

Review Article

A bibliometric analysis of the 50 most cited articles on impetigo: research trends and scholarly impact

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ABSTRACT

Impetigo is a common bacterial skin infection that primarily affects children, although it can occur in individuals of all ages. Despite its widespread prevalence and significant public health impact, a comprehensive evaluation of the most influential research on impetigo is lacking. This study aims to identify the 50 most-cited publications on impetigo and analyze trends in authorship, institutional contributions, study designs, and collaborative networks. A total of 2,126 articles were retrieved from Web of Science, of which 1,596 met the inclusion criteria. Subsequently, the articles were sorted in descending order based on citation count. Data extracted from each article included the title, authors, citation counts, study design, funding sources, and institutional collaborations. The years of publication varied from 1965 to 2019. The research output is largely driven by institutions in Australia, Japan, and the USA, with the University of Melbourne and Keio University being major contributors, and Steer. being the most frequently listed author, contributing to 8 highly cited articles. About 30–35% of the studies' objectives centered on the pathophysiology and molecular mechanisms of bacterial skin infections, 20–25% on disease burden and epidemiology, and 20–25% focused on antimicrobial resistance and treatment methods. This bibliometric analysis provides a comprehensive evaluation of the most influential research on impetigo, highlighting key authors, institutions, and publication trends.

Keywords: Impetigo, Bacterial skin infection, Staphylococcal skin infection

INTRODUCTION

Impetigo is a common bacterial skin infection.¹ Particularly affecting children and individuals in warm, humid environments. It is primarily caused by

Staphylococcus aureus and *Streptococcus pyogenes*, leading to highly contagious, superficial skin lesions.² Epidemiological studies indicate that impetigo accounts for 10% of pediatric skin infections worldwide, with the highest prevalence in tropical and subtropical regions.³

The global prevalence ranges from 5% to 40% in children, with increased rates in areas with poor hygiene and overcrowding.⁴

Despite being well-documented in dermatology and infectious disease literature, research on impetigo is dispersed across various sources, making it challenging to assess its overall impact. A bibliometric analysis can help bridge this gap by systematically evaluating the most influential studies, identifying key contributors, and mapping research trends over time.⁵

This study aims to analyze the most cited research on impetigo, highlighting the leading authors, institutions, and journals shaping this field. By using citation analysis, co-authorship networks, and keyword trend mapping, we will explore the academic influence of different studies and track emerging research directions. Understanding these patterns can provide valuable insights for researchers and healthcare professionals, guiding future studies and interventions.⁶ By applying bibliometric tools to scholarly databases, this research will offer a structured overview of the evolution of impetigo studies.⁷ Our findings will not only reveal the most impactful publications but also highlight gaps in the literature, helping to direct future research efforts toward unanswered questions in the field of bacterial skin infections.

METHODS

Search strategy

A bibliometric analysis of the 50 most cited articles on impetigo was conducted on February 27, 2025, using Thomson Reuters Web of Science (WoS). The search was performed using the following Boolean terms: ('Impetigo' OR 'bacterial skin infection' OR 'staphylococcal skin infection'). No specific timeframe was applied to the literature search to ensure comprehensive coverage of relevant studies.

Study selection

Studies were included in the review if they were published in English, in peer-reviewed journals, and if they investigated impetigo, regardless of whether other diseases were also discussed in the study. However, data extraction focused solely on impetigo-related findings.

Data extraction

A total of 2,126 papers were retrieved from Web of Science (WoS), of which 1,596 met the inclusion criteria. Subsequently, all articles were sorted in descending order based on citation count. Data extraction from the included studies was conducted by two authors using an extraction form in an Excel file to ensure efficiency and consistency. The following variables were recorded for each study: Article title, year of publication, authors,

number of authors, country of origin, journal name, impact factor, Journal Citation Reports (JCR) quartile, total number of citations, citations per year, h-index, most cited articles, author keywords, index keywords, study design, level of evidence, OCEBM level, funding sources, and collaborative networks. If any information was missing from an article, the corresponding authors were contacted to obtain the data.

Visualization

VOS viewer was used to analyze co-authorship and co-citations, while the Bibliometrix package in R Studio was used to analyze the most relevant authors and present the average citations per year.

Ethical statement

This study did not involve interventional procedures or data collection from animal experiments or clinical trials; therefore, ethical approval was not required.

ARTICLE SELECTION AND CITATION ANALYSIS

A total of 2,126 articles were retrieved from Web of Science, of which 1,596 met the inclusion criteria. Subsequently, the articles were sorted in descending order based on citation count. Data extracted from each article included the title, authors, citation counts, study design, funding sources, and institutional collaborations. Subsequent to the screening, 50 most-cited publications in impetigo were chosen for comprehensive examination. With a range of 64 to 1591 citations, the evaluated papers had an average citation count of 192.04 ± 256.12 . The highest quartile (75th percentile) comprised publications with 162 or more citations, but the median citation count was 111. Merely three articles surpassed 500 citations. A summary of the top 10 studies can be found (Table 1).

AUTHORS AND PUBLICATION TRENDS

Steer was the most frequently listed author, contributing to 8 highly cited articles, followed by Amagai with 7 articles. Stanly contributed 6 articles. Carapetis and Romani each contributed 4 articles, while Bowen, Hanakawa, Liu, Sugai, and Tong authored 3 articles each. The most relevant authors, based on the number of highly cited publications, are visualized in Figure 1, highlighting key contributors to impetigo research.

Between 1965 and 2019, the 50 most-cited papers were published, with 2006 accounting as the median year of publication. The peak output occurred in the 2002s, with 6 articles, succeeded by the 2014s with 5 articles, and the 2012s and 2006s, each with 4 articles. The years 2003, 2008, and 2015 each provided three articles. Figure 2 illustrates the historical distribution of citations, emphasizing peaks in citation activity and publishing trends throughout several decades.

Table 1: General information related to the top 50 cited (top 10) articles on impetigo (sorted by total citations).

#	PN	Reference	Authors	CA	ST	PY	TC	CI	NA
1	Pathogenesis of group A streptococcal infections	8	Cunningham MW	Cunningham MW	Clinical microbiology reviews	2000	1591	61.19	1
2	The global burden of skin disease in 2010: an analysis of the prevalence and impact of skin conditions	9	Hay RJ, Johns NE, Williams HC, Bolliger IW, Dellavalle RP, Margolis DJ, Marks R, Naldi L, Weinstock MA, Wulf SK, Michaud C, Murray CJL, Naghavi M	Hay RJ	Journal of investigative dermatology	2014	984	82	13
3	Disease manifestations and pathogenic mechanisms of group A streptococcus	10	Walker MJ, Barnett TC, McArthur JD, Cole JN, Gillen CM, Henningham A, et al	Walker MJ	Clinical microbiology reviews	2014	607	50.58	9
4	Effect of handwashing on child health: a randomised controlled trial	11	Luby SP, Agboatwalla M, Feikin DR, Painter J, Billhimer W, Altaf A, et al	Luby SP	Lancet	2005	466	22.19	7
5	Increased US emergency department visits for skin and soft tissue infections, and changes in antibiotic choices, during the emergence of community-associated methicillin-resistant staphylococcus aureus	12	Pallin DJ, Egan DJ, Pelletier AJ, Espinola JA, Hooper DC, Camargo CA	Pallin DJ	Annals of emergency medicine	2008	362	20.11	6
6	Skin microflora and bacterial infections of the skin	13	Chiller K, Selkin BA, Murakawa GJ	Chiller K	Journal of investigative dermatology symposium proceedings	2001	330	13.2	3
7	Toxin in bullous impetigo and staphylococcal scalded-skin syndrome targets desmoglein 1	14	Amagai M, Matsuyoshi N, Wang ZH, Andl C, Stanley JR	Amagai M	Nature medicine	2000	322	12.38	4
8	Pemphigus, bullous impetigo, and the staphylococcal scalded-skin syndrome	15	Stanley JR, Amagai M	Stanley JR	New England journal of medicine	2006	309	15.45	2
9	Antibacterial photodynamic therapy in dermatology	16	Maisch T, Szeimies RM, Jori G, Abels C	Maisch T	Photochemical and photobiological sciences	2004	271	12.31	4
10	Prevalence of scabies and impetigo worldwide: a systematic review	17	Romani L, Steer SC, Whitfeld MJ, Kaldor JM	Romani L	Clinical microbiology reviews	2015	264	24	4

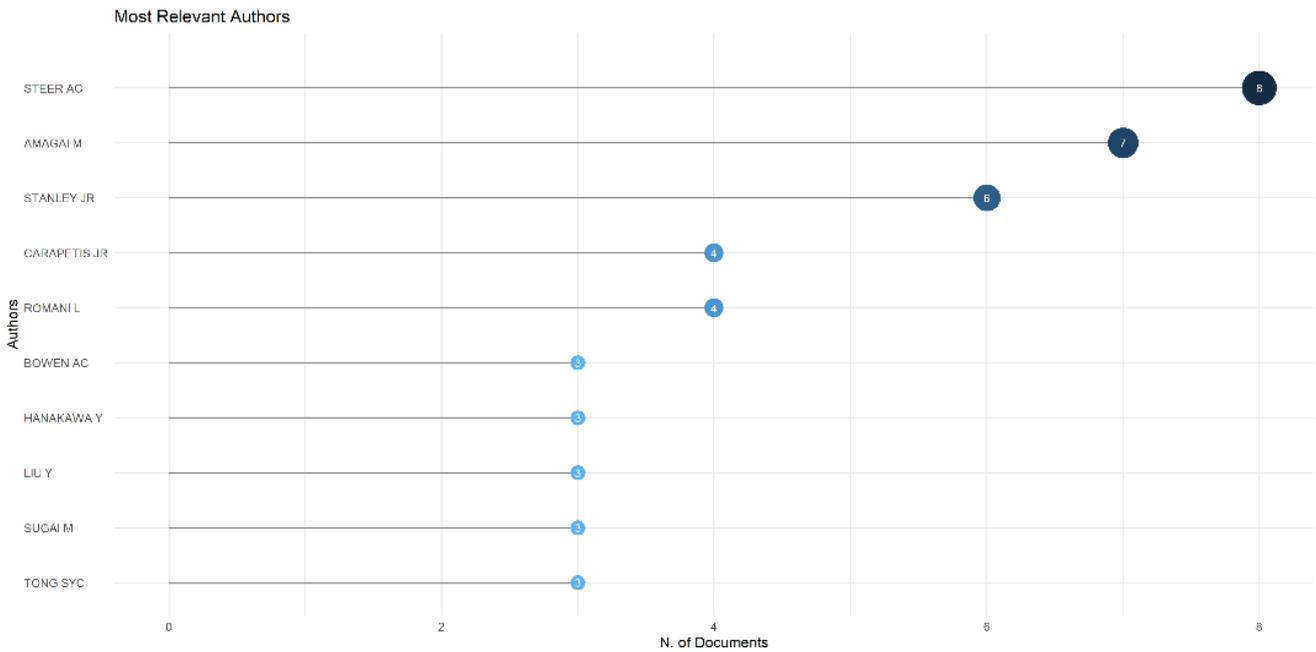


Figure 1: Authors with the highest number of highly cited publications are presented in the visualization.

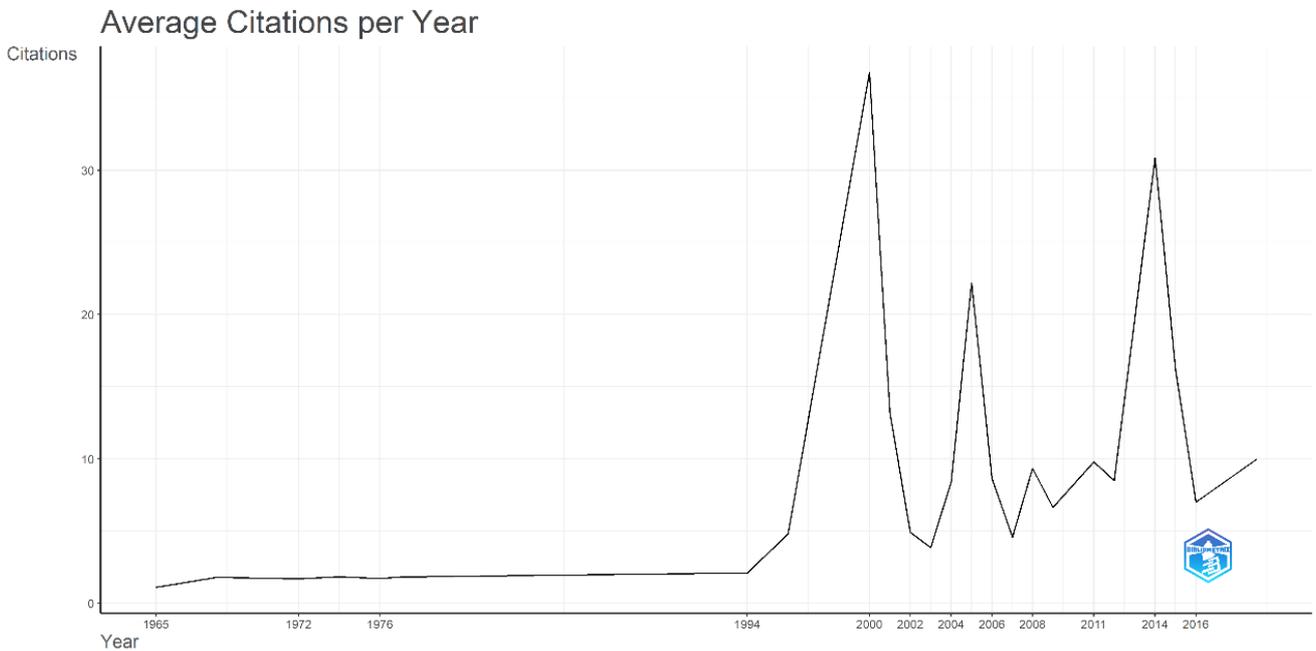


Figure 2: Represents the historical distribution of citations, illustrating peaks in citation activity and publishing trends across multiple decades.

JOURNALS AND IMPACT FACTOR

The primary sources on impetigo for the examined documents were American Family Physician, Journal of Clinical Investigation, Journal of Investigative Dermatology, and PLOS Neglected Tropical Diseases, with each providing 3 articles. Furthermore, Clinical Microbiology Reviews, Current Opinion in Infectious

Diseases, Journal of Clinical Microbiology, Journal of Dermatological Science, Journal of Dermatology, and Journal of Infectious Diseases each published two articles. The mean impact factor of the 50 journals in which these articles were published was 16.24±1.06, ranging from 0.7 to 98.4. The median impact factor was 5.15, with the 25th percentile at 3.4, 50th percentile at 5.15 and the 75th percentile at 12.9.

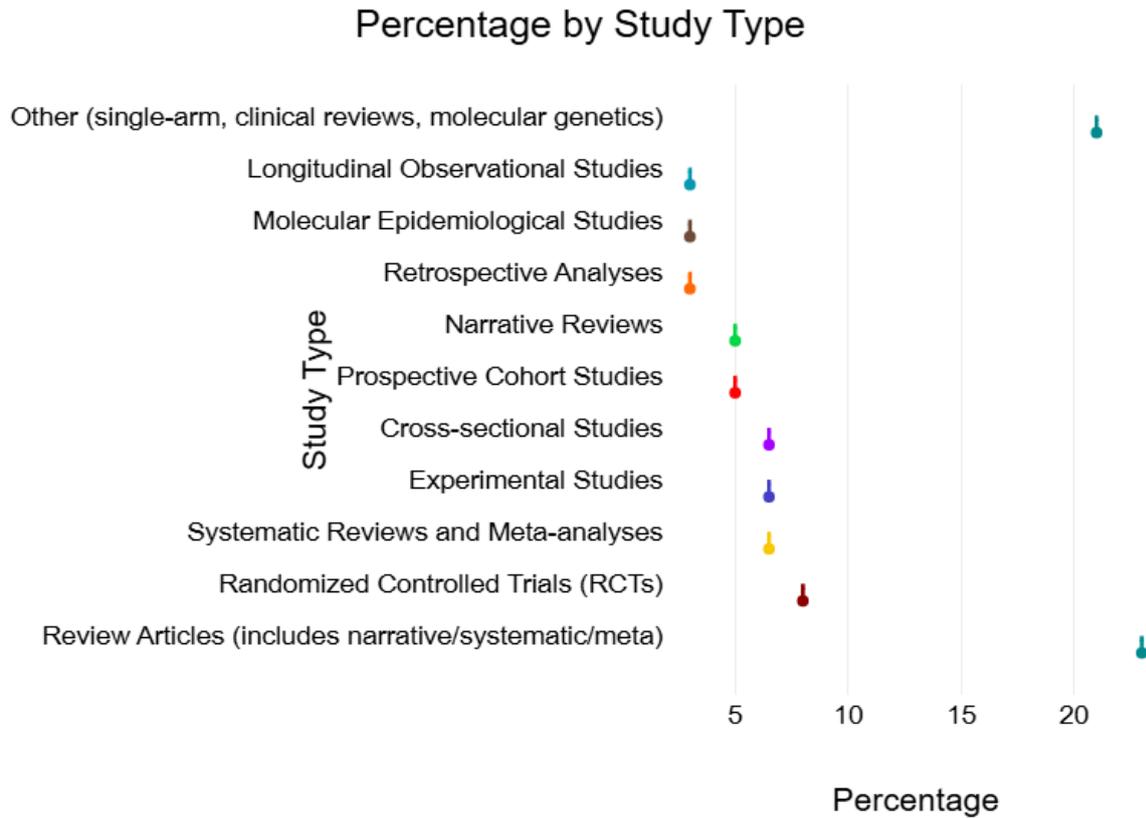


Figure 3: Percentage distribution of the included articles by study type.

OPEN-ACCESS STATUS AND INSTITUTIONAL COLLABORATION

Among the 50 most-cited articles, 37 (75.51%) were published in Q1 journals, 10 (20.4%) in Q2 journals, 2 (4.08%) in Q3 journals, and no publication was found in Q4 journals. In terms of open-access status, 38 articles (74.51%) were published in open-access journals, while 13 articles (25.49%) appeared in open-access journals. These findings indicate the authors tend to publish in high-ranking, open-access journals. In terms of institutional collaboration, among the analyzed articles, 4 (16.67%) were authored by a single author, while 2 (8.33%) had two authors. Additionally, 9 (37.5%) were written by three authors, and another 9 (37.5%) involved multi-author collaborations beyond three authors. These findings highlight that the majority of research studies involve multiple authors, with collaborative research being dominant. Authorship, H-index of contributing authors, and institutional contribution.

The number of authors per article ranged from 1 to 13, with a median of 4 authors. Eleven articles (22%) were authored by a single author, 8 articles (16%) had 2 authors, 7 articles (14%) had 3 authors, 12 articles (24%) had 4 authors, 5 articles (10%) had 5 authors. The H-index values of the contributing authors ranged from 1 to 630, with a mean of 105.38 ± 148.42 . The median was 41, and the mode was 101, 17, 1, 2, and 26, each appearing 2 times. The United States (US) had the

highest representation in institutional collaborations, contributing to approximately 40% of the total collaborations, followed by Japan with 20%, Australia with 20%, and the United Kingdom (UK) with 10%. Other countries, including Germany, Italy, Belgium, Denmark, Fiji, Bangladesh, and the Solomon Islands, collectively contributed to 10% of the collaborations. The University of Melbourne (Australia) was the most frequently represented institution, contributing to 10% of the collaborations. Keio University (Japan) appeared in 8% of the collaborations, while the University of Pennsylvania (USA) was involved in 5%. The University of Alabama at Birmingham (USA) contributed to 4% of the collaborations. Other contributing institutions included Brown University, Harvard Medical School, Murdoch Children's Research Institute, and Fujita Health University, each contributing between 1% and 3% of the collaborations.

STUDY DESIGN AND FOCUS AREAS

Among the 50 most cited articles, 23% were classified as review articles, while 8% were randomized controlled trials (RCTs). Systematic reviews and meta-analyses accounted for 6.5%, experimental studies for 6.5%, and cross-sectional studies for 6.5%. Prospective cohort studies made up 5% of the studies, while narrative reviews also represented 5%. Retrospective analyses accounted for 3%, and molecular epidemiological studies accounted for 3%. Longitudinal observational cohort

studies represented 3% of the total, with the remaining 21% comprising other study types such as single-arm trials, clinical reviews, and molecular genetic analyses, as shown in Figure 3. Regarding the focus areas in the research on skin infections and related treatments, the analysis revealed that 49.5% of the studies addressed bacterial skin infections, particularly pyoderma and scabies, while 26.9% focused on antibiotic resistance and the management of infections caused by resistant *Staphylococcus aureus*. Pediatric skin conditions, such as impetigo, were the focus of 11.8% of the articles, and broader diagnostic approaches to skin infections accounted for 7.5%. Research on retapamulin and its role in treating skin infections was studied in 4.3% of the cases.

The primary research themes included the management of resistant *Staphylococcus aureus* in 23.3% of the articles, diagnosis and treatment of impetigo in 16.7%, novel antibiotic treatments like retapamulin in 13.3%, the burden of skin infections in pediatric populations in 8.3%, and the prevalence of mupirocin resistance in 5.0%. The keyword co-occurrence network, illustrated in Figure 2, further highlights key research topics and thematic clusters in the field of skin infection management and antibiotic resistance.

LEVEL OF EVIDENCE AND FUNDING SOURCES

Level V accounted for 45.65% of the total number of studies, whereas Level II accounted for 21.74%. Level I studies made up 13.04% of the total, whilst Level III evidence accounted for 19.57%. None of the studies (0%) met the criteria for Level IV evidence. Most studies did not disclose or discuss funding, and several did not provide any information on financial support. Numerous examinations made it clear that no financing was obtained. A smaller percentage stated that they had received financial assistance, which came from a variety of sources, including private donors, pharmaceutical firms like Merck Sharp and Dohme, academic grants from organizations like the National Natural Science Foundation of China, and government organizations like the National Health and Medical Research Council (NHMRC) of Australia and the National Institute of Allergy and Infectious Diseases (NIAID, USA). Although there is still often a lack of transparency, the variety of funding sources demonstrates the range of financial research support.

DISCUSSION

The aim of this bibliometric analysis is to identify and analyze the most cited articles on impetigo, as well as to determine the most influential authors, institutions, and journals contributing to impetigo research. By examining the top 50 most-cited publications, the study revealed that the average citation count was 192.04 ± 256.12 , with a range of 64 to 1591 citations. Notably, only three articles surpassed 500 citations. The analysis highlighted key

contributors, with Steer authoring eight highly cited articles, followed by Amagai with seven and Stanley with six. Prominent institutions included the University of Melbourne (Australia) and Keio University (Japan). The predominant journals publishing influential impetigo research were *American Family Physician*, *Journal of Clinical Investigation*, *Journal of Investigative Dermatology*, and *PLOS Neglected Tropical Diseases*, each contributing three articles. These findings underscore the pivotal roles of specific authors, institutions, and journals in advancing impetigo research.

Our findings, when compared to a bibliometric analysis of dermatology research in India from 1999 to 2019, which revealed a significant increase in the number and diversity of publications over time, remain highly concentrated, with a limited number of authors and institutions leading most high-impact studies. This pattern aligns with broader trends in dermatological bibliometric studies, where research output is often dominated by a select group of researchers and institutions. For example, bibliometric analyses of atopic dermatitis research and the top 50 most-cited dermatology publications have similarly highlighted the disproportionate influence of a small group of contributors in shaping the field.^{19,20} These findings suggest that dermatological research, whether focused on a specific condition like impetigo or spanning broader topics, tends to be shaped by a core group of experts and institutions. However, while some dermatological conditions, such as atopic dermatitis, exhibit widespread research contributions, impetigo research remains more centralized.

The present study, while offering valuable insights into the research landscape of impetigo, is subject to certain limitations. One of the primary constraints is the reliance on the Web of Science database, which, although widely recognized for bibliometric analyses, does not encompass all relevant publications. Studies indexed exclusively in other databases such as Scopus, PubMed, or Google Scholar were not included, potentially leading to selection bias.²¹

This limitation may have influenced the ranking of influential articles, as citation counts can vary across different indexing platforms. Additionally, the analysis was limited to citation-based metrics, which do not fully capture research impact, particularly for recent publications that have not yet had sufficient time to accumulate citations.²² Variability in citation practices across disciplines and journals may also introduce discrepancies in measuring research influence. Furthermore, missing or incomplete metadata, such as funding sources and institutional affiliations, may have restricted a more detailed examination of research collaboration and financial support patterns.²³ These factors highlight the need for future studies to adopt a more comprehensive approach by integrating multiple

databases and considering additional impact indicators beyond citation counts.²²

Despite these limitations, the findings of this study provide meaningful implications for the field of impetigo research. The predominance of highly cited articles published in open-access journals suggests a growing emphasis on the accessibility and dissemination of scientific knowledge.²⁴ Moreover, the co-authorship analysis indicates that research in this domain is increasingly collaborative, with contributions from multiple authors and institutions, particularly from regions with a high research output. These patterns underscore the importance of interdisciplinary and international cooperation in advancing impetigo-related research. Future bibliometric studies could expand on these findings by incorporating emerging research areas, such as antimicrobial resistance trends, novel therapeutic interventions, and the role of public health initiatives in disease prevention.²⁵ Additionally, alternative impact metrics, such as altimetric and clinical citation analyses, may provide a broader perspective on the practical and societal relevance of highly cited works. By adopting a more holistic approach, future studies can further enhance the understanding of impetigo research dynamics and inform strategic research priorities.

CONCLUSION

This bibliometric analysis provides a comprehensive evaluation of the most influential research on impetigo, highlighting key authors, institutions, and publication trends. The findings reveal that research output is largely driven by institutions in Australia, Japan, and the USA, with the University of Melbourne and Keio University being major contributors. The most-cited studies focus on bacterial pathophysiology, epidemiology, antimicrobial resistance, and treatment approaches. Additionally, the high prevalence of open-access publications underscores the growing emphasis on research accessibility in this field. Despite these insights, impetigo research remains concentrated among a limited number of contributors, with fewer studies originating from regions where the disease burden is highest. Moreover, reliance on a single database may have excluded relevant publications indexed elsewhere. Future bibliometric studies should integrate multiple databases and explore emerging topics such as antibiotic resistance, innovative therapeutic strategies, and large-scale public health interventions to advance impetigo research and improve global disease management.

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