

AYURVEDA RESEARCH IN TWO SCIENTIFIC LANDSCAPES: A COMPARATIVE MAPPING OF RESEARCH IN INDIA AND THE UNITED STATES

KUNGLIANGLIU MARENMAI¹ & RAJKUMARI SOFIA DEVI²

¹Research Scholar, DLIS, Manipur University, Canchipur, Imphal -795003, India

Email: Kungliangliumarenmai2@gmail.com

ORCID: <https://orcid.org/0009-0003-7409-0969>

²Assistant Professor, DLIS, Manipur University, Canchipur, Imphal-795003, India

Email: Rksofia.02@gmail.com

ORCID: <https://orcid.org/0000-0003-3615-6472>

ABSTRACT

Ayurveda is gaining traction in the global research community, with more efforts being made to investigate its ancient knowledge and therapeutic practices using modern scientific methods. Nonetheless, the trajectory and focus of Ayurveda study may vary from one nation to another. As a result, the current study uses bibliometric techniques to compare Ayurvedic research conducted in India and the US. The analysis is based on data extracted from the Web of Science database, scrutinizing factors including research efficacy, citation occurrence, and theme composition. The findings show that India has been conducting much more research on Ayurveda, with a focus on Ayurvedic medicinal resources, medicinal plants, phytochemicals, standardization, analytical techniques, and the scientific validation of Ayurvedic interventions. In contrast, Ayurvedic research in the USA is connected to modern biomedical research, complementary and alternative medicine, and natural products, albeit in far smaller numbers. The thematic analysis also reveals a growing number of clinical research and the application of modern scientific techniques in both nations. Thus, the study highlights the increased interest in Ayurveda worldwide and highlights the different research profiles of Ayurveda in India and the USA. Researchers, academic and research institutions, policymakers, and funding agencies would therefore benefit from the study's findings in order to uncover new areas and opportunities for collaboration as well as to design appropriate methods for such interactions.

KEYWORDS: Ayurveda; Traditional Medicine; Bibliometric; India; United States; Research Productivity; Citation Impact; Thematic Structure

INTRODUCTION

Ayurveda, an ancient medical system from the Indian subcontinent, serves not only as a historical healthcare model but also as a thriving knowledge tradition that is progressively relevant to current health research.

Anchored in centuries of gathered knowledge, Ayurveda features particular ideas on health, disease avoidance, dietary habits, lifestyle, treatments, and the use of medicinal ingredients. Over the past few decades, it has attracted growing focus from the international scientific community, notably in the area of traditional and alternative health practices^{1,2}. India, being the historical and cultural birthplace of Ayurveda, has cultivated a robust institutional and research apparatus focused on its investigation and enhancement. At the same time, Ayurveda has gained visibility in the United States, where it has encountered a different healthcare, research, and regulatory environment. India represents the continuity of Ayurveda within its traditional and national healthcare context, whereas the United States represents its engagement with a predominantly biomedical research environment outside its historical setting. Bibliometric analysis offers a systematic means of examining these differences. In the context of Ayurveda, such an approach can help distinguish between research productivity and research influence, and identify areas of thematic specialization. The present study, therefore, places India and the United States within the same analytical frame to examine how Ayurveda research has developed across these two scientific landscapes.

REVIEW OF LITERATURE

Previous bibliometric research has demonstrated the substantial expansion of Ayurveda research and India's prominent contribution to the global literature. A study by Peter et al. (2020)³ examined India's position in publishing top Ayurvedic research papers. The Scopus-based analysis identified 2038 papers published between 1923 and 2018, primarily authored in India. Thrigulla et al. (2022)⁴ examined the quality of evidence in Ayurveda research and found that only 4.5% met grade A evidence criteria for randomized controlled trials, and just five of the 20 leading journals were indexed in PubMed or Scopus, indicating limitations in the quality and visibility of Ayurveda research. Nedungadi et al. (2023),⁵ reported substantial growth in Ayurveda research over the past three decades. The analysis covered 11,773 publications from 1993 to 2022 and identified four major clusters: traditional medicine, bioactive compounds, analytical techniques/herbal standardization, and herbal medicines/immunomodulation. Singh and Mansoria (2023)⁶ conducted a dimension-based analysis that revealed an increasing trend in the number of publications on Ayurgenomics. Mitali Mukerji and Bhavna Parashar were identified as the most active researchers in the field. Publications were contributed by four countries—India, China, the United States, and Denmark—with India having contributed the highest number of publications (18). The most frequently occurring keywords were identified as “Medicine”, “Ayurveda”, and “Prakriti”. The study indicated that Ayurgenomics has remained a relatively emerging field, with a limited number of publications and considerable scope for further research and collaboration. Samal (2024)⁷ conducted a PubMed analysis on Ayurveda research on COVID-19. The study identified the Journal of Ayurveda and Integrative Medicine as the leading journal, the Central Council for Research in Ayurvedic Sciences and its centers contributed the most, and S. Narayanam as the leading author in the field. The study also revealed that the keywords “humans” (n = 131) and “Ayurveda” (n = 90) have been used the maximum times in the MeSH and author keywords category. Johnpaul & Ranadheer (2025)⁸ identified India as the main contributor, while countries such as the USA, Saudi Arabia, and the UK show increasing engagement with Ayurveda research. Muthappan et al. (2026)⁹ highlighted the key trends and challenges in Ayush systems of medicine through a bibliometric analysis. The study included 24037 articles, which revealed that India and the USA contributed the most to the field.

Despite the growing body of bibliometric research on Ayurveda, a comparative understanding of Ayurveda research in India and the United States remains limited. Considering the prominent contribution of India and the

growing research engagement of the USA, a comparative bibliometric study is needed to examine differences and similarities in their research productivity, citation impact, and thematic priorities. The present study, therefore, focuses on a comparative analysis of Ayurveda research in India and the USA.

OBJECTIVES OF THE STUDY

The objective of this study is to comparatively map and characterize the research landscape of Ayurveda in India and the USA using bibliometric methods, with particular emphasis on research productivity, citation impact, and thematic structure.

METHODOLOGY

Data was collected from the Web of Science Core Collection database using the search query TS= ("Ayurvedi* Medic*" OR "Ayurved* Medic* System" OR "Ayurved* therapy") refined by (Document Types: Article). The search identified 900 records, of which 641 were contributed by India and 131 by the USA (Figure 1). The dataset was extracted and organized in MS Excel format for further management and analysis. The analysis and visualization are carried out by using the RStudio Bibliometrix Biblioshiny package and VOSviewer software.

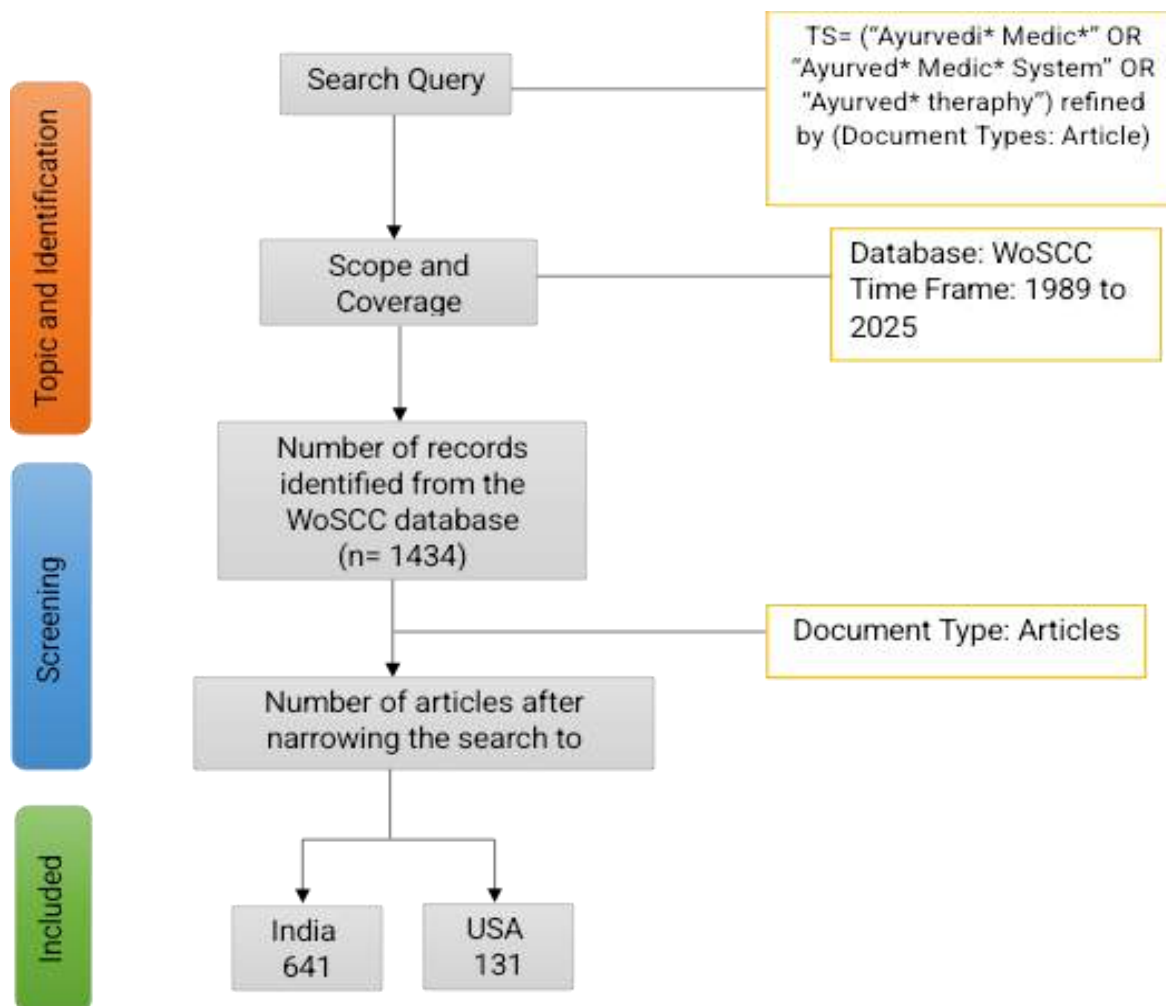


Figure 1: Flow chart illustrating Identification, Screening, Eligibility, and Inclusion criteria

GENERAL FINDINGS

Research Productivity

Research productivity is not just the number of academic outputs but also the degree to which these academic outputs impact on and influence the growth of a research field. Table 1 shows the five most prolific writers from India and the USA in the area of Ayurvedic research according to their total publications, total citations and h-index. For India, Kumar, A. contributed the most to the field with 19 articles, while Patwardhan, B. has the highest citation (TC=873) count and the highest h-index of 16. Interestingly, for the United States, though all five authors have an equal publication output of 5 publications, Singh, S.V., has the highest number of citations (TC=342). However, all five authors have an h-index of 5, indicating a similar level of sustained citation impact within the dataset. The analysis shows a clear difference between the two countries. Indian authors have contributed a larger number of publications, while some, particularly Patwardhan, D., have also achieved considerably higher citation impact. In contrast, the leading U.S. authors have the same publication count and h-index, although their citation counts differ noticeably. Table 2 presents the institutional research productivity of India and the USA.

Table 1: Prolific Authors

	Rank	1st	2nd	3rd	4th	5th
INDIA	Author	Kumar, A.	Patwardhan, B.	Rawat, A.K.S.	Kumar, S	Balkrishna, A
	TP	19	18	15	13	12
	TC	264	873	252	95	175
	h-index	9	16	9	4	7
USA	Author	Chitre, D.	Gupta, S.	Michalsen, A.	Morandi, A.	Singh, S.V.
	TP	5	5	5	5	5
	TC	195	104	92	95	342
	h-index	5	5	5	5	5

Table 2: Prolific Institutions

INDIA			USA			
Ran			T			T
k	Affiliation		P	Affiliation		P
1	COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH (CSIR) - INDIA		93	UNIVERSITY OF PITTSBURGH PENNSYLVANIA		20
2				COMMONWEALTH SYSTEM OF HIGHER EDUCATION		
	BANARAS HINDU UNIVERSITY (BHU)		53			18
3	ALL INDIA INSTITUTE OF MEDICAL SCIENCES (AIIMS) NEW DELHI		37	HARVARD UNIVERSITY		16
4	INDIAN INSTITUTE OF TECHNOLOGY SYSTEM (IIT SYSTEM)		34	UNIVERSITY OF CALIFORNIA SYSTEM		13
5	SAVITRIBAI PHULE PUNE UNIVERSITY		33	OHIO STATE UNIVERSITY		12

Publication and Citation Impact

The year-wise distribution analysis for India and the United States revealed considerable variations over the study period, indicating changes in both research productivity and the impact of publications. Table 3 and Figure 2 demonstrate the fluctuating but expanding research trend for both India and the United States. During the initial years, the publication productivity was relatively low in India, but increased considerably from the early 2000s, reaching its highest level in 2011 with 48 publications. The citation trend shows several prominent peaks, indicating that publications in those years are of significant scholarly significance. Unlike in India, the annual output of publications in the United States was quite limited and fluctuated. But there have been big upward trends in recent years, especially in the late 2000's. The late 2000s had some of the largest peaks in citation counts, suggesting that works from this period were the focus of considerable scholarly attention. Thus, the data indicate that India has experienced overall progress in research output, but citation impact has been inconsistent over the years. Nevertheless, the US has had low publication figures but high citation counts in several instances.

Table 3: Publication and Citation Pattern of the Ayurvedic Research

India						United States					
Yea r	T TP	T C	ACP P	h-core	h-index	Yea r	T P	T C	ACP P	h-core	h-index
1989	2	18	25.71	174	3	1989	1	12	12.00	12	1
1990	2	12	6.00	12	2	1990	2	99	49.50	99	2
1991	4	36	52.71	367	2	1991	1	6	6.00	6	1
1992	1	-	-	-	-	1992	4	45	11.25	42	3
1993	-	-	-	-	-	1993	2	7	3.50	7	2
1994	1	22	22.00	22	1	1994	1	9	9.00	9	1
1995	2	50	8.33	46	2	1995	1	15	15.00	15	1
1996	2	2	2.00	2	1	1996	-	-	-	-	-
1997	5	60	12.00	59	3	1997	-	-	-	-	-
1998	3	4	13.66	139	7	1998	1	0	0	0	0
1999	5	42	14.00	42	2	1999	1	64	64.00	64	1

200		17	42.50			200			70.00		
0	8	0		170	4	0	1	70		70	1
200		10	26.75			200			-		
1	3	7		107	1	1	-	-		-	-
200		30	27.72			200		10	26.00		
2	7	5		293	5	2	4	4		104	3
200			6.78			200			3.66		
3	5	95		86	4	3	3	11		10	1
200		35	32.45			200		53	178.3		
4	7	7		350	7	4	3	5	3	535	3
200		44	40.36			200			29.66		
5	8	4		442	10	5	3	89		87	2
200		37	17.95			200		14	48.00		
6	14	7		345	13	6	3	4		144	3
200		14	7.84			200		18	46.00		
7	26	9		128	6	7	4	4		184	4
200		20	9.31			200		64	72.00		
8	28	5		176	7	8	9	8		646	8
200		29	13.80			200			12.00		
9	34	0		247	10	9	4	48		48	4
201		22	10.04			201			10.00		
0	18	1		152	9	0	2	20		20	2
201		33	9.00			201		23	25.55		
1	48	3		258	10	1	9	0		224	8
201		48	15.70			201			14.33		
2	24	7		399	13	2	6	86		82	5
201		20	7.59			201		17	21.37		
3	26	5		136	9	3	8	1		165	7
201		12	6.40			201		16	27.66		
4	26	8		100	6	4	6	6		161	5
201		26	11.08			201			12.37		
5	26	6		240	13	5	8	99		94	6
201		23	9.87			201			31.00		
6	21	7		197	9	6	1	31		31	1
201		31	12.03			201		49	70.85		
7	31	3		236	9	7	7	6		493	6
201		30	9.21			201			34.00		
8	25	4		212	10	8	1	34		34	1
201		26	6.30			201			11.33		
9	22	5		167	9	9	3	34		34	3
202		22	6.90			202		16	28.00		
0	35	1		164	10	0	6	8		164	5

202	19	4.37			202	1.66		
1	34	7	101	8	1	3	5	3
202	17	5.26			202	6.33		
2	47	9	98	8	2	3	19	19
202	11	3.20			202	4.83		
3	27	2	58	6	3	6	29	25
202		1.15			202	5.14		
4	30	30	13	3	4	7	36	32
202		0.27			202	0.71		
5	34	5	2	1	5	7	5	4

*TP=Total Publications; TC=Total Citations; ACPP=Average Citations per Publications

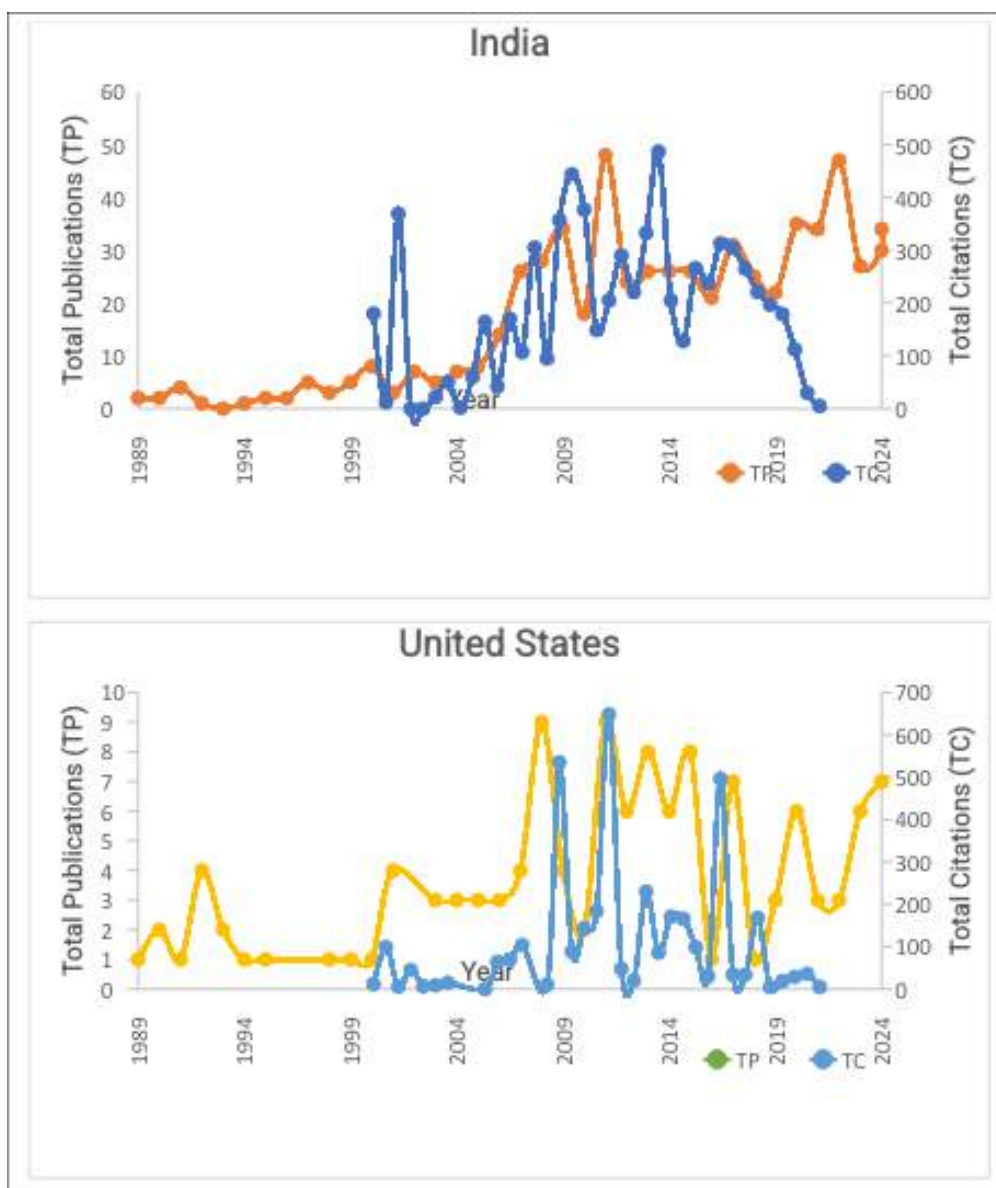
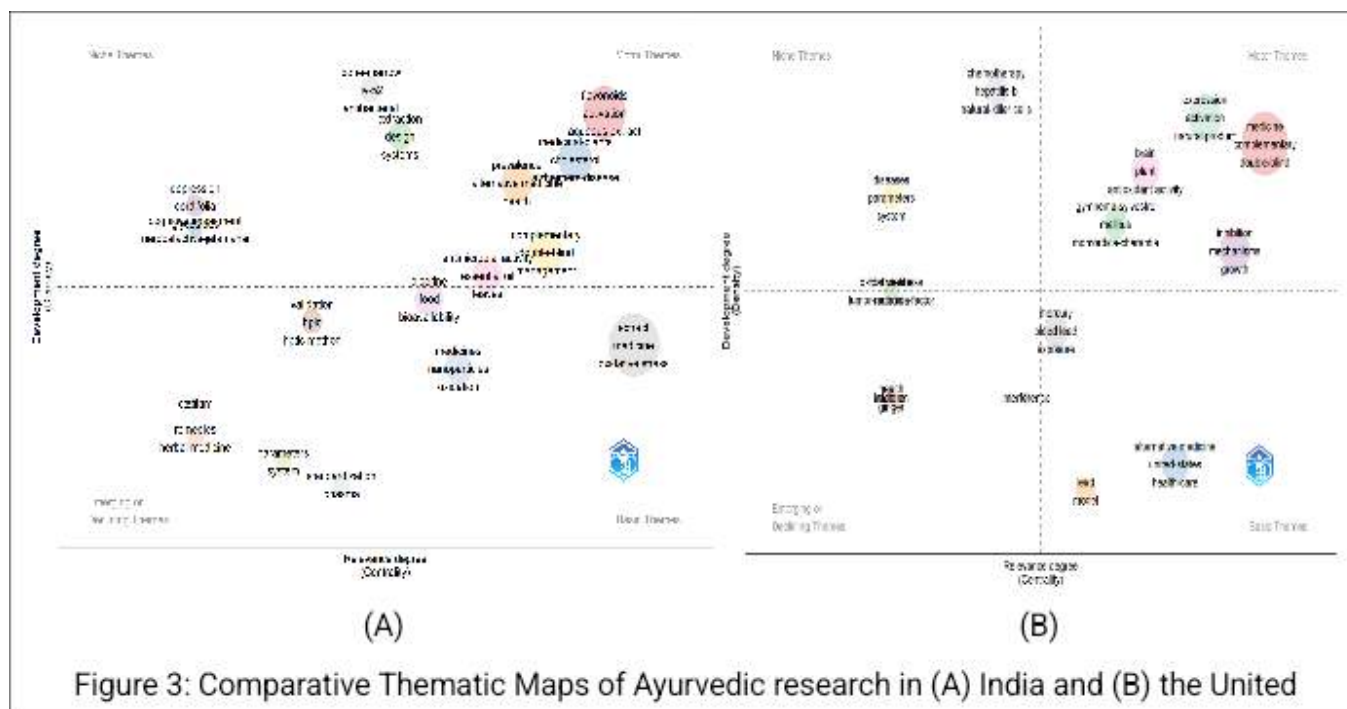


Figure 2: Publication and Citation Trends

Thematic Analysis

The thematic structure of Ayurvedic research in India and the United States demonstrates both overlapping interests and divergent study focuses. The research environment in India, as illustrated in Figure 3, is deeply and firmly rooted in Ayurvedic medicinal resources and their scientific analysis, with key themes including medicinal plants, extracts, flavonoids, oxidative stress, bioavailability, bhasma, standardization, and analytical techniques taking center stage. The existence of clinical management, double-blind trials, antibiotic efficacy, and disease-targeted research signifies an increasing emphasis on employing contemporary biological methods to substantiate Ayurvedic therapies. The thematic landscape of the USA, meanwhile, exhibits a greater, stronger inclination toward the integration of Ayurveda with broader fields of natural-product investigation and complementary and alternative medicine. Motor themes such as natural products, expression, activation, medicine,



Complementary, and double-blind studies, together with research on antioxidant activity, cytokines, brain-related applications, and specific medicinal plants such as *Momordica charantia*, indicate a greater connection between Ayurveda-related research and biomedical or mechanistic investigation. The USA also shows basic themes centered on alternative medicine, healthcare, and the role of Ayurveda within broader complementary health-care practices.

DISCUSSIONS

The present study conducted a comparative bibliometric analysis of Ayurveda research in India and the United States with emphasis on research productivity, citation impact, and thematic structures. The study found that in India, Kumar, A., contributed the most to the field with 19 articles, while Patwardhan, B., has the highest citation

count (TC=873) and h-index (16). Interestingly, for the United States, all five authors have an equal publication output of 5 publications and an h-index of 5. However, Singh, S.V., has the highest number of citations (TC=342). The results reveal that India has a significantly greater output of publications, which reflects the country's continuous connection with Ayurveda and its established research bodies in this area. Although the number of publications from the USA is relatively small, the USA has continued to contribute to Ayurveda research, demonstrating an increasing international interest in traditional and complementary medicine. The pattern of the citations indicates that the publication output does not necessarily lead directly to a citation impact. While India had a higher number of publications, differences in citation metrics show that the impact of individual publications differed across years and countries. Highly cited papers may represent research fields that have been more attractive to scholars. The thematic patterns imply that India attaches greater importance to the scientific exploration and confirmation of its traditional Ayurvedic knowledge and resources whereas the research in the USA tends to locate Ayurveda within the larger framework of complementary medicine and current biomedical research.

CONCLUSION

The present bibliometric analysis offers a comparative assessment of the research output, citation impact, and thematic arrangement of Ayurveda research in India and the USA. The study demonstrates that Ayurveda research in India and the United States has developed in multiple but interconnected directions. The long historical and cultural relationship of India with Ayurveda provides a strong foundation for research in this discipline, with its relatively higher publication output. Most of the research in India is oriented toward scientific testing and validation of Ayurvedic principles. In the USA, research is increasingly associated with alternative medicine and modern biological studies. The differences point to the different ways in which Ayurveda is researched across the world and suggest opportunities for further international collaboration and multi-disciplinary research. The findings can help the Ayurveda and AYUSH institutions, policy makers and academics to identify their research strengths and goals, to distribute funds and to pinpoint the areas where more research, collaborations and publication efforts may be required.

REFERENCES

1. World Health Organization. (2019). WHO global report on traditional and complementary medicine 2019. World Health Organization.
2. World Health Organization. (2025). Global traditional medicine strategy 2025–2034. World Health Organization.
3. Peter, M., Idhris, M., & Anandraj, S. (2020). "Visualizing the Citation Analysis of Scholarly Communication of Ayurveda Research During 1923-2018: An Exploratory Study." Shanlax International Journal of Arts, Science and Humanities, vol. 8, no. 1, 2020, pp. 15–23. <https://doi.org/10.34293/sijash.v8i1.3163>
4. Thrigulla SR, Sridevi V, Krishna BV, Naik MK, Devi KR, Shruthi G, et al. (2022) Clinical studies in Ayurveda: A bibliometric analysis of articles indexed in AYUSH research portal. AYU,43(3), 75-81. https://doi.org/10.4103/ayu.ayu_144_21
5. Nedungadi, P., Salethoor, S. N., Puthiyedath, R., Nair, V. K., Kessler, C., & Raman, R. (2023). Ayurveda research: Emerging trends and mapping to sustainable development goals. Journal of Ayurveda and Integrative Medicine, 14(6), 100809. <https://doi.org/10.1016/j.jaim.2023.100809>

6. Singh, S. B. & Mansoria, P. (2023). Quantifying the progress of ayurgenomics research: A bibliometric review of publications. *International Journal of Ayurveda Research*, 4(2), 78-83. https://doi.org/0.4103/ijar.ijar_34_23
7. Samal J. (2024). Mapping Ayurveda research on COVID-19: A bibliometric analysis of PubMed literature. *Ancient Sci Life*, 39,41-9. https://doi.org/10.4103/asl.asl_108_24
8. Johnpaul, M., & Ranadheer, J.G. (2025). Global Discourse on Ayush Systems: A Bibliometric Analysis of Scholarly Publications. *Jharkhand Journal of Development and Management Studies*. <https://doi.org/10.70994/jjdms.10721.10746>
9. Muthappan, S., Shanmugasundaram, N., Podugu, S., Chandrasekaran, A., Govindarajan, K., Ramesh, S., Thrigulla, S. R., & Ponnaiah, M. (2026). Bibliometric Analysis of India's Ayush Systems of Medicine Using Ayush Research Portal Data from 1954-2020: Current Status, Challenges, and the Way Forward for Future Research. *Alternative Therapies*, 32(4).