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# Bibliometric Study of Social Media Analysis in Healthcare

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## Abstract

This study aims to conduct bibliometric research on social media analysis in the healthcare domain, identifying key trends, influential publications, authors, and thematic developments over time. Investigating academic research indexed in Scopus databases of the subject area from 2019 to 2024 reveals that social media is actively utilized for healthcare purposes, including disease tracking, treatment, health communication, and patient experiences. The bibliometric technique uses the Bibliometric R package and VOSviewer to visualize co-authorship networks, keyword co-occurrences, citation patterns, and the geographical distribution of research outputs. Results obtained in this study show that more studies were conducted after 2015, with the COVID-19 pandemic acting as a key factor for increased research activity. The United States, the United Kingdom, and China emerged as the leading contributors, while journals in health informatics and public health became the dominant publications in the field. The most popular keywords identified are "social media," "COVID-19," "Internet," "human," and "public health." The analysis in the study offers an inclusive overview of the progression and intellectual structure of social media analysis in healthcare. It hence provides researchers, practitioners, and policymakers with valuable knowledge for future guidance on digital data and public health.

**Keywords**: *Digital Data, Healthcare, Public Health, Social Media.*

## INTRODUCTION

The proliferation of social media platforms has significantly reshaped the landscape of communication, providing users with unprecedented opportunities to share personal experiences, access information, and engage in discourse around health-related issues. This digital transformation has opened new avenues for public health surveillance, patient engagement, and health communication. Platforms such as Twitter, Facebook, Instagram, YouTube, and TikTok now serve as rich sources of real-time health data, offering insights into public sentiment, misinformation, behavioral trends, and health policy reactions (Aparicio-Martinez *et al*., 2019; Basch *et al*.,2022).

Among these platforms, Twitter has emerged as a prominent tool in healthcare research due to its real-time data accessibility. Researchers utilize tweets to track disease outbreaks, assess public sentiment towards health policies, identify vaccine hesitancy, and detect the spread of health-related misinformation (Capurro *et al*., 2014; Charles-Smith *et al*., 2015; Chen *et al*., 2019; Kim, Lee, & Park, 2012). Hashtag and geolocation analyses have been particularly useful during public health crises such as the COVID-19 pandemic. Similarly, Facebook has been instrumental in exploring patient support networks, chronic illness communities, and public attitudes through group interactions and comment analyses, though privacy constraints limit large-scale research (Guidry *et al*., 2021; Jim *et al*., 2024; Li *et al*., 2024).

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Visual-centric platforms like Instagram and TikTok offer unique insights into health communication through images and short-form videos, respectively. Instagram studies often focus on body image, nutrition, and fitness trends, while TikTok research has recently gained momentum in analyzing viral health content, especially among younger demographics (Lo *et al*., 2020; Lu *et al*., 2017; Orr *et al*., 2016; Osman *et al.*, 2022; Palemba & Nurmandi, 2023; Rajput, 2020 & Stephen *et al.*, 2024). YouTube remains an essential platform for analyzing long-form health education content and understanding the dissemination of medical information and misinformation (Lu *et al.*, 2017; Orr *et al.*, 2016).

In response to the rapid expansion of health-related discourse on social media, bibliometric analyses have become valuable for synthesizing research trends, mapping intellectual structures, and identifying influential publications and emerging topics. Previous bibliometric studies have examined general trends in digital health or specific topics such as misinformation or mental health discourse on social platforms (Xin & Lim, 2024; Yeung *et al.*, 2022). However, these studies often lack a comprehensive, cross-platform view or fail to capture the post-COVID shifts in research focus and thematic evolution.

This study addresses that gap by presenting a systematic bibliometric analysis of social media research in healthcare, with particular attention to post-pandemic developments. Unlike earlier reviews that focused on singular platforms or narrow topics, this paper offers a holistic, cross-platform examination that identifies key publication trends, influential authors and institutions, thematic clusters, and underexplored areas.

It also highlights the convergence of disciplines (e.g., public health, computer science, and communication studies) and the evolution of analytical techniques such as sentiment analysis and natural language processing.

The primary contributions of this study are as follows. First, it maps the longitudinal evolution of healthcare-related research on social media, with a particular focus on shifts that occurred in response to global health crises such as the COVID-19 pandemic. Second, it identifies emerging research themes and frontiers, including the rise of studies on misinformation, mental health, and algorithm-driven health communication.

Third, it reveals critical gaps in existing literature, such as the underrepresentation of non-Western contexts, marginalized populations, and newer platforms like TikTok. Finally, the study provides strategic guidance for researchers, healthcare practitioners, and policymakers aiming to incorporate social media analytics into evidence-based healthcare planning and communication strategies.

This study distinguishes itself from previous bibliometric analyses by offering a cross-platform, post-pandemic perspective that not only maps research trends but also uncovers emerging themes, methodological shifts, and critical gaps in representation across global healthcare contexts.

## METHODOLOGY

The methodology provides a structured approach to analyze the research output quantitatively. In the context of social media analysis in healthcare, this section outlines the procedures used to collect, screen, and analyze relevant scholarly literature. The following methodological steps were followed:

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### Data Selection

To get all relevant publications, the data was obtained from established and multidisciplinary databases that cover a great variety of peer-reviewed literature from many fields. Scopus is the primary database because of its reliability, breadth of coverage, and compatibility with bibliometric software tools. Boolean operators and keywords were used to form an organized and repeatable search process. The search terms were formulated to capture articles that focus on both social media and healthcare. The search string used is as follows: ("social media" OR "Twitter" OR "Facebook" OR "Reddit" OR "Instagram") AND ("healthcare" OR "public health" OR "health communication" OR "disease surveillance") AND ("analysis" OR "mining" OR "monitoring"). The search was restricted to the period between 2009 and 2024 to reflect the rise of social media platforms in the health research domain. Only English-language articles were included, with document types, articles, reviews, and conference papers.

### Data Extraction

To ensure relevance and quality, the studies that analyze social media data in the context of healthcare, peer-reviewed journal articles, conference papers, and reviews, as well as articles that employ quantitative, qualitative, or mixed methods for social media data analysis, were included. Meanwhile, articles that are not related to healthcare, non-English publications, and non-peer-reviewed or grey literature were excluded. Relevant metadata from the selected articles was extracted and exported into a CSV format. The extracted information includes Author(s), Title, Abstract, Keywords, Journal name, Year of publication, Citations, Country, and institution of the authors, among others.

### Bibliometric Tools and Analysis

Bibliometric (R Package) was used for comprehensive bibliometric and scientometric analysis, including annual scientific production, source growth, and thematic mapping, while Microsoft Excel was used to support basic data cleaning and frequency analysis. The main types of analyses conducted included performance analysis to identify the most prolific authors, journals, institutions, and countries. Science Mapping - *Co-citation analysis* to detect clusters of frequently cited references, c*o-authorship analysis* to identify collaborative networks, and *Keyword co-occurrence* to explore research trends and thematic evolution. Temporal trends analysis was also carried out to track publication growth, keyword evolution, and citation patterns over time.

### Quality Control and Data Validation

To ensure the reliability of findings, duplicate entries were removed, and abstracts and full texts were screened to confirm thematic relevance. As a bibliometric study based on publicly available data, no human subjects were involved, and therefore, ethical approval was not required. However, all efforts were made to ensure responsible citation and adherence to academic integrity standards

## RESULTS AND DISCUSSIONS

### Dataset Overview

Between 2009 and 2024, a total of 6,367 documents were published across 1,860 sources, including journals and books. This body of literature has experienced a high annual growth rate of 48.5%, indicating rapid expansion. The average age of documents is 3.86 years, reflecting

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the field's recent and active development. On average, each document has received 22.51 citations, contributing to a cumulative total of 259,528 references as shown in Figure 1. The dataset contains a wide range of content, with 14,889 Keywords Plus (ID) and 11,028 Author's Keywords (DE), highlighting diverse research themes. In terms of authorship, 29,853 authors contributed, with 267 responsible for single-authored works. There are 278 single-authored documents overall, and the collaboration rate is high, with an average of 5.93 co-authors per document and 28.55% involving international collaboration.

Regarding document types, the majority are articles (5,587), followed by reviews (592) and conference papers (188). This distribution suggests a focus on peer-reviewed journal contributions, supported by a substantial number of reviews, indicating a mature and synthesizing research field. Overall, the data portrays a dynamic, collaborative, and rapidly growing academic landscape with strong global engagement.

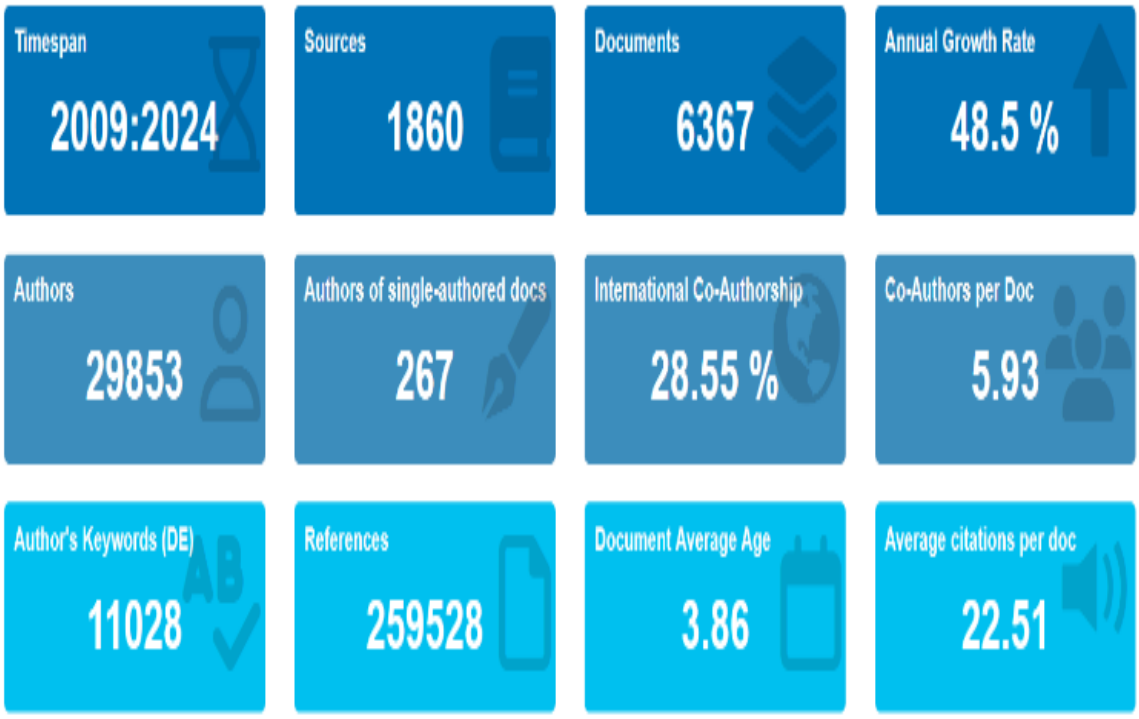


**Figure 1: Data overview**

## Annual Scientific Production

Annual scientific production refers to the number of scholarly documents, such as articles, reviews, or papers, published within a specific year. It indicates the research output and activity level over time, helping to track growth, trends, and the evolution of scientific knowledge. Figure 2 shows the annual scientific production from 2009 to 2024 shows a significant upward trend. Starting with just 3 articles in 2009, output remained low until 2012 but began rising steadily afterwards.

A sharp increase is evident from 2015 onwards, peaking at 1,162 articles in 2022. The surge between 2019 and 2021, particularly a jump from 641 in 2020 to 1,092 in 2021, reflects rapid growth in research activity. Though slightly fluctuating after 2022, annual output has remained above 1,100 articles. Overall, the data demonstrates a strong and accelerating trajectory in scientific productivity over the 16 years.

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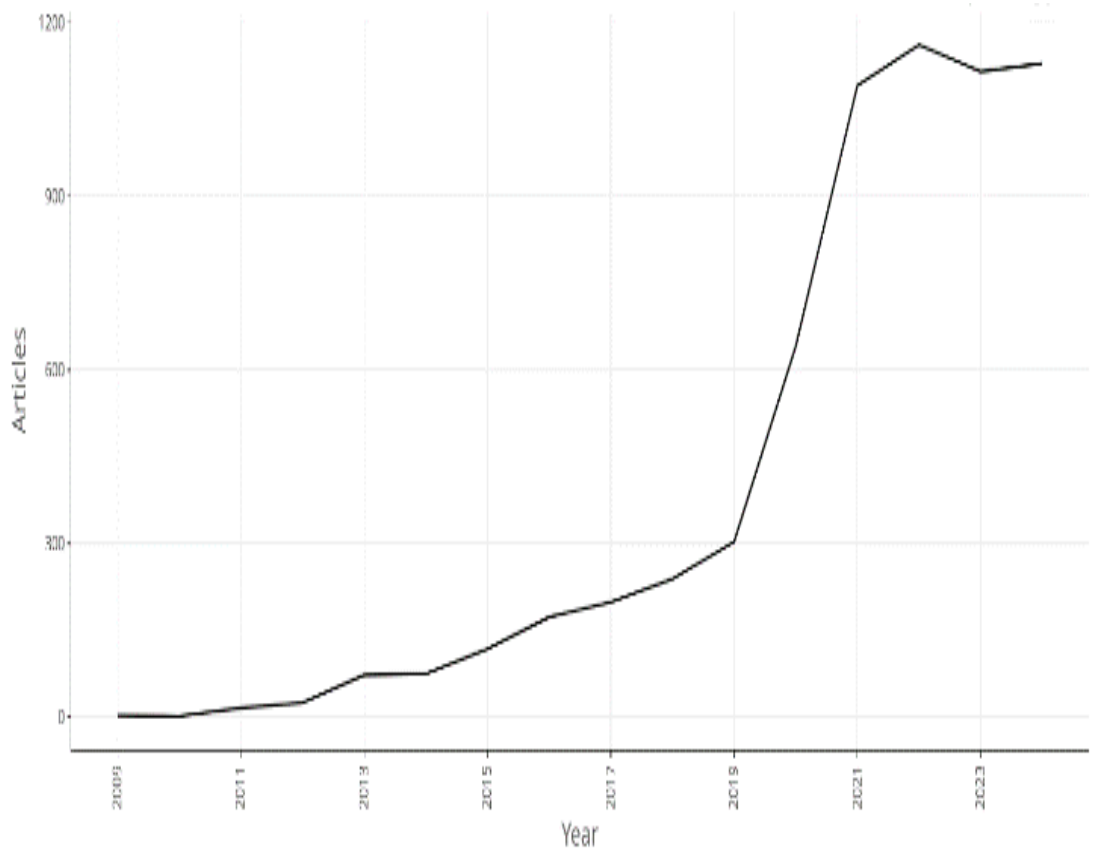


**Figure 2: Annual scientific production**

## Performance analysis

Performance analysis highlights the most prolific authors, journals, institutions, and countries contributing to the field. It identifies leading researchers, high-impact publication venues, top-performing universities or organizations, and countries with the highest output. This analysis helps reveal key contributors, collaboration networks, and global research trends shaping the scientific landscape. The benefit of performance analysis is that it identifies key contributors, influential journals, leading institutions, and productive countries, helping researchers, policymakers, and funding bodies understand who drives the field. It guides collaboration, resource allocation, and strategic planning, and helps scholars target high-impact venues and partnerships to maximize research impact

## The most Relevant Authors

Figure 3 shows the 10 most relevant authors, based on article count and fractionalized contributions, which are central to the field's research output. **WANG Y** leads with 58 articles and a fractionalized contribution of 12.15, indicating frequent collaboration. **ZHANG Y** and **LI Y** follow with 39 and 37 articles, respectively. Other key contributors include **LI Z**, **ZHANG J**, and **WANG X**, each with over 30 publications. Authors like **LI J**, **ZHANG X**, **LI X**, and **CHEN Y** also show strong productivity and involvement. These authors represent a significant scholarly influence, shaping the field through both volume and collaborative impact.

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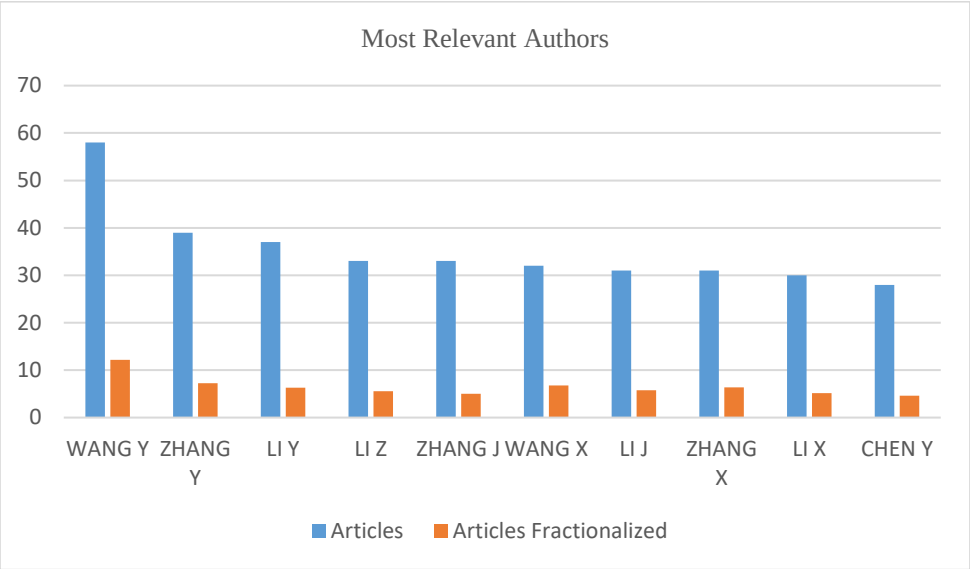


**Figure 3: Most relevant Authors**

## The Most Globally Cited Journals

Figure 4 shows the 10 most-cited journals that reflect the most impactful research in the field. Leading the list is Nature Human Behaviour, with Bavel et al. (2020) receiving 3,543 citations, highlighting its influence on human behaviour studies. The Journal of Medical Internet Research appears three times, with articles by Moorhead, Eysenbach, and Chou collectively amassing over 3,400 citations, showcasing its central role in digital health research. Social Science & Medicine contributes two highly cited papers, indicating a strong interest in the social dimensions of health. Other influential journals include the American Journal of Public Health, Journal of Community Health, Health Informatics Journal, and the American Journal of Tropical Medicine and Hygiene.

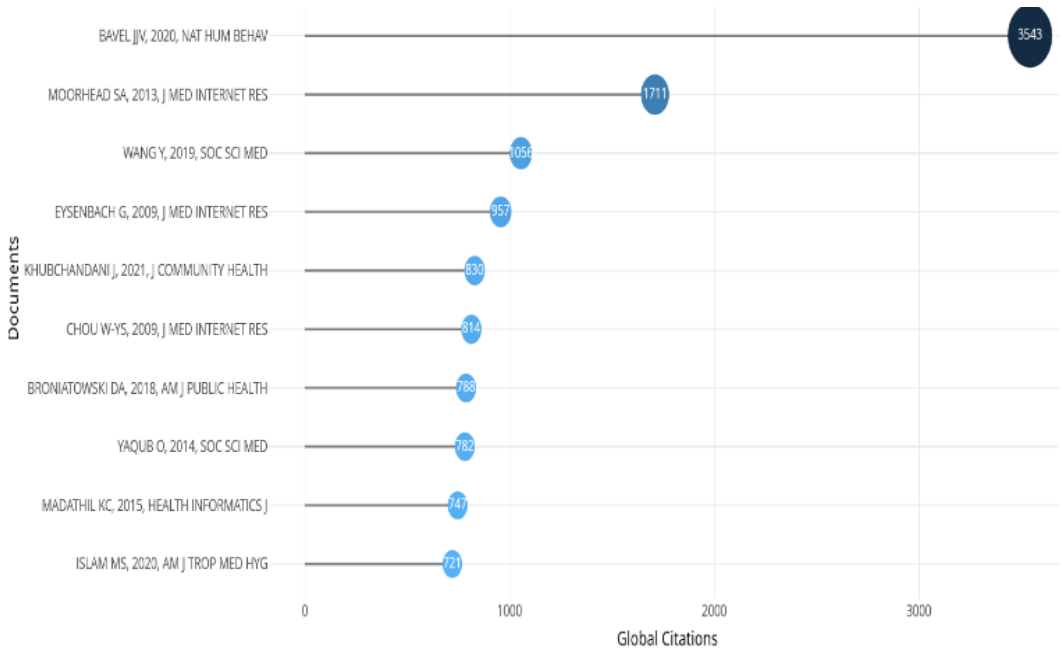


**Figure 4: The Most Cited Journals**

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**The most Cited Affiliation**

Figure 5 is the 10 most prolific institutions driving research output, including top global universities with significant contributions. The University of California leads with 298 publications, followed by University College London (259) and the University of Toronto (220).

The University of Pennsylvania (218) and Monash University (158) also show strong productivity. Other key contributors are the University of Southern California (150), the University of Florida (143), the University of Oxford (139), the University of Sydney (130), and the University of South Carolina (129).

These institutions represent major research hubs, fostering high-impact studies and international collaborations across diverse scientific fields

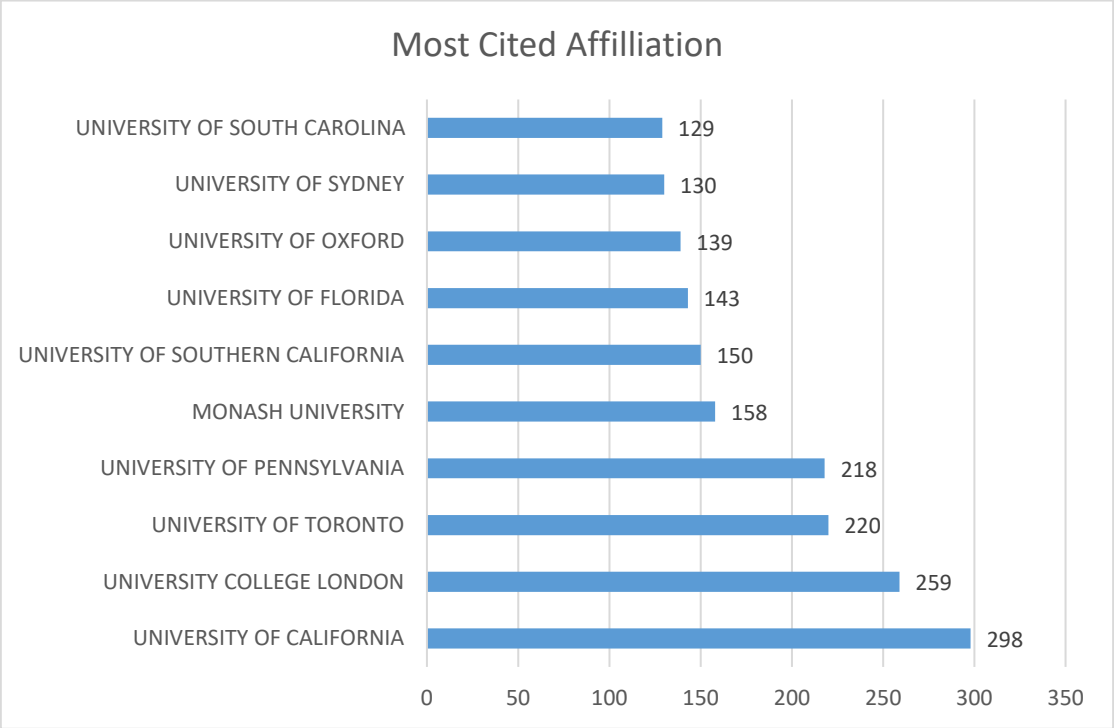


**Figure 5: Most cited Affiliation**

**The Most Cited Countries**

The 10 most cited countries highlight global leaders in impactful research as shown in Figure 5. The USA ranks first with 48,014 total citations and an average of 28.6 citations per article, demonstrating both volume and influence.

The United Kingdom follows with 14,820 citations, while China (8,921) and Canada (7,964) also contribute significantly. Australia (6,964) and Italy, despite fewer publications, achieved high average citations (29.8). Spain and Ireland stand out for citation quality, with Ireland leading in average citations per article (43.5).

Saudi Arabia and Germany also show strong research engagement. These figures reflect the countries' roles in shaping scientific discourse globally.

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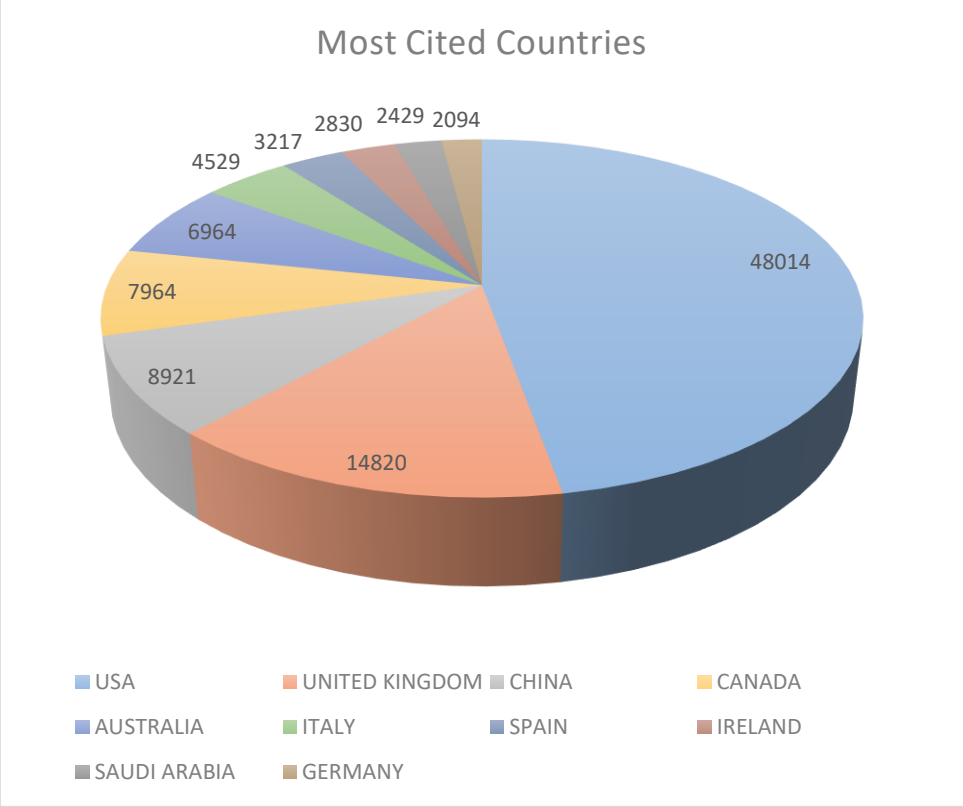


**Figure 6: Most Cited Countries**

## Science Mapping

Scientific mapping visualizes relationships among authors, keywords, and publications to reveal research trends, influential works, and collaboration networks. This analysis will help identify knowledge structures and emerging fields, supporting research evaluation, strategic planning, and informed decision-making in this area of study.

## Co-citation analysis

Co-citation analysis reveals influential authors across thematic clusters. In Cluster 1, Braun V dominates with the highest betweenness (34.098), suggesting a key bridging role in qualitative research networks, complemented by Creswell JW, notable for conceptual influence. Tong A, Harris PA shows lower centrality, indicating peripheral but connected contributions.

Cluster 2, centred on vaccine hesitancy, features Larson HJ with high betweenness (8.651) and closeness (0.016), reflecting strategic influence. MacDonald NE and Dube E follow closely in PageRank and connectivity.

Blei DM in Cluster 3, likely tied to topic modelling, holds moderate betweenness, denoting cross-disciplinary relevance in methodological frameworks.

This co-citation analysis helps to understand the intellectual structure and influence of authors within academic literature based on how frequently they are cited together.

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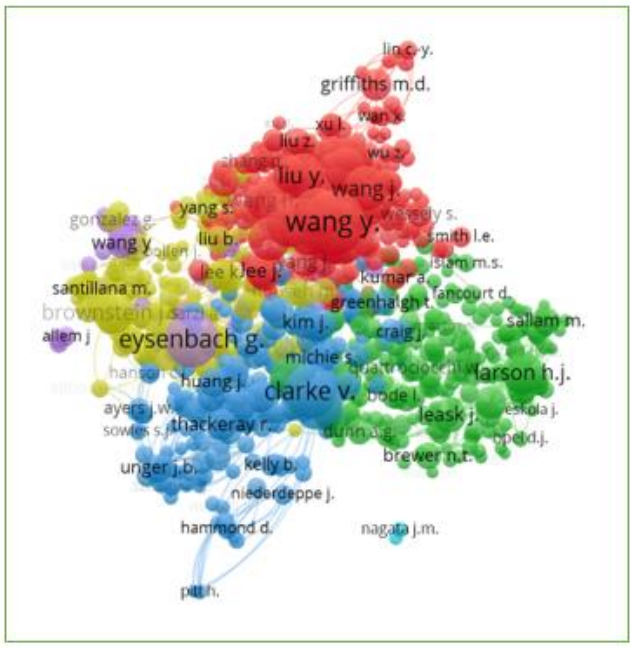


**Figure 7: Co-citation Network/Chart by Authors**

## Co-authorship Analysis

A co-authorship analysis using network metrics in Figure 8 reveals key contributors in a scholarly community. All nodes belong to Cluster 1, indicating a tightly connected group. Wang Y exhibits the highest betweenness centrality (319.942), suggesting a crucial role in connecting authors. Closeness scores are relatively uniform, indicating similar access to others in the network. PageRank values highlight Wang Y (0.026) as the most influential, followed by Wang X and Li Y. Authors like Liu X and Wang H, with low betweenness and PageRank, are less central. Overall, Wang Y is a pivotal figure in this co-authorship network, bridging and influencing collaborations.

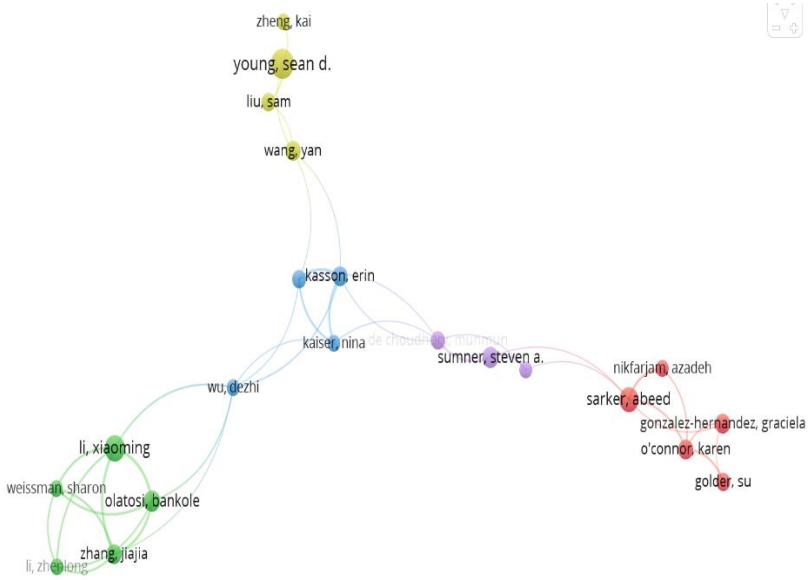


**Figure 8: Co-authorship analysis**

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**Keyword co-occurrence**

An analysis of keyword occurrences reveals dominant themes in recent research literature. Social media tops the list with 7,665 mentions, indicating its central role in current studies, likely driven by its influence during global events like the COVID-19 pandemic. Keywords like human, female, male, and adult reflect a focus on demographic and population-based research. The frequent appearance of terms such as public health coronavirus disease 2019, COVID-19, and pandemic underscores the lasting impact of the global health crisis on academic inquiry. Age-specific terms like adolescents, young adults, and middle-aged suggest an interest in health outcomes across life stages. Research design and methodology are also prominent, with controlled study, cross-sectional study, and qualitative research frequently cited. Overall, the data points to a strong emphasis on health-related topics, population studies, and digital media's role in public discourse and behavior.


**Figure 9: Keyword co-occurrence**

**Trends Topics analysis**

Trend topic analysis from 2011 to 2024 reveals a shift from clinical and procedural themes to digital health and data-driven discussions. Early in the timeline, topics like utilization review, MLCS, and MLown (2011–2013) dominated, reflecting a focus on healthcare systems and management. Between 2013 and 2016, consumer participation, advertising, and computer interface emerged, indicating a growing interest in user engagement and digital interfaces.

By 2015, there was a clear surge in public health topics like Ebola, influenza, and drug interactions, aligning with global health crises. From 2016 onward, there has been significant attention on tech-driven themes such as consumer health information (138 mentions), blogging (77), mobile phones, and medical information systems.

The most notable spike is on the internet (1155 mentions) and procedures (727) from 2017–2022, underscoring the central role of digital infrastructure and standardization in modern healthcare. This evolution highlights the growing interplay between technology and patient-centered care.

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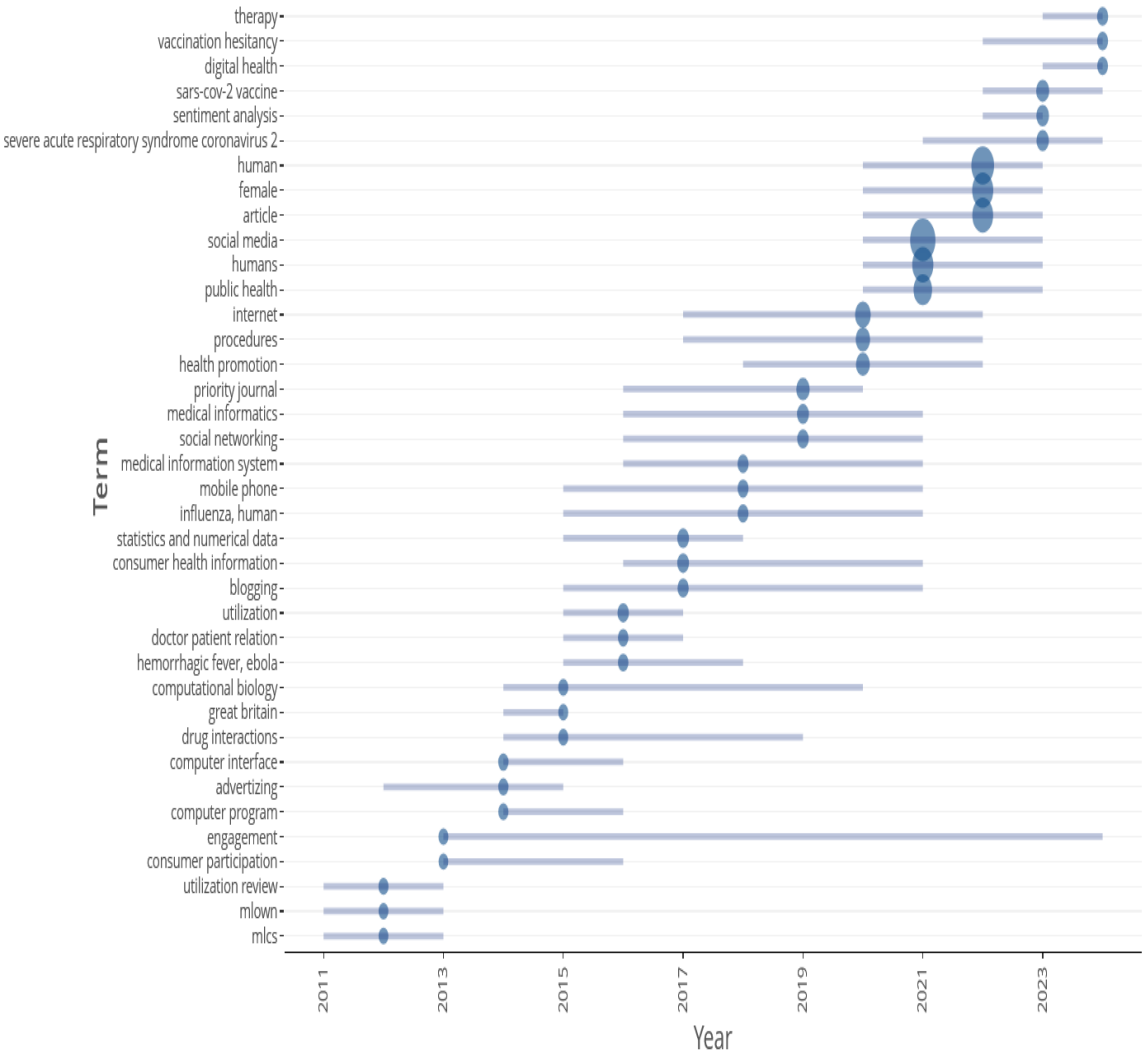


**Figure 10: Temporal trends analysis**

## SUMMARY OF DISCUSSION

It is clear from the results of this analysis that knowledge of social media analysis in healthcare has been developing and is now structured in a particular way. Looking at the use of key terms, references cited, and how researchers join forces, the study explains the move from basic social media health promotion and awareness to more advanced roles such as sentiment analysis, monitoring wrong information, interacting with patients, and real-time health observation. Because of this process, scholars observe the birth of new approaches such as using AI and machine learning to gather insights from social media data for public health.

Bibliometric mapping also organizes the key ideas supporting the field by mentioning key authors, significant works, and major themes. This helps researchers identify the ways research ideas spread and the theories that have had a strong influence on the field. It was found that research looking at social media in healthcare in low-resource or non-English contexts is underrepresented. From simple communication solutions, the field now focuses more on analytics-based strategies that use predictive modeling and monitoring of behavior on social media such as Twitter, Facebook, YouTube, and TikTok. Analyses of research collaboration networks highlight that the main progress in the field is linked to top universities, mainly in the

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U.S. and Europe. It shows the benefit of working together in making healthcare-related social media studies more diverse. Even so, there is not much international cooperation, mainly between countries in Africa and Asia, so there remains a theoretical and practical space that should be filled to boost exchanges of knowledge globally and new research perspectives.

The thematic evolution of the field reflects increasing specialization and complexity, with topics moving from general health communication to focused themes such as COVID-19 discourse, mental health awareness, digital epidemiology, and patient-provider interactions. This interconnected research landscape highlights the practical relevance of social media in improving healthcare delivery, public health monitoring, and patient outcomes. The assessment of institutions and countries in this field shows the U.S. as the main leader in shaping it. Partnering more with these groups could spread knowledge around the world, particularly on AI tasks in healthcare and managing false information. There is a weak record of Atlantic cooperation according to bibliometric data, showing a clear need for strategic partnerships across countries.

In real terms, this analysis backs up informed choices in health communication, policy creation, and planning of social media-led health projects. Stakeholders may access credible evidence, relevant technologies, and suitable information to examine how the public feels, behaves, and the impact of digital health campaigns. In summary, the research traces the progress of information in this area and points out major themes, acting as a guide for future projects, cooperation, and policies dealing with social media in healthcare.

## CONCLUSION

The study gives a broad description of the use of social media analysis in healthcare. According to the findings, the number of studies related to mental health in infectious diseases have grown fast, and this happened most notably during the COVID-19 pandemic. More studies about social media are a sign that it is now widely accepted as useful for live health tracking, public health reporting, and research involving patients. Many contributions to this area come from important institutions and authors in the United States, the United Kingdom, China, and Canada, which demonstrates global collaboration in the field. Coverage in leading journals links health informatics, public health, and data science, showing a multidisciplinary convergence of expertise.

Thematic analysis shows that key research areas include disease outbreak monitoring, mental health, misinformation detection, sentiment analysis, and the application of artificial intelligence techniques such as machine learning and natural language processing. The co-authorship and keyword co-occurrence networks reflect a maturing and increasingly interconnected research community. Despite the promising findings, this study also acknowledges several limitations, including potential language and database biases, and the evolving nature of social media platforms and healthcare challenges. These factors underscore the need for continuous updates to bibliometric analyses as the field progresses.

In conclusion, social media analysis in healthcare is a progressing and expanding area of research, with real-time insights and new opportunities for public health intervention, policy development, and patient care. The bibliometric technique employed in this study has mapped evolution, key contributors, and emerging trends in this interdisciplinary field. These understandings will provide future research directions, encourage international collaboration, and the inclusion of social media analytics in modern health services. Future research may

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centre around AI-driven analytics, data privacy, platform-specific behaviours, and policy development for digital health governance. As the landscape of health communication continues to digitize, social media analysis will remain a vital tool for understanding and improving health outcomes worldwide.

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