BIBLIOGRAPHIC ANALYSIS OF THE INVESTIGATION OF ORAL CANCER

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ABSTRACT

Oral cancer is a significant worldwide public health issue in nations with low levels of awareness and restricted access to healthcare. Despite advancements in diagnostic and treatment methods, its prevalence and mortality rates remain high. The purpose of this bibliometric study is to evaluate global research trends, key contributors, and emerging directions for oral cancer research between 2000 and 2025 using data from the Scopus database. A total of 570 publications were obtained using keywords related to the research of oral cancer. Bibliometric features including total publications, citation counts, and h-index were examined using Biblioshiny with R-studio and VOS viewer. Results indicate that China, the United States, and the United Kingdom were the most frequently named countries, while the National Institute of Biomedical Genomics, the University of London, and Fujian Medical University were the top contributing institutions. Professor Warnakulasuriya S. was the most prolific author. "Oral Oncology" was determined to be the most popular journal based on the quantity of publications. Publication activity peaked in 2021. Saliva-based diagnostics, optical imaging devices, and autofluorescence spectroscopy were mentioned as important technological advancements in early detection. This study offers valuable insights into the current status and future directions of research on oral cancer. It highlights areas for more study and identifies significant authors, institutions, and countries that are advancing the field. These results highlight the need for increased international collaboration and the continuous development of early diagnostic tools.

Keywords: Oral cancer, Oncology, Bibliographic analysis, H index, Dentistry.

INTRODUCTION

For dental surgeons in particular, oral cancer is a particularly important worldwide public health concern (Sharma *et al.* 2020). The incidence and death rate of oral cancer are increasing despite improvements in diagnosis and treatment techniques. Oral cancer is more prevalent among populations with low access to medical care and little knowledge of the disease (Rivera, 2015). Bibilometric analysis is a quantitative analysis of collection of articles which helps to identify the top authors, organization and countries with most relevant research of oral cancer. This bibliometric analysis aimed to give a thorough summary and emerging research directions in investigation of oral cancer. The results of the investigation provide a useful knowledge about investigation of oral cancer and the areas where further study is required.

MATERIALS AND METHODS

Articles were collected from the scopus database by using keywords like oral cancer investigation the search articles were from the year 2000-2025. This search has given 570 articles. The data was examined by bibliometric indexes including the h-index, the entire number of citations, and the total amount of publications. Additionally, VOS viewer and Biblioshiny were used to visualize the data with using the help of R-studio software (Figure 1).

TOP CITED COUNTRIES

Biblioshiny was used to examine the most referenced publications, with a focus on countries related to the published research. With 333 citations, the United Kingdom was the country that contributed the most to the study of oral cancer. The United States and China came

next with 263 and 233 citations, respectively. With 67 referenced articles, Turkey came in at number 10 (Figure 2).

MOST CITED GLOBAL DOCUMENTS

The top ten most globally cited publications were selected by analyzing the identified articles using global citation metrics. The findings showed that, with almost 168 citations, the paper by Shiboski *et al.* (2000), which was published in Community Dentistry and Oral Epidemiology, had the most citations (Table 1 & Figure 3).

INSTITUTION WITH MORE RELEVANT ARTICLES

To determine the top 10 academic institutions involved in oral cancer research, a bibliometric study was performed. With 19 publications published overall, Fujian Medical University was the top university. The University of London and the National Institute of Biomedical Genomics came next, both with 11 articles. With ten publications devoted to the study of oral cancer, Saveetha University came in third (Figure 4).
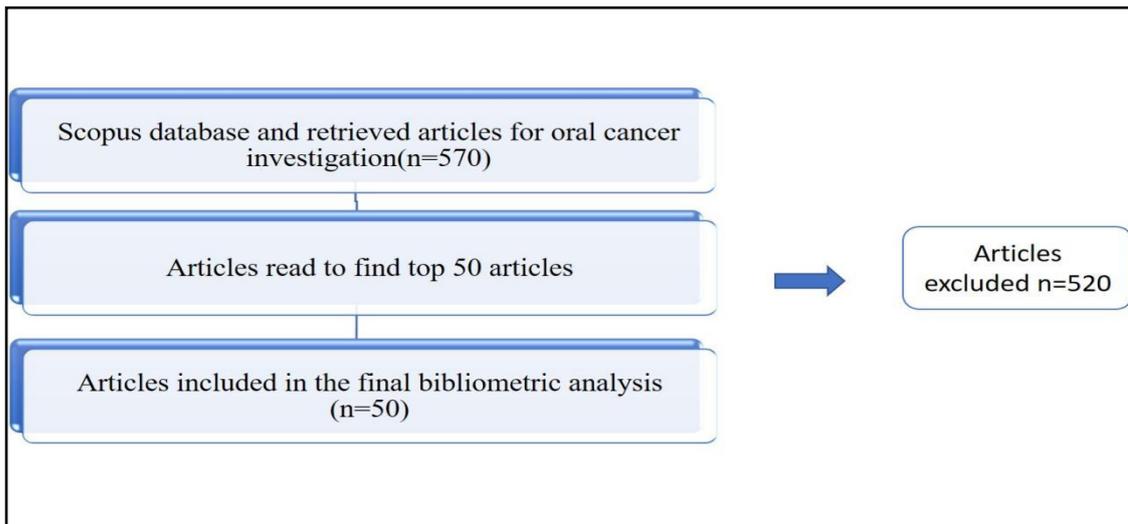

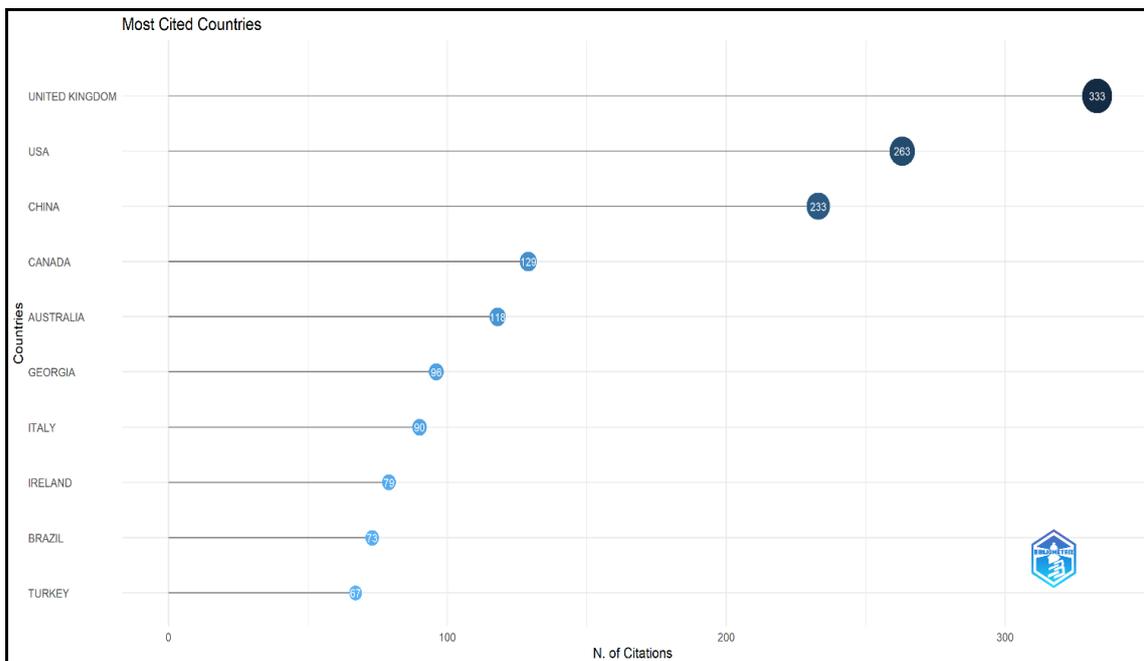**Figure 1.** Flowchart of the article selection process for bibliometric analysis.

Figure 2. Shows top 10 cited countries, with the United Kingdom receiving the highest number of citations.

Table 1. Most Cited Global documents.

| Author	Year	Journal	Global Citations
Shiboski *et al.*	2000	Community Dent Oral Epidemiology	168
Gómez *et al.*	2010	Oral Diseases	140
Pintos *et al.*	2008	Oral Oncology	124
Hsu *et al.*	2004	Oral Oncology	96
Kujan *et al.*	2005	J Dent Education	81
Mognetti B	2006	Oral Oncology	81
Healy CM	2019	Oral Oncology	79
Downer MC	2004	Oral Oncology	78
Ilhan B	2021	Oral Oncology	67
Chatzistefanou I	2017	J Craniomaxillofac Surgery	64
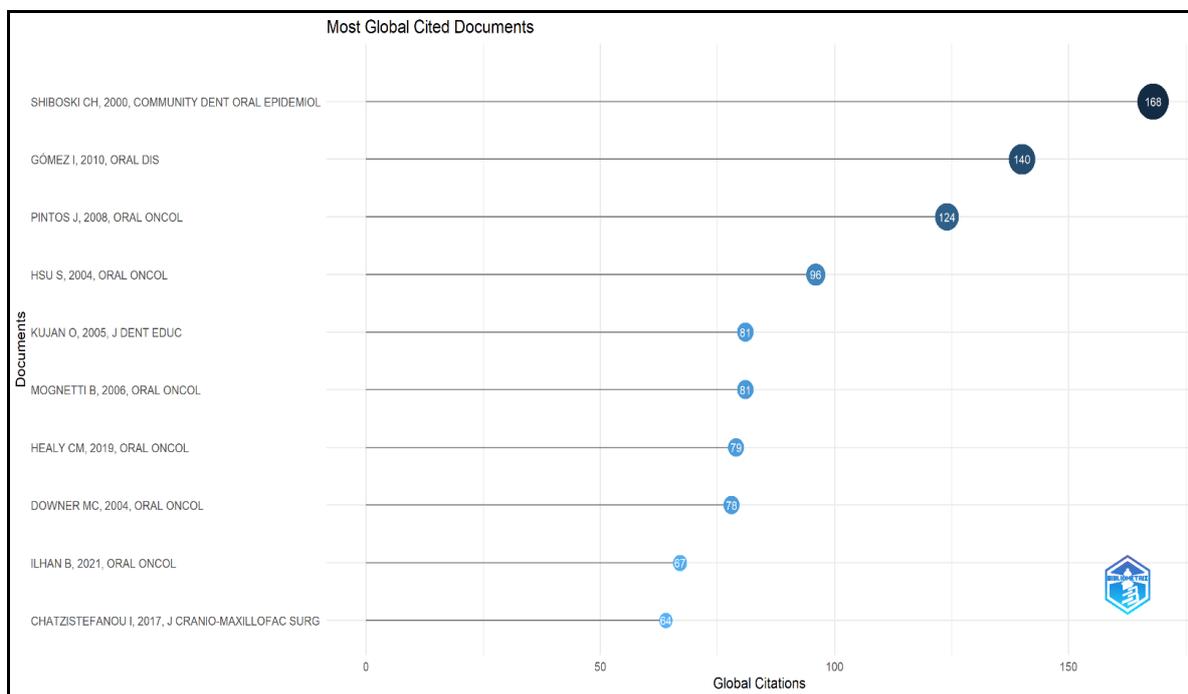
Figure 3. Most globally cited documents based on the number of research citations.
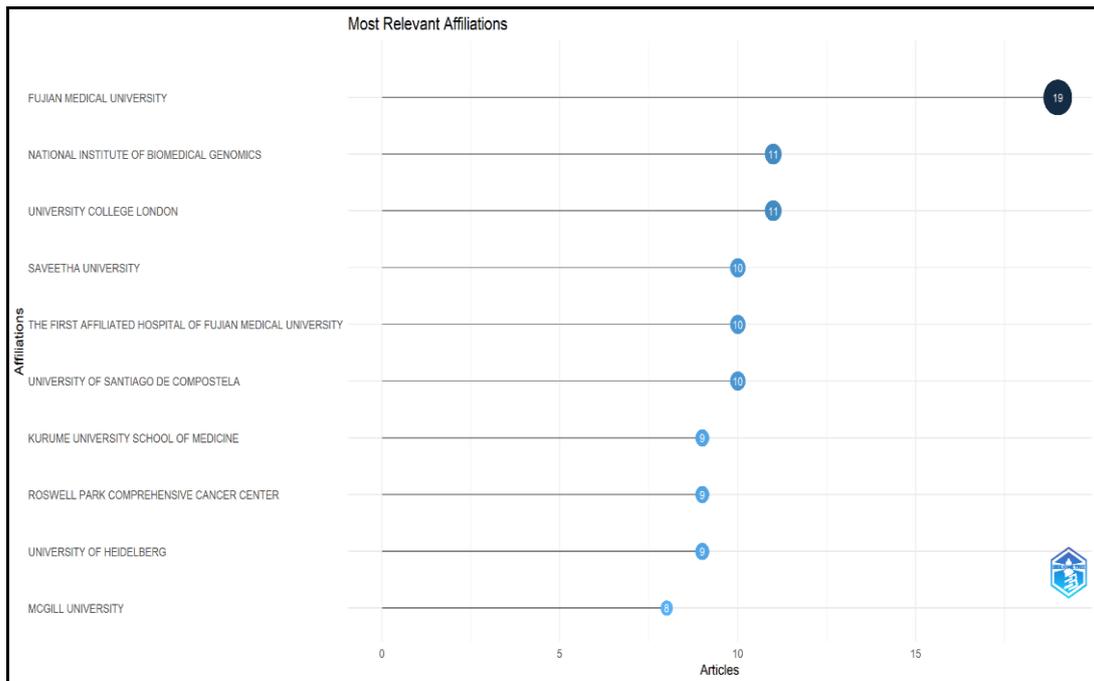
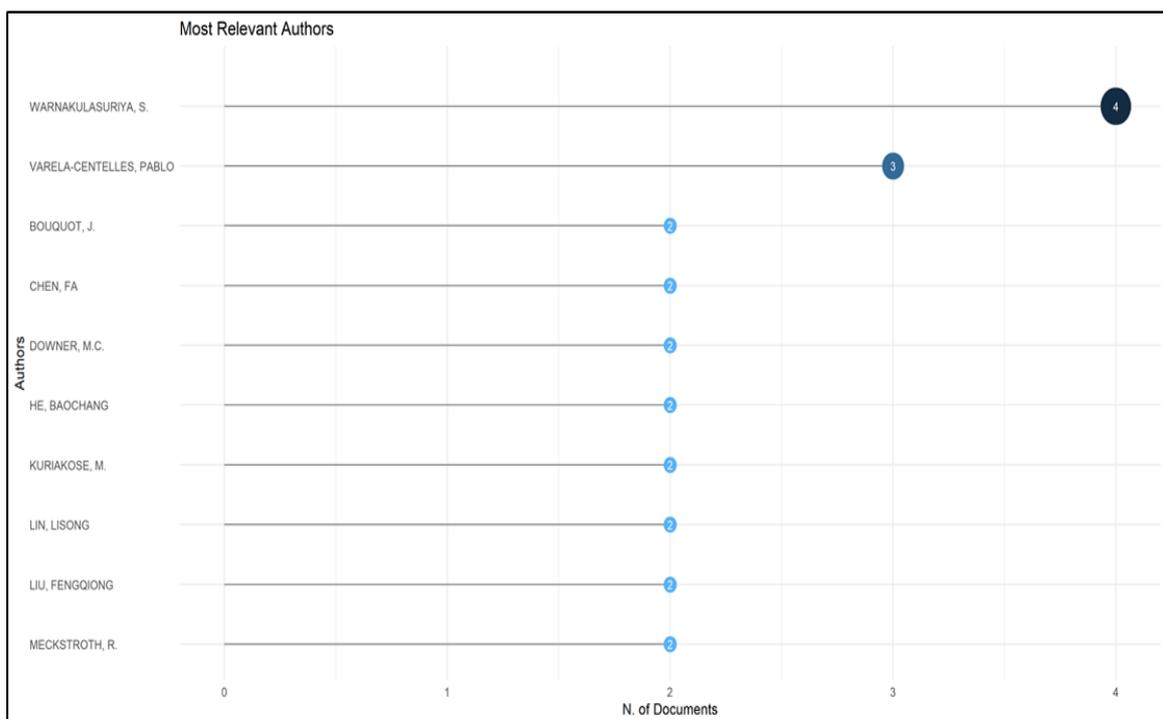**Figure 4.** Most relevant affiliations based on the number of published articles.

Figure 5. Most relevant authors based on the number of published documents.
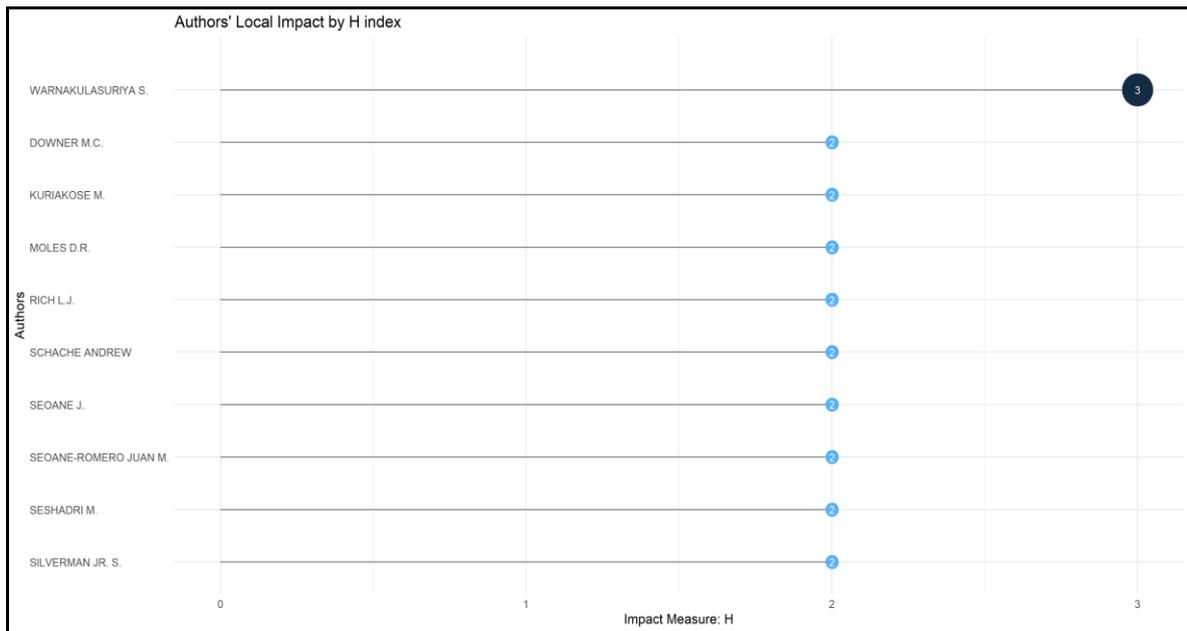
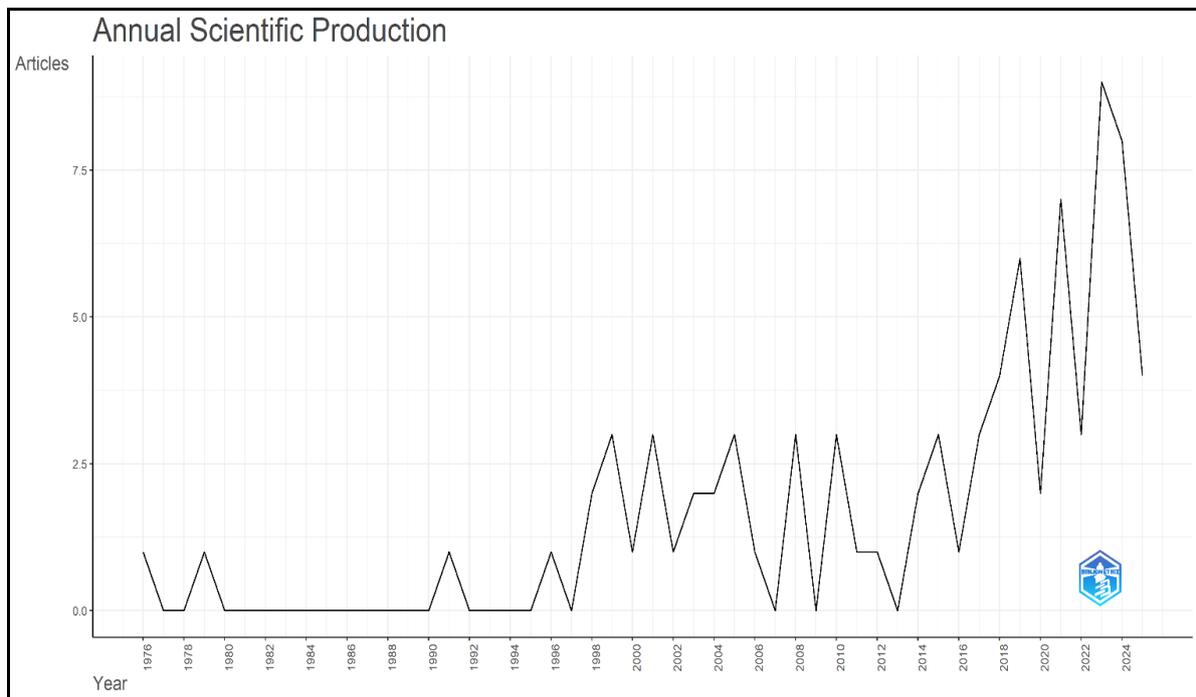**Figure 6.** Authors' local impact measured by H-index.

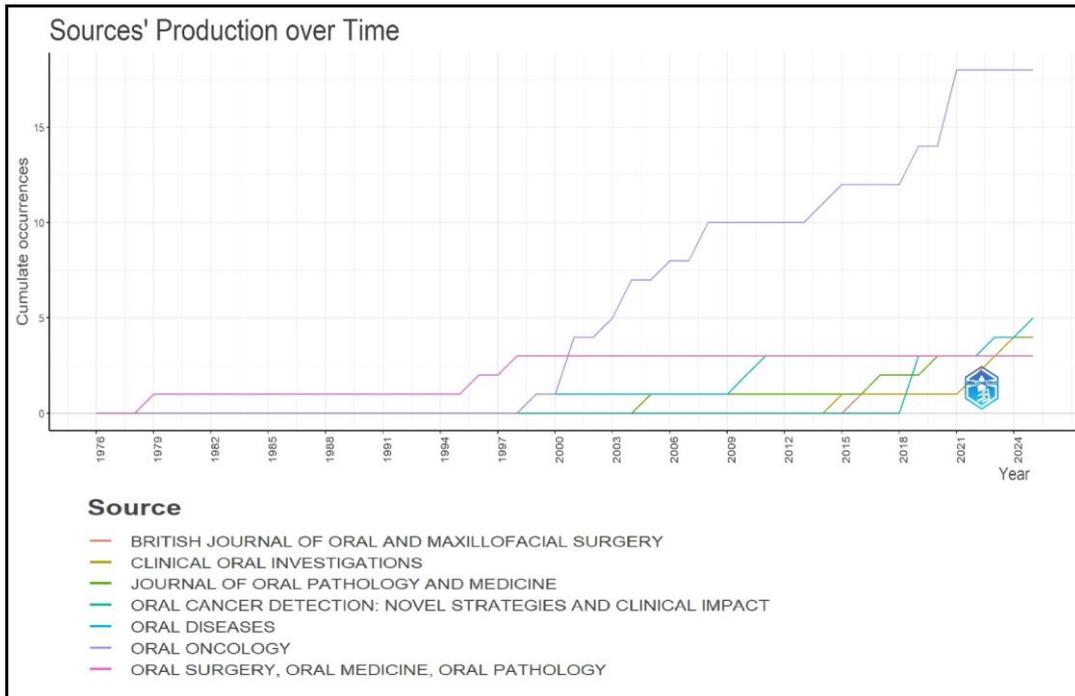**Figure 7**. Annual Scientific Production from 1975 to 2024.

Figure 8. Sources' production over time, highlighting a marked rise in contributions from Oral Oncology and Oral Diseases, compared with modest outputs from other journals.

Table 2. Annual distribution of published articles.

Year	Total no of Articles Published
2021	9
2022	8
2019	7
2018	6
2020	5

INDEX AND ANNUAL SCIENTIFIC PRODUCTION

The h-index, or Hirsch index, measures the impact of a particular scientist rather than a journal. The h index is "defined as the highest number of publications of a scientist that received h or more citations each, while the other publications have not more than h citations each (Schreiber, 2008). The top 10 authors with the highest h-index were determined by the data analysis (Figure 6). 2018–2022 is the most active decade, with significant growth and consistent high output. 2021 is significant since it marks the highest point of scientific production. The graph indicates that 2021 is the year with the highest number of papers published, with an annual peak of approximately nine articles in scientific production. This is the highest peak of the graph, occurring just before a little decline in the years that follow (Table 2 & Figure 7).

JOURNAL PRODUCTION OVER TIME

Oral oncology, with 17 articles source has the highest cumulative curve and the steepest. Since it started operating in 2000, the number of publications has steadily increased, particularly between 2009 and 2021. Oral pathology, oral surgery, oral medicine, Activity began in 1978 and increased gradually until there were six publications in all (Figure 8).
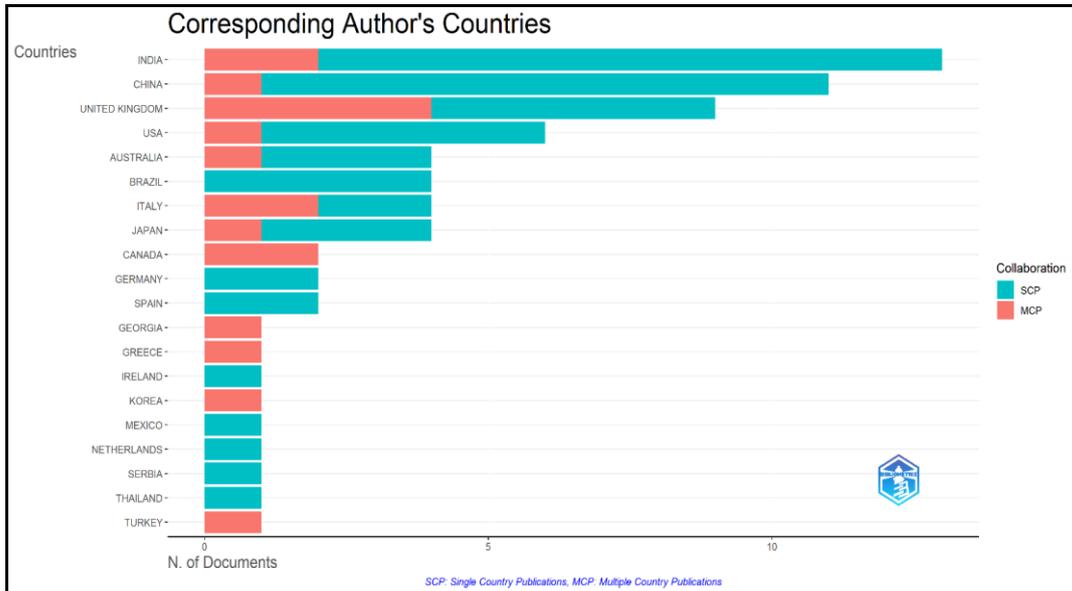
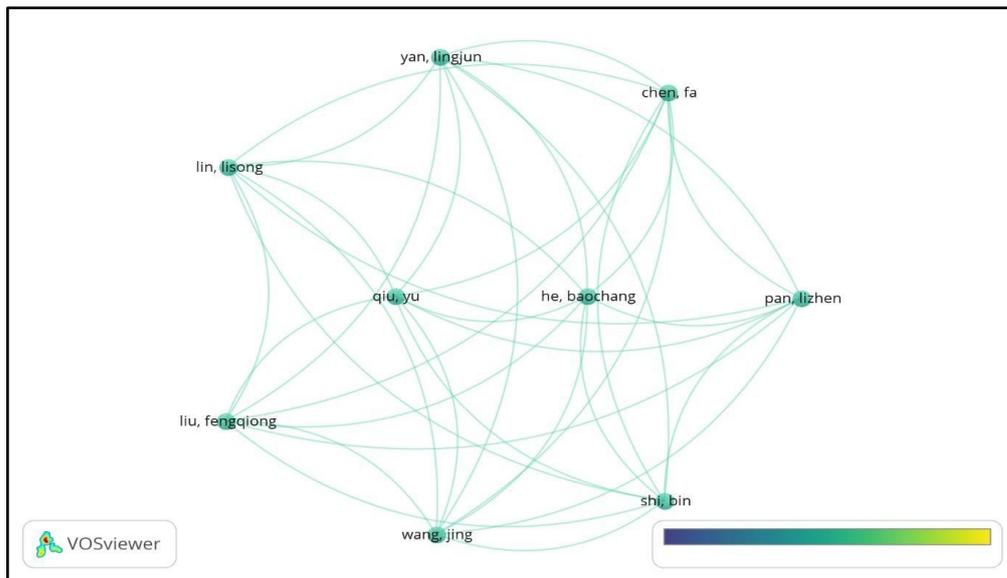**Figure 9.** Corresponding authors' countries and their contribution to publications.

Figure 10. VOS viewer network visualization showing co-authorship links among researchers.

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DISCUSSION

The increase in publications and citations over time indicates that oral cancer is becoming more widely acknowledged as a significant public health issue. Despite improvements in diagnostic and treatment methods, the persistently high incidence and mortality rates—particularly in rural regions with limited access to healthcare facilities—highlight the necessity for continued research and policy action. Most of the articles were produced by Fujian Medical University, the University of London, and the National Institute of Biomedical Genomics. Shiboski *et al.,* 2000 and Gomez *et al.,* 2010 are the authors with most citation worldwide. The United States, China, and the United Kingdom published most of the top 10 journals for research on oral cancer. In recent years, oral oncology has published more than 15 articles, more than the top 10 internationally recognized journals. Hence, articles and research related to oral cancer and advancements are encouraged to be published in oral oncology journals. Warnakulasuriya is the most pertinent author with four articles on oral cancer (Warnakulasuriya et al,2021; Warnakulasuriya, 2009; Warnakulasuriya & Kerr, 2021; Warnakulasuriya, 2018). Countries like Turkey and India have been contributing more to the investigation of oral cancer, despite the lack of international cooperation. The academic influence of a number of authors whose articles have greatly influenced our current knowledge and approach to treating oral cancer was further confirmed by the h-index analysis. According to annual scientific production, the most research was done in 2021. This could be because of more money, global health efforts, or the effect of digital platforms on sharing research during and after the COVID-19 pandemic. However, a small drop in the years that followed could mean that research output has stopped growing or that academic goals have changed. Despite positive trends, the investigation found shortcomings. Global research networks should be more inclusive due to poor international collaboration, especially among developing countries. Many studies focus on clinical and diagnostic features, while public health programs, early detection measures, and awareness campaigns remain understudied, especially in low-resource regions where oral cancer is most prevalent.

ADVANCEMENTS

Significant advancement has been accomplished with the study of oral cancer in the last few years. The goal of these advancements has been providing early, and efficient methods for identifying and treating oral cancer. Numerous protein and mRNA biomarkers linked to oral squamous cell cancer (OSCC) have been found through the diagnostic analysis of saliva which is helpful in early diagnosis light-induced autofluorescence spectroscopy using double excitation wavelengths was proposed for identifying oral cancer, and its performance as a diagnostic tool was compared to that of an algorithm using a single excitation wavelength. For improved visibility of mucosal alterations, use optical coherence tomography (OCT) and narrow band imaging (NBI). Fluorescence Imaging: By identifying aberrant tissue autofluorescence, tools such as VEL scope and Identify improve visual screening. Multiphoton Microscopy: For visualizing malignant and dysplastic alterations at the cellular level. Narrow Band Imaging (NBI) has the potential to be a useful aid for the clinician involved in the diagnosis and management of Oral Potentially Malignant Disorders (OPMDs) and OSCC (Upadhyay *et al.* 2019)

LIMITATIONS

One of the limitations of this bibliometric analysis is using a single Scopus database. However, the journals in the Scopus database are audited annually to ensure they adhere to higher standards. It is the largest abstract and citation database of peer-reviewed scientific journals, books and conference proceedings (Ganesh *et al.* 2019)**.**

CONCLUSION

This bibliometric analysis gives a useful summary of the oral cancer research worldwide. It highlights the future technical advancements and the top authors, organisation, journals, and countries that contribute to the investigation of oral cancer. For improvement of the research and clinical results multicentre research and more international relationships are encouraged.

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CONFLICT OF INTERESTS

The authors declare no conflict of interest

ETHICS APPROVAL

Not applicable

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AI TOOL DECLARATION

The authors declares that no AI and related tools are used to write the scientific content of this manuscript.

DATA AVAILABILITY

Data will be available on request

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