in periodontics has been divided into 6 intervals, except the first interval comprised of 6 years, all other intervals consisted of 5

Table 2: Comparison of research collaboration in periodontics produced by Saudi Arabia from 1987 to 2022 at the national and international level

Interval	Total documents	National collaboration	International collaboration	Total citations	Citations (national)	Citations (international)
1987–1992	10	4	6	182	9	173
1993–1997	5	4	1	147	81	66
1998–2002	22	13	9	818	360	458
2003–2007	47	13	34	1,245	269	976
2008–2012	148	48	100	4,154	1016	3138
2013–2017	533	166	367	12,150	2484	9666
2018–2022	1164	402	762	7,142	1862	5280
Total	1929	650	1279	25,828	6081	19,757

**Figure 2: Distribution of documents and citations by intervals**

years each. Saudi Arabia contributed 1,929 documents in 36 years with an average of 53.58 documents per year. Table 2 elaborates that slow progress of research in periodontics ($n = 84$; 4.35%) was observed with an average of four documents per year from 1987 to 2007. A remarkable growth ($n = 1164$; 60.34%) was recorded during the last 5 years of study with an average of 232.8 documents per year. The comparison of national and international collaboration revealed that slightly more than one-thirds ($n = 650$; 33.69%) of the documents were considered indigenous research, whereas 66.30% ($n = 1279$) of the documents were the result of international research collaboration. The analysis of citations exposed that all the selected documents ($n = 1,929$) gained 25,838 citations with an average of 13.39 citations per document, and indigenous literature gained less ratio of average citations (9.35 citations per document) as compared to internationally collaborated documents (15.44 citations per document). The liner in Figure 2 shows a peak against the column of 2013–2017, which means that documents published from 2013 to 2017 gained the highest citation impact, with an average of 22.79 citations per document.

MOST PRODUCTIVE INSTITUTIONS IN SAUDI ARABIA

The examination of the top 15 most productive institutions of Saudi Arabia in periodontics research

from 1987 to 2022 is presented in Table 3. The authors affiliated with King Saud University coauthored in 786 (40.74%) documents, followed by King Abdulaziz University ($n = 246$; 12.75%). The top 7 institutions contributed ≥ 100 documents each. Although King Faisal University contributed 38 documents and secured the 14th rank, its documents gained the highest average citations (33.24 citations per document), followed by King Saud University (16.19 citations per document).

ANALYSIS OF DOCUMENTS BY TYPES

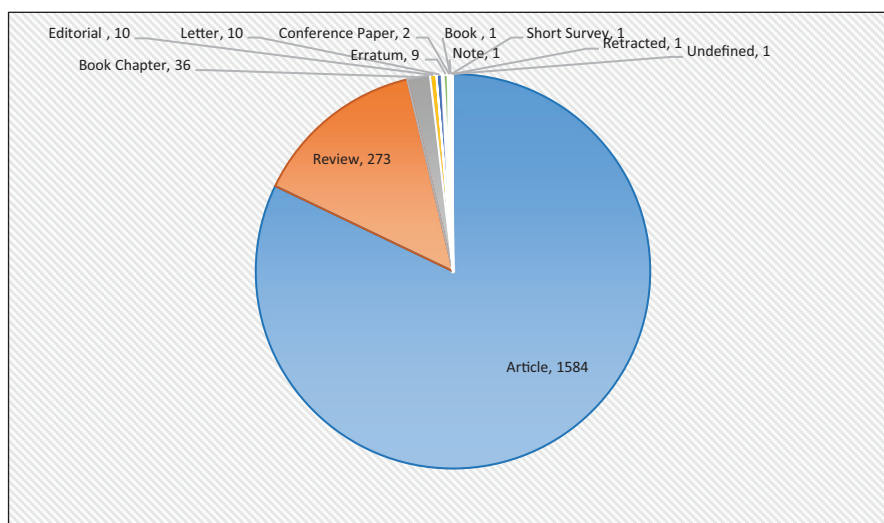
Figure 3 demonstrates the analysis of documents by type and the maximum number of documents consisted of original research articles ($n = 1584$; 82.11%), followed by a review ($n = 273$; 14.15%). Other documents comprised of 3.73% ($n = 72$), including book chapter ($n = 36$), editorial ($n = 10$), letter ($n = 10$), erratum ($n = 9$), conference paper ($n = 2$), and one each from book, note, short survey, retracted, and undefined document.

MOST FREQUENTLY USED SOURCE OF PUBLICATIONS

The top 15 most frequently used sources of publications are listed in Table 4 and about one-third ($n = 615$; 31.88%) of the documents were published in these sources. The highest number of documents ($n = 122$) was published in *Journal of Contemporary Dental Practice*, followed by *Saudi Dental Journal* ($n = 82$) and *Journal*

Table 3: Top 15 most influential institutions in periodontics research in Saudi Arabia

Rank	Institutions	Total documents	Total citations	Citation impact
1	King Saud University	786	12,727	16.19
2	King Abdulaziz University	246	3975	16.16
3	King Khalid University and King Khalid University Hospital	194	1093	5.63
4	Jazan University	154	657	4.27
5	Imam Abdulrahman bin Faisal University	126	1421	11.28
6	Prince Sattam bin Abdulaziz University	121	1410	11.65
7	Jouf University	100	706	7.06
8	Taibah University	79	936	11.85
9	King Saud bin Abdulaziz University for Health Sciences and King Abdulaziz Medical City Riyadh	72	696	9.67
10	Ministry of Health, Saudi Arabia	69	338	4.90
11	Al Qassim University	60	300	5.00
12	Prince Nourah Bint Abdulrahman University	58	629	10.84
13	Alfarabi University	49	802	16.37
14	King Faisal University	38	1263	33.24
15	Taif University	37	144	3.89

**Figure 3: Distribution of documents by types**

of *Periodontology* ($n = 48$). As per citation impact, *Journal of Periodontology* was found most influential because 48 documents published in this journal gained an average of 32.83 citations per document, followed by *International Journal of Dentistry* (22.08 citations per document). *World Journal of Dentistry* received the lowest citation impact (0.83 citations per document) among the top 15 sources.

INTERNATIONAL RESEARCH COLLABORATION

The maximum research collaboration was performed with the researchers of the United States ($n = 425$; 22.03%), followed by India ($n = 411$, 21.30%), as listed in Table 5. A slight difference was found in a research collaboration between the United States and India, but the citation impact of the United States coauthored

documents has been much higher than India. The research collaboration with Pakistan stood in the third rank, followed by Egypt. The top 4 countries had more than 100 collaborated documents each. As per citation impact is concerned, Germany took the topmost rank as its research collaboration gained 55.59 citations/document followed by Canada (38.09 citations/document) and Jordan (36.26%). The lowest citation impact was recorded in the United Arab Emirates.

TOP 15 MOST-CITED PAPERS

Table 6 denotes the bibliographic details of the top 15 most-cited papers consisting of 5 original research articles and 10 review papers. These papers gained 3869 citations with an average of 257.93 citations per paper and these papers were published in 14 different

Table 4: Top 15 most influential journals in periodontics research in Saudi Arabia

Serial no.	Journal's name	Total publications	Total citations	Citation impact
1	Journal of Contemporary Dental Practice	122	1055	8.65
2	Saudi Dental Journal	82	1125	13.72
3	Journal of Periodontology	48	1576	32.83
4	International Journal of Periodontics and Restorative Dentistry	39	331	8.49
5	BMC Oral Health	38	433	11.39
6	Journal of Pharmacy and Bioallied Sciences	37	51	1.38
7	Saudi Medical Journal	36	459	12.75
8	Photodiagnosis and Photodynamic Therapy	33	516	15.64
9	World Journal of Dentistry	30	25	0.83
10	Journal of Oral Implantology	27	254	9.41
11	Applied Sciences Switzerland	26	72	2.77
12	International Journal of Environmental Research and Public Health	25	154	6.16
13	International Journal of Dentistry	24	530	22.08
14	Journal of Prosthetic Dentistry	24	310	12.92
15	Journal of Prosthodontics	24	346	14.42

Table 5: Top 15 research collaborative countries

Serial no.	Country's name	Total publications	Total citations	Citation impact
1	United States	425	9611	22.61
2	India	411	3457	8.41
3	Pakistan	135	2067	15.31
4	Egypt	122	1279	10.48
5	Malaysia	97	882	9.09
6	United Kingdom	80	2523	31.54
7	Canada	56	2133	38.09
8	Italy	54	1830	33.89
9	The Netherlands	51	820	16.08
10	United Arab Emirates	46	302	6.57
11	Germany	44	2446	55.59
12	Jordan	39	1414	36.26
13	Yemen	39	303	7.77
14	Australia	35	593	16.94
15	Brazil	34	1123	33.03

journals, only 2 papers were published in the journal *Materials*. These papers were published between the years 2008 and 2017, with five papers were published in 2015 and three papers each were published in 2014 and 2017. Fourteen papers were the results of international research collaboration except one paper (serial no. 9) contributed by a single author. Eight papers were contributed and coauthored by King Saud University, followed by four papers from King Abdulaziz University. One paper (serial no. 10) was jointly collaborated by the authors of Taibah University, Al-Farabi College, King Faisal University, and Riyadh College of Dentistry and Pharmacology (now Riyadh Elm University) aside with international authors.

DISCUSSION

Through a comprehensive quantitative bibliometric analysis, initially, we examined the progress of periodontal research articles published by Saudi Arabia over a span of 22 years (2001–2022). Our findings demonstrate remarkable advancements, as Saudi Arabia ranked eleventh globally, contributing 3.43% to the global research output, with a peak of 7.63% in 2022. Saudi Arabia contributed 1929 documents on periodontics from 1987 to 2022 and notably, two-thirds of the published documents resulted from international research collaboration. This remarkable increase of Saudi Arabia in the global rank highlights its role in significantly contributing to the field of

Table 6: Top 15 most-cited papers

Serial no.	Bibliographic information of the papers	Type of documents	Total citations
1	Khan AA, Morrison A, Hanley DA, Felsenberg D, McCauley LK, O’Ryan F, <i>et al.</i> Diagnosis and management of osteonecrosis of the jaw: A systematic review and international consensus. <i>J Bone Miner Res</i> 2015;30:3–23.	Review	813
2	Paravina RD, Ghinea R, Herrera LJ, Bona AD, Igiel C, Linninger M, <i>et al.</i> Color difference thresholds in dentistry. <i>J Esthet Restor Dent</i> 2015;27:S1–9.	Article	540
3	Sheikh Z, Najeeb S, Khurshid Z, Verma V, Rashid H, Glogauer M. Biodegradable materials for bone repair and tissue engineering applications. <i>Materials</i> 2015;8:5744–94.	Review	463
4	Arvidson K, Abdallah BM, Applegate LA, Baldini N, Cenni E, Gomez-Barrena E, <i>et al.</i> Bone regeneration and stem cells. <i>J Cell Mol Med</i> 2011;15:718–46.	Review	291
5	Ortiz P, Bissada NF, Palomo L, Han YW, Al-Zahrani MS, Panneerselvam A, <i>et al.</i> Periodontal therapy reduces the severity of active rheumatoid arthritis in patients treated with or without tumor necrosis factor inhibitors. <i>J Periodontol</i> 2009;80(4):535–40.	Article	247
6	Bouri Jr A, Bissada N, Al-Zahrani MS, Faddoul F, Nouneh I. Width of keratinized gingiva and the health status of the supporting tissues around dental implants. <i>Int J Oral Maxillofac Implants</i> 2008;23:323–6.	Article	210
7	Yu B, Chang J, Liu Y, Li J, Kevork K, Al-Hezaimi K, <i>et al.</i> Wnt4 signaling prevents skeletal aging and inflammation by inhibiting nuclear factor- κ B. <i>Nat Med</i> 2014;20:1009–17.	Article	168
8	Patil S, Rao RS, Majumdar B, Anil S. Clinical appearance of oral Candida infection and therapeutic strategies. <i>Front Microbiol</i> 2015;6:1391.	Review	166
9	Alqahtani MQ. Tooth-bleaching procedures and their controversial effects: A literature review. <i>Saudi Dent J</i> 2014;26:33–46.	Review	155
10	Zafar M, Najeeb S, Khurshid Z, Vazirzadeh M, Zohaib S, Najeeb B, <i>et al.</i> Potential of electrospun nanofibers for biomedical and dental applications. <i>Materials</i> 2016;9:73.	Review	150
11	Khan AA, Morrison A, Kendler DL, Rizzoli R, Hanley DA, Felsenberg D, <i>et al.</i> Case-based review of osteonecrosis of the jaw (ONJ) and application of the international recommendations for management from the international task force on ONJ. <i>J Clin Densitom</i> 2017;20:8–24.	Review	146
12	Gokila S, Gomathi T, Sudha PN, Anil S. Removal of the heavy metal ion chromium(VI) using Chitosan and Alginate nanocomposites. <i>Int J Biol Macromol</i> 2017;104:1459–68.	Article	144
13	Abou Neel EA, Chrzanowski W, Salih VM, Kim HW, Knowles JC. Tissue engineering in dentistry. <i>J Dent</i> 2014;42:915–28.	Review	141
14	Chalisserry EP, Nam SY, Park SH, Anil S. Therapeutic potential of dental stem cells. <i>J Tissue Eng</i> 2017;8:2041731417702531.	Review	119
15	Venkatesan J, Lowe B, Anil S, Manivasagan P, Kheraif AA, Kang KH, <i>et al.</i> Seaweed polysaccharides and their potential biomedical applications. <i>Starch-Stärke</i> 2015;67:381–90.	Review	116

periodontics. By employing bibliometric methods and utilizing the extensive Scopus database, we thoroughly investigated publication characteristics, encompassing growth trends across countries, institutions, and subject domains.

The present study holds significant importance as it provides policymakers with valuable information to evaluate the progress and impact of periodontal research. It enhances our understanding of the current state of periodontics research in Saudi Arabia and its global research contributions. It overcomes the limitations of study by Ababneh *et al.*, which

focused solely on the period from 2012 to 2021 and exclusively considered original and review articles.^[14] In addition, unlike the study conducted by Ababneh *et al.*, this study explores the most productive institutions in Saudi Arabia, which is a crucial aspect in understanding the research landscape, identifying key contributors, and benefiting these institutions.^[14] Furthermore, researchers can gain valuable insights from the study's analysis of citation impact, top-cited papers, and international collaboration levels. This sets it apart from Ababneh *et al.*^[14] which did not explore the comparison of national and international

collaboration, an essential factor in comprehending the global connectivity and knowledge exchange in the field of periodontics research. Therefore, the current study is of high significance.

Regarding the global scenario of periodontics research, our findings indicate that the United States has the highest research output. Multiple studies consistently demonstrate that the leading academic institutions in the United States have made a significant contribution to the top 100 most-cited articles^[15-21] due to the presence of a vibrant research community and a wide range of funding sources within the country.^[22] Saudi Arabia, on the other hand, ranks eleventh globally, contributing approximately 3.43% of the total research output. In a study by Ababneh *et al.*,^[14] it was reported that Saudi Arabia accounted for 4.4% of the total research contribution in periodontics from 2012 to 2021, ranking eighth. The lower contribution in our study and the lower rank can be partially attributed to the fact that the analysis in Ababneh *et al.*^[14] did not cover the period from 2001 to 2010, during which Saudi Arabia's research output remained consistently below one percent per year, impacting the cumulative number of contributions. However, our findings reveal a significant increase in the last five years, reaching 7.63% in 2022. These findings align with Alrubaiq *et al.*^[13] on endodontics, indicating a growing research activity in Saudi Arabia.

Citations are a crucial measure of a research paper's quality, reflecting the extent to which it is referenced by other researchers.^[13,23,24] International research collaboration played a significant role in our study, constituting the majority of the documents (66.30%). The selected documents ($n = 1,929$) received a total of 25,838 citations, averaging 13.39 citations per document. Notably, the peak in citation impact was observed for papers published between 2013 and 2017, with an average of 22.79 citations per document. These findings align with a previous study by Ababneh *et al.*,^[14] indicating a similar pattern of international research collaboration. However, our study yielded a higher citation impact due to the broader analysis period and larger number of documents. In contrast, a previous study on dental research in Saudi Arabia from 2009 to 2018 reported a lower average citation impact of 5.83 cites per paper.^[3] Similarly, Alfadley *et al.*^[11] described an average of 9.09 citations per paper for endodontic research in Saudi Arabia from 2001 to 2020.

Interestingly, we discovered that documents resulting from international research collaboration had a higher average citation ratio of 15.44 cites per document,

compared to indigenous literature with 9.35 cites per document. This highlights the positive influence of international collaboration on citation impact. Moreover, our findings provide further evidence of the significant role played by international collaboration in enhancing the citation impact of research papers.

Notably, researchers from the United States and India demonstrated the highest level of collaboration, and co-authored documents with the United States exhibited a significantly higher citation impact. In terms of citation impact rankings, Germany ranked the highest, followed by Canada and Jordan, while the United Arab Emirates had the lowest citation impact among the countries analyzed. It is evident that papers resulting from research collaborations in countries with strong research expertise are typically published in high-impact journals, leading to increased attention and citations.^[13]

Regarding the most productive institutions in periodontics research in Saudi Arabia, King Saud University emerged as the leading institution, contributing approximately 41% of the research output, followed by King Abdulaziz University with a contribution of around 13%. Previous studies on Saudi Arabian research from 1984 to 2014^[25] and on endodontic research from 2010 to 2022^[13] also highlight the prominent role of King Saud University. Interestingly, despite being ranked 14th, King Faisal University achieved the highest average citations among the institutions. This may indicate the type of studies conducted at this university or the journals they target, suggesting a significant impact in terms of citations. In addition, our analysis of documents by types, reveals that the majority of the documents were original research articles, indicating a focus on generating new findings in the field.

Among the top 15 papers with the highest citation counts, there were five original research articles and ten review papers. These papers were published in a total of 14 different journals, and it is worth noting that all 14 of these journals resulted from international research collaboration. In terms of citation impact, the *Journal of Periodontology* demonstrated the highest influence, followed by the *International Journal of Dentistry*. Conversely, the *World Journal of Dentistry* had the lowest citation impact among the top 15 sources. It is interesting to note that about one-third of the total literature on periodontics was published in these top 15 journals. This finding differs from the findings of Ababneh *et al.*^[14] who reported that the top 10 journals published 27% of the total periodontics

literature. This difference could be attributed to the broader timeframe and higher number of journals included in our current study. Additionally, Haq *et al.*^[4] showed that 50% of Saudi dental papers published between 1998 and 2017 were in the top 15 journals. This finding is consistent with our study and the research conducted by Ababneh *et al.*^[14] and Haq *et al.*^[4] which identified the *Journal of Contemporary Dental Practice* and the *Saudi Dental Journal* as the top 2 journals in the field. Regarding institutions, our findings are in agreement with Hag *et al.*^[4] and Alrubaiq *et al.*^[13] as King Saud University emerged as the leading contributor, followed closely by King Abdulaziz University.

This study has several limitations. First, our findings are limited to the periodontal field of Saudi Arabia and cannot be generalized. Further studies on other dental disciplines would provide a deeper understanding of the state of research in Saudi Arabia. Second, we included all available Scopus documents dating back to 1987; however, additional documents in other databases may have an impact on the overall status of periodontics research in Saudi Arabia. As a result, further studies utilizing several datasets are worthwhile. Thirdly, bibliometric analysis does not provide a complete picture of research impact and quality. Lastly, the study did not assess potential biases or their impact on research output and collaboration patterns. Further investigation of these aspects of periodontics research in Saudi Arabia is warranted.

CONCLUSION

Our comprehensive quantitative bibliometric analysis reveals that Saudi Arabia significantly contributes to global periodontal research output. The study highlights the importance of international collaboration, institutional involvement, and the predominance of original research publications. Additionally, it provides valuable insights for academics, institutions, and policymakers, who can build upon these findings to further our understanding of dental research in Saudi Arabia.

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CONFLICTS OF INTEREST

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AUTHORS CONTRIBUTIONS

HMA and IUH contributed to conception, design, data acquisition, drafted, and critically revised the manuscript. IUH contributed to analysis and interpretation. Both authors gave final approval and agreed to be accountable for all aspects of the work.

ETHICAL POLICY AND INSTITUTIONAL REVIEW BOARD STATEMENT

The King Abdullah International Medical Research Center Institutional Review Board exempted this study since it does not involve human subjects or relevant data (# NRC23R/400/07).

PATIENT DECLARATION OF CONSENT

Not applicable.

DATA AVAILABILITY STATEMENT

Not applicable.

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