



ORIGINAL ARTICLE

**Evaluating a Decade of Research Excellence: A Bibliometric Analysis of Apollo Hospitals Group (2015-2024)**

Raju Vaishya,<sup>1,\*</sup> Anupam Sibal,<sup>2</sup> Ghouse Modin N. Mamdapur<sup>3</sup> and Prathap C Reddy<sup>4</sup>

<sup>1</sup>*Department of Orthopaedics, Indraprastha Apollo Hospitals, New Delhi 110076*

<sup>2</sup>*Department of Paediatric Gastroenterology and Hepatology, Indraprastha Apollo Hospitals, New Delhi 110076*

<sup>3</sup>*Department of Library and Information Science, Yenepoya (Deemed to be University), Deralakatte, Mangalore-575018, Karnataka*

<sup>4</sup>*Chairman, Apollo Hospitals Group, Greams Road, Chennai*

Accepted: 02-January-2025 / Published Online: 01-March-2025

**Abstract**

**Background and Aims:** Established in 1983, Apollo Hospitals has emerged as Asia's leading integrated healthcare provider, committed to delivering healthcare of international standards. This study conducts a bibliometric analysis of the Apollo Hospital Group's research output from 2015 to 2024, focusing on growth, impact, and collaborative efforts in healthcare research. **Methods:** Data from Scopus and SciVal was utilised to analyze bibliometric indicators such as scholarly output, citation metrics, and publication visibility over the past decade. **Results:** The Apollo Hospital Group experienced significant growth in research publications, increasing from 255 in 2015 to 794 in 2024, totalling 5,005 publications. The average citation count stood at 11.9 per publication, indicating strong engagement with the academic community. International collaborations were prominent, accounting for 26.4% of publications and achieving a high citation impact (27.3). The research garnered considerable visibility with 79,666 views, where 47.5% of the publications appeared in the top 50% of journals (Q1 to Q2) and 86.3% in the top 75% (Q1 to Q3). Notably, the average field-weighted citation impact rose from 0.73 in 2015 to 1.88 in 2024, reflecting their research's high quality and credibility. **Conclusions:** The analysis concludes that Apollo Hospitals has solidified its status as a key player in healthcare research, evidenced by substantial growth in productivity and impact. Strategic collaborations and high-quality publications have enabled the institution to contribute significantly to global healthcare knowledge advancement. Their commitment to research excellence reflects a dedication to improving healthcare outcomes and practices worldwide.

**Keywords:** Apollo Hospitals; Bibliometric Analysis; Healthcare Research; Publication Impact; Citation Metrics; International Collaboration; Field-Weighted Citation Impact.

Corresponding Author: Raju Vaishya  
Email: raju.vaishya@gmail.com

### Graphical Abstract



### Introduction

Established in 1983 by Dr. Prathap C. Reddy, Apollo Hospitals has emerged as Asia's leading integrated healthcare service provider, dedicated to providing healthcare of international standards accessible to all [1]. Guided by the mission statement, “*To bring healthcare of international standards within the reach of every individual,*” Apollo Hospitals is committed to excellence in education, research, and healthcare for the benefit of humanity [2]. The organization has positioned itself robustly in clinical services, medical research, and education. The *Apollo Hospitals Research and Education Foundation (AHERF)* is pivotal in advancing healthcare knowledge and practice through rigorous inquiry and exploration. Apollo Hospitals’ official journal, *Apollo Medicine* [3], has completed a glorious journey of 20 years and proves the Group's commitment to fostering research and publications in the biomedical field [4].

As the healthcare landscape continues to evolve, assessing the impact and productivity of research activities within a prominent health institution is essential. This study aims to analyze the bibliometric profile of the *Apollo Hospitals Group* from 2015 to 2024. By examining various bibliometric indicators—such as publication counts, citation metrics, and the distribution of publications across journals—this analysis seeks to provide insights into the research dynamics that have shaped Apollo Hospitals over the past decade. Additionally, the study aims to assess the impact of the Group's publications through citation analysis, encompassing metrics such as Field-Weighted Citation Impact (FWCI) and Citations Per Publication (CPP). By providing a comprehensive bibliometric analysis, this study aims to understand Apollo Hospitals' role in the global healthcare research landscape and its ongoing commitment to advancing medical knowledge and practice for the benefit of

society. The citation analysis involved comparing the citation counts and FWCI of Apollo's publications with the global average, providing a clear picture of the influence and impact of their research.

The evaluation of research excellence is a pivotal aspect of discerning the impact and contributions of academic institutions over time. Through a bibliometric analysis from 2015 to 2024, valuable insights into the research output and influence of the Apollo Hospitals Group can be gleaned. This examination of publication trends, citation counts, and collaboration networks offers a comprehensive understanding of the research landscape within the organization. Consequently, one crucial facet of evaluating research excellence lies in comprehending the vision and principles that underpin an organization's research activities. By aligning research outcomes with overarching principles and goals, researchers can effectively assess the relevance and impact of the group's endeavours within the broader context of healthcare research.

Several studies have provided insights into research productivity and collaboration in healthcare settings. For instance, the study conducted by Mahmoud et al. (2020) revealed increasing publication counts and impact factors across various medical specialities in Irish hospitals from 2007 to 2018 [5]. These findings offer valuable insights to guide strategic improvements in Irish health research and resource allocation for enhanced scientific output. Similarly, Alkhatip et al. (2020) presented a bibliometric analysis of pediatric anaesthesia research output from two Irish hospitals, revealing discrepancies in publication distribution, impact factors, and collaborative efforts [6]. The findings

underscore the need for enhanced research planning and collaboration strategies to elevate the quality and quantity of anaesthetic publications in Irish pediatric healthcare institutions.

The study by Hu et al. (2024) also utilized CiteSpace software to conduct a comprehensive bibliometric analysis of research-oriented hospitals in China, revealing trends, collaboration patterns, and research hotspots [7]. The results suggest a need for enhanced interdisciplinary partnerships, targeted development strategies, and innovation to address challenges and optimize the construction and operation of research-oriented hospitals, ultimately improving healthcare outcomes for populations. Finally, the study by Tocora et al. (2024) conducted a scientometric analysis of leading clinics and hospitals in five Latin American countries to assess their scientific productivity and collaboration patterns [8]. The findings highlight institutions with high publication numbers, citations, collaborations, and patent applications, emphasizing the importance of identifying priorities for funding and support to enhance clinical research in Latin America and strengthen global health research initiatives. Some bibliometric studies focussing on government-run Indian medical institutes were conducted, such as those on Government Medical College & Hospital, Chandigarh [9], Government Medical College Jammu [10], All India Institute of Medical Sciences or AIIMS [11–15], National Institute of Mental Health and Neurosciences or NIMHANS [16], and Post Graduate Institute of Medical Education & Research or PGIMER [17]. However, such studies focussing on private/corporate healthcare institutions/hospitals are lacking.

By synthesizing these insights, the current study aims to provide a nuanced understanding of the Apollo Hospitals Group's contributions to healthcare research, setting the stage for future investigations into its enduring impact and role in the global research community.

### **Methods**

This study employs a comprehensive bibliometric analysis to assess the research contributions of the Apollo Hospital Group (covering 23 institutions: Institution id: 704522) over the past decade, specifically from 2015 to 2024. By utilizing Scopus data extracted via the SciVal last accessed on February 19<sup>th</sup>, 2025, we aim to derive insights into the quantity, quality, and impact of scholarly output produced by the organization. The methodology encompasses several key components, which are detailed below.

### **Data Collection**

We systematically gathered data from the Scopus database, renowned for its extensive coverage of peer-reviewed literature across multiple disciplines. The analysis focused on publications authored by Apollo Hospital personnel, including articles, reviews, conference papers, and other scholarly works that contribute to the body of medical research.

### **Bibliometric Indicators**

Several bibliometric metrics were utilized to evaluate the research output and its impact.

### ***Publication Metrics***

This includes total scholarly output, outputs in top citation percentiles, and

publications in top journal percentiles. We analyzed the total number of publications and tracked the annual increase in output to understand growth trends over the decade.

### ***Citation Metrics***

We assessed citation counts, CPP, and FWCI. CPP provides a measure of average citations received by each publication. At the same time, FWCI allows for comparison against the global average for similar papers, thus contextualizing the impact of Apollo's research relative to other works in the field.

### ***Views Metrics***

This involves counting the total views of published works, outputs in top views percentiles, and average views per publication. These indicators gauge the visibility and engagement of Apollo's research within the academic and healthcare communities.

### ***Journal Quartiles***

Each publication was categorized according to journal quartile rankings (Q1, Q2, Q3, and Q4). Q1 and Q2 journals are recognized for their rigorous peer-review processes and high-impact factors. This classification helps assess the qualitative aspect of the research output.

### ***Co-authorship and Collaboration Analysis***

To evaluate Apollo Hospital's collaborative efforts, we analyzed co-authorship patterns, both nationally and internationally. The percentage of publications resulting from collaborations was calculated to elucidate the institution's engagement with other research entities. We specifically investigated the impact of international collaborations on citation

counts and CPP, recognizing that partnerships beyond national boundaries can enhance the visibility and credibility of research. The analysis revealed that Apollo Hospitals has engaged in significant international collaborations, particularly with USA and European institutions, significantly contributing to the institution's research impact. The VOSviewer co-authorship map was generated based on bibliographic data sourced from Scopus.

### **Statistical Analysis**

The data were collated and statistically analyzed to identify trends, correlations, and significances. This analysis involved graphical representations, including trends of publication growth over the decade and distributions of publications across different journal quartiles. Average values and percentage distributions were computed to provide a comprehensive overview of the research landscape.

### **Interpretation of Results**

The bibliometric indicators were interpreted within the healthcare research environment, considering global trends and shifts in research priorities. By examining the outcomes of this analysis, the study aims to identify strengths, areas for improvement, and future opportunities for research and collaboration within the Apollo Hospital Group. By leveraging these methodologies, the study aims to present a detailed and nuanced narrative of

the Apollo Hospital Group's research productivity and impact over the past decade, shedding light on its contributions to healthcare and medical research.

### **Network Analysis**

Utilizing VOSviewer 1.6.20 and leveraging the Scopus database with primary keys, a comprehensive network analysis of Apollo Hospital Group's research productivity was conducted. The study examined co-authorship, co-occurrence, citation, and co-citation patterns. By constructing networks encompassing the top 50 authors, affiliations, countries, keywords (co-occurrence), journals (co-citation), and the top 68 highly cited papers with more than 100 citations, VOSviewer unveiled complex relationships among contributors, affiliations, geographic regions, publications, and thematic areas within the realm of Apollo Hospitals Group's research output.

### **Results**

The bibliometric analysis of the Apollo Hospital Group's research output over the past decade (2015-2024) reveals a remarkable trajectory of growth and influence within the healthcare sector. The findings indicate a consistent upward trend in scholarly publications, showcasing the organization's escalating commitment to research (Table 1).

Table 1. Comparative Research Metrics of Apollo Hospitals Group from the year 2015 to 2024

| Research Metric                      | 2015 | 2024  | Percentage (%) Increase |
|--------------------------------------|------|-------|-------------------------|
| <b>Total Publications</b>            | 255  | 794   | 211.37                  |
| <b>Top 10% Citations</b>             | 4.7  | 12.0  | 155.32                  |
| <b>Top 10% Journals</b>              | 8.8  | 17.3  | 96.59                   |
| <b>Field-Weighted Citation Index</b> | 0.73 | 1.88  | 157.53                  |
| <b>Total Views</b>                   | 4836 | 10201 | 106.67                  |

**Publication Growth**

The total number of publications authored by Apollo Hospitals increased significantly from 255 in 2015 to 794 in 2024 (211.37% increase), culminating in 5,005 publications over the analyzed period. This yields an average of 500.5 publications per year, highlighting a

pronounced and sustained rise in research output, particularly in the last five years of the decade (Figure 1). This increase highlights Apollo Hospitals' proactive approach to contributing to medical knowledge and addressing pressing healthcare challenges.

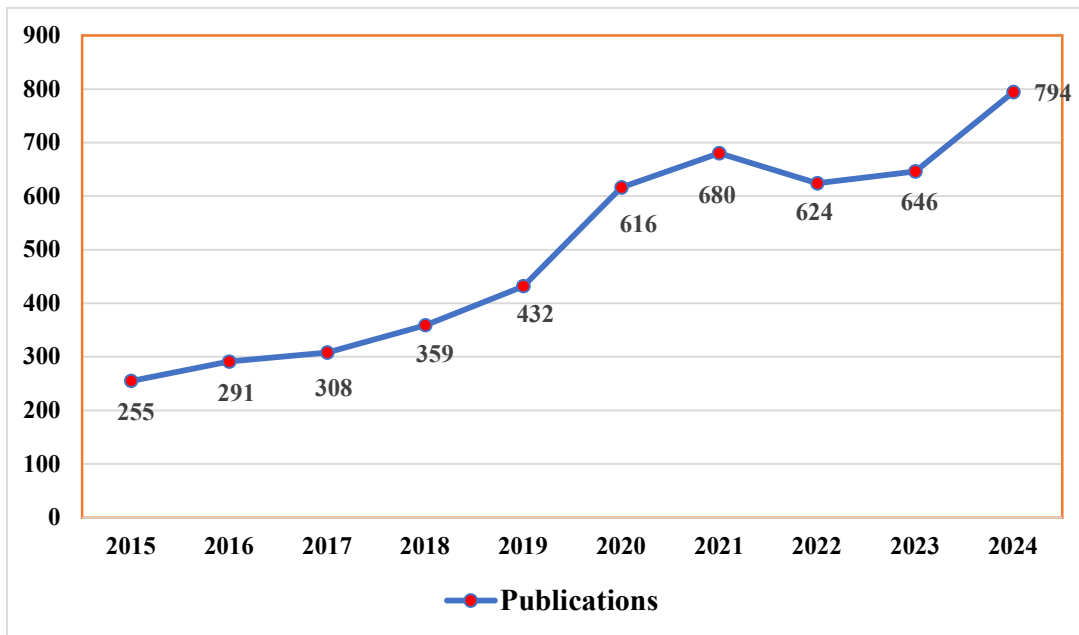


Figure 1. A rising trend of publications of Apollo Hospital Group authors in the last decade (Source: Sci Val)

**Citation Impact**

In conjunction with the growth in publication numbers, there has been a notable increase in total citations (n=59,333), reflecting productivity and the broader impact of the research conducted. The analysis indicates an average of 11.9

CPP and FWCI of 1.27. The FWCI rose from 0.73 in 2015 to 1.88 in 2024 (a percentage increase of 157.33), demonstrating substantial engagement with the academic community and a strong resonance of Apollo's research findings within relevant discourses (Table 1).

### Collaborative Research

Collaboration emerged as a central pillar of the Apollo Hospital Group's research strategy. The analysis revealed that 44.4% of the publications resulted from national collaborations, while 26.4% were the product of international partnerships. Notably, international collaborations demonstrated a higher average CPP of 27.3

and FWCI of 2.91, suggesting that research produced in collaboration with global entities tends to receive greater recognition and validation (Table 2). This trend aligns with contemporary approaches in healthcare research that emphasize interdisciplinary and transnational collaboration as vital for tackling complex health issues.

Table 2. Geographical Collaboration of Apollo Hospitals Group Authors and their Impact

| <b>Geographical Collaboration</b>       | <b>Percentage Involvement</b> | <b>Average Citations Per Publication (CPP)</b> | <b>Average Field Weighted Citation Impact (FWCI)</b> |
|---|-------------------------------|--|--|
| <b>International</b>                    | 26.4                          | 27.3   | 2.91   |
| <b>National only</b>                    | 44.4                          | 7.9  | 0.88   |
| <b>Institutional only</b>               | 22.1                          | 4.2  | 0.39   |
| <b>Single author (no collaboration)</b> | 7.0                           | 3.1  | 0.38   |

Figure 2 illustrates a citation-based collaboration network map showcasing the top 50 most productive organizations out of 9,570. Each organization had to have a minimum of 9 papers, leading to 57 organizations meeting these criteria. The Total Link Strength (TLS) of co-authorship links with other organizations was computed for all 58 organizations. The top 50 most productive organizations were selected for VOS viewer analysis based on the highest TLS. Among these organizations, Indraprastha Apollo

Hospitals, New Delhi (n=2775) emerged as the leader, followed by Apollo Hospitals, Chennai (n=1159), Apollo Hospitals Hyderabad (n=419), and Apollo Hospitals Bangalore (n=388). This selection process resulted in the forming of five distinct clusters, interconnected by 375 links with a TLS of 2941. Cluster 1 comprises 21 organizations, followed by Cluster 2 with 10 organizations, cluster 3 with nine organizations, cluster 4 with seven organizations, and cluster 5 with three organizations.

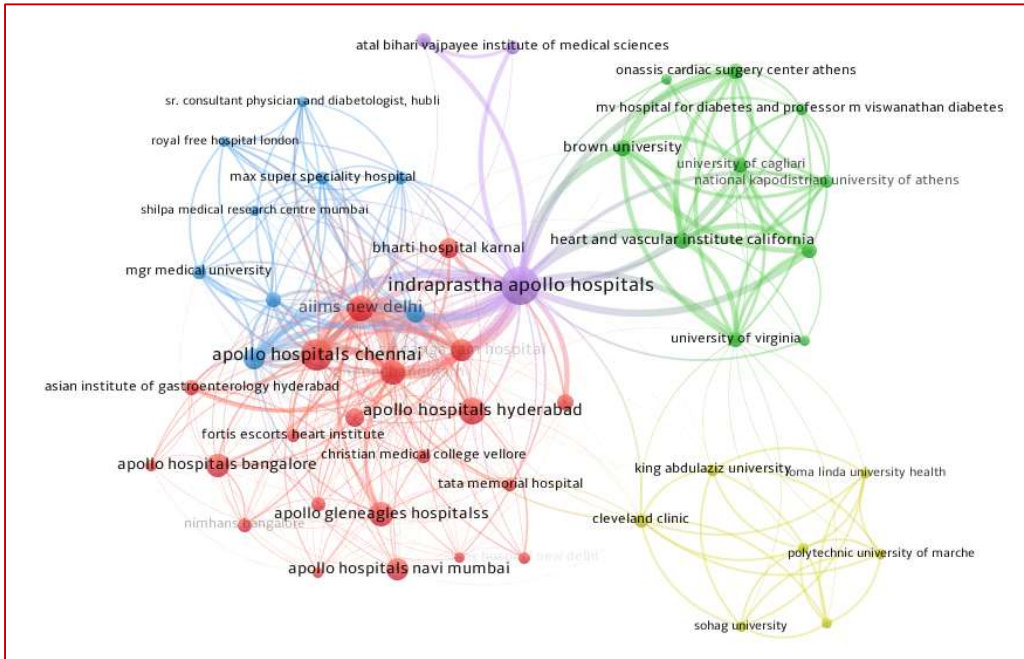


Figure 2. Collaboration Network of the Top 50 Institute Affiliations

The collaboration network analysis encompassed 166 countries. After applying a minimum threshold of 40 documents and 2000 citations per country, 50 countries were selected for further study. This analysis resulted in three distinct clusters: red (28 countries), green (15 countries), and blue (7 countries). The network included

1225 links and a TLS of 37,623, illustrating the scientific connections between the collaborating countries (Figure 3). Participants in Apollo Hospitals Group's scholarly output included the United States (n=633), the United Kingdom (n=537), Italy (n=300), Canada (n=246), and Australia (n=228), among others.

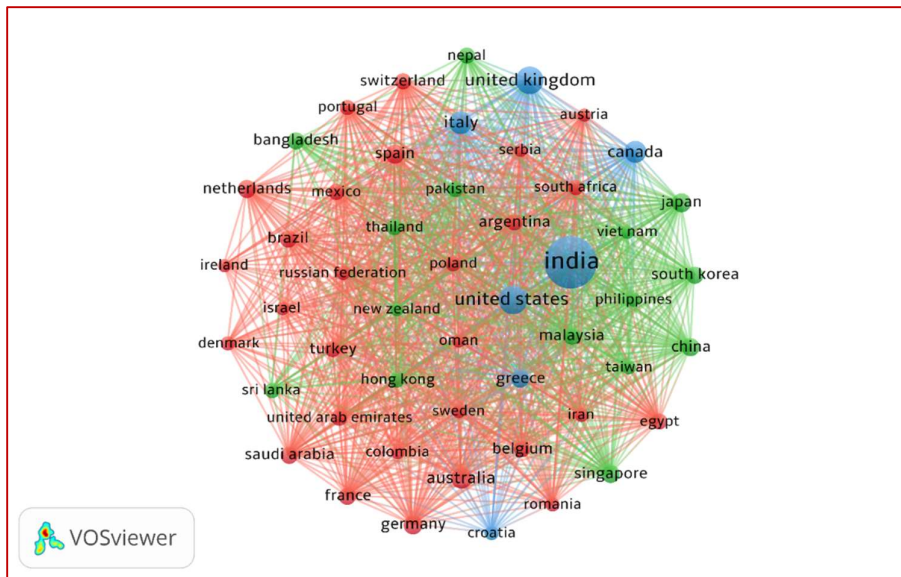


Figure 3. The International Scientific Collaboration Network of the Top 50 Countries



### Prolific Authors

A detailed examination of the bibliometric profile of the top 20 prolific authors from Apollo Hospitals revealed diverse expertise and contributions. The total number of publications among these authors ranged from 40 to 377 (Table 3). In terms of publication productivity, the most

significant contributions came from authors Vaishya, Raju (n=377), Vaish, Abhishek (n=152), and Khanna, Narendra Nath (n=103). This output concentration reflects the presence of highly active researchers within the institution who are at the forefront of generating significant knowledge in their respective fields.

Table 3. Bibliometric profile of the Top 20 prolific authors of Apollo Hospitals Group: 2014-2024 (Source: SciVal)

| S.No. | Author's Name             | Publications | Citations | Citations Per Publication (CPP) | Field-Weighted Citation Impact (FWCI) | h-index | Output in Top 10% Citation Percentiles (Field-Weighted) |
|-------|---------------------------|--------------|-----------|---------------------------------|---------------------------------------|---------|---|
| 1     | Vaishya, Raju             | 377          | 7642      | 20.3                            | 2.3                                   | 40      | 80  |
| 2     | Vaish, Abhishek           | 152          | 2238      | 14.7                            | 2.05                                  | 24      | 33  |
| 3     | Khanna, Narendra Nath     | 103          | 3503      | 34                              | 2.13                                  | 36      | 32  |
| 4     | Goenka, Mahesh Kumar      | 90           | 1072      | 11.9                            | 1.14                                  | 25      | 14  |
| 5     | Ramakrishnan, N.          | 83           | 1093      | 13.2                            | 1.63                                  | 27      | 8   |
| 6     | Vijay, Vipul              | 79           | 780       | 9.9                             | 0.59                                  | 17      | 1   |
| 7     | Gowrishankar, Swarnalata  | 70           | 425       | 6.1                             | 0.41                                  | 15      | 2   |
| 8     | Sibal, Anupam             | 61           | 468       | 7.7                             | 0.67                                  | 15      | 6   |
| 9     | Agarwal, Amit Kumar       | 61           | 683       | 11.2                            | 0.54                                  | 16      | 0   |
| 10    | Sinha, Sanjay             | 61           | 193       | 3.2                             | 0.76                                  | 10      | 7   |
| 11    | Raj, Revathi              | 57           | 343       | 6                               | 0.48                                  | 13      | 2   |
| 12    | Chawla, Rajesh            | 55           | 1447      | 26.3                            | 2.83                                  | 21      | 18  |
| 13    | Bhattacharya, Saptarshi   | 53           | 75        | 1.4                             | 0.51                                  | 12      | 6   |
| 14    | Chowdhry, Mohit           | 48           | 240       | 5                               | 0.23                                  | 11      | 0   |
| 15    | Uppuluri, Ramya           | 47           | 291       | 6.2                             | 0.52                                  | 13      | 1   |
| 16    | Mehta, Ravindra M.        | 46           | 629       | 13.7                            | 1.71                                  | 17      | 8   |
| 17    | Sengottuvelu, Gunasekaran | 45           | 265       | 5.9                             | 0.86                                  | 10      | 3   |
| 18    | Gopalakrishnan, Ram       | 41           | 391       | 9.5                             | 0.71                                  | 17      | 5   |
| 19    | Venkataraman, Ramesh R.   | 41           | 446       | 10.9                            | 0.59                                  | 22      | 3   |
| 20    | Sharma, Punit             | 40           | 312       | 7.8                             | 1.28                                  | 31      | 5   |

The VOSviewer co-authorship map was generated based on bibliographic data from Scopus. The analysis focused on co-authorship among 25,774 authors, with a refined selection criteria of 50 authors who met a minimum threshold of 26 documents and 50 citations per author. This selection process formed seven distinct clusters,

interconnected by 141 links with a TLS of 2763. Cluster 1 consists of 13 authors, followed by clusters 2 and 3 with 12 authors each, cluster 4 with six authors, cluster 5 with four authors, cluster 6 with two authors, and cluster 7 with one author, as shown in Figure 4.

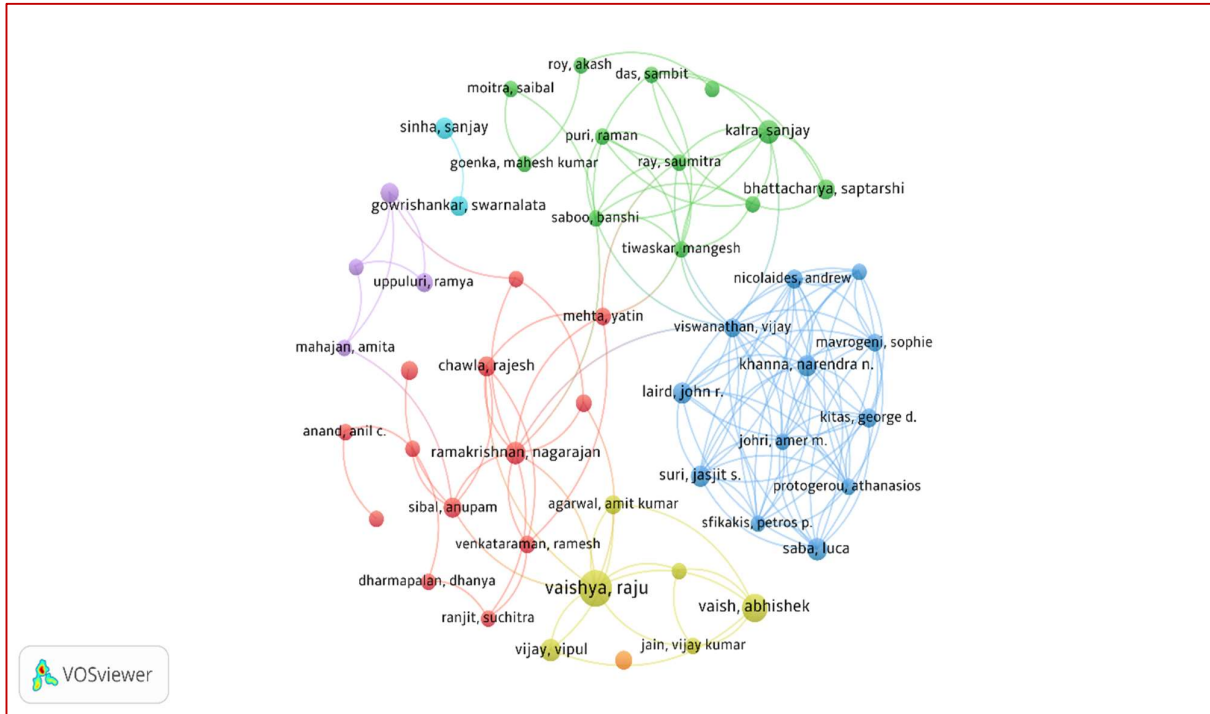


Figure 4. Network visualisation of co-authorship of the Top 50 Apollo Authors

### Visibility and Engagement

The published works garnered considerable visibility, accumulating 79,666 views, translating to an average of 15.9 views per publication in Scopus. There has been a substantial increase of 106.67% in article views in the past decade (Table 1). This high level of engagement, coupled with a top 9.3% percentile ranking, signifies a strong interest in and relevance to Apollo's research within the healthcare discourse and academic communities. The average Field-Weighted views impact was

0.92 in 2015 and 1.98 in 2024 (average of 1.13).

### Quality of Research

The quality of the research is further substantiated by its placement within the top 10% of journal percentiles: 11.8% for journals and 9.1% for citations. The number of Apollo Hospitals' publications in higher quartile journals (top 10%) has increased substantially over the last decade, with an increase of 96.59% from 2015 to 2024 (Table 1).

The quality of research output is further evidenced by the distribution of publications across journal quartiles, with 47.5% appearing in high-impact Q1 to Q2

journals and 86.3% in Q1 to Q3 journals. The number of Apollo Hospitals' publications in higher quartile journals has increased over the last decade (Figure 5).

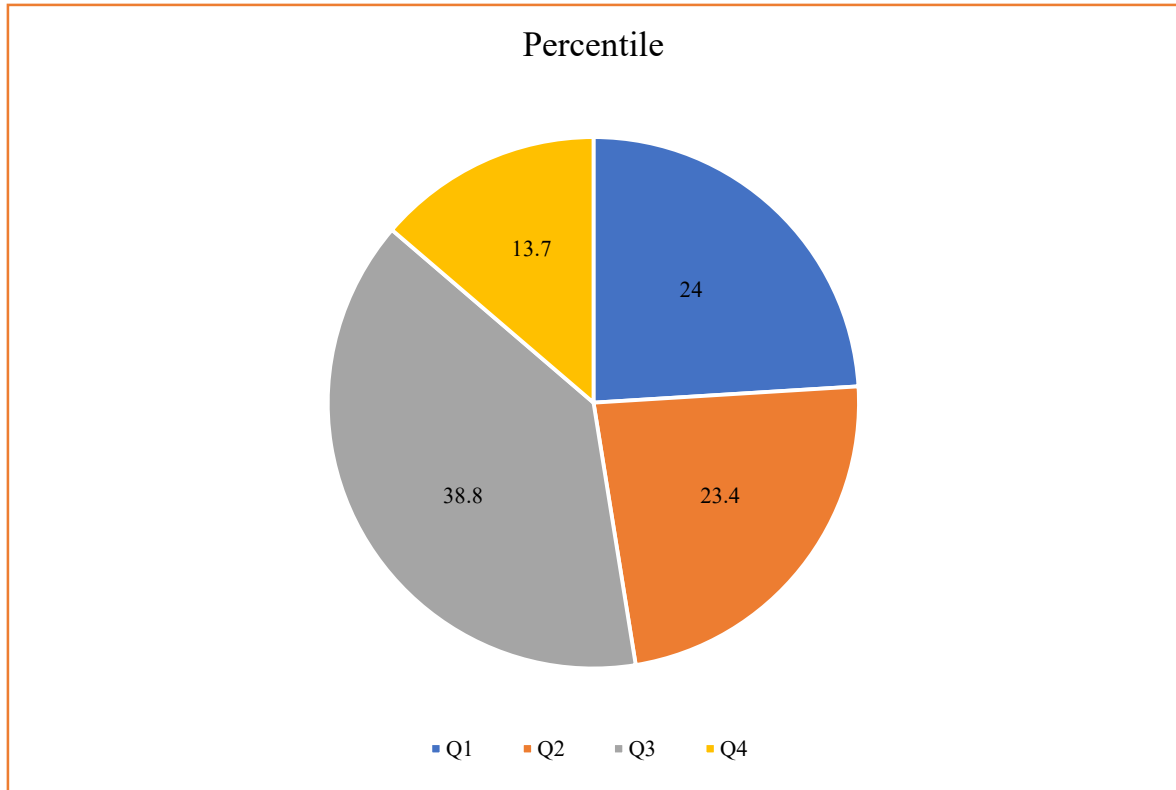


Figure 5. Journals quartile distribution of Apollo Hospitals' authors

This balanced output illustrates the institution's dedication to publishing in prestigious venues that adhere to rigorous peer-review processes. Additionally, the analysis reveals a positive trend in the average FWCI, which rose from 0.74 in 2015 to 1.84 in 2024 (148.6% increase). This increase indicates an enhancement in the quality and significance of the research and highlights the growing recognition of Apollo's contributions to the global medical community.

**Subject Areas**

Apollo Hospitals' authors primarily published on subjects related to Medical

Sciences (96.0%), followed by Natural Sciences and Engineering and Technologies. Apollo's researchers have contributed to 443 Topic Clusters and 2,313 Topics in the last decade.

**Policy Impact**

5.1% of all publications for Apollo Hospitals' authors during 2015-2024 were cited by 602 prestigious global policy bodies, like NICE, World Health Organization (WHO), World Bank, PubMed Central (PMC), and several Nations' policy documents.

### **Funding**

Three hundred seventy-four top-level funding bodies were linked to 10.1% of publications by the authors of Apollo Hospital Group. The top ten supporting organizations are the National Institutes of Health (NIH), Department of Science and Technology of India (DSTI), Indian Council of Medical Research (ICMR), Sanofi France, Johnson and Johnson (J&J), Pfizer, Ministry of Education, India, Astra Zeneca, Wellcome Trust, European Commission (EC).

### **Data Visualization Metrics**

There were 2,814 mentions in the media received by Apollo Hospitals Group during the last decade, including National and International media sources.

### **Discussion**

This bibliometric study presents insightful findings that illuminate the quality and impact of the research under examination. One of the study's primary outcomes is the impressive placement of the research findings in top-tier journals, with 11.8% of these journals belonging to the highest percentile - a clear indication of their stringent peer-review processes and academic rigour. Publishing in such prestigious journals suggests that the research has met high standards for originality, methodological soundness, and contribution to the field. This strong performance is supported by an average citation impact of 11.9 CPP, illustrating the relative influence of Apollo's research within similar disciplines. Publishing research in high-impact journals is a significant milestone for researchers, as these journals have a wide readership and high citation rates. High-impact research usually involves groundbreaking

discoveries, significant advancements, and innovative solutions to pressing problems.

The bibliometric analysis reveals that 9.1% of Apollo Hospitals' publications are among the top 10% most cited globally, reflecting a significant output in the top citation percentiles. This metric serves as a critical measure of impact, demonstrating that the research has been recognised and actively referenced by other scholars, thus fostering further exploration and dialogue in the subject area. A high citation rate typically correlates with research that provides valuable insights, establishes theoretical frameworks, or introduces innovative methodologies that others are eager to build upon. A recent bibliometric study revealed a significant increase in publications from Indian medical institutions, particularly during and after the COVID-19 pandemic. Among private hospitals, authors affiliated with the Apollo Hospitals Group have notably led the publication count [18].

The group's publications garnered nearly 78,000 views in the Scopus database, highlighting the widespread interest in their research, particularly in clinical, arts, and humanities fields, where extensive citation may only sometimes occur. Notably, 9.3% of their publications ranked in the top 10% most viewed globally, with an impressive average of 15.9 views per publication. In 2024, the average FWCI of 1.88 indicates that Apollo's research receives 88% more citations than the global average for similar publications, further underscoring the quality and relevance of their work. An FWCI above 1.00 demonstrates a notable recognition for their contributions compared to the broader research landscape. Collectively, these findings emphasize Apollo Hospitals' influential presence in healthcare research and its

commitment to producing impactful and widely viewed publications.

Bibliometric studies play a pivotal role in scholarly communication by providing rigorous quantitative analyses that elucidate patterns in producing, disseminating, and utilising academic literature. Utilizing advanced statistical methods, these studies enable researchers to extract meaningful insights from extensive bibliographic datasets, facilitating the identification of trends within specific fields, understanding collaboration dynamics, and assessing the impact of both individual research outputs and collective knowledge within the academic community [19,20].

Another critical aspect of the bibliometric analysis is its reflection on the broader academic landscape. It highlights the interconnectedness of research outputs and how studies influence one another. In an era where collaboration and interdisciplinary approaches are increasingly encouraged, the visibility of influential research becomes crucial in shaping future inquiries and guiding funding priorities. Collaboration among researchers is essential for fostering innovation, sharing expertise, and addressing complex challenges. By working together, researchers can combine their strengths, overcome limitations, and generate more impactful research. Collaboration can take many forms, including co-authorship, joint projects, and knowledge sharing.

As the academic landscape evolves, marked by an unprecedented surge in research output and increasingly complex collaborative networks, the relevance of bibliometric studies has heightened. They have become essential tools for structured research evaluation, aiding funding

agencies, academic institutions, and policymakers in decision-making related to resource allocation, academic promotion, and research strategy development. Moreover, bibliometric analyses foster interdisciplinary collaboration by mapping connections among researchers and their contributions, enhancing global visibility and sharing of academic work [21,22].

This study found a substantial and progressive increase in the publications by Apollo Hospitals' authors in the last decade, with an over three-fold increase between 2015 and 2024, culminating in 5,005 publications. Moreover, several of its authors are prolific researchers, and 13 have published over 50 papers in the last decade (Table 3). These prolific researchers have consistently produced high-quality, impactful work and are recognized as leaders in their field. The dynamic interplay between research and clinical practice is crucial for advancing healthcare. Research generates new knowledge and evidence-based practices translated into clinical settings to improve patient care. Conversely, clinical practice provides valuable feedback and data to researchers, informing future research directions and priorities. This integration leads to improved patient outcomes, enhanced quality of care, cost-effectiveness, professional development, and advancement of scientific knowledge.

Apollo Hospitals Group is also a pioneer in the postgraduate (PG) education and training for the students of the Diplomate of National Board (DNB) and Fellowship of National Board (FNB) programs. This is being offered at 24 locations across Apollo Group Hospitals, in 57 specialities and super specialities. Currently, there are PG 1173 students, and they account for around 10% of the total

number of PG students of the DNB in India [23].

We chose SciVal for our bibliometric data collection as it is a powerful research intelligence tool that offers a comprehensive analysis of research performance at various levels, including institutions, departments, and individual researchers, by using Scopus data. The Scopus database covers a wide range of scientific information by providing access to millions of articles, including from many international publishers [24,25]. It is also a powerful search tool to help find relevant information quickly and efficiently. It also provides multiple research bibliometrics, such as citation counts, h-index, and CiteScore, to evaluate the impact of research.

### **Study Limitations**

While this bibliometric analysis provides valuable insights into the research contributions of the Apollo Hospitals Group, several limitations must be acknowledged. First, the study relies on data extracted from Scopus and SciVal, which may not capture all relevant publications, particularly those in non-indexed journals or regional publications. This limitation may underreport the total research output and its impact. Additionally, the study focuses on quantitative metrics such as publication counts and citation rates, which may not fully represent the quality or significance of the research findings. Qualitative assessments could provide deeper insights into the impact of the research on clinical practice and patient outcomes. Lastly, we could not compare the metrics with other private Indian institutions, similar to Apollo Hospitals.

### **Future directions**

Building on the findings of this study, future research could explore a more nuanced analysis of the research context and its implications. Investigating specific focus areas within Apollo Hospitals' research output would be valuable, such as identifying emerging trends in healthcare technologies, public health initiatives, or patient care innovations. Additionally, conducting longitudinal studies that monitor the impact of significant publications on clinical practices and patient outcomes would enhance understanding of research efficacy. A comparative analysis with other leading healthcare institutions across Asia or globally could also shed light on the relative standing and contributions of Apollo Hospitals in the broader context of healthcare research. Exploring the impact of specific collaborations—both national and international—on publication quality and innovation could provide further insights into effective research strategies.

### **Relevance of the Study**

This study is of significant relevance to multiple stakeholders in the healthcare sector. The analysis offers a comprehensive overview of Apollo Hospitals' research trajectory for researchers and healthcare practitioners, highlighting strengths in specific areas and paving the way for future collaborations. This study highlights the importance of research excellence in the healthcare sector and serves as a valuable eye-opener for both governmental and private institutions. Demonstrating the significant impact of organized research efforts, it underscores the necessity for policymakers and academic organizations—regardless of their affiliation—to prioritize and evaluate

research outputs systematically. Encouraging corporate hospitals to adopt this approach not only enhances their contributions to healthcare knowledge but also aligns with broader public health goals. Collaboration between governmental bodies and private entities could foster a more robust research ecosystem, ultimately improving patient care and healthcare outcomes on a larger scale.

Policymakers can benefit from understanding the contributions of prominent healthcare institutions in shaping healthcare policies and practices, emphasizing the importance of funding and supporting such research endeavours. Moreover, the findings underline the importance of international collaborations in enhancing research visibility and impact, which can serve as a motivational framework for other healthcare providers aiming to elevate their research profiles. Finally, this study contributes to the broader discourse on the importance of rigorous, high-quality healthcare research and its pivotal role in advancing medical knowledge for global health outcomes. This is essential for driving innovation and advancing knowledge in the respective field.

### **Conclusion**

This bibliometric analysis highlights Apollo Hospitals' impressive growth and influence in healthcare research over the past decade. The substantial increase in research publications, from 255 (in 2015) to 794 (in 2024) and a total of 5,005 publications, demonstrates the institution's commitment to advancing medical knowledge. The average citation count of 11.9 per publication and a significant 26.4% of international collaboration outputs indicate strong

academic community engagement. Moreover, the rise in field-weighted citation impact from 0.73 to 1.88 reflects the high quality and relevance of the research produced. Overall, Apollo Hospitals has established itself as a prominent contributor to global healthcare advancements, driven by strategic collaborations and a focus on high-quality research output. The study findings illustrate Apollo Hospitals' influential role in shaping healthcare research and practices both nationally and internationally.

### **Statements and Declarations**

#### **Conflicts of interest**

The authors declare that they do not have conflict of interest.

#### **Funding**

No funding was received for conducting this study.

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