Traditional Medicine in Context: Analyzing Trends and Gaps through Bibliometric Methods from 1946 to 2024

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Abstract

Traditional medicine has played a crucial role in global healthcare systems, particularly in regions with limited access to modern medicine. This study employs bibliometric analysis to explore research trends, key contributors, and thematic developments in Traditional Medicine from 1946 to 2024. Using Scopus as the primary database and Bibliometrix for analysis, the study systematically examines 2,145 articles within Social Sciences and Arts and Humanities, highlighting the interdisciplinary nature of the field. The findings indicate a steady growth in research output, with the USA, India, and Brazil as leading contributors, and Nepal, Germany, and Pakistan exhibiting high citation impacts. Key research themes include medicinal plants, ethnobotany, and cultural perspectives, with emerging topics such as mental health and healthcare integration. While this study provides valuable insights, limitations include language restrictions and dataset scope. Future research should explore non-English literature and qualitative approaches to enhance understanding. This study contributes to a deeper comprehension of Traditional Medicine's role in contemporary healthcare and cultural preservation.

Keywords: Traditional Medicine, Bibliometric Analysis, Ethnobotany, Healthcare Integration, Cultural Heritage.

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1. Introduction

Traditional medicine has been a key part of healthcare systems worldwide, especially in regions where modern medicine is less accessible (World Health Organization, 2019). Many people, particularly in Africa and Asia, rely on traditional medicine as their main source of healthcare. Traditional healing methods have been passed down through generations and remain an important part of cultural heritage. In many cases, these practices provide effective treatments for various illnesses, including chronic diseases and neurological disorders (Maiga et al., 2024). Despite its significance, traditional medicine is often overlooked in mainstream medical research, making it necessary to explore its impact systematically.

Traditional medicine, as defined by the World Health Organization, encompasses the cumulative knowledge, skills, and practices rooted in cultural theories, beliefs, and experiences, whether scientifically explainable or not, that are used for health maintenance and the treatment of illnesses. This field reflects a deep connection to cultural heritage and varies widely in its forms, ranging from systems supported by extensive literature, such as those of China, India, and Africa, to orally transmitted knowledge preserved through generations. Despite advancements in modern healthcare, traditional medicine remains a primary source of health care for many populations globally, underscoring its enduring relevance. According to (Che et al., 2024) traditional medicine continues to play a pivotal role in pharmacognosy, with systems like Chinese, Ayurvedic, and African medicine contributing significantly to global health practices. When adopted outside of its traditional culture, traditional medicine is often referred to as "complementary and alternative medicine," highlighting its adaptability and significance in addressing diverse health needs. This article explores the critical role of traditional medicine from a multidisciplinary perspective, focusing on its social, cultural, and healthcare

dimensions, while emphasizing its potential for integration with modern health systems and its contribution to global health innovation.

The term "Traditional Medicine" is widely used in research and policy discussions. WHO defines it as "the sum of knowledge, skills, and practices based on indigenous theories, beliefs, and experiences used to maintain health, prevent, diagnose, and treat physical and mental illnesses" (WHO, 2019). Many studies have used this keyword to explore trends in healthcare and public health policy (Wu et al., 2025). In bibliometric research, selecting the right keyword is essential because it determines the scope and accuracy of data collection (Mirzaeian et al., 2025). The term "Traditional Medicine" was chosen for this study because it is recognized across different cultural and academic contexts (Wale et al., 2025). It also allows researchers to track changes in how traditional medicine is studied and applied globally (Wang et al., 2022).

Bibliometric analysis is a powerful quantitative method that employs statistical techniques to evaluate publications within the field of Traditional Medicine, offering insights into its characteristics, development, and structure. By identifying influential publications, authors, journals, and research themes, bibliometric analysis allows for the systematic exploration of trends, geographical distributions, and collaborative networks in this domain (Aria & Cuccurullo, 2017). This study uses bibliometric tools such as RStudio® and the Biblioshiny app to generate and analyze bibliometric maps, focusing on core concepts like medicinal plants, ethnobotany, and cultural practices. These tools reveal emerging trends, highlight significant gaps, and track the interdisciplinary nature of Traditional Medicine research across the domains of Social Sciences and Arts and Humanities. The insights gained are critical for researchers, policymakers, and practitioners aiming to understand and enhance the integration of Traditional Medicine into global health systems and cultural preservation initiatives.

Traditional medicine is not only a scientific practice but also a deeply rooted cultural and social phenomenon. The decision to focus on Social Sciences and Arts and Humanities stems from the recognition that traditional medicine is shaped by historical traditions, societal norms, and evolving healthcare practices. In the field of sociology, traditional and complementary medicine is increasingly viewed as a socially patterned phenomenon influenced by cultural persistence, health system accessibility, and patient autonomy (Gale, 2014). Cultural persistence plays a crucial role in sustaining traditional medicine practices, as seen in the enduring use of herbal remedies across generations, even in societies where modern medical advancements are widespread (Costa-Font & Sato, 2024). Additionally, integrating arts and humanities into the study of traditional medicine provides insights into the philosophical, ethical, and humanistic dimensions of healthcare, enriching medical education and professional development (Al Azmeh & Du, 2018). By incorporating these perspectives, this study ensures a more holistic and contextualized understanding of traditional medicine and its evolving role in healthcare systems worldwide.

By employing Bibliometrix, a widely accepted software for bibliometric studies, this study examines how traditional medicine research has evolved over time. Bibliometric tools provide insights into the impact of traditional medicine on modern healthcare and highlight areas that need further exploration (Detthamrong, Chansanam, Li, Chaichuay & Laochankham, 2024). By applying bibliometric methods, this research aims to present a clear and structured analysis of traditional medicine's role in global health discussions.

Research Questions

1. How has the field of Traditional Medicine evolved in terms of research output and thematic focus within the domains of Social Sciences and Arts and Humanities over the past decades?
2. What are the key geographical regions, cultural contexts, and collaborative networks influencing the development of Traditional Medicine research?
3. How do specific bibliometric patterns, such as co-citation networks and keyword clusters, reveal the interdisciplinary nature of Traditional Medicine?
4. What are the emerging trends and potential gaps in the integration of Traditional Medicine with modern healthcare and cultural preservation efforts?

2. Methodology

This study employs bibliometric analysis as a systematic research methodology to explore academic literature related to Traditional Medicine within the contexts of Social Sciences and Arts and Humanities. Bibliometric analysis, a quantitative approach, provides an objective framework for evaluating and synthesizing scientific output, enabling the identification of trends, research gaps, and the intellectual structure of this interdisciplinary field (Donthu et al., 2021). This study applies performance analysis and science mapping techniques, following established methodologies (José de Oliveira et al., 2019; Oosthuizen and Pretorius, 2020; Čater and Zupic, 2015), to analyze key themes, relationships, and the evolution of research on Traditional Medicine.

Key bibliometric techniques employed include citation analysis, which assesses the influence of publications; co-citation analysis, which explores relationships between cited works; co-author analysis, which examines collaboration patterns; and co-word analysis, which maps thematic clusters within the scientific literature. These techniques provide a systematic and rigorous approach to understanding scientific knowledge. Such methods are vital for advancing scientific research by identifying core topics, mapping specialized areas, and offering clearer insights into the trajectory and potential of this field.

2.1 Data Extraction

This study employed a systematic data extraction process using the Scopus database, a widely recognized and reputable source for peer-reviewed scholarly content. Scopus provides extensive multidisciplinary coverage, making it an essential resource for bibliometric studies.

The initial search was conducted using the keyword “Traditional Medicine”, which retrieved 64,331 records across all disciplines. To refine the dataset, the scope was narrowed to include only research within Social Sciences and Arts and Humanities, reducing the number of records to 3,939. To ensure consistency in document type, the search was further restricted to articles only, which resulted in 3,223 records.

A keyword filter was then applied to ensure the dataset focused on studies explicitly mentioning “Traditional Medicine”, refining the dataset further to 2,349 records. Finally, a language filter was used, selecting only English-language articles, which yielded the final dataset of 2,145 records.

This structured selection process, as outlined in the PRISMA Diagram, ensured that the final dataset was precise, relevant, and aligned with the study’s objectives. It enabled a robust bibliometric analysis of Traditional Medicine research, facilitating insights into trends, scholarly contributions, and interdisciplinary connections within the field.

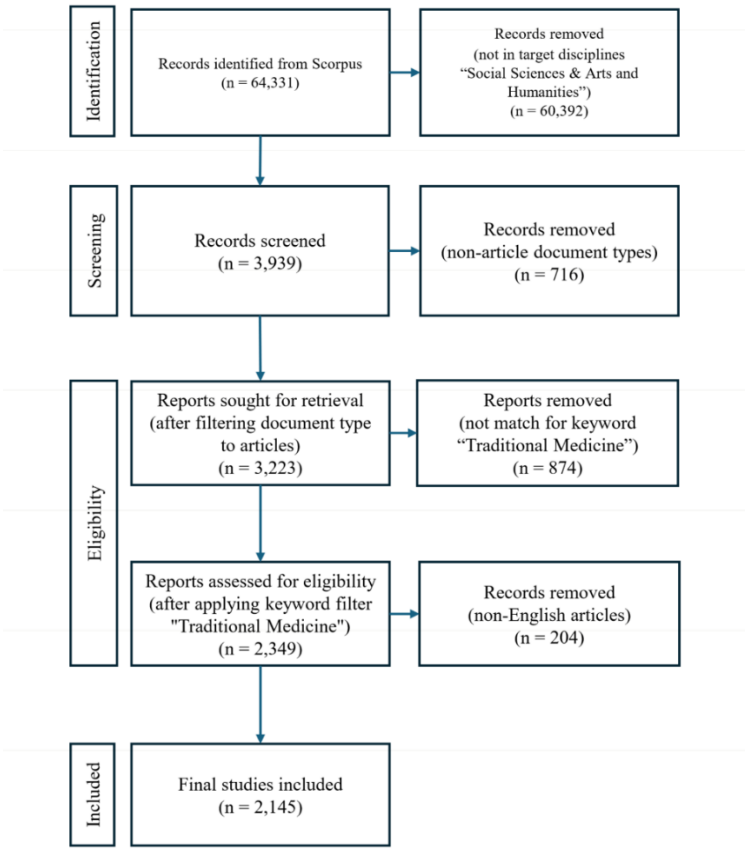

Figure 1. PRISMA flow diagram.

2.2 Data Analysis

Bibliometric analysis, which focuses on quantitatively examining scientific output through literature, is a vital method for monitoring the progression of Traditional Medicine research and identifying trends over time (García-León et al., 2021). This approach offers valuable insights into publication patterns, geographical distribution, author collaborations, leading institutions, and influential journals. By applying statistical and mathematical methods to written data, bibliometric analysis investigates components such as keywords, article titles, publication sources, authorship, document types, and abstracts. Often referred to as statistical bibliography, this method primarily evaluates scientific output in the form of articles and books. Tools like RStudio® and the Biblioshiny app from the Bibliometrix library are commonly used for bibliometric analysis, given their accessibility and robust capabilities (Aguillo, 2012; Aria and Cuccurullo, 2017).

Before the analysis began, bibliographic data underwent a thorough review and corrections to ensure consistency, particularly in author names, as emphasized by Van Eck and Waltman (2010). This step was crucial to avoid errors and inconsistencies, ensuring the reliability of subsequent analysis.
The study employed two main types of analysis:

- Descriptive Analysis: This provided an overview of the Traditional Medicine research landscape by summarizing the included studies.
- Bibliometric Analysis: Various techniques, including performance analysis, citation analysis, co-citation analysis, and co-word analysis, were utilized. The dataset was meticulously cleaned and processed using Microsoft Excel to maintain accuracy and reliability. Biblioshiny in RStudio (Aria and Cuccurullo, 2017) was then used to generate and visualize bibliometric indicators, statistical data, and bibliometric maps. These maps, based on network data, illustrated connections between concepts and provided a clearer understanding of relationships among key elements.

The bibliometric maps, focusing on geographic distribution and author keywords, revealed meaningful patterns in Traditional Medicine research, such as the role of medicinal plants, ethnobotany, and indigenous knowledge. This comprehensive analysis, supported by advanced visualization tools, enabled a deeper exploration of the structure and dynamics of the field.

3. Results

This section analyzes and highlights key findings from published articles related to Traditional Medicine as Figure 2. Research in this field spans from 1946 to 2024, reflecting over seven decades of sustained interest. A total of 499 sources and 2145 publications demonstrates widespread contributions, emphasizing the diversity of data and perspectives explored in this domain. The annual growth rate of 5.8% indicates a continuously increasing focus on Traditional Medicine. Particularly in recent years with 4531 researchers involved, including 904 single-author papers and an international collaboration rate of 18.28%. The topic has gained international attention, encouraging knowledge sharing across borders. On average, each publication has 2.5 co-authors, reflecting balanced collaboration among researchers. Authors have employed 3806 unique keywords, highlighting the thematic diversity within Traditional Medicine. While the average document age of 20.9 years highlights the field's continued relevance and the enduring basis of its knowledge base, the average citation per document is 25.49, indicating significant academic impact.

In conclusion, Figure 2 combines historical significance with academic progress to highlight the significance of Traditional Medicine on a worldwide scale and the ongoing scholarly interest in it. The potential for future discoveries and the merging of traditional medicine with modern sciences is highlighted by the 5.8% yearly growth rate.

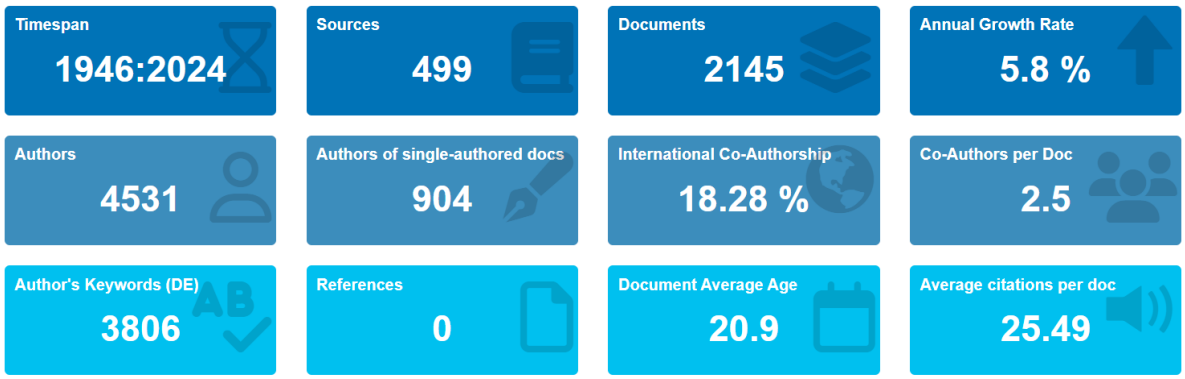

Figure 2. Main information.

Figure 3 presents the publication trend in Traditional Medicine from 1946 to 2024. During the initial research phase (1946–1970), the number of published articles was minimal, reflecting the early stage of interest in the field, likely due to technological limitations, restricted access to information, or the topic's lack of academic recognition at the time. After 1970, the number of publications began to rise gradually, with notable growth during the 1980s–1990s, indicating expanding interest and connections between Traditional Medicine and modern sciences. Post-1990, the publication rate increased significantly, driven by advancements in technology, research capabilities, and growing acceptance of the field's scientific and cultural importance, alongside international collaboration and integration with modern healthcare systems. From 2010 onward, the growth became exponential, reaching nearly 100 articles per year in 2024. This surge highlights increasing awareness of Traditional Medicine's role in addressing lifestyle-related diseases, international research support, and its incorporation into mainstream medical systems across various countries. The continuous growth of Traditional Medicine publications, particularly in the past two to three decades, emphasizes its rising global significance in academic, medical, and cultural dimensions. This trend reflects a strong potential for the sustainable integration of Traditional Medicine with modern healthcare practices in the future.

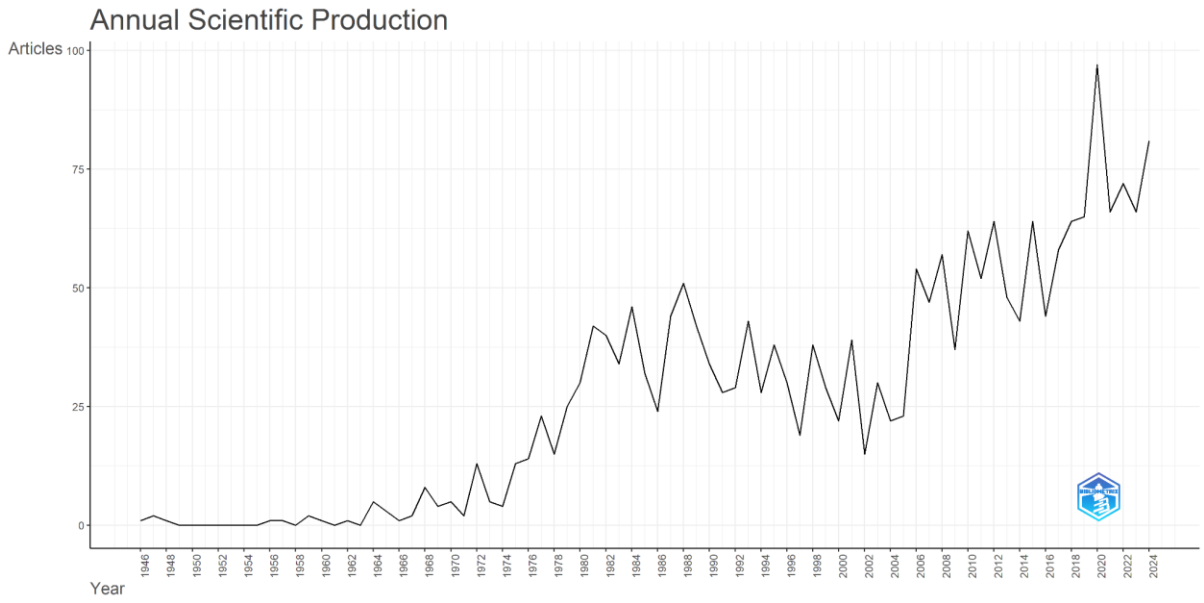

Figure 3. Publication trend analysis.

Table 1 shows the publication output of authors in Traditional Medicine, including total articles and fractionalized contributions. Rainer W. Bussmann leads with 22 articles but a fractionalized contribution of 5.64, indicating significant collaborative work. Rômulo Romeu Nóbrega Alves and Andrea Pieroni follow with 14 articles each, with fractionalized contributions of 3.33 and 3.49, respectively, suggesting a balanced role in authorship. Alfred Maroyi, with 13 articles, stands out for his high fractionalized score of 13, reflecting predominant independent authorship. James B. Waldram has 11 articles with a notable fractionalized contribution of 8.83, showing substantial leadership in his research. Authors like Mark Nichter and Arshad Mehmood Abbasi have 10 articles each, but Nichter's higher fractionalized score of 8.5 indicates stronger contributions per paper. Chunlin Long and Cassandra L. Quave, with 9 articles each, show moderate fractionalized scores of 2.01 and 2.07, respectively, while Edward C. Green contributes 8 articles with a fractionalized score of 5.67, reflecting significant collaboration but noteworthy individual contributions. This data highlights both the productivity and authorship dynamics within the field of Traditional Medicine research.

Table 1. Most relevant authors.

Authors	Articles	Articles Fractionalized
Rainer W. Bussmann	22	5.64
Rômulo Romeu Nóbrega Alves	14	3.33
Andrea Pieroni	14	3.49
Alfred Maroyi	13	13
James B. Waldram	11	8.83
Arshad Mehmood Abbasi	10	1.71

Authors	Articles	Articles Fractionalized
Mark Nichter	10	8.5
Chunlin Long	9	2.01
Cassandra L. Quave	9	2.07
Edward C. Green	8	5.67

Table 2 highlights the Top Ten Papers in Traditional Medicine, showcasing the most highly cited articles, their DOIs, and citation metrics. The most cited paper, *"Medicinal plants in Mexico: healers' consensus and cultural importance"* by Heinrich (1998), with 922 citations and a TC per Year of 34.15, demonstrates its long-term influence. The second-ranked paper, *"Medicinal plants used by traditional healers in Kancheepuram District of Tamil Nadu, India"* by Muthu (2006), with 485 citations and a TC per Year of 25.53, underscores the importance of medicinal plants and indigenous knowledge in ethnobiology. Historical and cultural studies such as Good's (1977) *"The heart of what's the matter"* and Vidal's (2009) *"Brainhood"* contribute to understanding Traditional Medicine's cultural and psychological aspects. Papers like Lans (2006) and De Albuquerque UP (2006) focus on ethnobotany and medicinal plant research, highlighting their role in disease treatment and indigenous studies. Foster's (2015) paper showcases significant recent impacts with a TC per Year of 34.30. Overall, the table reveals the dominance of ethnobiology and ethnobotany in Traditional Medicine research, with highly cited studies often appearing in journals such as *SOC SCI MED* and *J ETHNOBIOLOGY & ETHNOMEDICINE*. This reflects the field's diversity across cultural, historical, and botanical dimensions and its critical academic impact as a foundation for future advancements.

Table 2. Most global cited documents.

Paper	DOI	Total Citations	TC per Year	Normalized TC
Medicinal plants in Mexico: healers' consensus and cultural importance (HEINRICH M, 1998, SOC SCI MED)	10.1016/S0277-9536(98)00181-6	922	34.15	18.66
Medicinal plants used by traditional healers in Kancheepuram District of Tamil Nadu, India (MUTHU C, 2006, J ETHNOBIOLOGY ETHNOMEDICINE)	10.1186/1746-4269-2-43	485	25.53	7.11
The heart of what's the matter the semantics of illness in Iran (GOOD BJ, 1977, CULT MED PSYCH)	10.1007/BF00114809	452	9.42	9.80

Paper	DOI	Total Citations	TC per Year	Normalized TC
Traditional use of medicinal plants among the tribal communities of Chhota Bhangal, Western Himalaya (UNIYAL SK, 2006, J ETHNOBIOLOGY ETHNOMEDICINE SOC SCI MED)	10.1186/1746-4269-2-14 10.1016/S0277-9536(99)00282-8	349	18.37	5.12
Tradition and innovation in scientists' research strategies (FOSTER JG, 2015, AM SOCIOL REV)	10.1177/0003122415601618	343	34.30	11.94
Brainhood, anthropological figure of modernity (VIDAL F, 2009, HIST HUM SCI)	10.1177/0952695108099133	335	20.94	8.76
Knowledge and use of medicinal plants by local specialists in an region of Atlantic Forest in the state of Pernambuco (Northeastern Brazil) (GAZZANEO LRS, 2005, J ETHNOBIOLOGY ETHNOMEDICINE)	10.1186/1746-4269-1-9	326	16.30	6.55
Ethnomedicines used in Trinidad and Tobago for urinary problems and diabetes mellitus (LANS CA, 2006, J ETHNOBIOLOGY ETHNOMEDICINE)	10.1186/1746-4269-2-45	308	16.21	4.52
Treatment seeking for malaria: a review of recent research (MCCOMBIE SC, 1996, SOC SCI MED)	10.1016/0277-9536(95)00446-7	278	9.59	6.90
Re-examining hypotheses concerning the use and knowledge of medicinal plants: a study in the Caatinga vegetation of NE Brazil (DE ALBUQUERQUE UP, 2006, J ETHNOBIOLOGY ETHNOMEDICINE)	10.1186/1746-4269-2-30	277	14.58	4.06

Table 3 highlights the scientific production and citation impact in Traditional Medicine research across various countries. The USA leads with 4,989 articles, reflecting sustained research interest, particularly in healthcare systems and technology, though its average citations per article of 27.30 suggest a focus on quantity-driven output. India, with 2,180 articles, underscores its significant role

through the rich cultural tradition of Ayurveda, while Brazil (2,022 articles) highlights the importance of medicinal plants and Traditional Medicine within its diverse ecosystems, such as the Amazon rainforest. In contrast, countries like Nepal (69.20), Germany (58.20), and Pakistan (56.40) exhibit the highest average citations per article, demonstrating research quality and global impact despite lower publication volumes. This comparison underscores both the research volume of leading contributors and the influence of high-quality studies from emerging contributors in advancing Traditional Medicine knowledge.

Table 3. Scientific production and citations.

Country	TC	Average Article Citations
USA	4,989	27.30
INDIA	2,180	36.90
BRAZIL	2,022	43.00
UNITED KINGDOM	1,724	22.10
CANADA	1,613	31.60
PAKISTAN	1,185	56.40
ITALY	1,079	37.20
ETHIOPIA	998	49.90
GERMANY	990	58.20
NEPAL	830	69.20

Figure 4 presents a three-column visualization that maps interconnected terms within the domain of Traditional Medicine. The leftmost column (DE) highlights central concepts, with “traditional medicine” as the most prominent, alongside terms like “medicinal plants”, “ethnobotany”, and “traditional knowledge”, emphasizing the importance of indigenous practices, plant-based healing, and knowledge preservation. The middle column (TI_TM) displays broader themes, with dominant terms such as “traditional”, “health”, and “medicine”, illustrating the field’s focus on health systems and healing practices, while terms like “study”, “medical”, and “healing” connect research to practical healthcare applications. The rightmost column (ID) contains detailed terms such as “human”, “medicine”, and “female”, reflecting a human-centered approach and highlighting demographic aspects, historical roots, and documentation of Traditional Medicine. Connecting lines between columns illustrate relationships, such as “medicinal plants” linking to “healing” and further to “human”, showing the interconnectedness of traditional knowledge, plant-based therapies, and health outcomes. The color coding reflects term prominence, with concepts like “traditional medicine” and “health care” dominating, while emerging areas like “mental health” and “indigenous knowledge” also feature. Overall, this map visualizes the complexity of Traditional Medicine, integrating core concepts, broader

themes, and specific research areas, emphasizing its significance in modern global health systems and scientific literature.

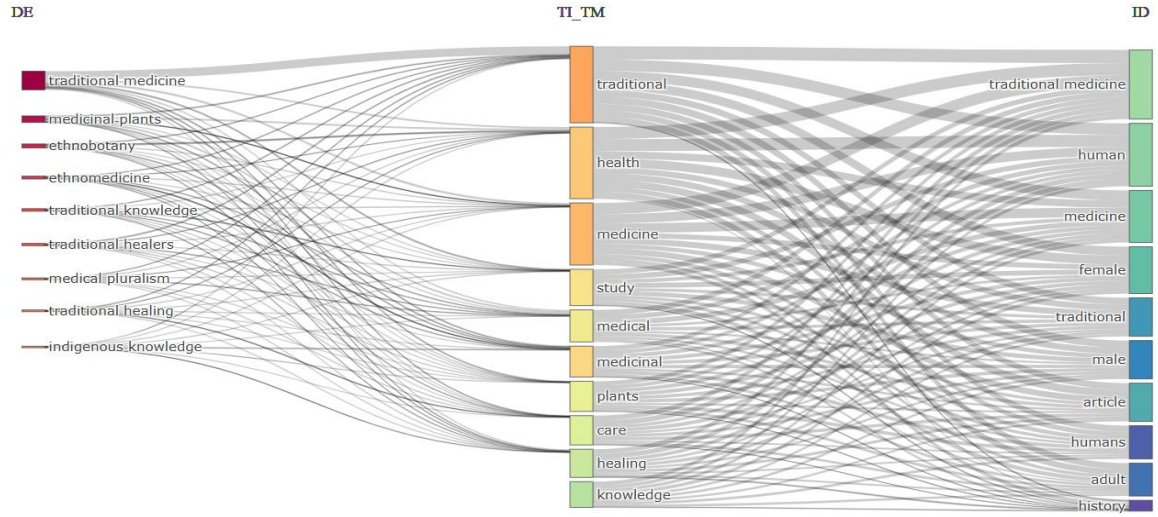

Figure 4. Three field plot.

Figure 5 shows the co-occurrence network of Traditional Medicine visually maps interconnected themes, with “traditional medicine” as the central node, highlighting its foundational role. Surrounding clusters illustrate distinct research areas: the Purple Cluster focuses on healthcare systems, including terms like "health care," "mental health," and "primary health," showcasing the integration of traditional healing into broader health services. The Green Cluster emphasizes the role of plant-based therapies, featuring nodes like "medicinal plants" and "ethnobotanical study," linking indigenous knowledge with scientific research. The Red Cluster addresses mental health and cultural dimensions, with terms like "traditional healing" and "American Indian," reflecting the psychological and cultural aspects of healing. The Orange Cluster focuses on medical practices and knowledge preservation. The size and proximity of nodes indicate term importance and conceptual relationships, such as "herbal medicine" and "ethnobotanical study." This visualization demonstrates the multidisciplinary nature of Traditional Medicine, bridging healthcare, ethnobotany, and cultural studies, and highlights its growing significance across scientific and cultural domains.

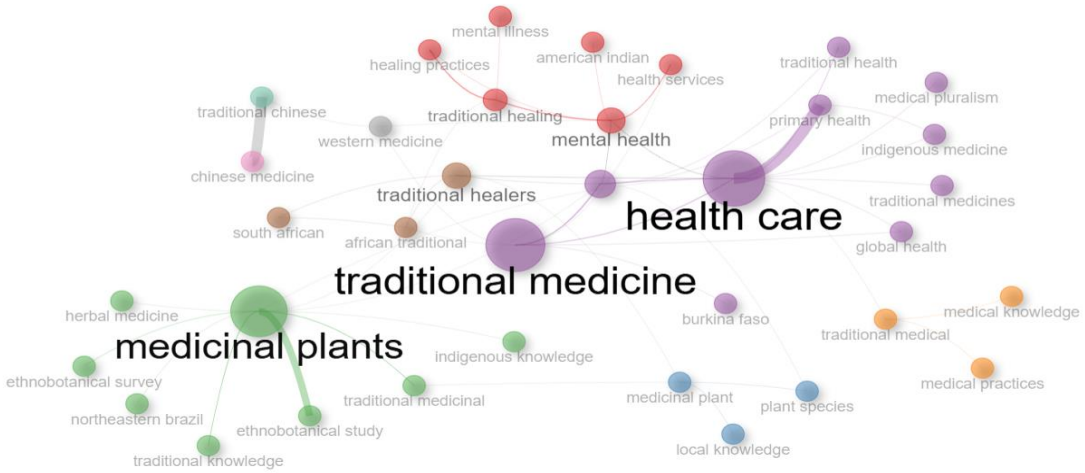

Figure 5. co-occurrence network of Traditional Medicine**.**

Figure 6 the trend topics graph highlights the distribution and frequency of key terms associated with Traditional Medicine over time, reflecting evolving research interests. Terms like "Traditional Knowledge" and "Medicinal Plants" have shown long-term consistency, with significant growth in frequency post-2000, emphasizing the sustained focus on traditional knowledge and the role of medicinal plants. "Traditional Medicine" remains the most prominent term, with its frequency increasing after 2005. Emerging terms such as "Mental Health" and "Traditional Healing" gained prominence after 2010, underscoring the growing interest in Traditional Medicine's role in mental health and holistic care, while "Health Services" and "Health Care" expanded from the early 2000s, reflecting its integration into broader healthcare systems. Recently, "Semi-Structured Interviews" and "Plant Species" have highlighted qualitative research methods and the detailed study of medicinal plant species. Regional and system-focused terms like "Chinese Medicine" and "Traditional Healers" have grown in importance, demonstrating interest in cultural practices and regional contributions to Traditional Medicine. Overall, the graph illustrates how research in Traditional Medicine has expanded from a focus on traditional knowledge and medicinal plants to a broader integration with healthcare systems and mental health dimensions. This trend reflects efforts to modernize and integrate Traditional Medicine into sustainable healthcare systems for the future.

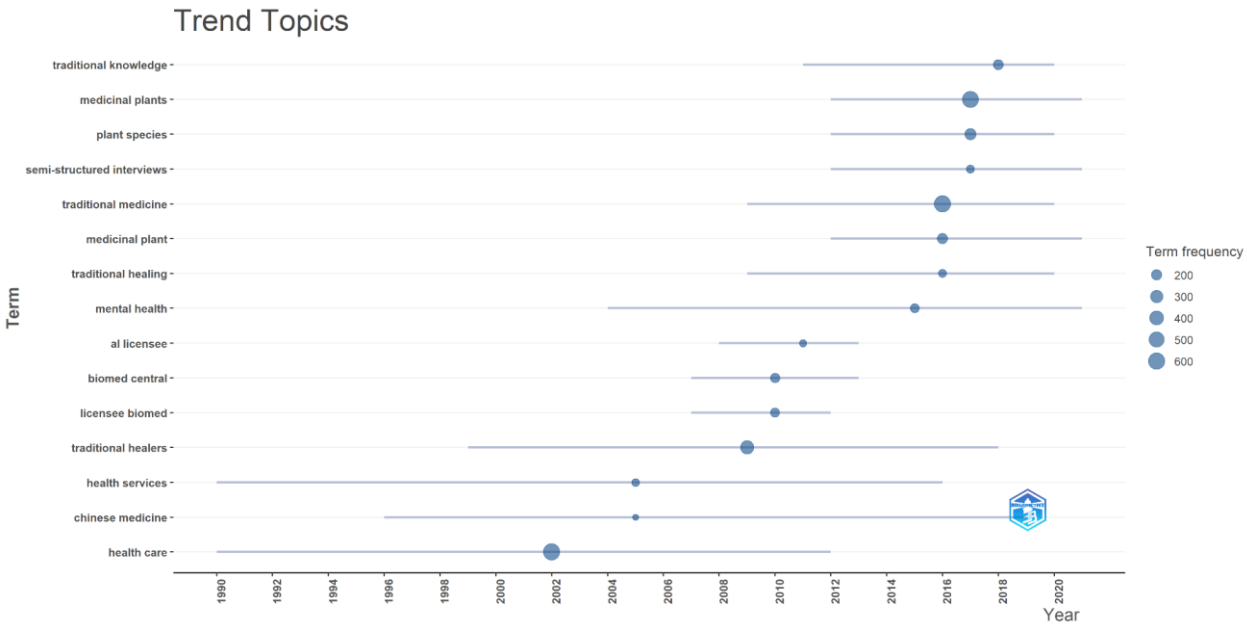

Figure 6. the trend topics graph.

Figure 7 shows The Thematic Map in the context of Traditional Medicine illustrates the grouping of themes based on two dimensions: Relevance Degree (Centrality), representing the importance and connectivity of a theme within the knowledge network, and Development Degree (Density), indicating the level of depth and progression of a theme. Key groups include Motor Themes (top-right), such as "Cultural Anthropology," "Psychological Aspect," and "Cultural Factor," which emphasize the cultural and psychological dimensions of healthcare, highlighting the integration of beliefs and cultural practices into traditional medicine. Basic Themes (bottom-right), including "Traditional Medicine," "Human," and "Medicine," serve as foundational topics focusing on the integration of traditional and modern medical practices centered on human well-being. Emerging or Declining Themes (bottom-left), such as "History" and "19th Century," explore historical aspects, providing insight into the evolution of traditional medical systems, while Isolated Themes at the center, including "Humans," "Attitude to Health," and "Medicinal Plant," link traditional medicine with human behavior, herbal use, and health perceptions. This analysis underscores the multifaceted nature of traditional medicine, encompassing cultural, psychological, and systemic health dimensions, with

Motor and Basic Themes playing pivotal roles in advancing knowledge and policy, while historical themes preserve its cultural heritage for future understanding.

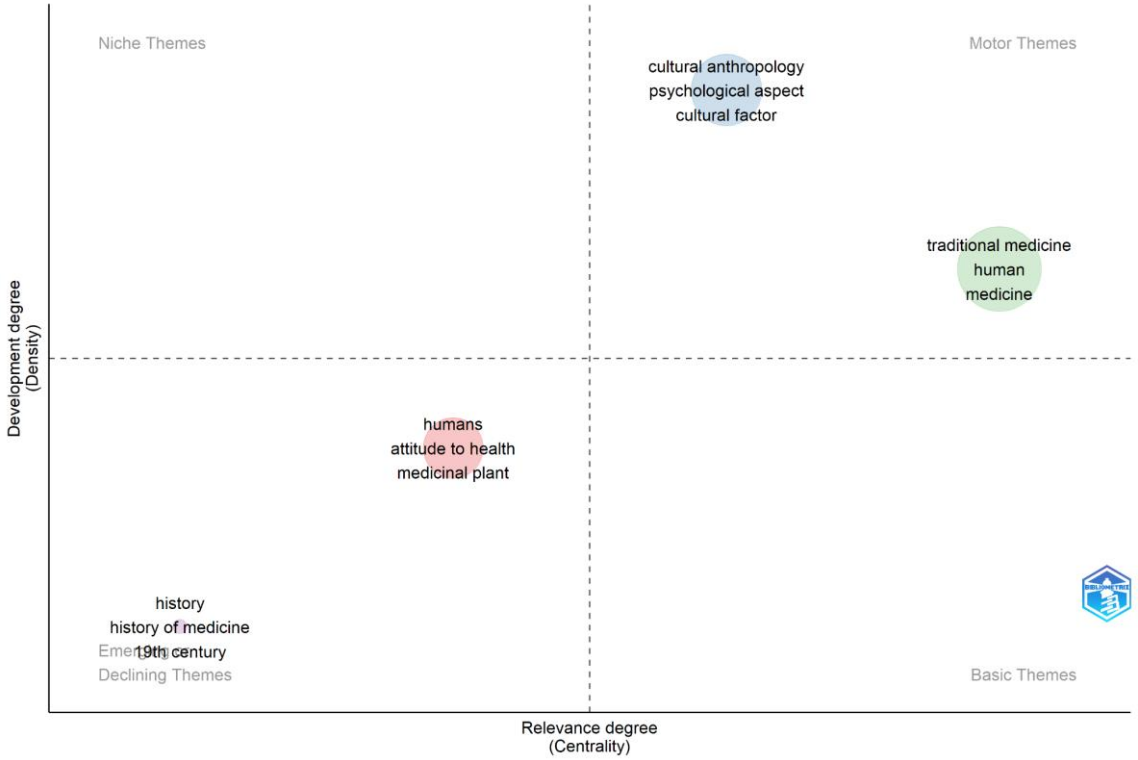

Figure 7. The Thematic Map.

Figure 8 shows The Collaboration Network in the context of Traditional Medicine illustrates academic partnerships among universities, with the University of California serving as the central hub. Key groups include: the America and UK group (green), featuring institutions like the University of London, University of Oxford, and Columbia University, focusing on high-quality research, cultural perspectives, and scientific innovation in medicine; the USA and Nepal group (blue), with universities like University of Arizona and Tribhuvan University, emphasizing research on natural resources, medicinal plants, and indigenous knowledge in South Asia; the Brazil group (red), including Universidade Estadual da Paraíba and Universidade Federal da Paraíba, which highlights regional collaboration on tropical medicinal plants and traditional medicine in Latin America; and the Canada and Africa group (purple), with institutions like the University of Toronto and Addis Ababa University, focusing on comparative studies and integration of traditional and modern medicine in multicultural contexts. The University of California, as the network's nucleus, bridges regional expertise and promotes the integration of Traditional Medicine with modern healthcare systems. This network demonstrates geographical and disciplinary diversity in Traditional Medicine research, showcasing the essential roles of universities in preserving local knowledge, advancing medicinal plant studies, and fostering global health integration.

Figure 8. The collaboration network.

Figure 9 shows The Factorial Analysis of Traditional Medicine, based on a Conceptual Structure Map derived from Multiple Correspondence Analysis (MCA), highlights key connections between terms across two dimensions. Dimension 1 (20.61%) reflects cultural differences in medical systems, with the right side emphasizing Traditional Chinese Medicine (TCM)—featuring terms like "traditional Chinese" and "Chinese medicine," representing its unique herbal and energy-based therapies—while the left focuses on indigenous and African traditional medicine, showcasing diverse practices tied to local cultures. Dimension 2 (16.52%) distinguishes approaches and study methods, with the upper section linked to health services and public health integration (e.g., "health practitioners," "community health"), and the lower section associated with ethnobotany and medicinal plant studies (e.g., "medicinal plants," "indigenous knowledge"). Centrally, terms like "health care," "mental health," and "western medicine" underscore efforts to bridge traditional and modern medical systems through cross-sectional studies in diverse regions like South Africa. The expanded graph boundaries illustrate the geographic and cultural richness of Traditional Medicine, from Chinese systems to African community health. This analysis reveals the complexity and diversity of Traditional Medicine, shaped by local traditions, integration with modern systems, and scientific exploration, providing valuable insights for developing inclusive and sustainable health policies.

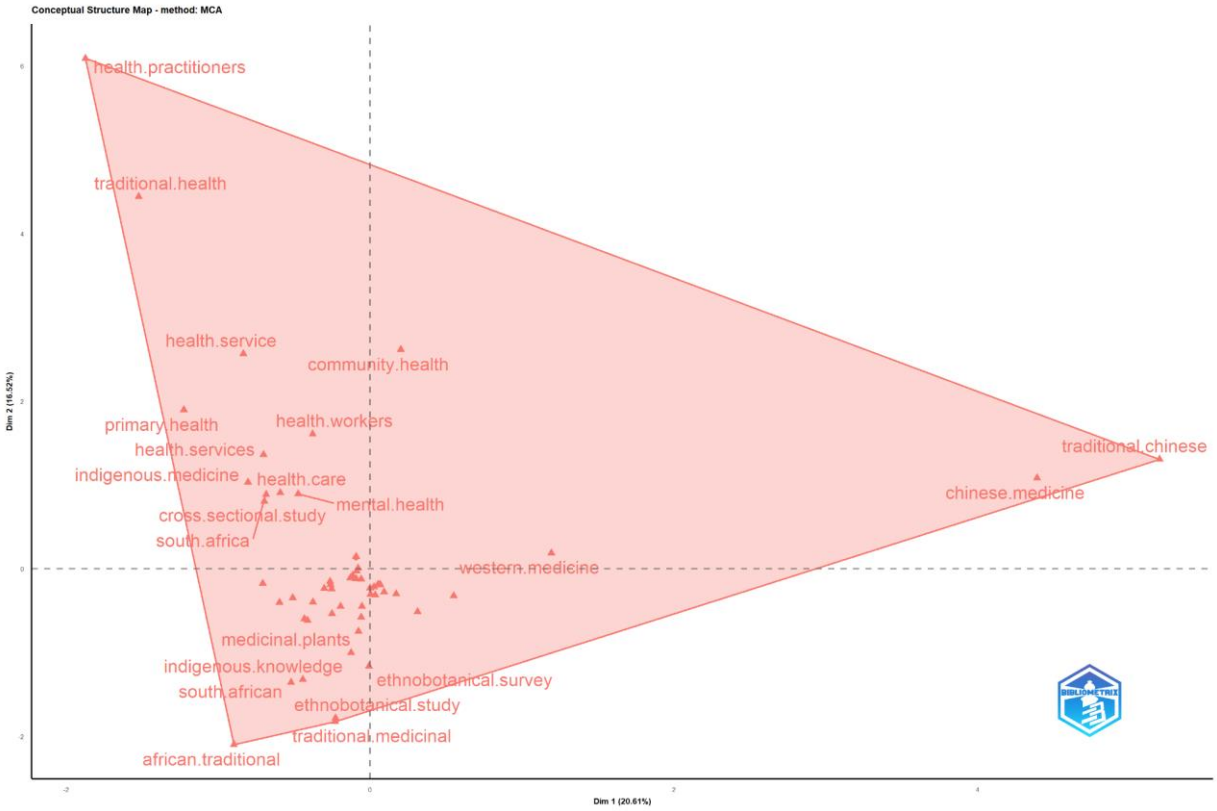

Figure 9. The Factorial Analysis of Traditional Medicine.

4. Discussion

This study presents a comprehensive bibliometric analysis of Traditional Medicine research from 1946 to 2024, providing insights into research growth, key contributors, and emerging trends. The results reveal a steady increase in publications, with an annual growth rate of 5.8%, demonstrating sustained interest in the field. The dataset includes 2,145 articles primarily within Social Sciences and Arts and Humanities, reflecting an interdisciplinary approach to understanding traditional medicine beyond biomedical perspectives. Geographically, the USA, India, and Brazil lead in publication output, while countries like Nepal, Germany, and Pakistan exhibit high citation impacts, indicating influential research contributions. The analysis highlights dominant themes, such as medicinal plants, ethnobotany, and cultural perspectives, while emerging topics, including mental health and integration with modern healthcare, signal evolving research interests. Collaboration networks illustrate growing international partnerships, reinforcing the global relevance of Traditional Medicine research.

Previous research has primarily focused on ethnobotany and pharmacology, emphasizing the medicinal properties of plants and indigenous knowledge (Heinrich, 1998; Muthu, 2006). While these studies have established the importance of traditional medicine in healthcare, they often lacked a systematic, large-scale evaluation of publication trends. In contrast, this study applies bibliometric methods to provide a broader and more structured understanding of the field. Compared to earlier bibliometric analyses (Aria & Cuccurullo, 2017), which focused on biomedical applications, our research highlights the social, cultural, and historical dimensions of traditional medicine. The findings align with recent discussions on integrating Traditional Medicine into mainstream healthcare and cultural preservation efforts (Nguyen et al., 2023). The identification of research gaps, particularly in mental health and policy-related studies, further contributes to advancing knowledge in this field.

Despite its contributions, this study has several limitations. First, the analysis is restricted to English-language articles indexed in Scopus, potentially excluding significant research published in other languages or indexed in alternative databases such as Web of Science or PubMed. Second, the study

focuses on bibliometric patterns rather than qualitative assessments of research quality, which may overlook methodological rigor in individual studies. Third, the keyword selection process, while structured, may not capture all relevant works, particularly those using alternative terminology. Finally, while the study identifies trends and collaboration networks, it does not explore the reasons behind these patterns in depth. Future research should incorporate qualitative methods to complement bibliometric findings.

Future research should expand on several key areas. First, a more inclusive analysis incorporating non-English publications and additional databases would provide a more comprehensive global perspective. Second, qualitative studies should explore how Traditional Medicine is applied in modern healthcare settings, particularly in addressing mental health and chronic diseases. Third, interdisciplinary collaborations between Traditional Medicine practitioners, policymakers, and medical researchers should be further examined to foster knowledge exchange. Additionally, studies on the socio-economic impacts of Traditional Medicine adoption in different cultural contexts would provide valuable insights for public health policy. Lastly, integrating bibliometric analysis with systematic reviews could enhance the depth of understanding regarding the effectiveness and applicability of Traditional Medicine.

5. Conclusion

This study conducted a bibliometric analysis of Traditional Medicine research from 1946 to 2024, aiming to understand its research landscape, major trends, and interdisciplinary relevance. Using Scopus as the primary database and Bibliometrix for analysis, the study systematically examined 2,145 articles focusing on Social Sciences and Arts and Humanities. The findings highlight the growing significance of Traditional Medicine, particularly in cultural and healthcare contexts, while also revealing emerging research trends in mental health and policy integration. The study underscores the need for broader interdisciplinary collaboration and policy-driven research to further strengthen the role of Traditional Medicine in global healthcare. Although the study is limited by its scope and data selection criteria, its insights contribute to advancing knowledge in the field and provide a foundation for future research directions.

By bridging the gap between academic advancements and clinical practice, the potential of deep learning to revolutionize lung cancer diagnostics and reduce global health disparities can be fully realized. This study provides a foundation for future research, offering valuable insights into thematic evolution, collaboration patterns, and emerging directions in the field. Researchers, clinicians, and policymakers can leverage these findings to advance the role of artificial intelligence in transforming lung cancer care for all populations.

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