

Occupational Stress Among Dental Professionals: A Bibliometric Analysis (2015-2024)

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ABSTRACT

Occupational stress is a significant concern in the healthcare sector, particularly among dental professionals, who face unique stressors in their daily practice. This bibliometric analysis aims to provide an overview of the global research landscape on occupational stress among dental professionals. The study's main objectives are to assess publication trends, citation trends, most impactful articles, most impactful sources, and most frequent themes of the studies on this topic. A systematic online search was conducted in the Dimensions database to gather relevant publications using keywords related to the topic. VOSviewer was used to visualize citation networks of articles, journals, and countries. Biblioshiny was used to identify the most frequently studied themes, most impactful publications, and citation trends. Our analysis revealed a significant increase in research output on occupational stress among dental professionals in recent years. However, the total number of articles is less. The highest number of citations was observed in 2018. The citation pattern of countries indicates that regions with advanced healthcare infrastructure and robust academic environments are more likely to generate research with a more considerable impact. The British Dental Journal is a highly cited journal that publishes on this topic. Key themes that emerged included job satisfaction, workload, burnout, musculoskeletal disorders, mental health, and COVID-19, suggesting a strong focus on stress's impact on physical and psychological health, particularly during the pandemic. Factorial analysis reveals three main research themes: physical health risks, psychological well-being, and the effects of COVID-19. Additionally, it highlighted geographical differences, with different regions focusing on varied themes. This bibliometric analysis indicates a need for more longitudinal intervention-based research, particularly on preventive strategies and stress management programs tailored for dental professionals.

Keywords

Occupational stress, Dentists, Dental professionals, VOSviewer, Biblioshiny, Publication trends, Citation trends, Themes, Burnout

INTRODUCTION

Occupational stress among healthcare professionals, particularly in dentistry, is well-recognized^{1,2}. Dental practitioners frequently experience anxiety due to factors such as workload, long working hours, clinical responsibility, job dissatisfaction, low social support, and job uncertainty³. These stressors might lead to various negative consequences, including burnout and other mental health challenges⁴. The impact of occupational stress extends beyond the individual, as it can also affect the quality of care provided to patients, emphasizing the need for further investigation into this issue⁵.

According to a study done in Qatar, 26.4% of dentists reported low job stress, 49.1% reported a moderate stress level, and 20.8% reported high stress levels. In addition, 3.8% of dentists

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experienced significantly high job stress ⁶. On the contrary, a systematic review and meta-analysis reported high satisfaction. It included five studies originating from China, South Korea, Egypt, and the United States reporting a neutral level of satisfaction, and 3 studies from Canada, Lithuania, and the United States reporting high satisfaction ⁷. Thus, the inconsistencies in findings across different studies in different geographical locations indicate a lack of consensus in the literature on dentists' occupational stress and satisfaction levels. Despite being a widespread issue, there has been limited research aimed at understanding the global research trends in occupational stress among dental professionals through bibliometric analysis.

While many studies have examined stress in dental practitioners, no bibliometric analysis has been published. This presents a significant gap in the research, limiting the development of strategies and policies to address stress-related challenges in the profession. Bibliometric analysis is valuable for exploring the research landscape and trends, providing insights into strategy and policy development ⁸. This bibliometric analysis aims to address the research gap and provide an overview of the research landscape on global research on occupational stress in dental professionals with the following objectives:

1. To analyze trends of publications and citations over time.
2. To understand the citation relationship of highly cited articles, sources, and countries.
3. To identify the dominant themes and focus areas of research in this domain.

MATERIALS AND METHODS

A comprehensive bibliometric analysis was conducted in line with the stated objectives—to explore publication and citation trends, identify influential sources and countries, and uncover dominant research themes. The methodology adopted for this purpose is outlined below-

An online search was conducted on the Dimensions database on 27 March 2025 to retrieve relevant literature on occupational stress among dental professionals. Dimension was selected for this bibliometric analysis due to its comprehensive coverage of multidisciplinary journals, including those in dentistry, occupational health, and psychology. Furthermore, Dimensions

provides extensive bibliometric information, including citation data compatible with bibliometric tools such as VOSviewer ⁹ and Biblioshiny ¹⁰, making it an appropriate database to achieve the objectives of this study.

Search String applied: (“occupational stress” OR “Burnout” OR “mental stress” OR “job stress” OR “perceived stress” OR “distress” OR “psychological stress”) AND (“Dental professionals” OR “Dentist” OR “Dental surgeon” OR “Dental practitioners” OR “Pedodontist” OR “Orthodontist” OR “Periodontist” OR “Stomatologist” OR “Endodontist” OR “Public health dentist” OR “Community Dentist” OR “Prosthodontist” OR “Dental health professional” OR “Oral health professionals” OR “Dental health practitioners” OR “Oral health practitioners”) NOT (“Review” OR “Students” OR “hygienist” OR “Meta-analysis”)—Filter Applied-Publication type- Article only.

Inclusion and Exclusion Criteria

The following inclusion and exclusion criteria were applied during the search.

• Inclusion Criteria

1. Publication Type: Articles. 2. Articles focusing on stress, burnout, stressors, and stress management among dental professionals.

• Exclusion Criteria

1. Articles assessing the stress among dental students and dental hygienists. 2. All other article types, including reviews, conference papers, editorials, letters, notes, proceedings, perspectives, and protocols, were excluded to focus solely on original research. 3. Articles focusing only on psychological issues that are unrelated to stress.

Study Selection Process

The study selection process was displayed in a PRISMA flow chart (Figure 1), detailing the number of records identified, screened, and included in the final analysis ¹¹⁻¹³. This ensured transparency in the methodology and adherence to inclusion and exclusion criteria.

Duplicate articles were removed using MS Excel. In addition, a manual inspection of the titles and abstracts of the retrieved articles was conducted to ensure the relevance of the content, excluding studies that did not align with the topic of occupational stress among dental professionals. Any articles focusing on irrelevant

populations or unrelated themes were excluded during this step.

Data Extraction and Analysis

The search results were exported in a format compatible with the bibliometric analysis software VOSviewer and Biblioshiny. The following measures were used to achieve the objectives of the study.

1. To access annual scientific publication trends, Patterns for yearly scientific publications over time were analyzed using Biblioshiny (RStudio version 4.3.1), a web-based interface of the Bibliometrix package.
2. Citation networks were visualized separately for articles, sources, and countries using VOSviewer (version 1.6.20) to understand their citation relationship. In the visualizations, different colors are used to distinguish between various clusters. Items sharing the same color belong to the same cluster, representing a group of closely related elements. The lines connecting the nodes indicate their links, illustrating relationships between items and clusters.
3. To identify dominant themes: Word clouds based on keywords were generated using Biblioshiny to determine the most frequently used keywords, suggesting themes. The factorial map was generated to explore relationships among the keywords.

Methodological Limitations

Several methodological limitations were considered:

1. **Database Limitation:** Although Dimensions provides a broad range of multidisciplinary literature, it does not index all journals, potentially leading to the exclusion of some relevant research published in non-indexed sources.
2. **Software Limitations:** VOSviewer and Biblioshiny's functionality depends on the quality and consistency of the indexed data. Inconsistently mentioned metadata, particularly keywords, might affect the results of analyses based on them¹⁴.

Despite these limitations, combining Dimensions as the database with VOSviewer and Biblioshiny software for analysis enabled a comprehensive and reliable bibliometric overview of the research on occupational stress among oral health care providers.

RESULTS

Search Results

The online search in the Dimension database retrieved 1012 results when the search string was used to search related keywords in the title and abstract. After applying filters for the type of publications, 969 articles were left. Only 470 articles published last decade were selected and exported to the file formats compatible with VOSviewer and Biblioshiny for data cleaning and analysis. After manually inspecting all articles' titles and abstracts, 167 were selected based on inclusion and exclusion criteria (Figure 1).

Main Information About Data

Analysis in Biblioshiny suggests that the dataset includes 167 articles on occupational stress among dental professionals published in various journals with an annual growth rate of 19.58%. The average age of these documents is 4.39 years. Each document has received an average of 9.56 citations. A total of 160 unique keywords were identified. Six hundred thirty-two authors contributed to these publications, with only 18 single-authored papers. On average, each document involved 4.08 co-authors, while 5.39% of the publications resulted from international collaborations.

Publication and Citation Trends

In recent years, there has been a notable fluctuation in the number of citations received by articles related to occupational stress among dental professionals, as captured in the Dimensions database. In 2015, there were only four articles on this topic, but they received a high average of 16.75 citations per article, with a mean of 1.68 citations per year over 10 years of citable life. By 2016, the number of publications increased to 13, although the average citations per article decreased to 12.15, with a yearly citation average of 1.35 over 9 years. This slight decline in citation impact continued into 2017, where 15 articles received an average of 12.13 citations each, with a slightly improved yearly rate of 1.52 citations over 8 years. A substantial spike occurred in 2018; despite only four articles being published that year, the papers received 53.25 citations on average, with a yearly citation rate of 7.61 over a 7-year window.

In contrast, in 2019, 10 articles were published, with an average of 26.6 citations per article and 4.43 citations per year over 6 years. In 2020, more publications

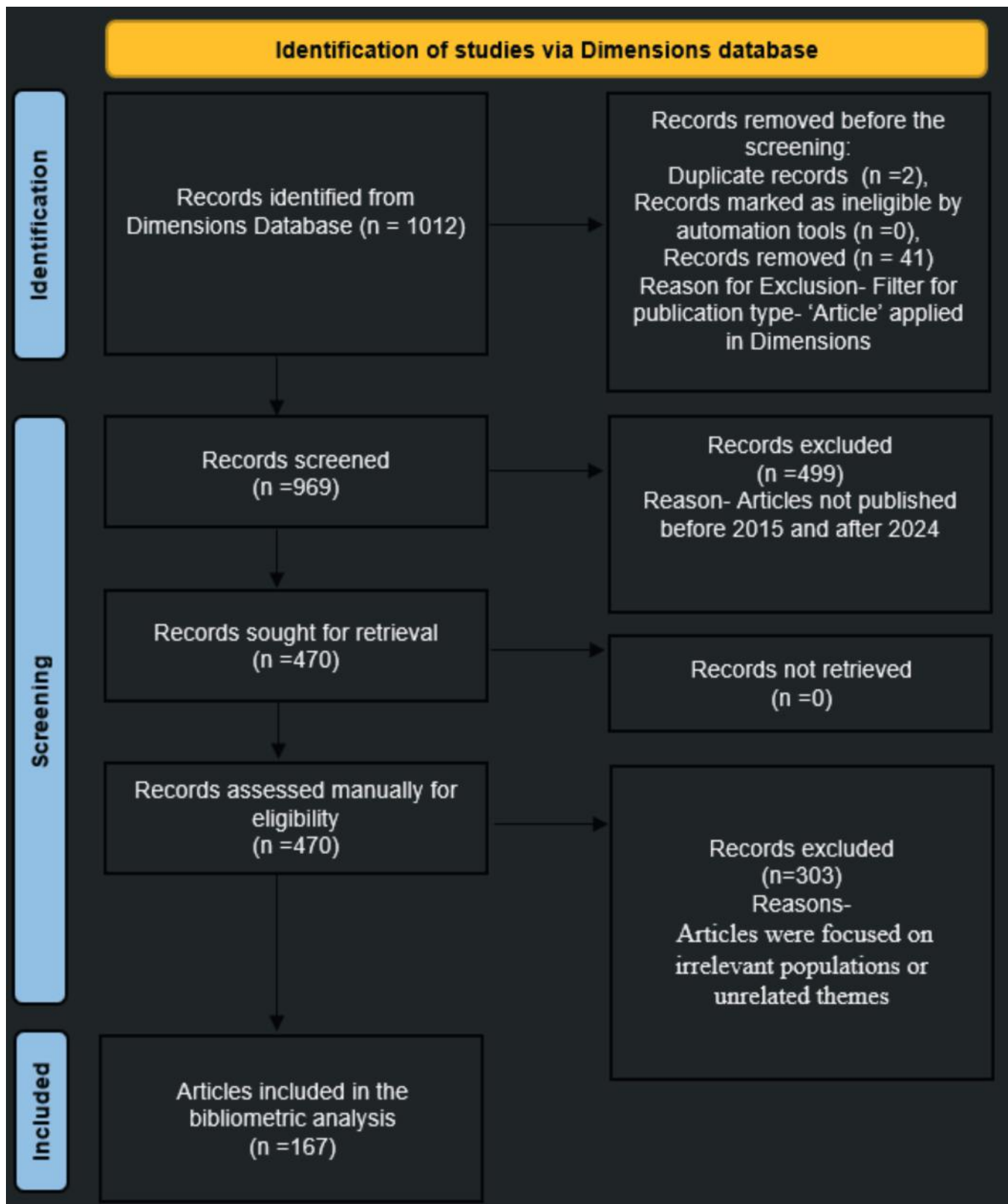


Figure 1: Flow chart of the study selection process.

Image Credit: Namrata Dagli.

emerged (16 articles), but the citation rate dropped again to 11.12 per article, with a mean of 2.22 citations per year over 5 years. The highest number of publications was noted in 2021, with 38 articles, but the average citations per article declined to 10.61, with a mean of 2.65 yearly citations over 4 years. By 2022, the number of articles reached 22, but the citation impact sharply decreased, with an average of only 2.59 citations per article and a yearly average of 0.86 citations over 3 years. The downward trend persisted into 2023, where 25 articles were published, but they only received an

average of 2.2 citations per article, with 1.10 citations per year over 2 years. Since 2024, 20 articles have been published, with the lowest average citation count recorded so far—just 0.9 citations per article, with an average of 0.9 over 1 year. This data shows that while the number of publications on occupational stress in dental professionals has steadily increased, the average citation impact of these articles has fluctuated, with more recent years experiencing a notable decline in citation rates (Figure 2).

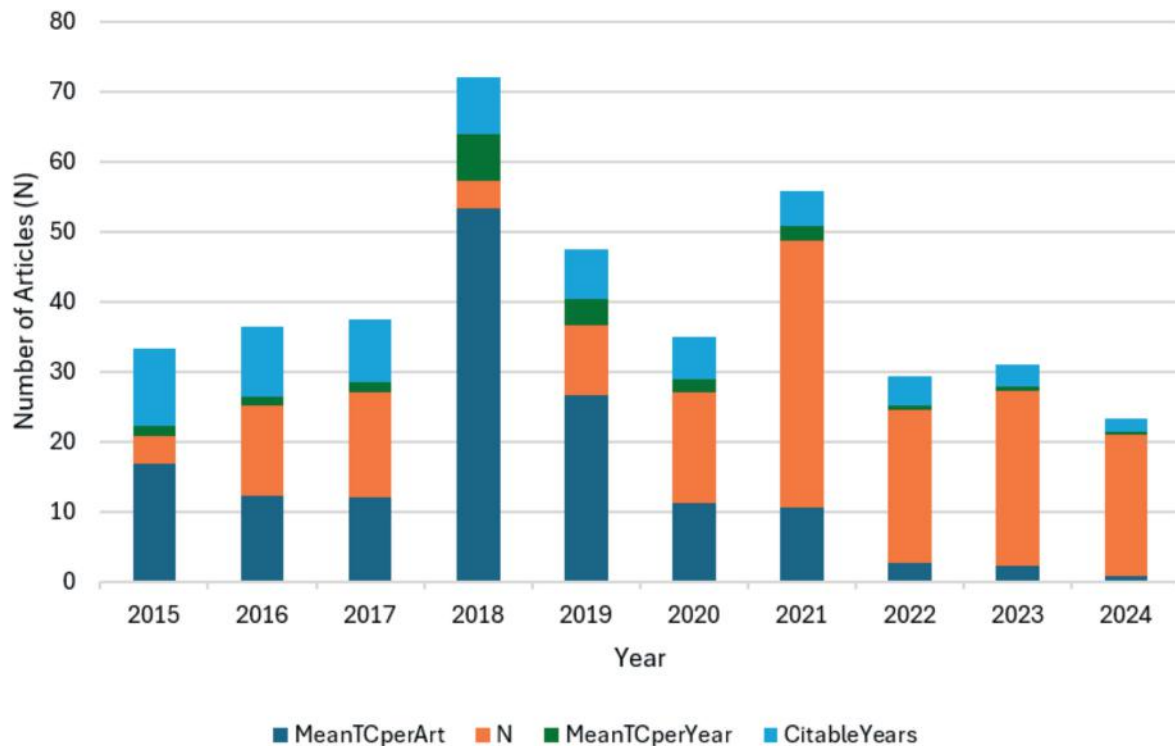


Figure 2: Publications and Citation Trends of Articles on Occupational Stress in Dental Professionals Indexed in the Dimensions database. MeanTCperArt: Mean Total Citation per Article, MeanTCperYear: Mean Total Citation per Year.

Image Credit: Namrata Dagli.

Citation Analysis of Articles

Citation analysis in VOSviewer examines how often a particular document is cited by others in the dataset analyzed, helping to identify influential works and contributors in a field. Only 87 out of 167 articles that received at least 2 citations were included in the analysis. The number of citation links was calculated by VOSviewer, which refers to the total instances where one article cites another within a dataset. The most

extensive set of connected items includes 34 articles. The network visualization generated using these 34 articles shows their citation relationships. In addition, the analysis revealed that the articles are divided into 8 clusters and connected by 52 links. Each cluster is shown with a different color in Figure 3. The article- “A Survey of Stress, burnout and Well-being in UK Dentists” by Collin et al. 2019 appears to be the most central and highly cited work¹⁵, as indicated by its larger node size and numerous links to other publications.

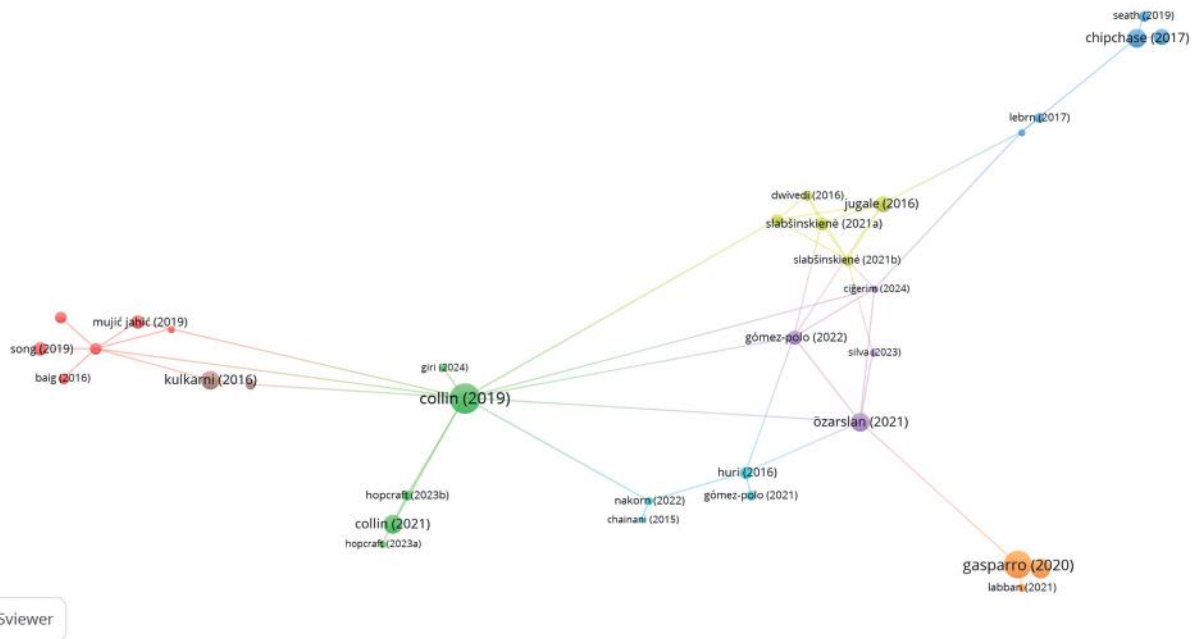


Figure 3: Citation analysis of articles on occupational stress in dental professionals in VOSviewer. Each node represents a publication, with different colors indicating various clusters—the number of citations weights node size.

Notes: A Few names are not visible due to the spatial arrangement of nodes within the network visualization.

Image Credit: Namrata Dagli.

The most cited ten articles are listed in Table 1. The study by Hakanen and Peters 2018 - "*Different types of employee well-being across time and their relationships with job crafting*," is the most cited article in the Dimension database¹⁶. It explores how different aspects of employee well-being—such as being engaged at work, feeling satisfied with the job, experiencing burnout, and having workaholic tendencies—affect how Finnish dentists shape or modify their work over time. The results show that being engaged in one's work is a stronger indicator of future efforts to actively improve one's job and overall well-being than simply being satisfied with the job. While workaholicism is also connected to proactive job changes, it tends to be linked with higher levels of burnout¹⁶. The second most cited study by Collin et al. 2019¹⁵, "*A survey of stress, burnout and well-being in UK dentists*," shows that dentists in the UK often face high-stress levels and burnout, while the fear of being sued is the most common source of stress. The findings highlight the need for future efforts to support dentists in managing their stress and improving the overall working conditions within the profession¹⁵.

The 3rd most cited study by Gasparro et al. 2020 found that Italian dentists who felt uncertain about the stability of their jobs were more likely to show signs of depression. This relationship became even stronger in those who were more afraid of COVID-19. In other words, when dentists were both worried about losing their jobs and fearful of the virus, their mental health suffered more. These findings emphasize how the combination of work-related stress and health anxieties can significantly contribute to psychological distress—particularly during crises such as the COVID-19 pandemic¹⁷. In a study conducted by Aly et al., 2021 the psychological toll on healthcare workers in Egypt, including dental professionals, was examined. The results revealed that many experienced elevated levels of stress, anxiety, and depression during the pandemic. Dental professionals were especially affected due to the nature of their work, which involves close physical proximity to patients, raising concerns about infection risks. Additional stressors, such as uncertainty surrounding the virus, fear for personal and family safety, and abrupt shifts in clinical protocols, further heightened their emotional strain. These observations underscore the mental health

vulnerability of dental professionals during public health emergencies and the need for systems that support their psychological well-being¹⁸. In another study, Hakanen et al. (2017) investigated how employees stay engaged and avoid burnout in demanding work environments. “Job crafting” emerged as a key strategy, and individuals actively modify their tasks or workplace relationships to make their roles more meaningful or manageable. Adopting job crafting behaviors such as seeking support or rethinking their task approach may help sustain motivation and job satisfaction for dental practitioners who frequently encounter emotional and physical challenges. The study highlights how personal initiative can be a powerful buffer against workplace stress, even in high-pressure professions¹⁹.

Other studies with high citations have shed light on how stress and burnout affect dental professionals. Marklund et al. 2019 research revealed that high stress levels among dentists were closely linked with sleep issues

and musculoskeletal pain, which lowered their ability to function effectively at work²⁰. Mekhemar et al. 2021 study during the COVID-19 pandemic found elevated levels of depression, anxiety, and stress, particularly among female dentists and those with chronic illnesses or financial concerns²¹. Collin et al. 2021 work showed that while some UK dentists experienced relief during the lockdown, others faced new mental health challenges²². Another study by Chipchase et al. 2017²³ highlighted how stress and burnout can impact clinical decision-making, especially among young or emotionally exhausted dentists, who may struggle with confidence and rely on defensive treatment choices. Kulkarni et al. 2016²⁴ reported that many young dentists face high levels of emotional exhaustion, primarily due to workload, time pressures, and the challenges of clinical decision-making. The lack of adequate support and mentoring during their early career stages also contributed to burnout²⁴.

Table 1: The most cited articles on occupational stress among dental professionals identified in the Dimensions database.

| Paper | Article Title | TC | TC per Year | Normalized TC |
|---|--|-----|-------------|---------------|
| Hakanen and Peeters J Occup Health Psychol. 2018 ¹⁶ . | Different types of employee well-being across time and their relationships with job crafting | 201 | 25.13 | 3.77 |
| Collin et al. Br Dent J. 2019 ¹⁵ . | A survey of stress, burnout and well-being in UK dentists | 162 | 23.14 | 6.09 |
| Gasparro et al. Int J Environ Res Public Health. 2020 ¹⁷ . | Perceived Job Insecurity and Depressive Symptoms among Italian Dentists: The Moderating Role of Fear of COVID-19 | 124 | 20.67 | 11.15 |
| Aly et al. BMJ Open. 2021 ¹⁸ . | Stress, anxiety, and depression among healthcare workers facing COVID-19 pandemic in Egypt: A cross-sectional online-based study | 95 | 19.00 | 8.96 |
| Hakanen et al. Int J Behav Med. 2017 ¹⁹ . | High Job Demands, Still Engaged and Not Burned Out? The Role of Job Crafting | 81 | 9.00 | 6.68 |
| Marklund et al. Int Arch Occup Environ Health. 2019 ²⁰ . | Workability and productivity among dentists: associations with musculoskeletal pain, stress, and sleep | 51 | 7.29 | 1.92 |
| Mekhemar et al. J Clin Med. 2021 ²¹ . | The Psychological Impact of the COVID-19 Pandemic on Dentists in Germany | 49 | 9.80 | 4.62 |
| Collin et al. Br Dent J. 2021 ²² . | Psychological distress and the perceived impact of the COVID-19 pandemic on UK dentists during a national lockdown | 44 | 8.80 | 4.15 |
| Chipchase et al. Br Dent J. 2017 ²³ . | A study to explore whether dentists' anxiety affects their clinical decision-making | 43 | 4.78 | 3.54 |
| Kulkarni et al. J Int Soc Prev Community Dent. 2016 ²⁴ . | Stress and professional burnout among newly graduated dentists | 40 | 4.00 | 3.29 |

Table Credit: Namrata Dagli.

Citation Analysis of Journals

Citation analysis in VOSviewer examines how often others cite a particular journal in the dataset. The thresholds selected were 1 article and 1 citation of a journal. Out of 139, 91 journals that met the threshold were included in the analysis, and for each of them, the total strength of citation links with other sources was calculated by VOSviewer. The most extensive set of connected items included 34 journals, shown in Figure 4. In addition, the analysis identified 7 clusters of journals represented by various colors and connected by 51 links.

The British Dental Journal stands out as the most cited Journal (290 citations) with the highest value of Total Link Strength (TLS=19) and maximum number of published articles (8 articles) on the topic in the Dimension database. Other notable journals in the network include the International Journal of Environmental Research and Public Health (Citations 156, TLS-16, Publications-5) and Work (Citations-58, TLS-3, Publications-5). The Journal of Occupational Psychology and BMJ Open has published only one document that received high citations (201 and 95, respectively), but the TLS is 0. The most cited journals in the dataset are listed in Table 2.

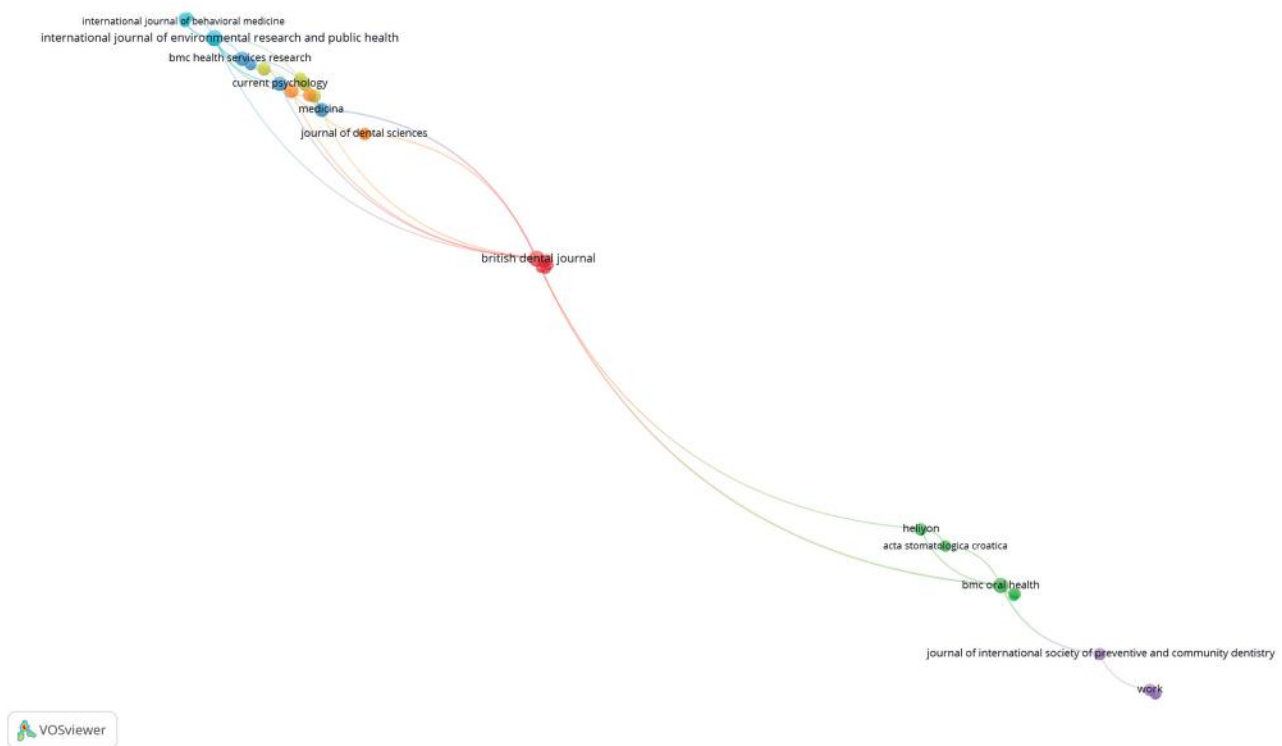


Figure 4: Citation Analysis of journals publishing research papers on occupational stress in dental professionals. The nodes represent journals, and the lines represent citation links.

Notes: A few names are not visible due to the spatial arrangement of nodes within the network visualization.

Image Credit: Namrata Dagli.

Citation Analysis of Countries

Citation analysis in VOSviewer examines how often others cite a particular country. Only 27 out of 43 countries with a minimum of two documents and 1 citation were included in the analysis. For calculating the total strength of the co-authorship links with other countries was estimated by VOSviewer. The

most extensive set of connected items comprises 21 countries, distributed under 7 clusters with 37 links and 48 Total Link Strength (TLS). The network visualization shows the citation analysis of these 21 countries involved in research on occupational stress in dental professionals (Figure 5). The most cited country is the United Kingdom, with 334 citations, followed by Finland (317 citations), the Netherlands (282 citations),

India (88 citations), and Turkey (88 citations). The countries with the highest TLS value are the United Kingdom (TLS=15), followed by Turkey (TLS=12) and

Lithuania (TLS=12). The maximum number of articles is published by the United States (n=12), followed by India (n=10) and Brazil (n=10).

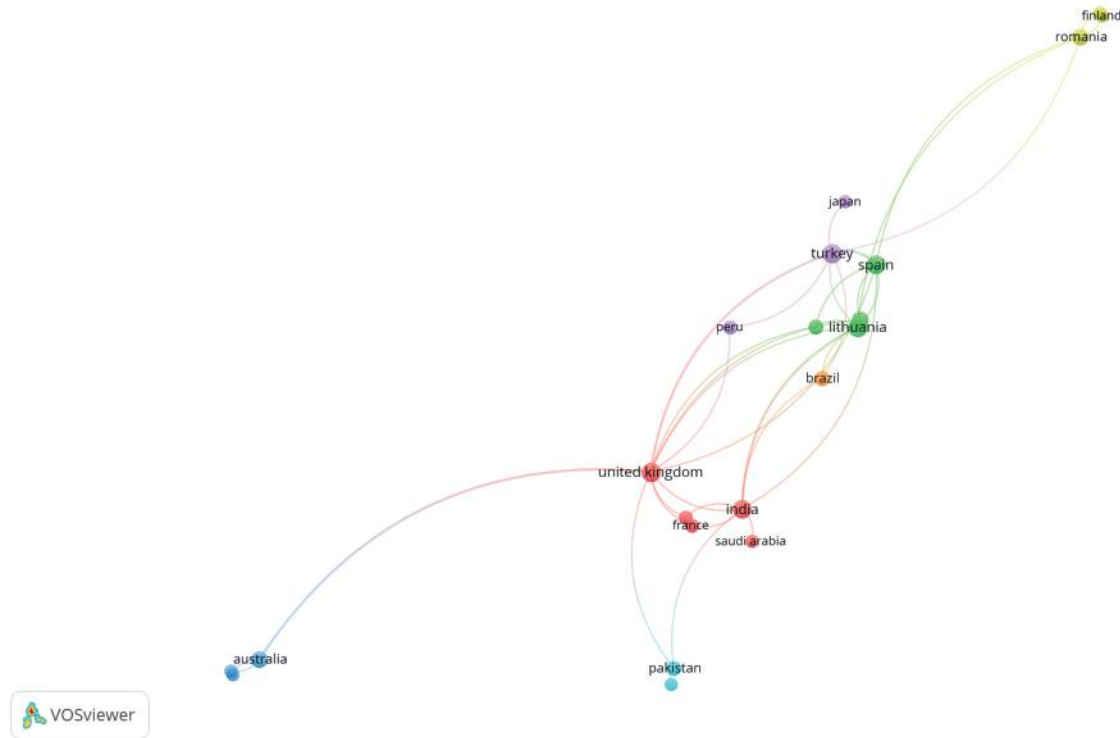


Figure 5: Citation analysis of Countries publishing on occupational stress in dental professionals (Dimension database) **Image Credit:** Namrata Dagli.

Keyword Analysis

The most frequently used keywords were identified by generating a word cloud. Figure 6 depicts patterns in research focusing on occupational stress among dentists from 2015 to 2025. The most prominent terms reveal several key themes in this research area.

The size of the fonts is directly proportional to their frequency of occurrence in the articles. The words with larger font size—“burnout,” “professional,” “male,” “adult,” “female,” and “COVID-19”—suggest that burnout has been a central focus, with studies examining how it affects different genders. The pandemic-related words, like “COVID-19,” “SARS-CoV-2,” and “pandemics,” indicate that the pandemic might have added to occupational stress.

Mental health concerns are evident through terms like “depression,” “anxiety,” “psychological stress,” and

“psychological distress.” The research also appears to address workplace factors, with “workload,” “job satisfaction,” and “professional role” featured in the cloud.

Methodologically, “cross-sectional studies” and “surveys and questionnaires” stand out, indicating this was a common research approach. There’s also attention to physical health issues through terms like “musculoskeletal diseases,” “musculoskeletal pain,” and “ergonomics.”

Geographic diversity in the research is reflected through country names including “United States,” “United Kingdom,” “Australia,” “Canada,” “Brazil,” “Finland,” and “Lithuania.”

The pattern of keywords suggests research has evolved from examining general, occupational stressors and their physical/mental health impacts to more specific

Table 2: Most cited journals publishing on occupational stress in dental professionals

| S. No. | Journals | Published Articles | Citations | Total link strength |
|--------|--|--------------------|-----------|---------------------|
| 1 | British Dental Journal | 8 | 290 | 19 |
| 2 | Journal of Occupational Health Psychology | 1 | 201 | 0 |
| 3 | International Journal of Environmental Research and Public Health | 5 | 156 | 16 |
| 4 | BMJ open | 1 | 95 | 0 |
| 5 | International Archives of Occupational and Environmental Health | 2 | 86 | 1 |
| 6 | International Journal of Behavioral Medicine | 1 | 81 | 1 |
| 7 | Work | 5 | 58 | 3 |
| 8 | Journal of Clinical Medicine | 1 | 49 | 1 |
| 9 | Journal of International Society of Preventive and Community Dentistry | 1 | 40 | 4 |
| 10 | Current Psychology | 1 | 39 | 9 |

Table Credit: Namrata Dagli.

Meanwhile, studies with the most linkages—like Collin et al. 2019¹⁵ and “*Burnout Syndrome in Dentists of the Rural Social Security of Chimborazo in the Year 2020*” by Orozco CN (2021)²⁶—demonstrate a strong network presence. These papers are frequently cited alongside others as critical nodes connecting different research strands. Notably, recent publications such as Ciğerim’s study²⁷ on burnout and depression in dentists across institutions already show high connectivity, indicating emerging influence within the research community.

Overall, citation counts reflect the historical impact of a study, while link strength illustrates how well a paper fits into and shapes the broader research conversation. Influential studies in this field were focused on factors like individual well-being¹⁵, stressors like fear of being sued¹⁶, workload, clinical decision-making²⁴, fear of COVID-19 infection^{17,18}, job crafting¹⁹, and the impact of stress on sleep and musculoskeletal pain²⁰. There is a clear trend toward exploring how psychological stress

affects professional performance, decision-making, and patient outcomes²⁴.

Among journals, the British Dental Journal emerges as a particularly influential publication. Other notable journals in the network include the International Journal of Environmental Research and Public Health and Work. Journals from overlapping fields such as public health, psychology, and dentistry frequently cite one another, demonstrating the cross-disciplinary nature of research on occupational stress in dental professionals.

The prominence of countries like the United States, the United Kingdom, Australia, Canada, Brazil, Finland, and Lithuania in the literature suggests that most of this research is concentrated in high-income nations. This may reflect greater awareness, academic interest, and resource availability to study occupational stress in these healthcare systems, where professional burnout and workload management are pressing issues. The literature is lacking in studies focusing on low- and middle-income countries.

Keyword Analysis reveals that burnout has been a central concern for dental professionals from 2015 to 2025, with particular attention to the mental and physical toll of the COVID-19 pandemic. Research has typically employed cross-sectional designs and survey methodologies to examine how stressors—such as workload and job demands—contribute to depression, anxiety, and overall psychological distress across gender groups. Alongside mental health, job satisfaction and musculoskeletal disorders linked to dental ergonomics have also been important areas of study. The pandemic has reshaped the research landscape, highlighting heightened psychological strain and rapidly changing clinical environments^{17,18,22}.

The factorial map in Figure 7 highlights three major research themes related to occupational stress among dental professionals from 2015 to 2025. One key focus is on physical health risks, especially musculoskeletal disorders, ergonomics, and workplace-related injuries, with Australia showing significant contributions in this area. Another major theme centers around psychological health, linking stress, anxiety, and depression to factors like workload, burnout, and job satisfaction, often studied through cross-sectional surveys, particularly in Western countries. A minor yet considerable cluster captures pandemic-related concerns, particularly from Brazil, emphasizing

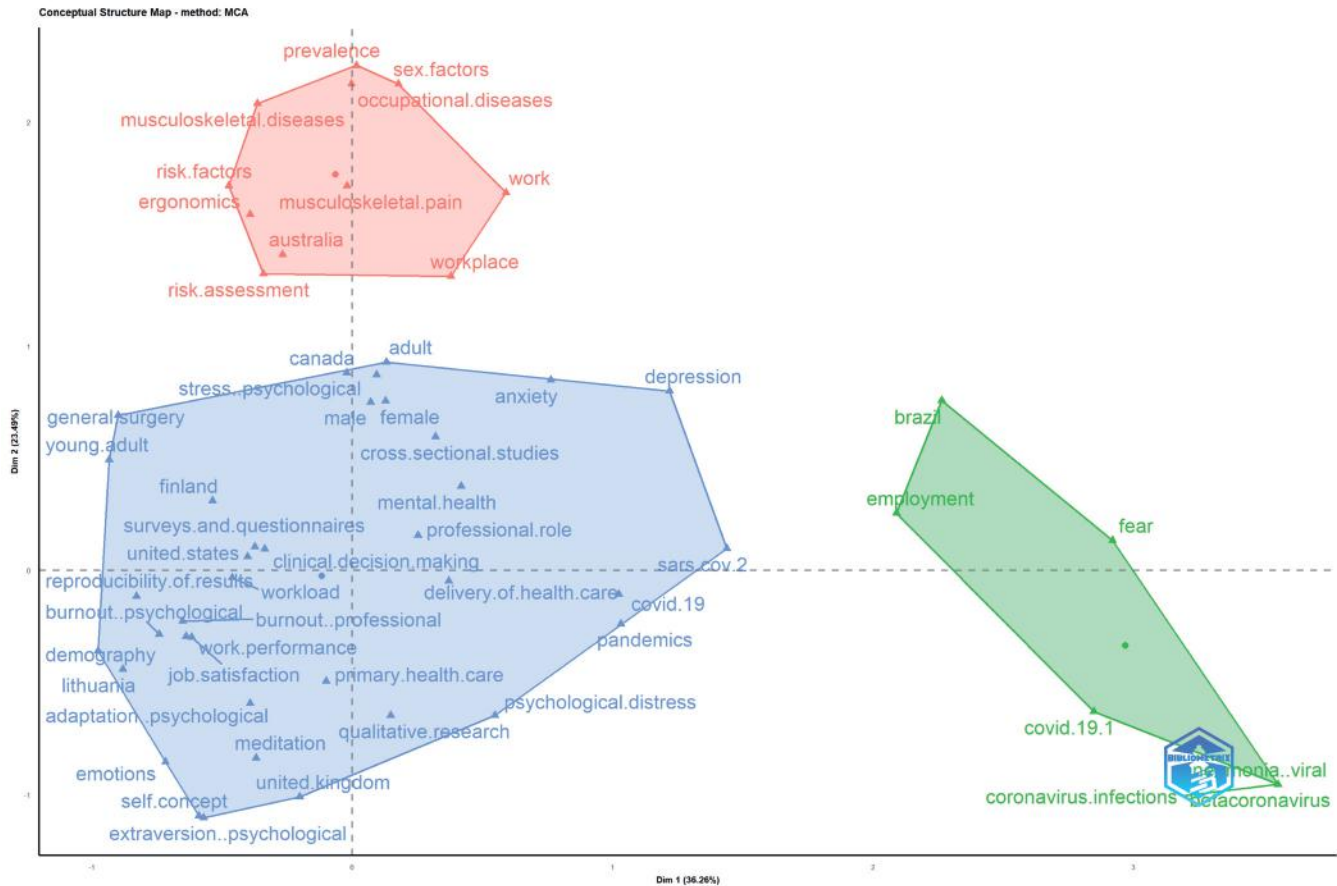


Figure 7: Factorial map of the most frequently used keywords in articles on occupational stress in dental professionals indexed in the Dimension database. (Method: MCA-Multiple Correspondence Analysis, Field: Keywords Plus)

Image Credit: Namrata Dagli.

how COVID-19, fear, and job insecurity affected dental professionals. Studies here often examine the psychological toll of infectious disease exposure. The map also shows interest in personality traits, meditation, and self-concept as coping mechanisms. Gender and age-related variables appear frequently, suggesting demographic influences are well explored. The factorial analysis also confirms the findings of keyword analysis and identifies questionnaire survey studies as the most common methodologies in the studies. In addition, the COVID-19 pandemic created a clear inflection point in the research landscape, establishing entirely new investigative pathways rather than merely intensifying existing research streams^{17,18,22}.

Despite its contributions to exploring the research landscape, this study has limitations. One major limitation is the reliance on bibliometric data from one database, which may exclude relevant publications from other sources. Additionally, the analysis is limited

to quantitative metrics, which provide insights into research trends but do not assess the quality or depth of individual studies. The lack of full-text content analysis further restricts the ability to evaluate study methodologies and conclusions in detail. The key findings of this bibliographic analysis are depicted in Figure 8.

Future Study Recommendations

Future research should prioritize integrating the currently distinct physical and psychological dimensions of dental and occupational stress through interdisciplinary studies that connect ergonomic interventions with mental health outcomes. Longitudinal investigations would significantly enhance understanding beyond the prevalent cross-sectional methodologies, allowing researchers to track how stress factors evolve throughout dental careers and in response to major disruptions like the pandemic. International collaborative networks

Publication and Citation Trends: The number of publications on occupational stress among dental professionals has steadily increased over the last decade, indicating growing research interest in this area. The highest number of articles was published in 2020, while the maximum citations were observed in 2018, showing a peak in scholarly attention during this period.

Citation Analysis of the Articles: The most cited articles were focused on individual well-being, stressors, musculoskeletal pain, sleep disturbances, job crafting, the impact of Covid-19, and the impact of stress on clinical decision-making.

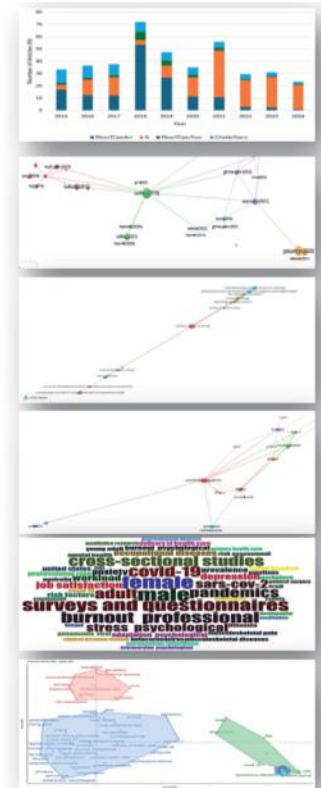
Citation Analysis of the Journals: The British Dental Journal stands out as the most cited journal with the highest value of Total Link Strength and a maximum number of published articles on the topic. Other notable journals in the network include the International Journal of Environmental Research and Public Health and Work.

Citation Analysis of the Countries: The most cited country is the United Kingdom, followed by Finland, Netherlands, India, and Turkey.

Keyword Analysis: Frequently occurring keywords such as 'burnout', 'workload', 'job satisfaction', 'musculoskeletal disorders', and 'mental health' indicate the core theme, while 'cross-sectional studies' and 'surveys and questionnaires' indicate the predominantly used methodology in the articles.

Factorial Analysis: Three major themes were identified- physical health risks, including musculoskeletal pain; psychological well-being, including stress, burnout, and job satisfaction; and COVID-19 pandemic-related impacts. The map also highlights geographical differences, with different regions focusing on varied themes and study types.

Database used-
Dimensions



Software used-
VOSviewer
Biblioshiny

Figure 8: The principal findings of this bibliometric analysis of articles on occupational stress among dental professionals published in the Dimensions database (2015-2024). The image was created using Microsoft PowerPoint.

Image Credit: Namrata Dagli.

should be expanded between regions showing different research emphases, particularly connecting Western research centers with understudied healthcare systems where cultural and institutional factors may uniquely influence stress experiences. Studies examining the effectiveness of interventions tailored to different practice settings (private, public, academic) are notably lacking and would provide practical applications of the growing body of descriptive research. Additionally, research exploring how technological advancements in dentistry interact with traditional stressors could anticipate emerging challenges. At the same time, patient-centered perspectives on how provider stress impacts care quality represent an important but underdeveloped dimension that could bridge the gap between occupational health and healthcare delivery concerns. Additionally, the limited presence of low- and middle-income countries in such research points to a potential gap in understanding occupational

stress among dental professionals globally. Expanding research to underrepresented regions could provide a more comprehensive perspective on stressors and coping strategies across diverse healthcare settings.

CONCLUSIONS

Research on occupational stress among dental professionals has evolved between 2015 and 2025, demonstrating growth and fragmentation across multiple dimensions. Despite this increase and the diversity of topics, the total number of publications remained less, indicating a need for more research to confirm the findings. There are predominantly collaborative research networks in the research field, with very few international collaborations. While publication volume has increased steadily, the impact of newer studies remains less pronounced than foundational works, suggesting a maturation process where early contributions continue to shape the field's trajectory.

The highest number of citations was observed in 2018, showing a peak in scholarly attention during this period, while the maximum number of articles was published in 2020. A few highly cited articles suggest a strong focus on how work pressures, personal challenges, and external events affect dentists' well-being. There's also growing interest in how this stress impacts their clinical decisions and overall professional life.

The research reveals a notable dichotomy between physical and psychological aspects of dental occupational stress, indicating that comprehensive interventions may require targeting these dimensions separately despite their interconnected nature.

The British Dental Journal is the most cited journal with the highest value of Total Link Strength and the maximum number of published articles on the topic in the Dimension database. Journals in related fields like public health, psychology, and dentistry often reference each other, reflecting the interdisciplinary nature of research on occupational stress among dental professionals. The citation pattern of countries suggests that regions with well-developed healthcare systems and strong academic institutions tend to produce more impactful research.

Geographic variations in research emphasize how cultural contexts and healthcare systems influence both the experience of workplace stress and the scholarly attention it receives. Western countries, particularly the United Kingdom, have emerged as research leaders with distinctive regional approaches. The predominance of cross-sectional methodologies across countries suggests opportunities for more longitudinal and interventional studies to address the profession's ongoing struggles with burnout and emotional exhaustion.

Given the high level of collaboration but limited

publication volume, regional disparities, and the dominance of cross-sectional designs, future research should aim to conduct more longitudinal and intervention-based studies, particularly on strategies that address both physical and psychological dimensions of occupational stress in dentistry. Expanding research to low- and middle-income countries could provide a more comprehensive perspective on stressors and coping strategies across diverse healthcare settings.

Consent for Publication

The author reviewed and approved the final version and has agreed to be accountable for all aspects of the work, including any accuracy or integrity issues.

DISCLOSURE

The author declares that they do not have any financial involvement or affiliations with any organization, association, or entity directly or indirectly related to the subject matter or materials presented in this article. This includes honoraria, expert testimony, employment, ownership of stocks or options, patents, or grants received or pending royalties.

Data Availability

Information is taken from freely available sources for this bibliometric analysis.

Authorship Contribution

All authors contributed significantly to the work, whether in the conception, design, utilization, collection, analysis, and interpretation of data or all these areas. They also participated in the paper's drafting, revision, or critical review, gave their final approval for the version that would be published, decided on the journal to which the article would be submitted, and made the responsible decision to be held accountable for all aspects of the work.

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