Asian Journal of Information Science and Technology
ISSN: 2231-6108 (P) Vol.14 No.1, 2024, pp.24-31

DOI: https://doi.org/10.70112/ajist-2024.14.1.3878

Exploring the Evolution of Bibliometric Analysis: A Comprehensive Study of Scientific Publications from 1974 to 2024 Using the Dimensions AI Database

Vinayak P. Hakkaraki
Karnataka State Law University, Hubballi, Karnataka, India
E-mail: vinayakhakkaraki@gmail.com
(Received 29 November 2023; Revised 25 January 2024; Accepted 15 March 2024; Available online 20 March 2024)

***Abstract* - Bibliometrics is the practice of analyzing books, articles, and other publications using statistical methods, with a particular focus on scientific contexts. This research employs bibliometric analysis to explore the evolution of the research landscape on bibliometrics and bibliometric analysis literature, utilizing the Dimensions AI database. A total of 23,527 articles were discovered in the Dimensions AI database when the search terms "bibliometric" and "bibliometric analysis" were input into the "Title" field. These articles cover a range of publication years from 1974 to 2024. Furthermore, upon selecting the "Health Science" category, 2,011 articles were displayed. Co-occurrence, co-authorship, countries, academic institutions, and future orientations are used to illustrate previous trends, growth, and prospects in the results, which are displayed through graphs, tables, and data maps. The results show that papers account for the majority of publications (1,888), with preprints coming in second (93). The most productive journal is Frontiers in Public Health, with 109 articles and 659 citations, while the most productive author is Waleed Mohamad Sweileh, with a substantial number of publications (n = 36) and total citations (1,428). The most productive academic institution is An-Najah National University, which tops the list with 63 publications and 2,082 citations.**
Keywords: **Bibliometrics, Bibliometric literature, Scientific Mapping, Dimensions AI, Bibliometric Analysis, Public Health**

I. INTRODUCTION

Bibliometrics is the discipline of examining various types of publications, such as books and papers, with a special focus on scientific content. This method is widely used in the domains of libraries and information science, and it is related to scientometrics, which is concerned with the examination of scientific metrics and indicators (Bahuguna P. C, Srivastava. R & Tiwari S. (2023), Batra. S, Saini. M, & Yadav. M (2023)).

The process of bibliometric analysis entails measuring the characteristics of different types of documents, such as books, conference proceedings, and journal articles. Alan Pritchard pioneered this approach in 1969, defining it as the application of mathematical and statistical methods to books and other forms of communication (Bibliometrics. (n.d.), 2022).

Because bibliometric analysis enables researchers to analyze citation trends in academic papers, it is a useful tool for assessing the impact of research. This approach can be used to find scholarly publications and prominent scholars, as well as research trends and patterns. Software tools for bibliometric analysis include Web of Science, Google Scholar, Scopus, and Dimensions AI for data exporting, and VOSviewer, BibExcel, CiteSpace, RStudio, Pajek, and Biblioshiny for analysis.

II. REVIEW OF LITERATURE

Statistical methods are used in the practice of bibliometrics, which places a focus on scientific contexts when analyzing books, articles, and other publications. Numerous studies on bibliometrics have been conducted over the past few decad es. Mulla & Chandrashekara (2011) evaluated Mapping of Industrial and Trade Literature (2002-2006): A Bibliometric Study. The study analysed 2253 articles published in industrial and trade literature from 2002 to 2006, using the Database of Indian Science Abstract as the main source. The study found that the average number of publications per year was 451, with a higher number of articles published between 2004 and 2006. It also identified the authorship trend, degree of collaboration, country-wise and state-wise contributions, as well as the top-ranking journal and corporate body in terms of publications.

Khoshroo & Talari (2022) conducted a comprehensive bibliometric analysis of digital transformation strategy (DTS) research studies in the context of Industry 4.0. The study analyses documents published in the Scopus database from 2011 to 2021, focusing on the publication process, types and languages of published documents, influential authors, institutions, sources, and countries in the field of DTS. It also utilizes VOSviewer software to analyse bibliographic coupling, co-occurrence of authors' keywords, and the timeline of their publications.

Sharma, Rohatgi & Jasuja (2023) studied paper on Scientific Mapping of Gravity Model of International Trade Literature: A Bibliometric Analysis. The paper presents a bibliometric analysis of the worldwide publication output on the gravity model of international trade from 1987 to 2021,

focusing on annual productivity, source titles, countries, institutions, linguistic analysis, and author contributions. The study identifies the most popular areas of subject specification, such as the estimation of trade variables and projections, and highlights literature gaps in areas like economic integration, Extensive and Intensive Margin, and Logistics Performance Index.

Chowdhry, Kapoor,Bhargava, & Bagga (2023) evaluated the Mapping of journal of oral and maxillofacial pathology from 2011 to 2022: A VOSviewer-based bibliometric visualisation. Journal of Oral and Maxillofacial Pathology: JOMFP, 27(1), 204. The paper presents a bibliometric analysis and network visualization of articles published in the Journal of Oral and Maxillofacial Pathology (JOMFP) from 2011 to 2022, highlighting the most frequently appearing keywords and the top cited articles and authors. The analysis reveals the need for increased efforts to enhance the volume and quality of papers in JOMFP, as well as to foster collaborations among authors and research groups. The analysis reveals the need for increased efforts to enhance the volume and quality of papers in JOMFP, as well as to foster collaborations among authors and research groups.

III. OBJECTIVES OF THE STUDY

1. The objective of this study is to analyze the distribution of publications from 1974 to 2024 and investigate the factors that contribute to variations in publication frequency.
2. This research aims to examine the distribution of publications between 1974 and 2024, focusing on the years of publication, and investigate the factors that contribute to variations in publication frequency.
3. The purpose of this evaluation is to assess and compare the productivity of authors based on the number of publications, citations, and link strength.
4. To evaluate the most cited research publications.
5. To evaluate the research publications output and citation impact of top contribution countries.
6. To evaluate the research publications output and citation impact of top Contributions of Institutions.

IV. RESEARCH METHODOLOGY

The study was conducted using the search terms “Bibliometric” and “Bibliometric Analysis” as the “topic” (title, abstract), and in the categories of “Health Science” in order to conduct an accurate investigation and reduce the likelihood of biases emerging. The publication years span from 1974 to 2024. 23527 articles in all were found in the Dimensions AI Database when the search terms “bibliometric” and “bibliometric analysis” were entered into the “Title” field. 2011 articles are displayed after selecting “Health Science” category. The writing that was discovered was arranged according to the amount of citations in a sliding order.

Researchers employed the “double evaluation” technique to assess each literature piece they discovered, ensuring that both the title and abstract contained the terms “Bibliometric” and “Bibliometric Analysis” or their variations, and that the content was relevant to “Bibliometric” and “Bibliometric Analysis. As a result, the relevant literary works from 2011 were identified. The articles on Bibliometric Analysis were analysed and visualized using VOSviewer and Microsoft Excel 2013 programming.

For the papers that were included, the following information was taken out and examined: article title, publication type, year of publication, frequency of references, nation, institutions, author, journal, and keywords.

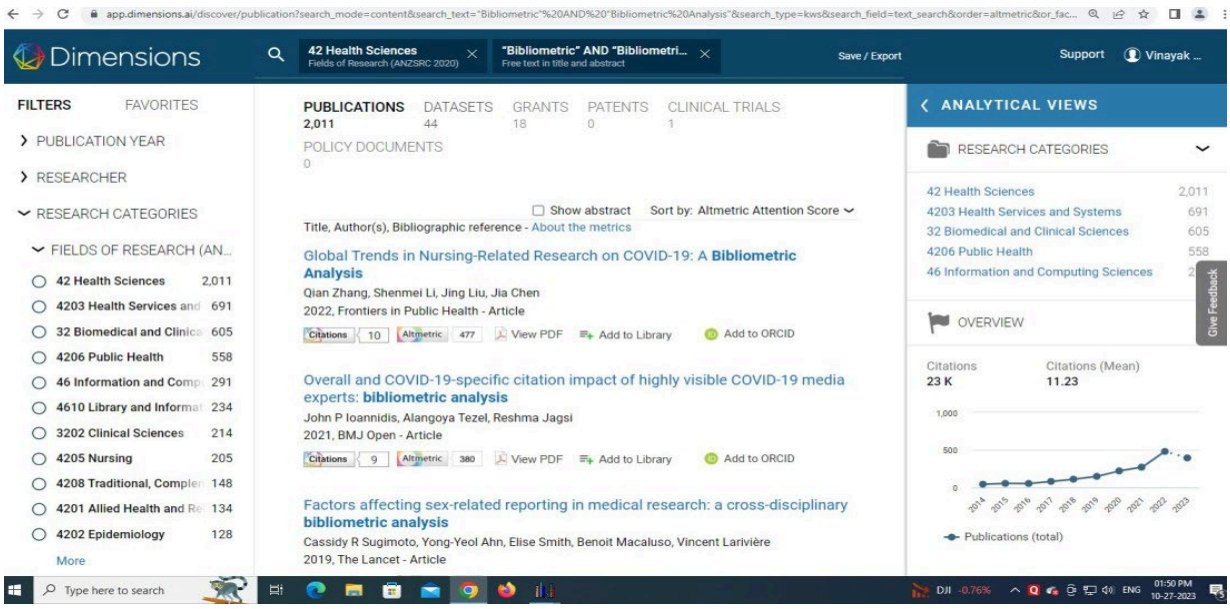


Fig. 1 Tracing the dimensions database

V. RESULTS AND DISCUSSION

The VOSviewer program was utilized to create visual representations, tables, and knowledge maps related to previous patterns, development, and potential using co-occurrence, co-authorship, and country examination.

This research revealed influential authors, publications, regions, educational institutions, and future directions. As per the data, articles accounted for the majority of the most publications (1888), with Preprint (93) having the largest portion of publications. The most productive journal in Public Health was "Frontiers in Public Health," with 109 articles and 659 citations. Waleed Mohamad Sweileh emerged as the most prolific author, with a significant number of publications (n = 36) and total citations (1428). The leading academic institution in terms of productivity was An-Najah National University, with 63 distributions and 2082 citations. The outcomes show that China had the largest number of distributions (606), trailed by the US (250) and the UK (128).

A. Publication Type

Table I shows the publication type of distribution based on the number of publications on "Bibliometric" AND "Bibliometric Analysis". There are about 4 items of publications in the study. It was noted that original articles constituted the major portion of the most publications (1888), followed by Preprint (93) and Chapter (20). The remaining 10 of the publications were proceeding.

TABLE I PUBLICATION TYPE

Sl. No.	Publication Type	No. of Article
1	Article	1888
2	Preprint	93
3	Chapter	20
4	Proceeding	10
	Total	2011

B. Year Wise No. of Publication with Citations

Table II displays the comprehensive breakdown of publications based on the number of publications on "Bibliometric" AND "Bibliometric Analysis". The data reveals that a total of 2011 articles were discovered from the Dimensions AI Database during the study period spanning from 1974 to 2024. Notably, the highest numbers of articles, specifically 479, were published in 2022. On the other hand, the lowest number of articles published was 1 in the years 1977, 1983, 1987, 1994, 1996, 1997, 1998, 2000, and 2003. Furthermore, the maximum numbers of citations, amounting to 5267, were found in 2022. Conversely, the lowest number of citations, which was 1, were recorded in the years 1978, 1982, 1986, 1988, 1990, 1992, and 2024 (Table II).

TABLE II YEAR WISE NO OF PUBLICATION WITH CITATIONS

Publication Year	No. of Publication	Citations	Publication Year	No. of Publication	Citations
1977	1	0	2003	1	21
1978	0	1	2004	5	24
1979	0	2	2005	3	35
1982	0	1	2006	13	62
1983	1	0	2007	10	75
1986	0	1	2008	9	104
1987	1	0	2009	15	128
1988	0	1	2010	14	144
1989	0	2	2011	20	149
1990	2	1	2012	22	211
1991	0	2	2013	31	277
1992	2	1	2014	43	362
1993	0	5	2015	53	527
1994	1	6	2016	52	685
1995	0	6	2017	80	764
1996	1	6	2018	109	1047
1997	1	3	2019	147	1388
1998	1	3	2020	220	2482
1999	4	5	2021	269	3845
2000	1	9	2022	479	5267
2001	2	15	2023	393	4914
2002	3	11	2024	2	1
Total				2011	22593

C. Top Ten Most Productive Journals

Table III presents a compilation of journals featuring a top ten ranking. Leading the pack is the esteemed Journal Frontiers in Public Health, boasting an impressive 109 documents and 659 citations. Following closely behind is the Chinese Journal of Modern Nursing, with 74 documents and 142 citations. For a visual analysis of the journal landscape, refer to Figure 2, which showcases a network visualization map. Notably, the Journal of Medical Internet Research garnered the highest number of citations, reaching an impressive 977, as indicated in the table.

TABLE III TOP TEN MOST PRODUCTIVE JOURNALS ON THE BIBLIOMETRIC ANALYSIS

Journals	Publications	Citations	Citations Mean
Frontiers in Public Health	109	659	6.05
Chinese Journal of Modern Nursing	74	142	1.92
Frontiers in Medicine	43	149	3.47
Research Square	40	7	0.18
Cureus	39	389	9.97
Healthcare	33	233	7.06
International Journal of Environmental Research and Public Health	29	232	8
Journal of Medical Internet Research	26	977	37.58
Annals of Translational Medicine	23	408	17.74
JMIR Preprints	21	9	0.43

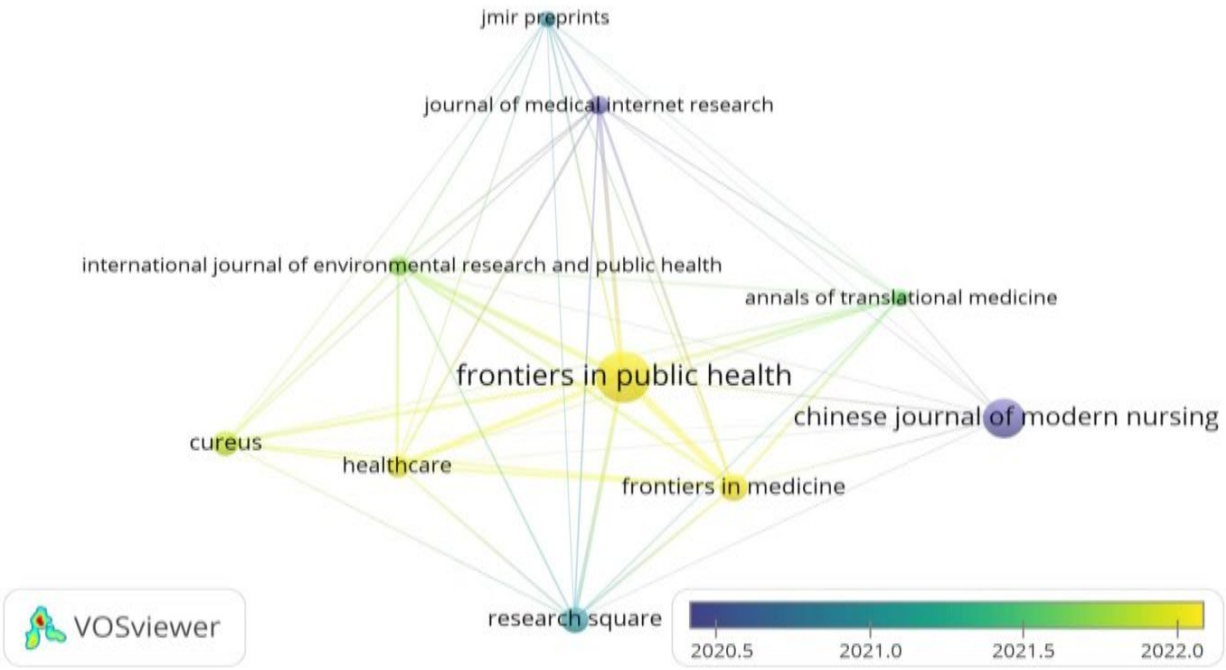


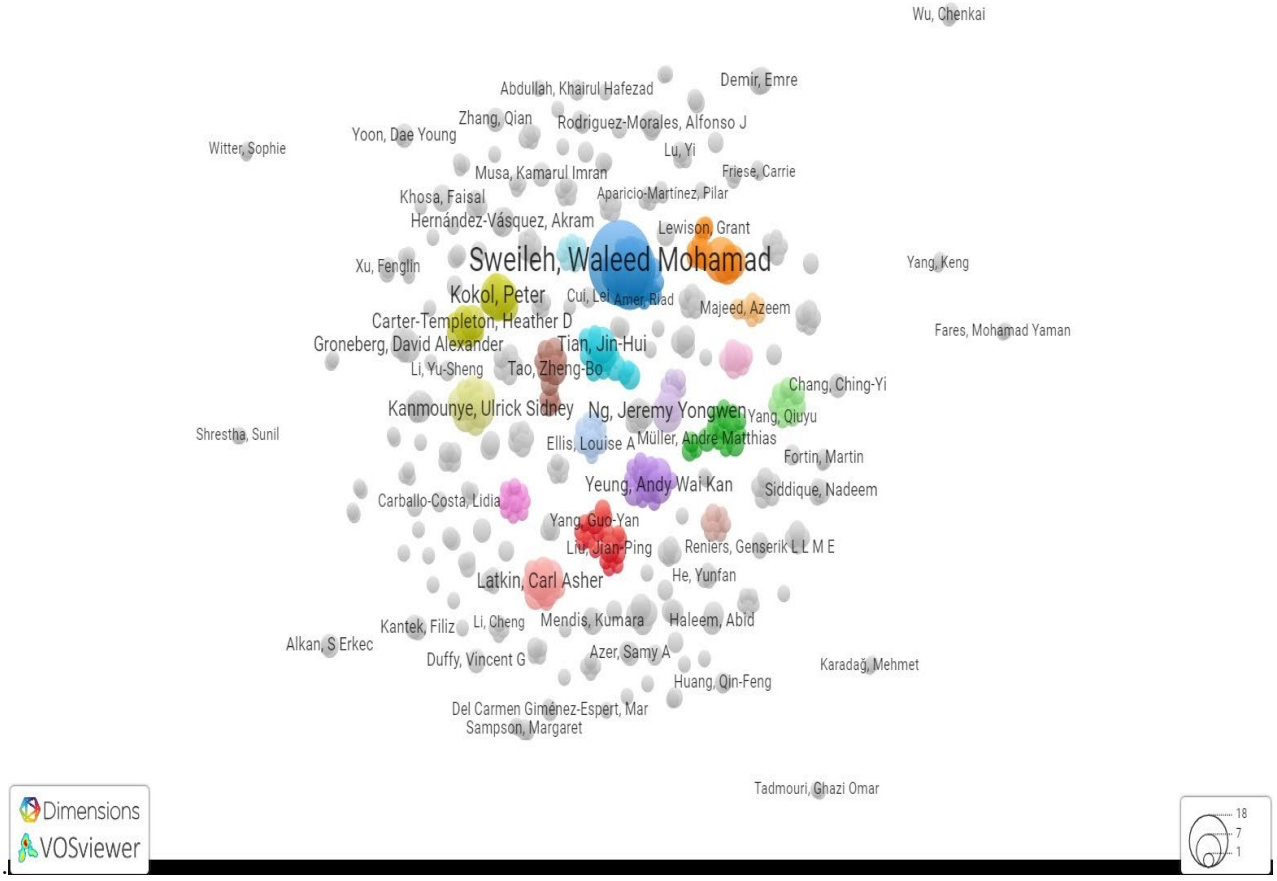
Fig. 2 Network visualization map analysis for journals

D. Most Prolific Authors on the Bibliometric Analysis

The list of authors with the most publications can be found in Table IV. Waleed Mohamad Sweileh is leading with 36 publications, 1428 citations, and link strength of 51. Sa'Ed Husni Zyoud is in second place with 21 publications, 867 citations, and link strength of 63. Samah W Al-Jabi follows with 15 articles, 708 citations, and link strength of 60. Figure 3 illustrates the co-authorship cluster density map, which was created using VOSviewer software.

TABLE IV LIST OF MOST PROLIFIC AUTHORS ON THE BIBLIOMETRIC ANALYSIS LEAST IN 8 PUBLICATIONS

Author	Publications	Citations	Total Link Strength
Waleed Mohamad Sweileh	36	1428	51
Sa'Ed Husni Zyoud	21	867	63
Samah W Al-Jabi	15	708	60
Peter Kokol	14	259	31
Yuh-Shan Ho	13	208	41
Jeremy Yongwen Ng	11	43	28
Ya Gao	9	187	86
waleed m Sweileh	9	294	13
Thompson Hope Atem	8	0	56
Ted Brown	8	70	25
Leonid Daya	8	0	56
Daniel Cheryl Eyaman	8	0	56
Ulrick Sidney Kanmounye	8	0	56
jian-ping Liu	8	176	70
Arsene Daniel Nyalundja	8	0	56
Jinhui Tian	8	149	75
Tochie, joel noutakdie	8	0	56
andy wai kan Yeung	8	346	63



Source: Dimensions AI

Fig. 3 Network visualization map for author analysis of the papers on bibliometric analysis

TABLE V LIST OF MOST TOP TEN CITED PAPERS ON THE BIBLIOMETRIC ANALYSIS

Sl. No.	Title	Year	Journal Name	Citations	Type of Document
1	Bibliometric analysis of safety culture research	2018	Safety Science	288	Article
2	A Bibliometric Analysis of COVID-19 Research Activity: A Call for Increased Output	2020	Cureus	242	Article
3	A bibliometric analysis using VOSviewer of publications on COVID-19	2020	Annals of Translational Medicine	234	Article
4	Transdiagnostic psychiatry: a systematic review	2019	World Psychiatry	210	Article
5	Factors affecting sex-related reporting in medical research: a cross-disciplinary bibliometric analysis	2019	The Lancet	186	Article
6	Bibliometric analysis of worldwide scientific literature in mobile - health: 2006â€”2016	2017	BMC Medical Informatics and Decision Making	175	Article
7	A 10-year follow-up study of sex inclusion in the biological sciences	2020	eLife	171	Article
8	Yoga as a Therapeutic Intervention: A Bibliometric Analysis of Published Research Studies from 1967 to 2013	2015	Journal of Alternative and Complementary Medicine	165	Article
9	Artificial Intelligence in Health Care: Bibliometric Analysis	2020	Journal of Medical Internet Research	163	Article
10	Why do we treat adolescent idiopathic scoliosis? What we want to obtain and to avoid for our patients. SOSORT 2005 Consensus paper	2006	Scoliosis and Spinal Disorders	153	Article

E. Top Cited Documents

Table V displays the top 10 cited articles in Bibliometric analysis. The most cited article, "Bibliometric analysis of safety culture research," was published in Safety Science in 2018 and received a total of 288 citations. Following closely is "A Bibliometric Analysis of COVID-19 Research Activity: A Call for Increased Output," published in Cureus in 2020, with a total of 242 citations.

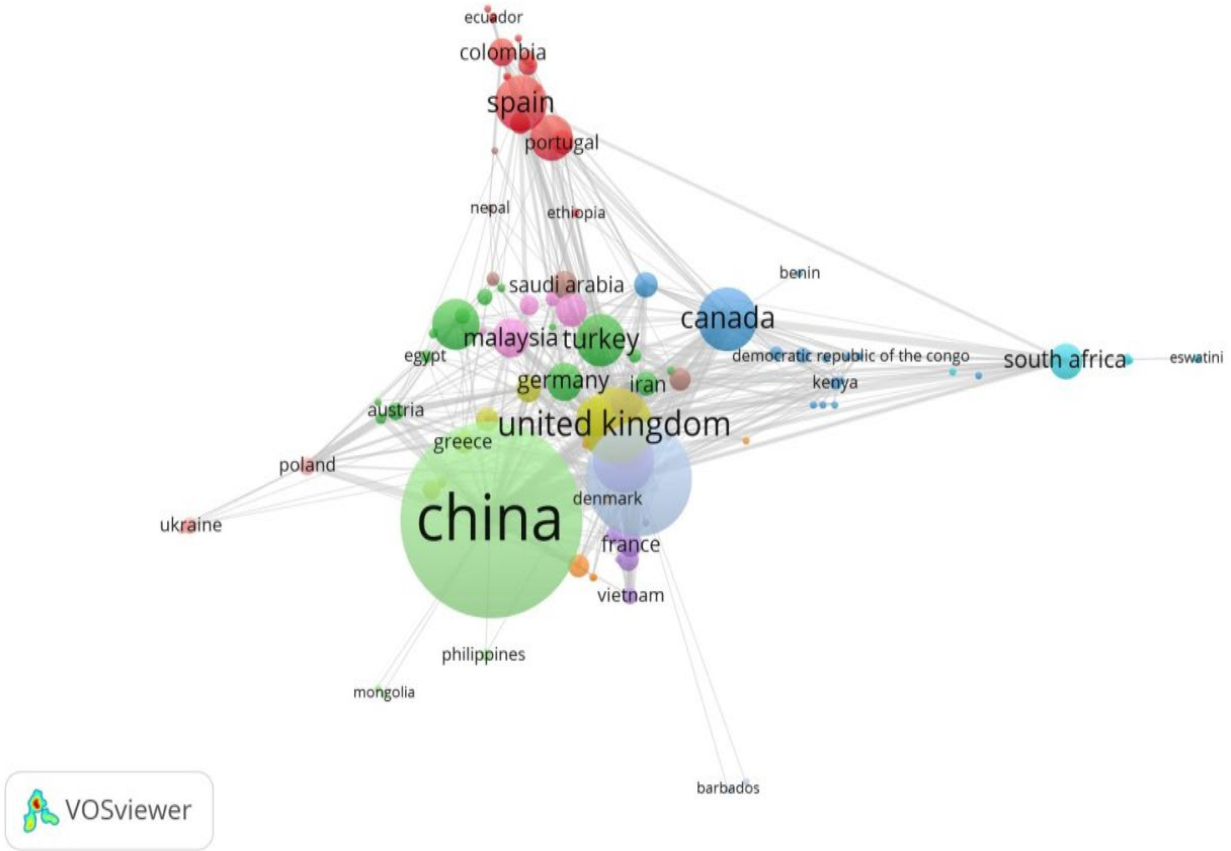


Fig. 4 Network visualization map of country analysis

F. Countries with at least in 20 Publications

Table VI presents the findings of a bibliometric analysis conducted during the research period, focusing on authors from countries with a minimum of 20 publications. Notably, China emerged as the leading contributor with 606 papers and 5148 citations.

The United States followed closely with 250 papers and 5178 citations, while the UK contributed 128 papers with 2760 citations. Australia's contribution consisted of 102 papers and 1581 citations. Figure 4 showcases network overlay visualizations that depict the co-authorship patterns among these countries.

G. Contributions of Institutions

The Vosviewer software is utilized in the bibliometric approach to analyse the Contributions of Institutions. During the research period, the top 22 institutions all had approximately 15 papers distributed for bibliometric analysis (Table VII). Leading the list was An-najah national university with 63 publications, 2082 references, and Total link strength of 33.

Following closely were Beijing university of Chinese medicine with 43 publications and 475 references, and the China academy of Chinese medical sciences with 28 publications and 119 references. Their Total link strengths were 108 and 46 respectively (Figures 5 and Table VII).

TABLE VI COUNTRIES WITH A MINIMUM PRODUCTIVITY OF 20 DOCUMENTS ON THE BIBLIOMETRIC ANALYSIS

Rank	Country	Documents	Citations
1	China	606	5148
2	United states	250	5178
3	United kingdom	128	2760
4	Australia	102	1581
5	Canada	94	1593
6	Spain	77	931
7	Turkey	68	637
8	India	67	1046
9	Palestinian territory	64	2085
10	Brazil	54	466
11	Malaysia	44	737
12	Italy	43	1053
13	Germany	40	765
14	South africa	36	478
15	Taiwan	35	347
16	South korea	33	344
17	Colombia	25	419
18	Saudi arabia	24	428
19	Netherlands	23	776
20	France	21	220
21	Switzerland	21	731
22	Iran	20	263
23	Ireland	20	363

TABLE VII INSTITUTIONS AND ORGANIZATIONS WITH A MINIMUM PRODUCTIVITY OF 15 DOCUMENTS ON THE BIBLIOMETRIC ANALYSIS

Rank	Organization	Documents	Citations	Total Link Strength
1	An-najah national university	63	2082	33
2	Beijing university of chinese medicine	43	475	108
3	China academy of chinese medical sciences	28	119	46
4	Chinese academy of medical sciences & peking union medical college	27	141	61
5	Central south university	25	124	59
6	Mcmaster university	24	192	58
7	Sichuan university	24	118	33
8	Peking university	22	230	79
9	West china hospital of sichuan university	21	72	29
10	Harvard university	20	1033	117
11	Shanghai jiao tong university	20	284	69
12	University of toronto	19	212	43
13	Lanzhou university	18	309	70
14	Johns hopkins university	16	306	71
15	Wuhan university	16	309	38
16	China medical university	15	312	29
17	Huazhong university of science and technology	15	142	22
18	Monash university	15	200	42
19	National university of singapore	15	231	81
20	The university of sydney	15	373	35
21	Universiti sains malaysia	15	401	25
22	Zhejiang university	15	311	37

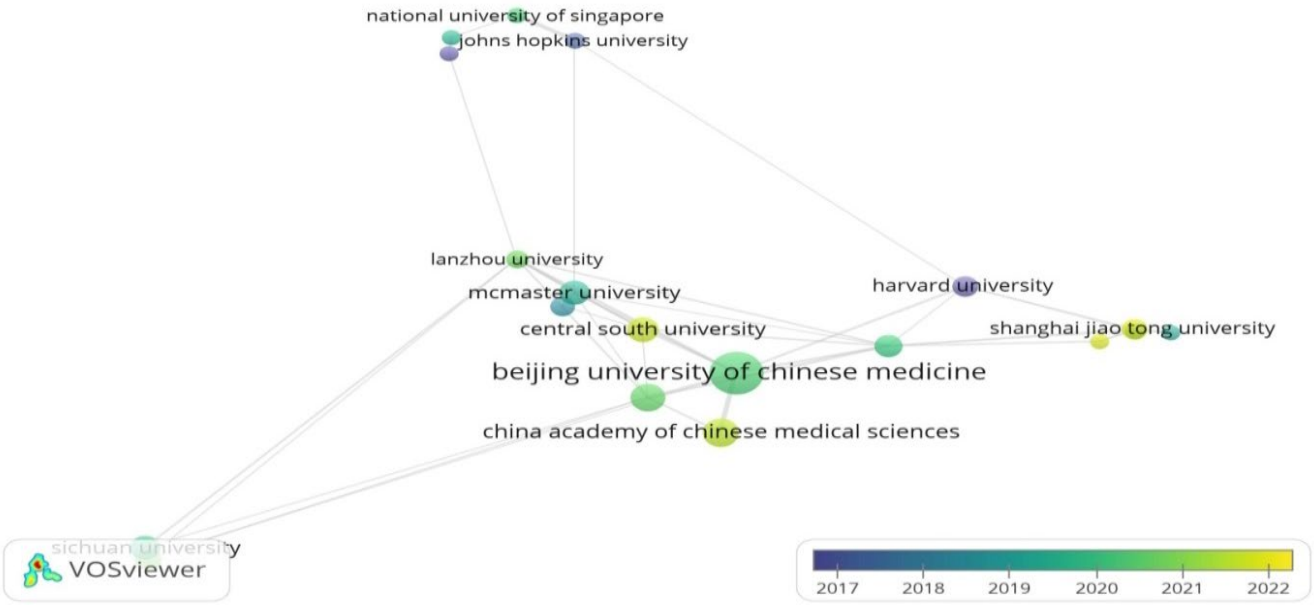


Fig. 5 Network visualization map of institutions and organizations analysis

VI. FINDINGS AND CONCLUSION

This article provides a comprehensive overview of bibliometrics and bibliometric analysis in the health science category. The study analyzed 2,011 documents from the Dimensions AI database and found a steady increase until 2017, followed by tremendous growth since 2018. The research predicts a promising future for this sector. Chinese researchers are the most prolific globally, with the United States and the UK following closely behind. Bibliometric analysis is achieved using VOSviewer software, employing co-occurrence, co-authorship, and co-citation analysis in the bibliometric approach. Additionally, the article spotlights the finest journals, prolific authors with their highly cited articles, nations, and their most successful academic institutions from the Dimensions AI database.

REFERENCES

[1] Bahuguna, P. C., Srivastava, R., & Tiwari, S. (2023). Two-decade journey of green human resource management research: A bibliometric analysis. *Benchmarking: An International Journal, 30*(2), 585-602.

[2] Batra, S., Saini, M., & Yadav, M. (2023). Mapping the intellectual structure of corporate governance and ownership structure: A bibliometric analysis. *International Journal of Law and Management, 65*(4), 333-353.

[3] Bibliometrics. (n.d.). In Wikipedia. Retrieved November 16, 2022, from https://en.wikipedia.org/wiki/Bibliometrics.

[4] Bibliometrics. (n.d.). *Definitions.net*. Retrieved November 23, 2023, from https://www.definitions.net/definition/Bibliometrics

[5] Bizel, G. (2023). A bibliometric analysis: Metaverse in education concept. *Journal of Metaverse, 3*(2), 133-143.

[6] Chane, M., & Atwal, H. (2023). Entrepreneurial ecosystem of micro and small enterprises: A bibliometric analysis. *IJIE, 2*(1), 1-9. https://doi.org/10.56502/IJIE2010001.

[7] Chowdhry, A., Kapoor, P., Bhargava, D., & Bagga, D. K. (2023). Mapping of Journal of Oral and Maxillofacial Pathology from 2011 to 2022: A VOSviewer-based bibliometric visualization. *Journal of Oral and Maxillofacial Pathology: JOMFP, 27*(1), 204.

[8] Dimensions AI Database. (n.d.). Retrieved from https://www.dimensions.ai/.

[9] Dulla, N., Mishra, S., & Swain, S. C. (2021). Global exploration on bibliometric research articles: A bibliometric analysis. *Library Philosophy and Practice, 1*, 1-26.

[10] García-Sánchez, P., Mora, A. M., Castillo, P. A., & Pérez, I. J. (2019). A bibliometric study of the research area of videogames using Dimensions.ai database. *Procedia Computer Science, 162*, 737-744.

[11] Mehri, S., Ammar, J., Sedighi, M., & Jalalimanesh, A. (2014). Mapping research trends in the field of knowledge management. *Malaysian Journal of Library & Information Science, 19*(1).

[12] Khoshroo, M., & Talari, M. (2023). Scientific mapping of digital transformation strategy research studies in Industry 4.0: A bibliometric analysis. *Nankai Business Review International, 14*(1), 3-34.

[13] Mulla, K. R., & Chandrashekara, M. (2010). Mapping of industrial and trade literature (2002-2006): A bibliometric study. *International Journal of Library Science, 3*(J11)(2011), 26, 40.

[14] Pritchard, A. (1969). Statistical bibliography or bibliometrics. *Journal of Documentation, 25*, 348. https://doi.org/10.1108/eb026482

[15] Sharma, P., & Sharma, S. (2023). Mapping the intellectual structure of mobile payment research: A bibliometric analysis. *SAGE Open, 13*(3), 21582440231200329.

[16] Sharma, P., Rohatgi, S., & Jasuja, D. (2023). Scientific mapping of gravity model of international trade literature: A bibliometric analysis. *Journal of Scientometric Research, 11*(3), 447-457. https://doi.org/10.5530/jscires.11.3.48.

[17] Subramanian, S., Billsberry, J., & Barrett, M. (2023). A bibliometric analysis of person-organization fit research: Significant features and contemporary trends. *Management Review Quarterly, 73*(4), 1971-1999.

[18] Suharso, P., Setyowati, L., & Arifah, M. N. (2021). Bibliometric analysis related to mathematical research through database Dimensions. In *Journal of Physics: Conference Series, 1776*(1), 012055, IOP Publishing.

[19] Verma, P., & Ghosh, P. K. (2023). The economics of forest carbon sequestration: A bibliometric analysis. *Environment, Development and Sustainability*, 1-31.