Drug, Healthcare and Patient Safety

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REVIEW

Current Status and Research Trends in Deprescribing: A Bibliometric Review

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Background: Polypharmacy has emerged as a major global public health concern. To mitigate its adverse effects, deprescribing has been introduced and integrated into clinical practice. This study aims to analyze the current research landscape and identify emerging trends in deprescribing from a bibliometric perspective.

Methods: Relevant studies on deprescribing published prior to December 2024 were retrieved from the Web of Science Core Collection database. Bibliometric analysis and visualization of co-authorship, citation, co-citation, co-occurrence, and burst detection were performed using VOSviewer, CiteSpace, and Bibliometrix.

Results: A total of 1809 publications were identified, with a marked increase over the past decade. The field is dominated by contributions from developed countries, notably the United States, Australia, and Canada. Studies primarily focus on chronic conditions, such as psychiatric disorders, cardiometabolic diseases, and chronic pain, and the medications used to treat them. Influential publications highlighted barriers and facilitators of deprescribing, deprescribing tools, and deprescribing interventions and their associated outcomes. Burst detection analysis pointed to increasing attention on pharmaceutical care and implementation science.

Conclusion: This study presents the first comprehensive bibliometric overview of deprescribing. The findings demonstrate that the field has grown rapidly but remains dominated by developed countries and a limited set of chronic diseases. The integration of implementation science frameworks emerges as a promising approach to enhance the design and evaluation of deprescribing interventions. Future studies should broaden their scope to include a wider range of diseases and medications, and encourage greater participation from developing countries.

Keywords: deprescribing, polypharmacy, bibliometrics, implementation science

Introduction

Polypharmacy, commonly defined as the concurrent use of five or more medications, has emerged as a major public health concern worldwide.[1] A meta-analysis of 54 studies estimated the overall prevalence of polypharmacy at 37%, with the rate increasing to 45% among individuals aged 65 years and older.[2] Polypharmacy may contribute to drug-related problems, including adverse drug events, medication nonadherence, and drug interactions, which may significantly compromise patient outcomes and increase healthcare costs.[3,4]

To mitigate the adverse effects of polypharmacy, various interventions have been explored. Among these, deprescribing has emerged as a particularly promising approach.[5] Deprescribing is the process of discontinuing potentially inappropriate medications (PIMs) under the supervision of healthcare professionals with the goal of managing polypharmacy and improving outcomes.[6] Numerous studies have examined the impact of deprescribing on health outcomes, and a recently updated meta-analysis that integrated these findings concluded that deprescribing does not increase the risk of falls, fractures, emergency department visits, or unplanned hospitalizations. Furthermore, a survival benefit was

Received: 29 July 2025
Accepted: 11 November 2025
Published: 18 November 2025

observed in a subgroup analysis of patient-specific interventions.[7] Deprescribing interventions can also help to reduce the overall medication burden by minimizing the use of PIMs, thereby lowering medication costs and additional expenses associated with inappropriate drug use. Several studies have evaluated the economic impact of deprescribing specific medications, such as sedatives[8] and nonsteroidal anti-inflammatory drugs,[9] and have consistently demonstrated the cost effectiveness of deprescribing.

Bibliometric analysis is a rigorous methodological approach that leverages bibliometric data to map the intellectual structure and identify emerging trends within a specific field.[10] It has been widely applied in medical research.[11] Although deprescribing has gained increasing attention in recent years, most existing reviews remain largely narrative.[12] A previous bibliometric study examined publications only up to 2018 and focused narrowly on basic authorship patterns, without comprehensively analyzing collaboration networks, keyword co-occurrence, or emerging research themes.[13] Therefore, the present study employs bibliometric methods to systematically map the current research landscape and identify emerging trends in deprescribing. These insights are intended to help researchers prioritize future investigations, support evidence-based clinical decision-making, and inform policy development in polypharmacy management.

Methods

This study follows the Guideline for Reporting Bibliometric Reviews of the Biomedical Literature (BIBLIO).[14]

Data Source and Search Strategy

The Web of Science (WOS) Core Collection database was searched to retrieve literature related to deprescribing. The search strategy employed in this study was TS = "(deprescribing OR deprescription OR deprescriptions OR deprescribe)", where TS stands for "Topic", indicating that the search was conducted within the title, abstract, and author keywords. The inclusion criteria were: (1) documents classified as articles or reviews; (2) published in English; (3) published before December 31, 2024; and (4) studies addressing deprescribing in any clinical context. The exclusion criteria were: (1) conference abstracts, book chapter, editorials, letters, notes, or other non-peer-reviewed publications; and (2) duplicate publications. The literature search and data extraction for this study were completed on February 15, 2025. All extracted data were double-checked independently by two authors to ensure accuracy.

Data Analysis and Visualization

Co-authorship analysis of countries, institutions, and authors, citation analysis of journals and publications, co-citation analysis of authors, journals, and references, and co-occurrence analysis of keywords were conducted using VOSviewer (version 1.6.18).[15] A co-authorship analysis of countries with a focus on corresponding authors was conducted using Bibliometrix.[16] Burst analysis of references and keywords was conducted using CiteSpace (version 6.4.R2 Advanced).[17]

In the co-authorship analysis of countries, Scotland, England, and Northern Ireland were combined into the United Kingdom, while the People's Republic of China and Taiwan were unified as China. The visualization of institutional and author collaboration networks as well as keyword co-occurrence was generated by adjusting the "minimum number of documents" parameter, which resulted in the display of 100 entities. In the visualizing of the co-citation author network, the "minimum number of documents" parameter was set to 50. Other parameter settings for VOSviewer were left at their default values.

Author keywords were used for the keyword analysis. To avoid biasing the results toward overly general or self-evident terms, keywords directly related to deprescribing and its synonyms, as well as countries and research types, were excluded from the analysis (Table S1). Keywords that appeared in both singular and plural forms as well as full terms and abbreviations or synonyms were consolidated into a single form prior to analysis. The replaced and replacement keywords are provided in Table S2.

In the analysis conducted using CiteSpace, the time slicing was set from January 2011 to December 2024 with one year per slice. The parameters for the selection criteria, pruning, and burstness were set to their default values.

Results

Annual Publication Trends and Citation Impact

The flow chart illustrating the screening and selection process is shown in Figure S1. Our search strategy identified a total of 1809 publications spanning the period from 2011 to 2024. Of these, 1434 publications (79.3%) were classified as articles, whereas 375 (20.7%) were categorized as reviews. Over the past decade, the annual number of publications and citations on the topic of deprescribing has steadily increased. The number of annual publications rose from 15 in 2015 to 334 in 2024, whereas the number of annual citations surged from 167 in 2015 to 7001 in 2024 (Figure 1A).

Co-Authorship Analysis of Countries

A total of 84 countries contributed to the field of deprescribing, with the United States (n = 565) leading in publication output, followed by Australia (n = 355) and Canada (n = 302). The countries ranked 4th to 10th in publication output were all European countries (Figure 1B). For publication data from other leading countries, please refer to Table S3. China ranked 20th in publication count, with a total of 23 publications.

Forty-four countries published more than five papers each. The publication collaborations among these countries are shown in Figure S2. Significant cooperation was observed between the United States, Australia, Canada, and European countries. Among the top 10 publishing countries, the median proportion of multiple country publications was 24.6%, with the Netherlands having the highest share at 46.7% (Figure 1B). Figure 1C illustrates the collaboration networks among the top 10 publishing countries in the field of deprescribing. The strongest collaborations were observed between

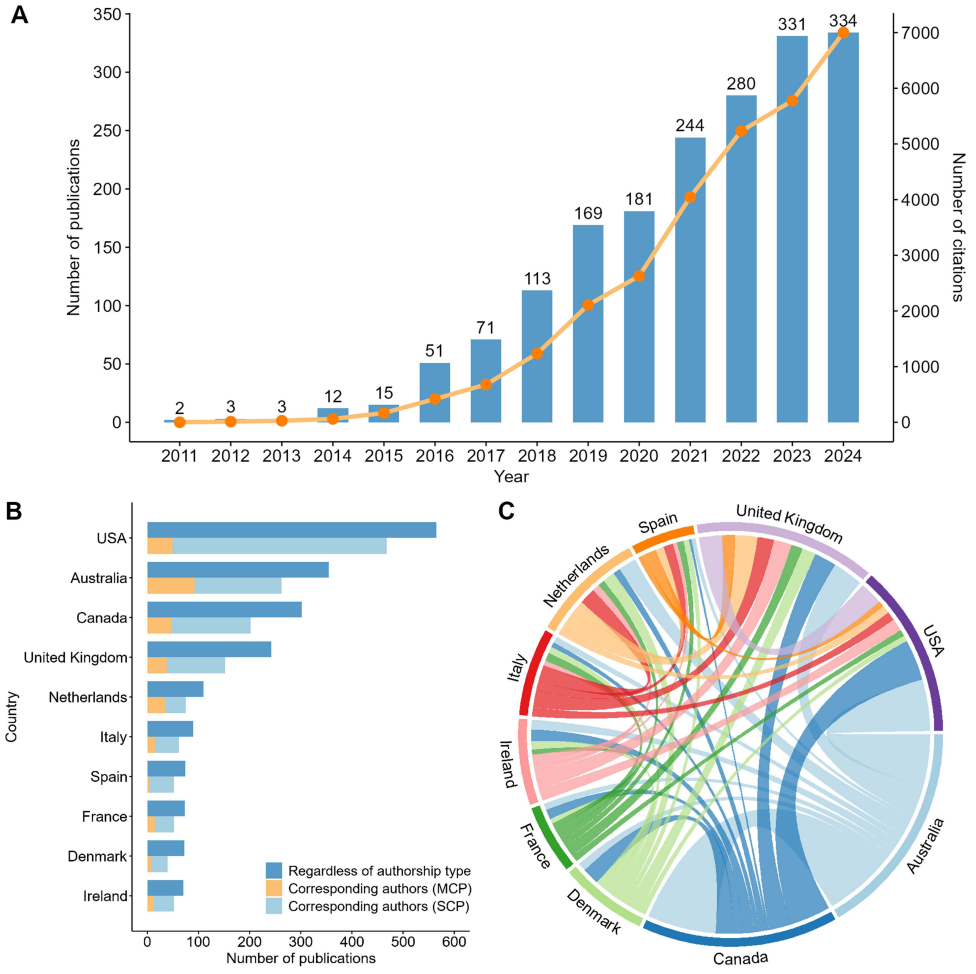

Figure 1 Publication trends, global contributions, and collaborations in deprescribing research: (**A**) Annual trends in publication volume and citation counts; (**B**) Top 10 countries by publication output; (**C**) Collaborative networks among the top 10 publishing countries.

https://doi.org/10.2147/DHPS.S557043

Australia and Canada, followed by those between Australia and the United States. These collaborations highlight key international partnerships and can guide future research and collaboration opportunities.

Co-Authorship Analysis of Institutions

A total of 2785 institutions contributed to the field of deprescribing. The top 5 institutions by publication volume are listed in Table 1, with full details provided in Table S4. Among these, the University of Sydney emerges as the leading contributor, with the highest publication output (n = 151), significantly surpassing all other institutions. Monash University (n = 91) and the University of Toronto (n = 74) also demonstrate substantial publication productivity. In terms of citation impact, the University of Sydney retains its leading position with a total of 6160 citations, followed by the University of Queensland (n = 3824) and Dalhousie University (n = 2809). Figure 2A illustrates the collaboration network among the top 100 institutions by publication volume, which can be grouped into six clusters. The University of Sydney and Royal North Shore Hospital have the highest number of jointly published works, followed by collaboration between the University of Sydney and Dalhousie University. This indicates leading research hubs and potential centers for multicenter studies.

Co-Authorship and Co-Citation Analysis of Authors

A total of 7901 authors contributed to the field of deprescribing. The top 5 authors by publication count in the field of deprescribing are listed in Table 1, with full details provided in Table S4. Reeve E ranks first with 73 publications, followed by Hilmer SN (n = 63) and Gnjidic D (n = 45). Figure 2B illustrates the collaboration network among the top 100 authors by publication volume, which can be grouped into 11 clusters. The most frequent collaboration is between Reeve E, Hilmer SN, and Gnjidic D, followed by the collaboration between Farrell B and Thompson W. Identifying these author networks helps understand influential research groups and may guide new collaborations. The top 5 co-cited authors by citation count are presented in Table 1, with Reeve E (n = 1834) in the lead, followed by Scott IA (n = 614) and Farrell B (n = 494). Full details are provided in Table S4. A total of 122 co-cited authors were cited more than 50 times, and their co-citation network is illustrated in Figure S3.

Citation and Co-Citation Analysis of Journals

A total of 518 journals published at least one article on deprescribing. The Journal of the American Geriatrics Society led with the highest number of publications (n=79), followed by Research in Social and Administrative Pharmacy (n=62) and BMC Geriatrics (n=58). In the analysis of co-cited journals, a total of 120 journals were cited more than 100 times. The Journal of the American Geriatrics Society (n = 3644) had the highest number of citations, followed by Drugs & Aging (n = 2217) and the British Journal of Clinical Pharmacology (n = 1732). Leading journals by deprescribing publications and top co-cited journals by citations are presented in Tables 2 and S5. All of these journals are classified within the Journal Citation Reports as either Quartile 1 or Quartile 2.

Table 1 Leading Institutions and Authors by Publications and Top Co-Cited Authors by Citations

Rank	Institutions		Authors		Co-Cited Authors	
	Name	**Publications (Citations)**	**Name**	**Publications (Citations)**	**Name**	**Citations**
1	University of Sydney	151 (6160)	Reeve E	73 (4588)	Reeve E	1834
2	Monash University	91 (1513)	Hilmer SN	63 (3230)	Scott IA	614
3	University of Toronto	74 (1769)	Gnjidic D	45 (2741)	Farrell B	494
4	Dalhousie University	64 (2809)	Farrell B	37 (1612)	Gnjidic D	381
5	University of South Australia	61 (997)	Thompson W	34 (1488)	O'mahony D	378

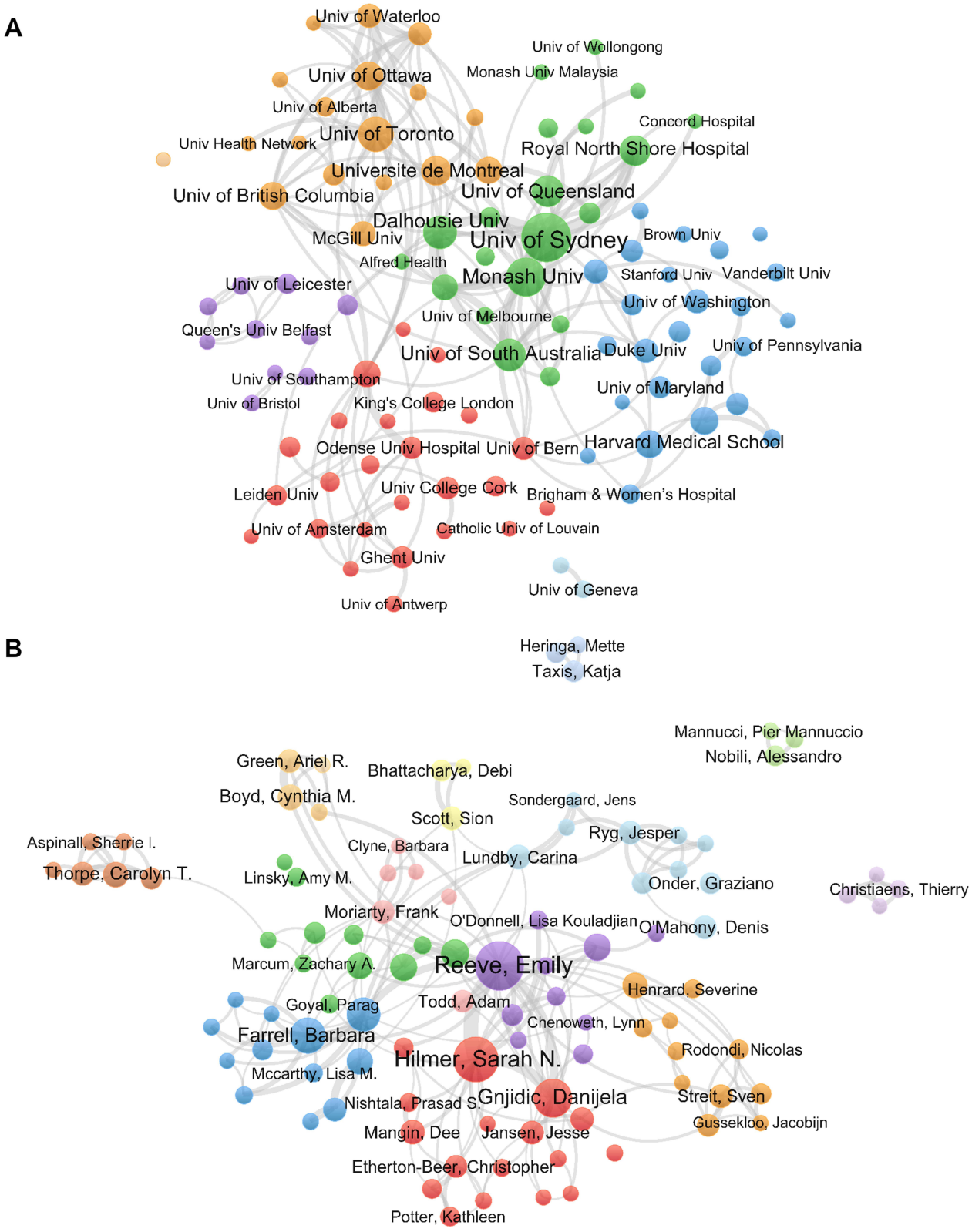

Figure 2 Visualization of collaborations among institutions and authors: (**A**) Top 100 institutions; (**B**) Top 100 authors.

Citation Analysis of Publications

Among the 1809 publications on deprescribing included in this study, the 10 most-cited publications are presented in Table S6. The study by Scott et al[18] received the highest number of citations (n=993) and primarily proposed a five-step

https://doi.org/10.2147/DHPS.S557043

Table 2 Leading Journals by Deprescribing Publications and Top Co-Cited Journals by Citations

Rank	Journals				Co-Cited Journals			
	Title	TP	IF	JCR	Title	TC	IF	JCR
1	Journal of the American Geriatrics Society	79	4.3	Q1	Journal of the American Geriatrics Society	3644	4.3	Q1
2	Research in Social and Administrative Pharmacy	62	3.7	Q1	Drugs & Aging	2217	3.4	Q2
3	BMC Geriatrics	58	3.4	Q2	British Journal of Clinical Pharmacology	1732	3.1	Q2
4	BMJ Open	52	2.4	Q1	JAMA Internal Medicine	1702	22.5	Q1
5	Drugs & Aging	49	3.4	Q2	Age and Ageing	1425	6.0	Q1

Abbreviations: IF, Impact factor; JCR, Journal citation reports; TC, Total citations; TP, Total publications.

framework for implementing deprescribing. One systematic review investigated the barriers and facilitators that shape prescribers' decisions to continue or discontinue PIMs,[19] while another examined the factors that influence patients' decision-making regarding deprescribing.[20] Reeve et al[6] conducted a comparative analysis of definitions of deprescribing in studies published before February 2014 and proposed a revised definition on the basis of their findings. Two studies[21,22] focused on deprescribing interventions and their effects. Tannenbaum et al[21] conducted a cluster-randomized trial and demonstrated that compared with usual care, a direct-to-consumer educational intervention significantly reduced benzodiazepine use. Page et al[22] performed a meta-analysis of nonrandomized data and revealed that deprescribing was associated with a significant reduction in mortality. Farrell et al[23] developed guidelines for deprescribing proton pump inhibitors (PPIs) and provided clinical recommendations on when and how to discontinue or taper PPI therapy. Additionally, two guidelines focused on the management of older adults[24] and frailty,[25] both of which advocated for deprescribing as a strategy to minimize inappropriate medication use. Another study highlighted the risk of adverse drug reactions in older adults and suggested that deprescribing should be considered when medications are no longer effective or when safer alternatives are available.[26]

Co-Citation and Burst Analysis of References

The top 10 most cited references in research on deprescribing are presented in Figure 3A. Among these, six references[6,18–22] also appeared in the previously identified top 10 most cited publications on deprescribing. Among the remaining four highly cited references, three introduced criteria for identifying PIMs, including the STOPP/START criteria[27] and the Beers criteria,[28,29] whereas the other provided a systematic review of definitions of polypharmacy.[1] The top 20 references with the strongest citation bursts are shown in Figure 3B. Nine of these are also among the 10 most-cited references. Two meta-analyses[30,31] emerged as highly cited references in the past three years: one reported that a high proportion of patients (84%) and caregivers (80%) were willing to engage in deprescribing,[30] whereas the other evaluated the impact of various deprescribing interventions on clinical outcomes.[31]

Co-Occurrence and Burst Analysis of Keywords

A total of 17 keywords appeared more than 50 times, with polypharmacy as the most common (n=525), followed by older adults (n=234) and potentially inappropriate medications (n=114). Additional high-frequency keywords are presented in Table S7.

For disease-related keywords, dementia (n=92) was the most prevalent and significantly exceeded other conditions. Among the medication-related keywords, benzodiazepines (n=74), proton pump inhibitors (n=54), and opioids (n=48) were the top three keywords in terms of frequency. Among the stakeholder-related keywords, pharmacists appeared most frequently (n=61), surpassing caregivers (n=17) and general practitioners (n=15). The frequencies of keywords categorized by disease, medication, and stakeholders are provided in Figure 4.

The co-occurrence network of the top 100 most frequent keywords is depicted in Figure S4. These keywords are categorized into 7 clusters. Polypharmacy had the greatest co-occurrence with older adults, multimorbidity, medication review, and geriatrics. Figure S5 highlights the top 20 keywords with the strongest citation bursts. Pharmaceutical care and implementation science emerged as the most prominent burst keywords in the past three years.

A

ID	First author	Year	Journals	PMID	Citations	Key topic
1*	Scott IA	2015	JAMA Intern Med	25798731	462	Process of deprescribing
2*	Reeve E	2015	Br J Clin Pharmacol	27006985	325	Definition of deprescribing
3*	Anderson K	2014	BMJ Open	25488097	280	Barriers and facilitators
4	O'Mahony D	2015	Age Ageing	25324330	271	Deprescribing tool
5*	Reeve E	2013	Drugs Aging	23912674	242	Barriers and facilitators
6	Fick DM	2019	J Am Geriatr Soc	30693946	239	Deprescribing tool
7*	Page AT	2016	Br J Clin Pharmacol	27077231	210	Intervention and its outcomes
8	Radcliff S	2015	J Am Geriatr Soc	26446832	210	Deprescribing tool
9	Masnoon N	2017	BMC Geriatr	29017448	182	Definition of polypharmacy
10*	Tannenbaum C	2014	JAMA Intern Med	24733354	163	Intervention and its outcomes

B

ID	First author	Year	Journals	PMID	Strength	Begin	End	2011 - 2024
1	Gnjidic D	2012	Clin Geriatr Med	22500541	16.92	2012	2017	
2	Reeve E	2013	Drugs Aging	23912674	34.19	2014	2018	
3	Reeve E	2014	Br J Clin Pharmacol	24661192	24.24	2014	2019	
4**	Reeve E	2013	J Am Geriatr Soc	24028356	20.24	2014	2018	
5	Schuling J	2012	BMC Fam Pract	22697490	18.9	2014	2017	
6**	Anderson K	2014	BMJ Open	25488097	40.59	2015	2019	
7**	Tannenbaum C	2014	JAMA Intern Med	24733354	16.57	2015	2019	
8**	Scott IA	2015	JAMA Intern Med	25798731	59.81	2016	2020	
9**	Radcliff S	2015	J Am Geriatr Soc	26446832	32.29	2016	2020	
10**	Reeve E	2015	Br J Clin Pharmacol	27006985	32.29	2016	2020	
11**	O'Mahony D	2015	Age Ageing	25324330	29.39	2016	2020	
12	Kutner JS	2015	JAMA Intern Med	25798575	20.03	2016	2020	
13	Maher RL	2014	Expert Opin Drug Saf	24073682	13.57	2016	2019	
14	Farrell B	2015	PLoS One	25849568	13.52	2016	2019	
15	Jansen J	2016	BMJ	27260319	14.06	2017	2020	
16**	Page AT	2016	Br J Clin Pharmacol	27077231	25.55	2018	2021	
17	Reeve E	2016	Br J Gen Pract	27266865	14.59	2018	2021	
18**	Masnoon N	2017	BMC Geriatr	29017448	21.25	2020	2022	
19	Weir KR	2022	J Gerontol A Biol Sci Med Sci	34390339	13.47	2022	2024	
20	Bloomfield HE	2020	J Gen Intern Med	32820421	13.45	2022	2024	

Figure 3 Co-citation and citation burst analysis of references: (**A**) Top 10 most cited references in deprescribing research; (**B**) Top 20 references with the strongest citation bursts.

Notes: *Indicates that this reference is among the ten most cited publications on deprescribing; ** Indicates that this reference is also among the top ten most cited references.

Discussion

To our knowledge, this study is the first to employ bibliometric methods to explore the research landscape and development trends in the field of deprescribing. Over the past decade, the annual publication volume and citation counts in this domain have steadily increased, reflecting sustained scholarly interest and establishing deprescribing as a research hotspot. However, our findings highlight several challenges, including a geographical research imbalance, a limited range of diseases and medications studied, a high level of heterogeneity in intervention strategies, and a lack of a robust theoretical foundation. This study provides valuable insights into the current state of deprescribing research and offers guidance for future investigations.

Geographical Research Imbalance

Current publications on deprescribing are primarily concentrated in Western developed countries, including the United States, Australia, Canada, and European nations, where institutions and researchers maintain relatively close

https://doi.org/10.2147/DHPS.S557043

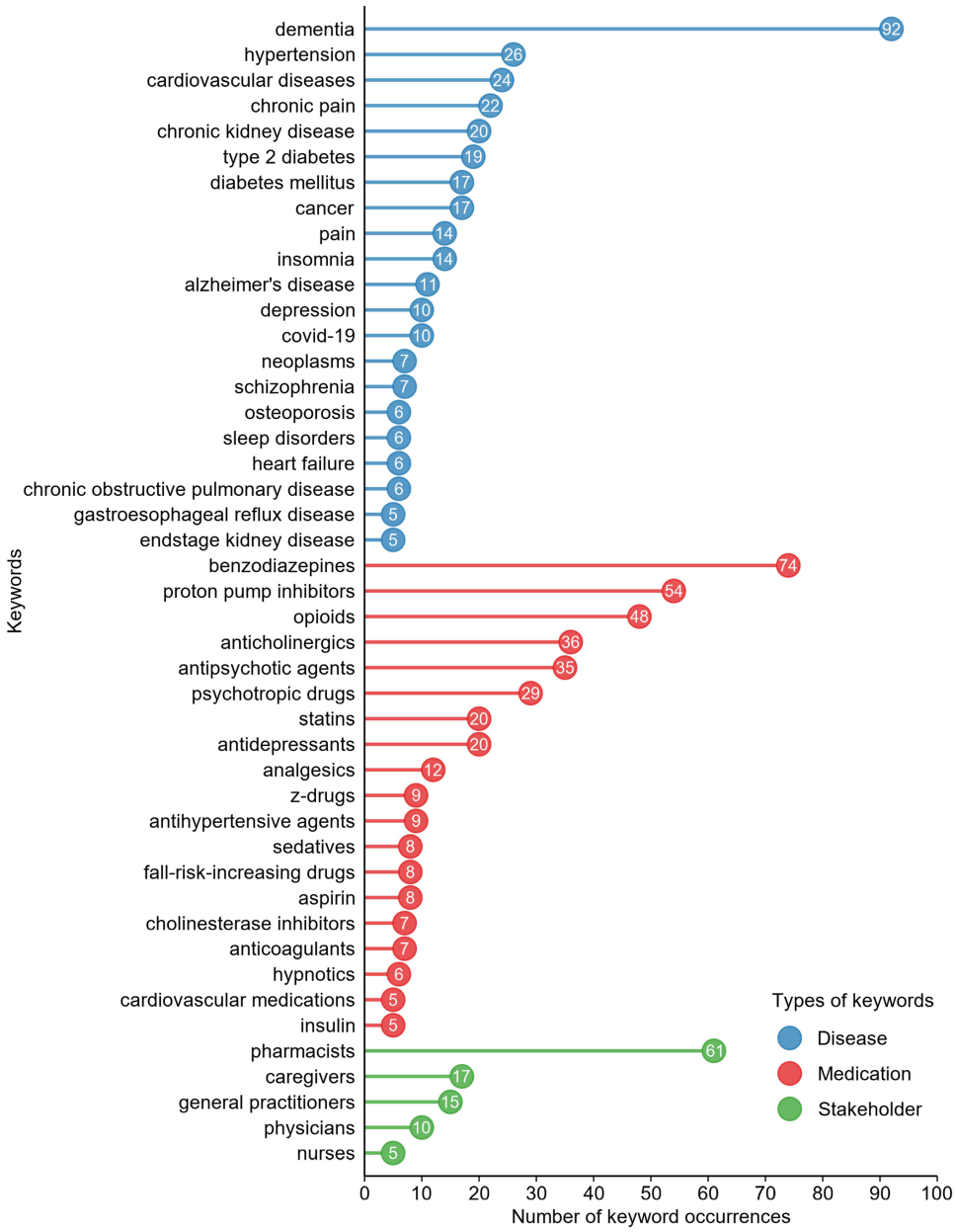

Figure 4 Frequency of keywords categorized by disease, medication, and stakeholder.

collaborative relationships. Notably, all of these countries or regions have established their own deprescribing networks. The first deprescribing network was founded in Australia in 2014 and was followed by the establishment of similar networks in Canada, the United States, and Europe.[32,33] These networks share a common objective of enhancing medication appropriateness, minimizing unnecessary polypharmacy, and reducing the use of PIMs. Collectively, they have played a pivotal role in advancing deprescribing research and fostering international collaboration in this field.

China's population is aging at an accelerating pace. Data indicate that the proportion of individuals aged 60 years and older in the total population will increase from 12.4% (168 million) in 2010 to 28% (402 million) by 2040.[34] This demographic shift further exacerbates challenges related to multimorbidity, polypharmacy, and the use of PIMs among older adults. In China, the prevalence of multimorbidity among older adults exceeds 32%,[35] whereas the rates of polypharmacy and PIM reach 48% and 39%, respectively.[36] These figures highlight both the substantial population that could benefit from deprescribing interventions and China's unique advantage for deprescribing research in terms of

sample size. However, this field has received insufficient attention domestically, as evidenced by the notably low volume of related publications. Therefore, we strongly urge relevant authorities and scholars in China to recognize the importance of deprescribing research and actively promote its development.

Importantly, similar demographic transitions are also occurring in other developing countries. According to the World Population Ageing 2023 report by the United Nations, the population aged ≥65 years in the least developed countries is projected to nearly triple between 2023 and 2050, despite starting from a relatively low base.[37] Moreover, WHO estimates suggest that by 2050, the majority of the global population aged 60 years and older will reside in low- and middle-income countries.[38] These trends indicate that accelerated population aging is a widespread challenge across developing regions, not unique to China, and underscore the urgent need for research and policy innovations, including deprescribing interventions.

Patient Perspectives and Barriers

Deprescribing is a complex process that faces numerous challenges in clinical practice. Our bibliometric analysis shows that among the top 10 most cited references in deprescribing research, two studies specifically focus on the barriers and facilitators of deprescribing. Extensive research has explored the barriers to and facilitators of deprescribing from the perspectives of patients, healthcare providers, and the broader healthcare system. In this study, we identified a reference that has seen a sharp increase in citations over the past three years, reporting that up to 84% of patients were willing to discontinue one or more medications if recommended by their physician.[30] However, a multinational survey conducted across 14 countries involving 1340 older adults with polypharmacy reported a lower proportion of 44%.[39] Patient-level barriers to deprescribing may include a strong preference for continuing current medications, concerns about potential adverse effects of discontinuation, and discouragement from healthcare professionals.[20,40] Furthermore, patients exhibit varied attitudes toward deprescribing: some resist it and prefer the status quo over uncertainty, others defer entirely to their physician's recommendations, and a third group remains open to deprescribing but favors active involvement in decision-making.[41] These findings highlight the need for personalized deprescribing strategies that are tailored to individual patients' preferences and concerns.

Several systematic reviews have comprehensively summarized the barriers to and facilitators of deprescribing at the level of healthcare providers and the broader healthcare system;[42,43] thus, this discussion will not be repeated here. Additionally, recent studies have increasingly focused on the barriers to and facilitators of deprescribing within specific classes of medication, including opioids,[44] antidepressants,[45] benzodiazepines,[46] PPIs,[47] and cardiovascular medications.[48] A deeper understanding of these barriers and facilitators will enable the effective integration of deprescribing into clinical practice.

Research Scope and Deprescribing Tools

The scope of diseases and medications addressed in current deprescribing research remains limited. Our study revealed that deprescribing research has focused primarily on chronic conditions, including psychiatric disorders, cardiometabolic diseases, and chronic pain. Accordingly, the medications used to treat these conditions are the main subjects of deprescribing studies. The extensive research on these medications may be due to the increased prevalence of inappropriate medication use in clinical practice.[49] An early study employed the modified Delphi method to identify 14 classes of medications that should be prioritized for deprescribing from the perspective of practitioners and recommended the development of deprescribing guidelines for these classes.[50] Currently, specific deprescribing guidelines are available for medications such as benzodiazepine receptor agonists and other sedatives,[51,52] antipsychotics,[53] antihyperglycemic agents,[54] PPIs,[23] cholinesterase inhibitors, memantine,[55] and opioid analgesics.[56] These guidelines provide actionable recommendations for clinical deprescribing practices.

However, creating specific guidelines for individual drug classes is often time-consuming, and deprescribing recommendations are more commonly integrated into disease treatment guidelines as a smaller component. Recently, Langford et al conducted a comprehensive review of current clinical practice guidelines related to deprescribing recommendations. These authors reported significant variability in both the content and format of these

recommendations, with few guidelines offering actionable advice on how to deprescribe.[57] Future guideline development may need to place greater emphasis on how to implement deprescribing to make it more actionable in clinical practice.

Among the top 10 most-cited references, three studies focused on criteria for identifying PIMs. Similar to deprescribing guidelines, these criteria are regarded as essential tools that facilitate deprescribing.[58] A wide range of tools has been developed to support deprescribing, but their proliferation may complicate clinical decision-making.[59,60] The continuous emergence of new evidence may lead to delays in updating these tools because integrating new research findings requires time for systematic review, critical appraisal, and consensus among experts. As a result, updates may lag behind the latest evidence, potentially causing discrepancies in deprescribing recommendations depending on which criteria are applied. Furthermore, most existing tools have been designed for specific populations or drug classes, which limits their applicability across diverse clinical scenarios. To improve the utility and consistency of deprescribing efforts, a systematic review and integration of these tools are warranted. Ideally, these resources should be consolidated into an accessible format, such as a database, to facilitate retrieval and implementation in clinical practice. Although this process may be time consuming, it would provide significant value by advancing the adoption and effectiveness of deprescribing.

Role of Pharmacists and Multidisciplinary Teams

Polypharmacy management typically requires a multidisciplinary team that comprises physicians, pharmacists, nurses, and other healthcare professionals.[61,62] Our bibliometric analysis revealed that "pharmacist" appeared significantly more frequently than other team members, and that "pharmaceutical care" has emerged as a keyword with recent citation bursts, highlighting the pivotal role of pharmacists in deprescribing. In recent years, an increasing number of deprescribing studies have been pharmacist-led and have demonstrated promising outcomes.[63–67] Moreover, stakeholders, including patients, have shown a positive attitude toward pharmacists' involvement in deprescribing.[68,69] However, it is noteworthy that some physicians remain reluctant to collaborate with pharmacists in the medication use process. While these physicians acknowledge pharmacists' contributions to dispensing and counseling, they do not regard them as highly beneficial in prescribing or monitoring.[70] Therefore, identifying strategies to better integrate pharmacists into multidisciplinary teams and optimize their role in deprescribing is crucial.

Intervention Strategies and Implementation Science

Our study found that deprescribing interventions and their clinical outcomes are widely discussed topics. Various deprescribing strategies have been reported, including medication reviews,[71,72] educational programs for patients[63,73,74] and prescribers,[75] computerized decision support tools,[76,77] and family involvement.[78] However, many studies have failed to demonstrate significant clinical benefits of deprescribing. Some researchers attribute this to challenges in translating research evidence into clinical practice.[79,80]

To address this issue, increasing attention has been given to implementation science, which was also identified in our citation burst analysis. Implementation science employs theories, models, and frameworks[81] to identify key implementation barriers and facilitators, guide intervention strategies, and evaluate effectiveness. The Consolidated Framework for Implementation Research has been applied successfully to deprescribing interventions and has yielded promising results.[82] Integrating implementation science into deprescribing research may be a critical direction for future studies.

Strengths and Limitations

To our knowledge, this study is the first to employ bibliometric methods to explore the research landscape and development trends in the field of deprescribing. Our findings offer valuable insights for practitioners and researchers, provide a comprehensive understanding of the field and serve as a useful reference for future research in this area. However, this study also has several limitations. First, the data used in this research were retrieved exclusively from the WOS database. While this database is globally regarded as one of the most comprehensive citation sources, relying on a single database may result in the exclusion of publications that are indexed only in other databases. However, some scholars argue that searching across multiple databases in bibliometric studies may not always be advantageous because differences in file formats and difficulties in accurate integration may lead to overlap and bias.[83] Second, the language was limited to English in this study, which may have led us to overlook non-English publications, thereby introducing

potential bias. Third, highly cited publications may be cited for either positive or negative reasons, and our study cannot effectively distinguish between these motivations.

Conclusion

This study provides the first comprehensive bibliometric analysis of deprescribing research, offering a systematic overview of its current state and emerging trends. While deprescribing has become a research hotspot, key challenges remain, including geographical imbalances, a narrow focus on certain diseases and medications, heterogeneity in intervention strategies, and the absence of a strong theoretical foundation. For researchers, these findings highlight the need to broaden the scope of investigation and adopt implementation science frameworks to strengthen study design and evaluation. For healthcare providers, the results underscore the importance of tailoring deprescribing strategies to diverse patient populations and clinical contexts. For policymakers and regulators, the findings suggest that investment in deprescribing research and international collaboration should consider demographic realities, such as the size of the aging population, to ensure recommendations are contextually appropriate. Addressing these gaps will be essential to advance deprescribing as an integral component of polypharmacy management and optimize patient outcomes.

Abbreviations

BIBLIO, Guideline for reporting bibliometric review of the biomedical literature; PIMs, Potentially inappropriate medications; PPIs, Proton pump inhibitors; WOS, Web of Science.

Data Sharing Statement

All data supporting the findings of this study are available within the paper. Raw data can be provided upon reasonable request from the corresponding author.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Funding

This study was supported by the National Key Research and Development Program of China (grant number: 2024ZD0522305), the Medical and Health Research Project of Zhejiang Province (grant number: 2025KY1093) and the Hangzhou Special Scientific Program for Supporting the Development of the Biomedical and Health Industry (grant number: 2024WJC008).

Disclosure

The authors declare that they have no competing interests in this work.

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