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Research Article

Global bibliometric trends in pharmacoeconomics research from 2015 to 2024

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ABSTRACT

Objectives: This study aims to explore global research trends in pharmacoeconomics over the past decade through a bibliometric analysis of publications from 2015 to 2024. Methods: A bibliometric analysis of pharmacoeconomic research articles published between 2015 and 2024, sourced from the PubMed database, was conducted using a structured search strategy targeting economic evaluation terms in combination with drug-related keywords. Data were analyzed using the *Biblioshiny* interface of the *bibliometrix* R package to assess publication trends, journal and institutional productivity, international collaboration, and thematic evolution. Citation data were further en-riched using metadata retrieved via the CrossRef REST API utilizing the *httr*, *jsonlite*, *dplyr*, and *purrr* packages in R. Results: The most prolific journals included *Journal of Medical Economics* , *Pharma-coeconomics*, and*PLOS ONE*. Foundational concepts such as "cost-effectiveness analysis" and "sys-tematic review" remained dominant throughout the decade. Since 2020, disease-specific terms like "type diabetes", "chronic hepatitis", "lung cancer", and "urothelial carcinoma" gained promi-nence, reflecting increasing interest in evaluating interventions for high-burden diseases. When considering all-author affiliations, China had the highest number of publications. However, when limited to corresponding authors, typically indicating research leadership, the United States and the United Kingdom led in output and citation impact. Conclusion: This bibliometric review highlights significant trends in pharmacoeconomics research over the last decade. There is a growing empha-sis on evaluating therapies for infectious and chronic diseases, with strong contributions from US-and UK-based institutions. These findings can guide future research priorities, funding allocation,and collaborative strategies in global health economics.

Key words: bibliometric analysis, economic evaluation, pharmacoeconomics

INTRODUCTION

Pharmacoeconomics is a sub-discipline of health economics that evaluates the cost and value of pharmaceutical products and services[1]. It involves assessing and comparing therapeutic alternatives in terms of their economic efficiency and overall value to healthcare systems, using the four main approaches of cost-effectiveness analysis (CEA), cost-utility analysis (CUA), cost-benefit analysis (CBA), and cost-minimization analysis (CMA)[2]. Given the increase in pharmaceutical expenditure of healthcare systems worldwide, pharmacoeconomic evaluations have become indispensable in guiding the efficient allocation of limited healthcare resources[2].

The integration of pharmacoeconomic evidence into healthcare policy and reimbursement decision-making has been increasingly emphasized in many countries[3–5]. Cost-effectiveness data now play a vital role in drug formulary inclusion, price negotiations, and health insurance coverage decisions[6,7]. Additionally, pharmacoeconomic evaluations are central to promoting evidence-based healthcare policies, ensuring that funding decisions align with both economic efficiency and clinical benefit[6,7]. This highlights the global acknowledgment of the importance of maximizing cost-effectiveness in pharmaceutical expenditure.

Over the past decade, there has been a clear global trend toward formalizing the use of pharmacoeconomic evidence in healthcare decision-making. Many countries, including low- and middle-income economies, have developed national pharmacoeconomic guidelines to standardize evaluation practices[8–10]. The International Society for Pharmacoeconomics and Outcomes Research (ISPOR) maintains a comprehensive repository of pharmacoeconomic guidelines from more than 50 countries, highlighting the international commitment to methodological rigor and transparency[11,12]. In addition, the Guide to Economic Analysis and Research (GEAR) platform provides practical guidance and contextual tools to support high-quality economic evaluations, especially in low- and middle-income countries[13]. Several systematic reviews have also documented the

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evolution and diversity of these guidelines across jurisdictions, reflecting both shared principles and contextual adaptations[8–10]. In particular, the post-COVID-19 period has accelerated interest in cost-effectiveness and resource allocation studies, highlighting methodological advances and regional disparities in evidence generation.

Despite the increasing visibility and influence of pharmacoeconomic research, there is limited bibliometric evidence synthesizing global publication trends, collaboration patterns, and emerging themes in this research area. Bibliometric analysis provides a powerful quantitative tool to map scientific activity, identify influential actors, and uncover structural changes in a field over time[14]. Therefore, in this study, we aim to perform a global bibliometric analysis of pharmacoeconomics research over the past decade from 2015 to 2024. By analyzing publication outputs, key contributing countries and institutions, and research topics, we aim to illuminate the evolving landscape of pharmacoeconomic inquiry and inform future research and policy directions.

METHODS

Search strategy and data collection

PubMed, maintained by the U.S. National Library of Medicine, is a leading biomedical literature database providing free access to over 36 million citations from MEDLINE, life science journals, and online books[15]. It covers a wide range of biomedical and health-related fields, including clinical medicine, public health, and basic sciences. With content from more than 5,600 journals, PubMed ensures high-quality indexing and uses Medical Subject Headings (MeSH) for precise and systematic literature retrieval. Its comprehensive coverage and focus on biomedical research make it an essential resource for clinicians and researchers alike. In this study, the articles related to research on pharmacoeconomics were sourced from the PubMed database.

A literature search was conducted using the following search syntax: "(cost-minimization OR cost-benefit OR cost-effectiveness OR cost-utility OR cost-consequence OR economic evaluation) AND (drug OR drugs OR treatment OR treatments OR therapy OR therapies OR medicine OR agent OR agents OR regimen OR regimens OR pharmacoeconomic OR pharmacoeconomics)", restricting the search to titles and abstracts (N = 59,392). The article publication date was limited to between 2015 and 2024 to capture recent evidence and trends in economic evaluations related to drug interventions, ensuring that the analysis reflects a complete and stable dataset up to the most recently completed calendar year (N = 30,026). In addition, article type was restricted to clinical trials and comparative studies to ensure relevance (N = 4,535).

Bibliometric analysis and visualization

A bibliometric analysis was conducted to map the research landscape and identify trends in economic evaluations related to drug interventions. The *Biblioshiny* application, an interactive web-based interface of the "*bibliometrix*" R package[16], enabled comprehensive quantitative and network-based evaluations of the scientific literature. The analysis included document characteristics (annual scientific production), source impact (most relevant journals), institutional contributions, country-level productivity and collaboration, and trend topics through the studies' keywords.

To explore citation patterns and identify commonly referenced literature in the included studies, the Digital Object Identifier (DOI) of each article was utilized to retrieve metadata and reference lists via the CrossRef REST API[16]. For each article, reference data were extracted, including cited DOIs, unstructured references, and article titles where available. All references were aggregated across the studies to calculate the total number of citations each reference received within the dataset. This enabled identification of the most cited articles and the degree of reference overlap among the included studies. Articles without accessible reference metadata in CrossRef were excluded from this part of the analysis. The data were processed employing the "*httr*", "*jsonlite*", "*dplyr*", and "*purrr*" packages[17–20]. All the analyses were performed using R (version 4.2.0).

RESULTS

Annual scientific production

From 2015 to 2024, a total of 4,535 articles were identified. The consistent annual increase in publications related to the economic evaluation of drug interventions reflects a growing global interest in pharmacoeconomics and healthcare decision-making (Figure 1).

Publication journals

Table 1 presents the top 10 journals that published the most articles addressing the economic evaluation of drug interventions over the period 2015–2024. Prominent journals with more than 100 articles include *Journal of Medical Economics (191 articles), PLoS ONE (142), BMJ Open (119), Pharmacoeco-*

Table 1: Cumulative number of articles on the economic evaluation of drug interventions from top 10 journals during 2015–2024.

Journal	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Journal of Medical Economics	15	42	62	80	98	120	139	158	176	191
PLoS ONE	23	42	55	63	80	91	109	121	136	142
BMJ Open	9	15	25	30	39	61	81	90	102	119
Pharmacoeconomics	11	27	37	54	64	72	86	98	107	116
Expert Review of Pharmacoeconomics & Outcome Research	8	13	20	26	35	48	66	75	90	108
Value in Health	1	18	20	32	44	55	72	80	89	93
Frontiers in Pharmacology	1	2	3	5	7	9	24	45	60	70
Pharmacoeconomics Open	6	9	20	26	40	43	55	61	66	68
Clinical Economics and Outcomes Research	0	0	5	9	17	21	34	48	60	66
Advances in Therapy	2	7	8	10	17	24	38	50	55	58

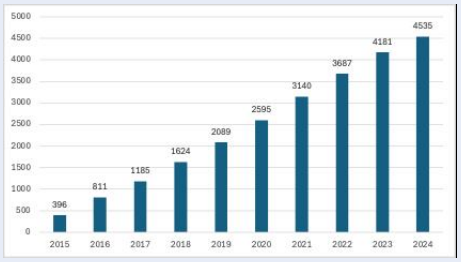

Figure 1: Cumulative number of pharmacoeconomics research published from 2015 to 2024.

nomics (116), and Expert Review of Pharmacoeconomics & Outcome Research (108). These journals are central platforms for disseminating research on drug cost-effectiveness, policy analysis, and healthcare financing.

Institutional contributions

Table 2 presents the top eight institutions contributing the highest number of publications on the economic evaluation of drug interventions. The School of International Pharmaceutical Business at China Pharmaceutical University (Nanjing, China) ranked first with 79 publications, followed by the Health Services Research Unit at the University of Aberdeen (UK) with 61 articles. Another unit from China Pharmaceutical University, the Center for Pharmacoeconomics and Outcomes Research, ranked third with 50 articles, highlighting the institution's strong influence in this research domain.

Notably, Chinese institutions accounted for four of the top five positions, including the Department of Pharmacy at the Second Xiangya Hospital, Central South University (44 articles) and the Department of Medical Oncology at West China Hospital, Sichuan University (37 articles), reflecting China's growing research capacity in pharmacoeconomics.

In addition, Harvard Medical School (US) and the School of Public Health and Preventive Medicine at Monash University (Australia) each contributed 36 publications, while the Mahidol University Health Technology Assessment (MUHTA) Program (Thailand) followed closely with 35 articles.

Country contributions and geographical collaborations

Figure 2 presents a global collaboration map, showing that the countries with the most prolific collaborative output in this field include the United States (1,173 articles), the United Kingdom (967), China (622), Canada (416), and Italy (392). The United States leads in publication volume and international collaborations, as indicated by dense connections with Europe and Asia. The United Kingdom and China also demonstrate strong bilateral collaborative contributions to the literature. Considering the countries of the corresponding authors, the top five contributors were England (1,594 articles), the United States (1,504), Switzerland (395), New Zealand (352), and the Netherlands (165).

Table 2: Top 8 institutions publishing on the economic evaluation of drug interventions.

Affiliation	Number of articles
School of International Pharmaceutical Business, China Pharmaceutical University, Nanjing, China	79
Health Services Research Unit, University of Aberdeen, Aberdeen, UK	61
Center for Pharmacoeconomics and Outcomes Research, China Pharmaceutical University, Nanjing, China	50
Department of Pharmacy, the Second Xiangya Hospital of Central South University, Changsha, China	44
Department of Medical Oncology, Cancer Center, West China Hospital, Sichuan University, Chengdu, China	37
Harvard Medical School, Boston, Massachusetts, US	36
School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia	36
Mahidol University Health Technology Assessment (MUHTA) Program, Mahidol University, Bangkok, Thailand	35

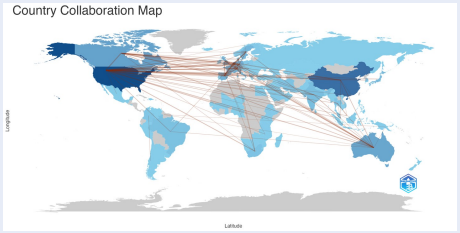

Figure 2: Global collaboration map of research on drug-related economic evaluations, displaying inter-country links with at least five collaborative publications.

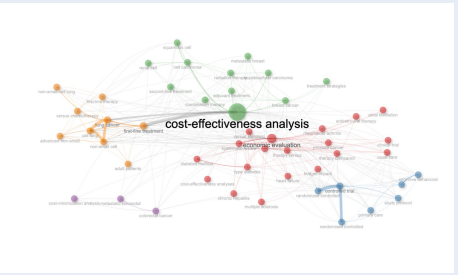

Figure 3: Keywords co-occurrence network.

Keyword analysis and research themes

Figure 3 presents a keyword co-occurrence network based on titles from publications on the economic evaluation of drug interventions between 2015 and 2024. The most prominent and central keyword in the network was "cost-effectiveness analysis", which connects broadly to other frequent terms such as "economic evaluation", "health technology assessment", "quality-adjusted life years", and "decision analysis". Other notable clusters include terms related to disease-specific applications (e.g., cancer, diabetes, cardiovascular disease), pharmaceutical policy (e.g., drug pricing, reimbursement), and outcomes research (e.g., utility measures, health-related quality of life).

Figure 4 illustrates the temporal evolution of keywords used in studies on the economic evaluation of drug interventions between 2015 and 2024. Foundational concepts such as "cost-effectiveness analysis", "economic evaluation", and "systematic review" began gaining prominence around 2017 and continue to be frequently used in recent years, indicating their central role in the field. Disease-specific and treatment-related terms, including "type diabetes", "chronic hepatitis", "lung cancer", and "urothelial carcinoma", appeared more recently, reflecting a growing focus on evaluating cost-effectiveness across diverse therapeutic areas. Emerging topics in 2023–2024, such as "drug pricing", "first-line treatment", and "folitropin alfa", indicate a shift toward more specialized interventions and contemporary clinical concerns.

Core articles and references

Table 3 presents the top-cited articles on the economic evaluation of drug interventions published between 2015 and 2016[21–29]. These studies reflect a diverse range of topics with significant policy and clinical relevance. The most cited work, with 2,414 citations,

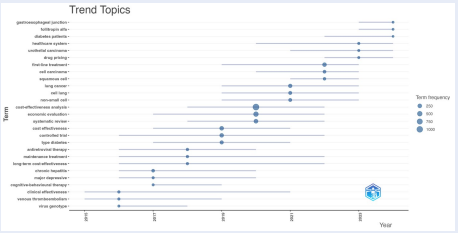

Figure 4: Trend topic evolution over the period 2015−2024.
The size of each bubble represents the frequency of term usage, while horizontal bars indicate the active span of each topic over the years.

is the methodological guidance titled "*Recommendations for conduct, methodological practices, and reporting of cost-effectiveness analyses*", published in *JAMA* (2016) [21]. This article, authored by Gillian D. Sanders and colleagues at Duke University, serves as a foundational reference in the field and underscores the importance of standardized practices in healthcare economic evaluations [21].

Other highly cited articles focused on specific therapeutic areas, including mental health, chronic diseases, and diagnostic strategies, with citation counts ranging from 181 to 381. For instance, the PREVENT trial, published in *The Lancet* (2015), evaluated the effectiveness and cost-effectiveness of mindfulness-based cognitive therapy in preventing depressive relapse [22]. Similarly, studies published in *Health Technology Assessment* assessed cost-effectiveness in contexts such as diagnosing giant cell arteritis and managing menorrhagia, reflecting interest in both diagnostic efficiency and women's health interventions [23].

A significant proportion of these influential articles originates from institutions in the United States (6 out of 9), highlighting the country's leadership in pharmacoeconomics and health services research [21,25–29]. Notable US-based studies included evaluations of *PCSK9* inhibitors [25], statin initiation thresholds, hepatitis C treatments [26], and hypertension therapies [28], published in high-impact journals like *JAMA*, *Annals of Internal Medicine*, and *The New England Journal of Medicine*, respectively. The United Kingdom contributed three articles, primarily from the University of Oxford [22,23] and the University of Birmingham [24], showcasing its strength in randomized controlled trials and technology assessments.

Table 4 highlights the most frequently cited references across the included studies, reflecting the foundational literature that underpins economic evaluations in healthcar [2,21,30–37]. The most cited works include widely recognized methodological guidelines, such as the *Second Panel on Cost-Effectiveness in Health and Medicine* [21] and the *CHEERS* reporting standards [31], which provide essential frameworks for study design and reporting practices. Key articles on cost-effectiveness thresholds, survival data reconstruction, and decision modeling also appear prominently, emphasizing the field's reliance on robust analytical methods.

Additionally, several citations focus on global disease burden data and health-related quality of life measurement, particularly tools like the EuroQol instrument [35,36] and utility studies [37] for specific conditions, highlighting the importance of standardized inputs for healthcare economic modeling. Collectively, these frequently cited works illustrate the central role of both methodological guidance and essential data resources in supporting rigorous and comparable economic evaluations of drug interventions.

DISCUSSION

In this report, we assessed and examined the global publication trends of articles on pharmacoeconomics, along with the number of articles published in the most prestigious journals. Between 2015 and 2024, a total of 4,535 pharmacoeconomics related articles were published, showing a steady increase over time. The dominance of specialized journals and leading contributions from China, the United States, and the United Kingdom indicate both increasing global engagement and persistent disparities in research influence. Institutional and keyword patterns suggest a strong methodological focus on cost-effectiveness and health technology assessment, underscoring the field's continued alignment with evidence-based healthcare evaluation.

Our analysis shows that over the past decade, cost evaluations have increasingly focused on chronic diseases with a high global burden, such as diabetes types, chronic hepatitis, lung cancer, and urothelial carcinoma [38]. For example, lung cancer remains one of the top causes of cancer-related deaths worldwide [39], and type 2 diabetes is projected to affect over a billion individuals by 2050, disproportionately impacting low- and middle-income countries [40]. Similarly, the persistent mortality associated with chronic hepatitis, particularly in East Asia and Africa [41], and the rising incidence of urothelial carcinoma in high-income countries, make these diseases critical targets for cost-effectiveness studies [42]. These alignments suggest that research focus is closely tied to disease burden, reflecting global health priorities.

Table 3: Top 10 most cited articles on the economic evaluation of drug interventions during 2015–2016 based on CrossRef reference data.

Article title	Journal and publication year	Corresponding author	Number of citations
Recommendations for conduct, methodological practices, and reporting of cost-effectiveness analyses: Second panel on cost-effectiveness in health and medicine [21]	JAMA 2016	Gillian D. Sanders, PhD Duke Clinical Research Institute, Duke University, Durham, North Carolina, USA	2,414
Effectiveness and cost-effectiveness of mindfulness-based cognitive therapy compared with maintenance antidepressant treatment in the prevention of depressive relapse or recurrence (PREVENT): a randomised controlled trial [22]	The Lancet 2015	Willem Kuyken, PhD Department of Psychiatry, University of Oxford, Oxford, UK	381
The role of ultrasound compared to biopsy of temporal arteries in the diagnosis and treatment of giant cell arteritis (TABUL): a diagnostic accuracy and cost-effectiveness study [23]	Health Technology Assessment 2016	Raashid Luqmani, PhD Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford, Oxford, UK	339
A randomised controlled trial of the clinical effectiveness and cost-effectiveness of the levonorgestrel-releasing intrauterine system in primary care against standard treatment for menorrhagia: the ECLIPSE trial [24]	Health Technology Assessment 2015	Jane P Daniels, PhD Birmingham Clinical Trials Unit, University of Birmingham, Birmingham, UK	307
Cost-effectiveness of PCSK9 inhibitor therapy in patients with heterozygous familial hypercholesterolemia or atherosclerotic cardiovascular disease [25]	JAMA 2016	Kirsten Bibbins-Domingo, PhD, MD, MAS University of California, San Francisco, Division of General Internal Medicine, Zuckerberg San Francisco General Hospital, California, USA	283
Cost-effectiveness and budget impact of hepatitis C virus treatment with sofosbuvir and ledipasvir in the United States [26]	Annals of Internal Medicine 2015	Jagpreet Chhatwal, PhD Department of Health Services Research, The University of Texas MD Anderson Cancer Center, Houston, Texas, USA	282
Cost-effectiveness of 10-year risk thresholds for initiation of statin therapy for primary prevention of cardiovascular disease [27]	JAMA 2016	Ankur, PhD Department of Health Policy and Management, Havard School of Public Health, Boston, Massachusetts, USA	200
Cost-effectiveness of hypertension therapy according to 2014 guidelines [28]	The New England Journal of Medicine 2015	Andrew E. Moran, MD, MPH College of Physicians and Surgeons, Columbia University, New York, USA	187
Cost-effectiveness of tafamidis therapy for transthyretin amyloid cardiomyopathy [29]	Circulation	Dhruv S. Kazi, MD, MSc, MS Center for Outcomes Research in Cardiology, Boston, Massachusetts, USA	181

Table 4: Top 10 most frequently cited references in included studies based on CrossRef reference data.

Reference title	Publisher and year	Corresponding author	Number of citations
Recommendations for conduct, methodological practices, and reporting of cost-effectiveness analyses: Second panel on cost-effectiveness in health and medicine [21]	JAMA 2016	Gillian D. Sanders, PhD Duke Clinical Research Institute, Duke University, Durham, North Carolina	342
Updating cost-effectiveness — the curious resilience of the $50,000-per-QALY threshold [30]	The New England Journal of Medicine 2014	Peter J Neumann, ScD Center for the Evaluation of Value and Risk in Health, Institute for Clinical Research and Health Policy Studies, Tufts Medical Center, Boston	331
Consolidated Health Economic Evaluation Reporting Standards (CHEERS)–explanation and elaboration: a report of the ISPOR health economic evaluation publication guidelines good reporting practices task force [31]	Value in Health XXXX	Don Husereau, BScPharm, MSc Institute of Health Economics, Edmonton, Canada Department of Epidemiology and Community Medicine. University of Ottawa, Ottawa, ON, Canada University for Health Sciences, Medical Informatics and Technology, Hall in Tirol, Austria	215
Enhanced secondary analysis of survival data: reconstructing the data from published Kaplan-Meier survival curves [32]	BMC Medical Research Methodology 2012	Patricia Guyot, PhD School of Social and Community Medicine, University of Bristol, UK Mapi Consultancy, the Netherlands	209
Decision modelling for health economic evaluation: introduction [33]	Oxford University Press 2006	Andrew Briggs, PhD London School of Hygiene & Tropical Medicine, UK	199
Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries [34]	CA: A Cancer Journal for Clinicians 2021	Freddie Bray BSc, MSc, PhD Section of Cancer Surveillance, International Agency for Research on Cancer, Lyon, France	143
Methods for the economic evaluation of health care programmes [2]	Oxford University Press 2005	Michael F. Drummond, BSc, MCom, DPhil Centre for Health Economics, University of York, UK	140
EuroQol–a new facility for the measurement of health-related quality of life [35]	Health Policy 1990	EuroQol research group	111
Modeling valuations for EuroQol health states [36]	Medical Care 1997	Paul Dolan, DPhil Department of Economics, University of Newcastle, Newcastle-Upon-Tyne, UK	101
Health state utilities for non-small cell lung cancer [37]	Health and Quality of Life Outcomes 2008	Beenish Nafees, MSc Megan Stafford, MSc United BioSource Corporation, UK	101

Regarding economic evaluation methods, CEA is the most widely used method in pharmacoeconomic research, playing a crucial role in evaluating the efficiency of healthcare interventions and guiding resource allocation[43]. In general, since CBA is infrequently applied due to inherent difficulties in converting health benefits into monetary value[44], many studies claiming to be CBA fail to conduct a full economic evaluation as they do not monetize outcomes. CMA is also often excluded from comprehensive assessments because it applies only when interventions yield demonstrably equivalent health outcomes, an assumption rarely met in complex clinical settings[45]. CUA, a subtype of CEA using QALYs/DALYs, further enhances the comparability of interventions, contributing to its widespread global adoption[45]. The integration of cost and health benefits in CEA and CUA makes them indispensable tools for health policy decision-making and resource management, supported by systematic frameworks and guidelines such as *CHEERS*[21].

While China has rapidly increased its research output in pharmacoeconomics, the United States and the United Kingdom remain the most influential countries in terms of both quantity and impact. From January 2012 to May 2014, US-affiliated authors contributed to 1,145 articles (40%), surpassing the UK (619 articles, 22%) and China (116 articles, 4%)[45]. This trend continued between 2015 and 2024, with the US leading with 1,173 articles, followed by the UK (967 articles) and China (622 articles). However, these figures include all authors' affiliations, potentially inflating contributions from countries with extensive international collaborations like China. When considering only corresponding authors, typically the primary investigators, the UK leads with 1,594 papers, followed by the US with 1,504, while China falls outside the top five. This indicates that leadership in high-impact studies remains concentrated in developed countries. Furthermore, the most highly cited articles, serving as proxies for academic influence, predominantly originate from the US and the UK. These include five of the top nine from the US and three from the UK, such as a widely cited methodological guideline from Duke University with over 2,400 citations. Leading UK institutions, including the University of York and the University of Oxford, rank among the most productive in CEA research from 2013 to 2023, reaffirming the UK's academic leadership[43].

The journals publishing most prolifically in healthcare economic evaluation and pharmacoeconomics share several common features, including broad scopes, consistent presence in bibliometric analyses, open access policies enhancing dissemination, and frequent coverage of core topics such as CEA, health technology assessment, and reimbursement policies. These journals are primarily indexed in the Web of Science Core Collection under categories like "Pharmacology Pharmacy", "Health Policy & Services", and "Health Care Sciences & Services". Many are published by reputable organizations, such as Springer (*Pharmacoeconomics*), ISPOR (*Value in Health*), BioMed Central (*Health Technology Assessment*), and the BMJ Publishing Group (*BMJ Open*), and are ranked as Q1 or Q2, with impact factors (IFs) ranging from 2.3 to 4.5. Notable examples include *Pharmacoeconomics* (IF 4.4), *Value in Health* (IF 4.5), *Health Technology Assessment* (IF 3.6), *Applied Health Economics and Health Policy* (IF 3.1), *PLoS ONE* (IF 2.9), *BMJ Open* (IF 2.4), and *Journal of Medical Economics* (IF 2.4). These journals demonstrate academic rigor and international visibility, playing pivotal roles in shaping pharmacoeconomic research.

In general, highly cited articles are often from the US and the UK and are published in leading journals such as *JAMA* and *Health Technology Assessment*. These articles typically report RCTs or economic modeling studies with robust economic components, focusing on diseases with high burden or high-cost interventions. Cited references also reflect this pattern, predominantly published in high-impact journals such as *JAMA* and *The New England Journal of Medicine*. Among them, the most cited article, "*Recommendations for conduct, methodological practices, and reporting of cost-effectiveness analyses*", published in *JAMA* (2016), appears both among top-cited articles and among cited references, emphasizing the foundational role of methodological guidance in this field. Other frequently cited references focus on global disease burden and health-related quality of life assessments.

The strength of this study is that it updates previous studies, like that by Kemdi Lugard Okoroiwu[45], with recent results focusing on the pharmaceutical area. However, several limitations should be acknowledged. A major constraint lies in the inability to accurately analyze collaboration networks among authors. This stems from challenges in author name disambiguation, particularly common with Chinese names, and inconsistencies in the way author affiliations are reported across publications. While some articles include department details, others only specify the city or omit affiliation information entirely, making it difficult to identify co-authorship patterns,

prolific contributors, or highly cited researchers. Future studies should integrate author disambiguation tools such as ORCID or Scopus Author ID to improve collaboration network accuracy. Furthermore, this study did not include a sensitivity analysis using other bibliographic databases such as Scopus or Web of Science, so publications not indexed in PubMed may have been missed. Nevertheless, PubMed's high-quality curation ensures consistency and validity of the included records.

CONCLUSIONS

In summary, this bibliometric analysis highlights a decade of substantial growth and diversification in global pharmacoeconomics research. The predominance of cost-effectiveness and cost-utility analyses reflects the ongoing need for standardized, policy-relevant approaches to healthcare decision-making. While China has become a major contributor by publication volume, research leadership remains concentrated in high-income countries, particularly the United States and the United Kingdom. To strengthen the field's global relevance, future efforts should focus on developing context-specific economic models for low- and middle-income settings, enhancing methodological transparency, and fostering equitable international collaborations. Promoting open data practices and balanced research visibility across regions will be essential to support evidence-informed and globally inclusive healthcare policy development.

LIST OF ABBREVIATIONS

List of abbreviations
CEA: cost-effectiveness analysis
CUA: cost-utility analysis
CBA: cost-benefit analysis
CMA: cost-minimization analysis
ISPOR: International Society for Pharmacoeconomics and Outcomes Research
GEAR: Guide to Economic Analysis and Research
MeSH: Medical Subject Heading
DOI: Digital Object Identifier

FUNDING

There was no specific funding for this research.

DATA AVAILABILITY

No datasets were generated or analyzed during the current study.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study is based on analysis from secondary data, thus, did not require ethical clearance.

CONSENT TO PUBLISH

Not applicable.

COMPETING INTERESTS

The authors declare no competing interests.

AUTHORS' CONTRIBUTIONS

Conceptualization, Methodology, Writing – original draft: Hoang Tung, Do Anh Thu, Ngo Thi Dieu Thuy, Cao Hong Ngoc, Nguyen Duc Thien
Data curation, Formal analysis, Writing – review and editing: Hoang Tung

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