REVIEW

The Application of Checklist in Chronic Disease: A Comprehensive Bibliometric Analysis

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Background: Increasing evidence suggests that checklist plays an important role in chronic disease. This study aims to use bibliometric methods to explore the evolving global research trends, hotspots, and emerging frontiers of the application of checklist in chronic disease research, providing deeper insights into the current research landscape and guiding future chronic disease management development efforts.

Methods: Bibliometrics analysis was performed utilizing RStudio and VOSviewer software. This atlas analyzed the global research trends, hotspots and emerging trends.

Results: In total, there were 408 publications authored by 2398 authors from 784 institutions and 53 countries, published in 274 journals. The USA led in publication numbers, international cooperation and societal impact. The leading core journal was Archives of Pathology & Laboratory Medicine. The first highly cited document was published in Psychological Assessment by Bovin MJ et al. Chronic disease management, and the validity of treatment and recovery were the hotspots and potential trends.

Conclusion: This study provides a comprehensive bibliometric analysis of the application of checklist in chronic disease research, uncovering global research trends and current hotspots while offering valuable insights and references for future research directions.

Keywords: checklist, chronic disease, bibliometric analysis, global research trends, frontier hotspots

Introduction

Chronic disease is defined as having a long duration, slow progression and is non-communicable.[1] Chronic disease includes cardio-cerebrovascular diseases, cancer, chronic respiratory diseases, diabetes, obesity, mental illness and so on.[2,3] They are responsible for 80% of all deaths and 50% of premature deaths in low- and middle-income countries, which cause the greatest burden of disease worldwide.[4] The WHO predicts that deaths from chronic disease will rise to 55 million by 2030 if no effective action is taken.[5] Therefore, the demand and utilization of healthcare services by chronic disease patients are essential.[6,7]

Checklist is a new type of medical auxiliary tool, typically covering key components such as basic patient information, symptom assessment, diagnostic tests, treatment plans, and patient education. [8, 9] The checklist has the characteristics of systematicity, comprehensiveness, standardization, and clarity.[10] More and more research report the importance of a checklist for chronic disease.[11] It not only helps to improve patients' self-management skills and compliance but also improves continuity and coordination of care, helping to achieve effective chronic disease management.[12,13] Nearly 50% of family physicians use flowcharts and checklists, recognizing the potential benefits to their practice.[14] In essence, checklist acts as a bridge between best practice and real-world application, strengthening the integrity and reliability of healthcare delivery for chronic disease patients.[15,16]

Bibliometrics, a subfield of library and information science, tracks the intellectual evolution of a given area of research and its structure in a quantitative way.[17] This analytical approach not only can assess the current influence of research but also provide predictive insights into the evolving directions of specific scientific fields, revealing

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development trends, hot topics and frontiers.[18,19] Therefore, this study will apply bibliometric methods to comprehensively analyze the research on checklist in chronic disease, aiming to provide valuable references and insights for scholars and clinicians in the field and promote further development in this area.

Materials and Methods

Data and Search Strategy

We retrieved the Web of Science Core Collection (WoSCC) database (https://webofscience.clarivate.cn/wos/woscc/basic-search), which is considered the longest time span and the largest, most systematic and complete collection of archives.[20] Comprehensive coverage of relevant literature could be achieved, avoiding the omission of important information and revealing research hotspots and potential trends from numerous research findings.[21] All searches were completed by January 26, 2025, to avoid biases due to database updates. More information on the Supplementary Search Strategies. Broad terms were retained in the analysis to ensure comprehensive coverage, while specific terms were included to identify emerging trends. Terms with more than 5 occurrences were noted as potential areas for future research.

To ensure the relevance and quality of the included literature, we have adopted the following inclusion criteria: (1) the selected documents, institutions, and countries were standardized to prevent variations in names from affecting the results. For example, England, Scotland, Wales, and Northern Ireland were combined into the UK, and Taiwan was merged with China;[22] (2) the studies must be written in English;[23] (3) document types include article or review article;[23] (4) literatures must include sufficient data and information, such as country, research institution, author details, etc., to facilitate visual analysis; (5) include all types of checklists, such as patient self-management checklists,[11] clinical decision support tools for healthcare professionals,[8,12] and disease monitoring and assessment tools;[13,14] (6) without limitation to specific types of chronic disease.

Ultimately, 2418 records were retrieved and downloaded in plain text format. We used EndNote software's plagiarism-checking function to remove duplicate studies. Two authors independently selected the titles and abstracts according to eligibility criteria. All differing opinions were discussed within the group multiple times and guided by professionals to reach final conclusions. The flow of data collection and bibliometric analysis is illustrated in Figure 1.

Data Analysis and Visualization

The following software tools were used in this study: VOSviewer (Version 1.6.20, Leiden University, the Netherlands),[24] Microsoft Excel (Redmond 2019; Washington State, United States), the Bibliometrix package (version 4.0, http://www.bibliometrix.org) in R Studio (Version 4.3.20).[25] We used VOSviewer's best feature, visual network construction based on co-occurrence relationships, to clearly show the co-occurrence of keywords, helping to identify academic networks and research hotspots within the field.[24] This study used R Studio in data mapping and Bibliometrix package for modeling, and most of the visualizations in this study were produced using this package. This study followed a structured methodological framework of the bibliometric study.[26]
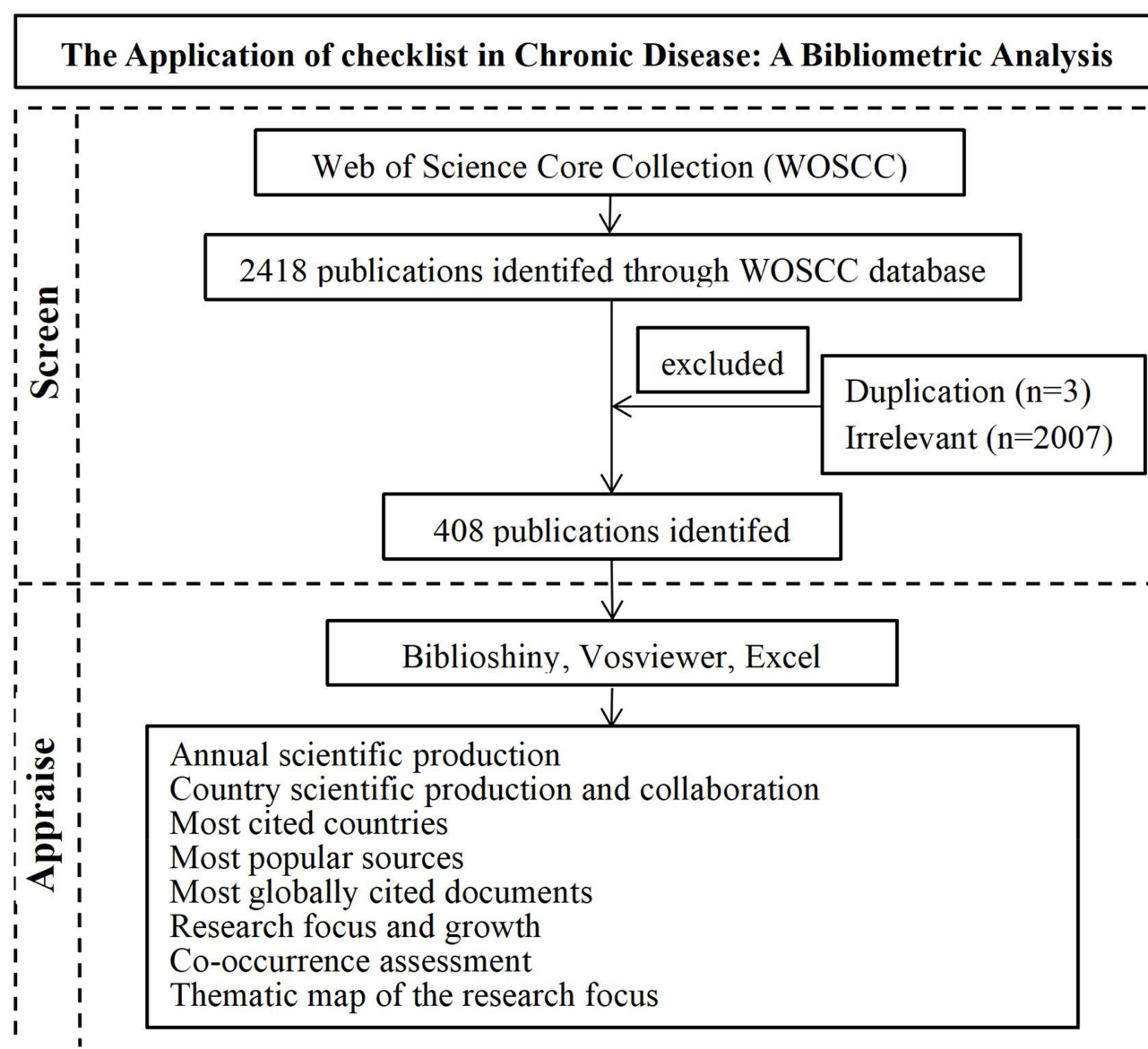
Results

Annual Scientific Production

Figure 2 presents the annual scientific production of the application of checklist in chronic disease covering the period 1983 to 2024. This research literature contains 408 publications, of which 380 articles and 28 reviews account for 93% and 7%, respectively. Overall, the number of articles seems to be showing a long-term growth trend. In 2017, the number of papers decreased to only 7. However, due to the emergence of the coronavirus disease 2019 (COVID-19),[27] the annual production of articles reached the peak of 35 articles in 2022. Although there was a slight decrease afterwards, the volume of publications is expected to continue rising consistently in the coming years.

Country Scientific Production and Collaboration

This section presents the country-wise scientific contribution to the application of checklist in chronic disease (Table 1). Figure 3 shows the time-trend assessment of the countries that accomplished the most scientific production. The top 10

The Application of checklist in Chronic Disease: A Bibliometric Analysis

Screen

Web of Science Core Collection (WOSCC)

↓

2418 publications identifed through WOSCC database

↓

excluded ← Duplication (n=3) / Irrelevant (n=2007)

↓

408 publications identifed

Appraise

Biblioshiny, Vosviewer, Excel

↓

Annual scientific production
Country scientific production and collaboration
Most cited countries
Most popular sources
Most globally cited documents
Research focus and growth
Co-occurrence assessment
Thematic map of the research focus

Figure 1 Detailed flowchart steps of the data collection and bibliometric analysis.

countries are the United States (531), China (167), the United Kingdom (137), Italy (115), Australia (74), the Netherlands (74), Canada (63), Germany (63), Japan (53), Spain (49).

The international cooperation network illustrates the degree of collaboration and communication among authors from different countries in relevant academic research (Figure 4 and Table 2). We only present the top 5 countries in Table 2, and S1 Table shows the rest of the countries. The varying shades of color on the map indicate the number of participated documents, with darker shades representing higher quantities of participated documents for each respective country. More numerous lines between countries denote deeper levels of collaboration. The United States was the most active collaborator, engaging closely with multiple countries such as Canada, China, the United Kingdom, Italy. These collaborations facilitate the exchange and dissemination of knowledge while enhancing the depth and breadth of international academic cooperation.[23]
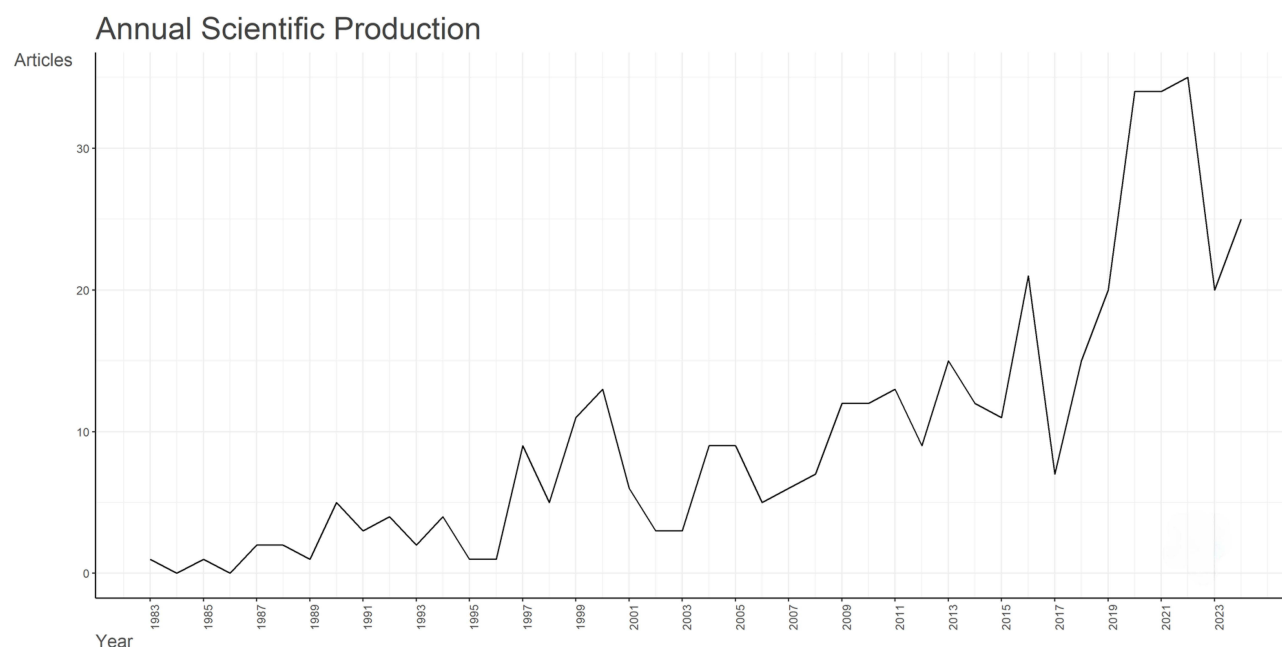
**Figure 2** Annual number of scientific published productions.

Most Cited Countries

Citation impact metrics are increasingly important in assessing research impact, and researchers are interested in the scientific metric literature.[28] This study analyses the citation impact of the application of checklist in chronic disease. Figure 5 presents the most cited countries or territories ranked based on the number of single-country total citations (TC) and average article citations (AAC). We only present the top 10 countries in Figure 5, but S2 Table shows the rest of the countries. The United States (4522) is the most cited country, whereas the United Kingdom (829) and Canada (538) are second and third, respectively. The Netherlands is in the fourth place (521), and Italy is in the fifth place (386) for the number of citations. We affirm that a possible explanation behind the number of citations given here is that

Table 1 Country Scientific Production

Region	Frequency	Region	Frequency	Region	Frequency
USA	531	TURKEY	20	SAUDI ARABIA	2
CHINA	167	SINGAPORE	17	TANZANIA	2
UK	137	MEXICO	13	ARGENTINA	1
ITALY	115	AUSTRIA	12	BARBADOS	1
AUSTRALIA	74	DENMARK	11	BURKINA FASO	1
NETHERLANDS	74	INDIA	10	CAMBODIA	1
CANADA	63	CHILE	9	CAMEROON	1
GERMANY	63	PORTUGAL	9	CZECH REPUBLIC	1
JAPAN	53	FINLAND	8	EGYPT	1
SPAIN	49	IRELAND	8	LUXEMBOURG	1
FRANCE	47	POLAND	8	MALAWI	1
SWEDEN	36	GREECE	6	ROMANIA	1
SOUTH KOREA	32	SOUTH AFRICA	5	RUSSIA	1
IRAN	28	CROATIA	3	SENEGAL	1
BRAZIL	25	KUWAIT	3	SERBIA	1
SWITZERLAND	25	INDONESIA	2	UGANDA	1
BELGIUM	23	JORDAN	2	VIETNAM	1
NORWAY	21	MALAYSIA	2		

Country Scientific Production
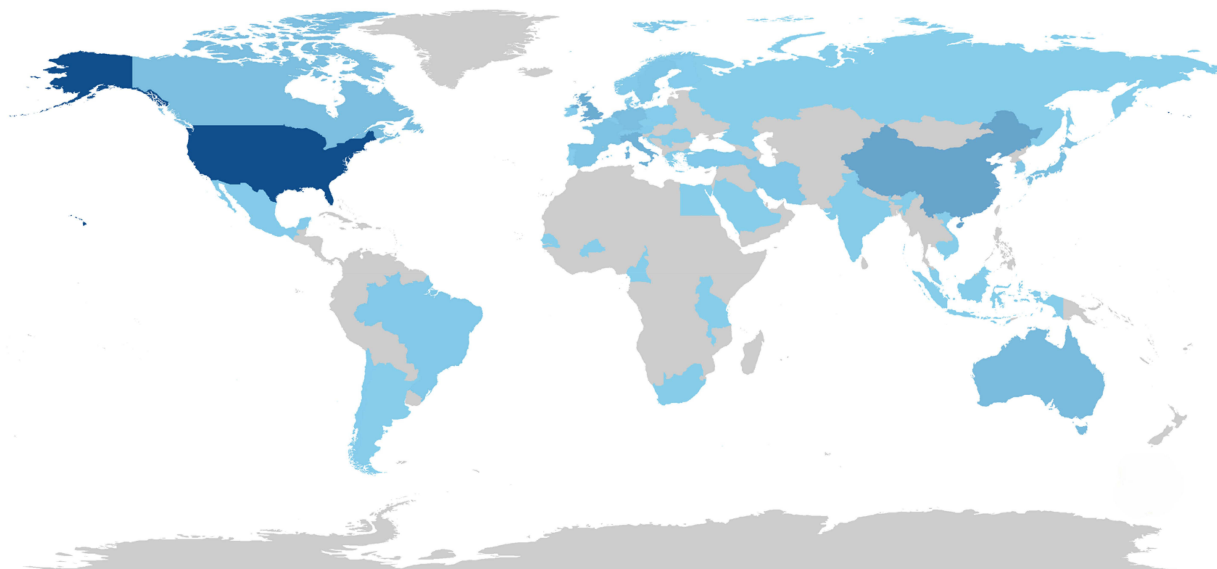
Figure 3 Country scientific production.

Country Collaboration Map
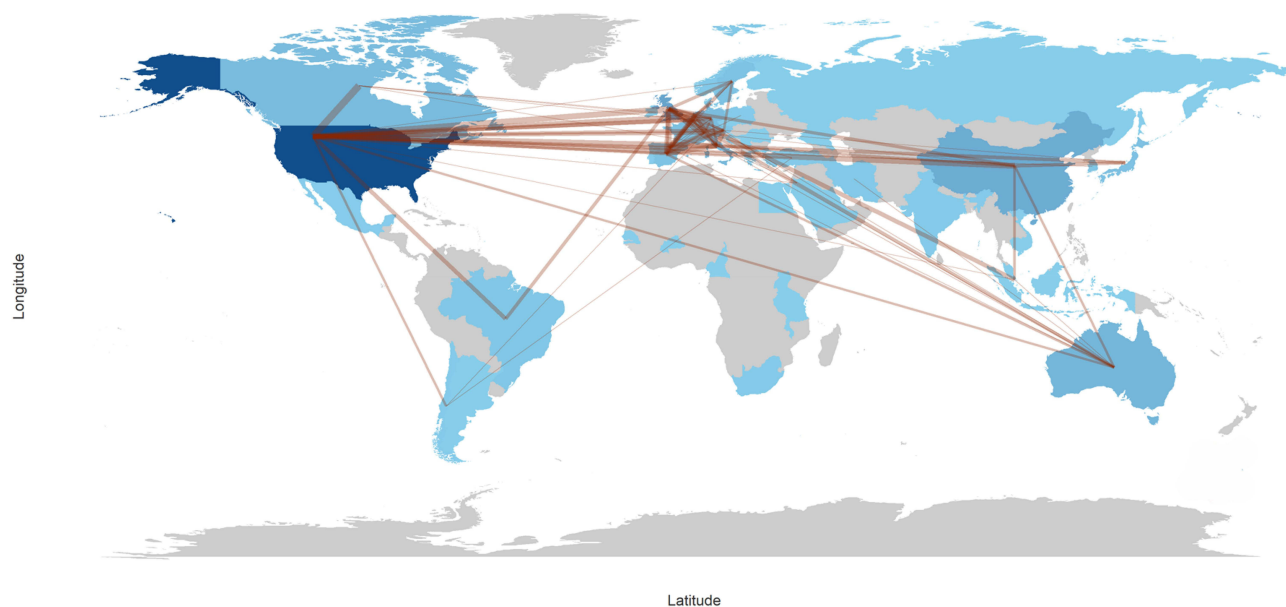
Figure 4 Country scientific collaboration.

although many countries are researching the application of checklist in chronic disease, the most cited countries have more meaningful research and societal impact.

Most Popular Sources

It is also imperative to understand which journals are more focused on publishing papers in the application of checklist in chronic disease. This information on publication sources will help researchers read more papers and submit papers to

Table 2 Country Collaboration

From	Freq	To (Countries with collaboration)
USA	94	Canada (11), China (8), the United Kingdom (8), Italy (7), Brazil (5), Germany (5), Netherlands (5), Austria (4), Belgium (4), France (4), Switzerland (4), Chile (3), Spain (3), Australia (3), Jordan (2), Korea (2), Singapore (2), Turkey (2), Sweden (2), Argentina (1), Barbados (1), Czech Republic (1), Denmark (1), Japan (1), Poland (1), Portugal (1), Serbia (1), Tanzania (1), Uganda (1)
UK	61	France (7), Netherlands (6), Italy (5), Singapore (5), Spain (5), Australia (4), Brazil (4), Sweden (4), Austria (3), Germany (3), Switzerland (3), Belgium (2), Canada (1), Denmark (1), Japan (1), Korea (1), Luxembourg (1), Portugal (1), Saudi Arabia (1), Serbia (1), U Arab Emirates (1), Uganda (1)
Italy	51	Austria (6), France (6), Spain (6), Japan (4), Netherlands (4), Belgium (3), Germany (3), Australia (2), Canada (2), Greece (2), Jordan (2), Switzerland (2), Brazil (1), Czech Republic (1), Denmark (1), Ireland (1), Luxembourg (1), Poland (1), Serbia (1), Singapore (1), Sweden (1)
Netherlands	36	France (6), Spain (5), Belgium (4), Denmark (3), Germany (3), Sweden (3), Austria (2), Canada (2), Switzerland (2), Czech Republic (1), Jordan (1), Korea (1), Luxembourg (1), Poland (1), Singapore (1)
France	26	Belgium (4), Austria (3), Switzerland (3), Sweden (2), Brazil (1), Burkina Faso (1), Cambodia (1), Cameroon (1), Czech Republic (1), Denmark (1), Egypt (1), Greece (1), Jordan (1), Luxembourg (1), Poland (1), Senegal (1), Serbia (1), Singapore (1)

Table 3 Primary Source Journal with the Application of Checklist in Chronic Disease

| Journal, Country	Articles	%	SC	IF	Date
ARCHIVES OF PATHOLOGY & LABORATORY MEDICINE	31	7.60%	M, MLT, PFM	3.12	2025/1/20
JOURNAL OF AFFECTIVE DISORDERS	16	3,92%	M, P	5.53	2025/1/20
ANNALS OF TRANSLATIONAL MEDICINE	7	1.72%	M	NA	2025/1/20
JOURNAL OF ASTHMA	5	1.23%	M, Pe	2.18	2025/1/20
PLOS ONE	5	1.23%	MD	2.90	2025/1/20

Abbreviations: SC, Scimago Category; Date, IF corresponds to a specific date; MLT, Medical Laboratory Technology; PFM, Pathology and Forensic Medicine; HP, Health Professions; M, Medicine; P, Psychology; Pe, Pediatrics; MD, Multidisciplinary; NA, Not Available.

those journals. Therefore, this study analyses the primary sources of the application of checklist in chronic disease. We list the scientific publication sources of the top 10 journals with the number of articles published on the application of checklist in chronic disease. Table 3 presents the checklist of primary sources with the number of articles published. See S3 Table for an extended list. The first two journals, the Archives of Pathology & Laboratory Medicine and Journal of Affective Disorders, account for nearly 11.52% of the relevant papers (a total of 47). The following three journals, Annals of Translational Medicine (total 7–1.72%), Journal of Asthma (total 5–1.23%), PLoS One (total 5–1.23%). The WHO also published a relevant meeting report on the application of checklist in chronic disease.[29]

Most Globally Cited Documents

This study also presents the top-cited papers in the field of the application of checklist in chronic disease. Some literature limits this list to a minimum or maximum citation number; for example, Krishen et al[30] determined the list within a minimum of 20 citations in their analysis. We also present the top 20 most cited articles. These published research articles significantly discussed the importance of applying checklist in chronic disease in different aspects. This study mentions the most globally cited research articles that have significant social and research impact. A checklist of the top 20 highest-cited articles is given in Table 4. The studies as the most globally cited documents are notably over 20 years old. This can be attributed to their foundational nature in the field, the stability of their research findings, and common citation habits in the academic community. These early studies laid the groundwork for subsequent research on checklist in chronic disease, and their influence persists despite the evolution of checklists over time. The rest of the list is presented in S4 Table, including authors' information, publication year, publication sources (journal), digital object identifier (DOI), total citations, yearly citations, and normalized total citations.

Most Cited Countries
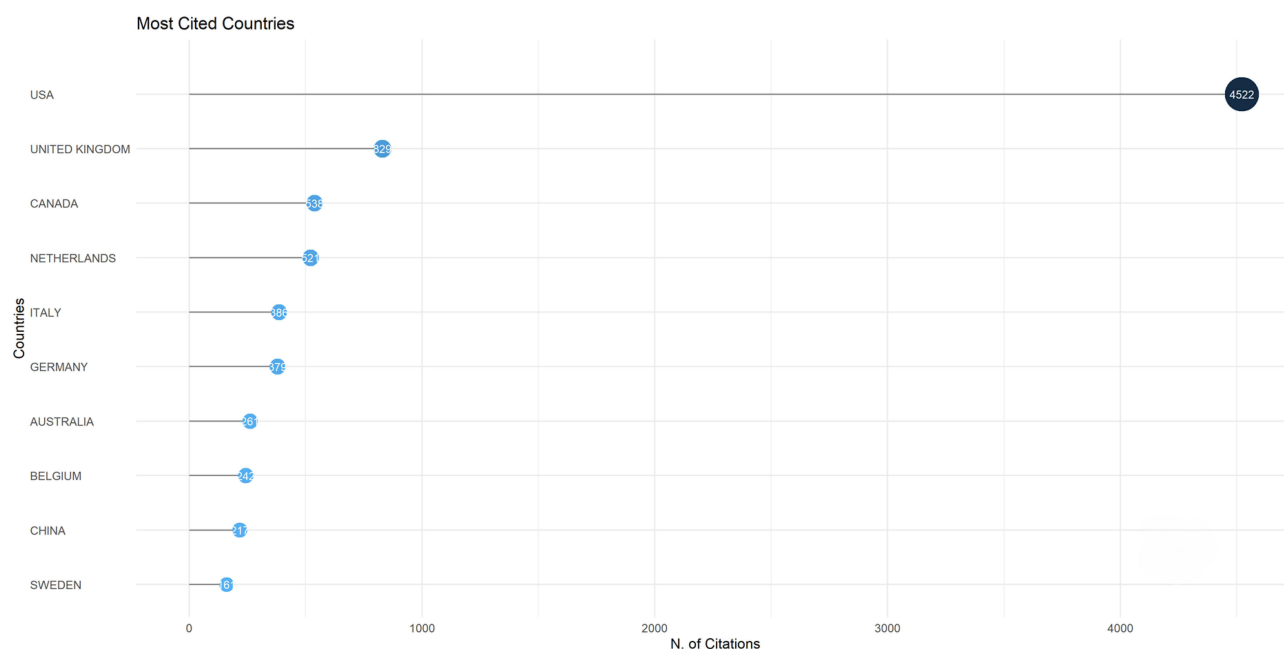

Figure 5 The most cited countries (social impact).

Research Focus and Growth

Figure 6 shows the growth of research from 1990 to 2024. It can be seen from the graph that the frequency of occurrence of all keywords is increasing, and the focus of research is constantly changing, from early cancer research to later research on management, prevalence, reliability, and validation. After 2020, the growth rate of all keywords accelerates

Table 4 Most Global Cited Documents

Author(s), Year, Country, Journal	DOI	TC	TCY	NTC
BOVIN MJ, 2016, PSYCHOL ASSESSMENT	10.1037/pas0000254	1756	175.60	18.02
DEHAES JCJM, 1990, BRIT J CANCER	10.1038/bjc.1990.434	663	18.42	4.37
COSTELLO EJ, 1988, J AM ACAD CHILD PSY	10.1097/00004583-198,811,000-00011	535	14.08	2.00
MOSS S, 1998, J INTELL DISABIL RES	10.1046/j.1365–2788.1998.00116.x	357	12.75	4.00
HEWLETT S, 2011, ARTHRIT CARE RES	10.1002/acr.20579	299	19.93	6.75
ISMAIL Z, 2017, J ALZHEIMERS DIS	10.3233/JAD-160979	296	32.89	4.43
EFFICACE F, 2003, J CLIN ONCOL	10.1200/JCO.2003.12.121	196	8.52	2.29
SOYER HP, 2004, DERMATOLOGY	10.1159/000075042	158	7.18	2.17
GROOTENHUIS PA, 1994, DIABETIC MED	10.1111/j.1464–5491.1994.tb00268.x	156	4.88	2.21
LUBY JL, 2004, J AM ACAD CHILD PSY	10.1097/01.chi.0000121066.29744.08	150	6.82	2.06
EWERT T, 2004, J REHABIL MED	10.1080/16,501,960,410,015,362	134	6.09	1.84
WU SM, 2006, J PAIN SYMPTOM MANAG	10.1016/j.jpainsymman.2006.05.010	124	6.20	2.82
COMPTON CC, 2000, ARCH PATHOL LAB MED	NA	113	4.35	6.12
DUHAMEL KN, 2004, PSYCHOL ASSESSMENT	10.1037/1040-3590.16.3.255	108	4.91	1.48
BIEDERMAN J, 2012, J DEV BEHAV PEDIATR	10.1097/DBP.0b013e3182475267	107	7.64	2.64
SHAMLIYAN TA, 2011, J CLIN EPIDEMIOL	10.1016/j.jclinepi.2010.08.006	97	6.47	2.19
WADSWORTH ME, 2001, J AM ACAD CHILD PSY	10.1097/00004583-200,101,000-00023	93	3.72	3.82
HEALSMITH MF, 1994, BRIT J DERMATOL	10.1111/j.1365–2133.1994.tb06881.x	93	2.91	1.32
PLATZ E, 2019, EUR J HEART FAIL	10.1002/ejhf.1499	91	13.00	5.71
MCGOVERN TW, 1992, J DERMATOL SURG ONC	10.1111/j.1524–4725.1992.tb03296.x	85	2.50	2.76

Abbreviations: TC, Total Citation; TCY, Total Citation per Year; NTC, Normalized Total Citation.
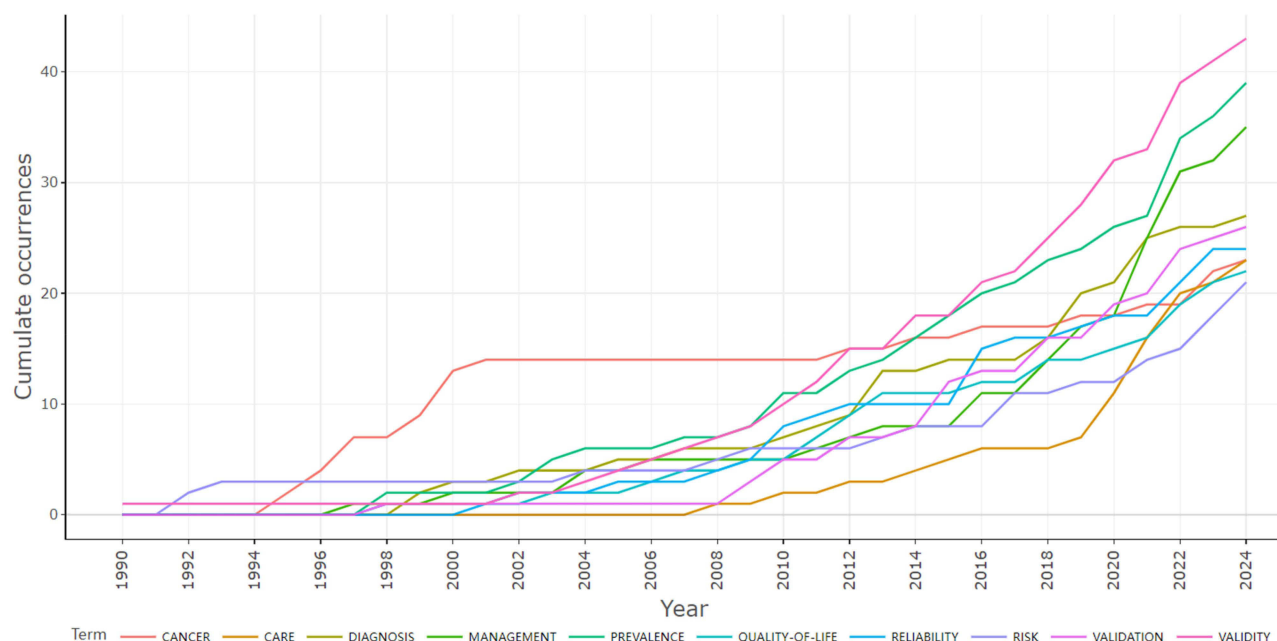
Figure 6 Research focus and growth.

which may be related to the impact of global health crises such as the COVID-19 pandemic, which may increase the urgency of research into chronic disease management.

Co-Occurrence Assessment

Figure 7 presents the co-occurrence assessment from all keywords, including keyword plus and author's keyword. The minimum number of occurrences of keywords is selected as 5. These keywords were categorized into 7 clusters: The red cluster related to psychology; the purple cluster related to severity and prognosis of the disease; the blue cluster related to treatment and nursing; the light-blue cluster related to public health especially for children and the elderly of mental health, cognitive disorders; the green cluster focused on primary care and diagnosis; the yellow cluster focused on quality of life and therapeutic efficacy; and the orange cluster focused on oncology.
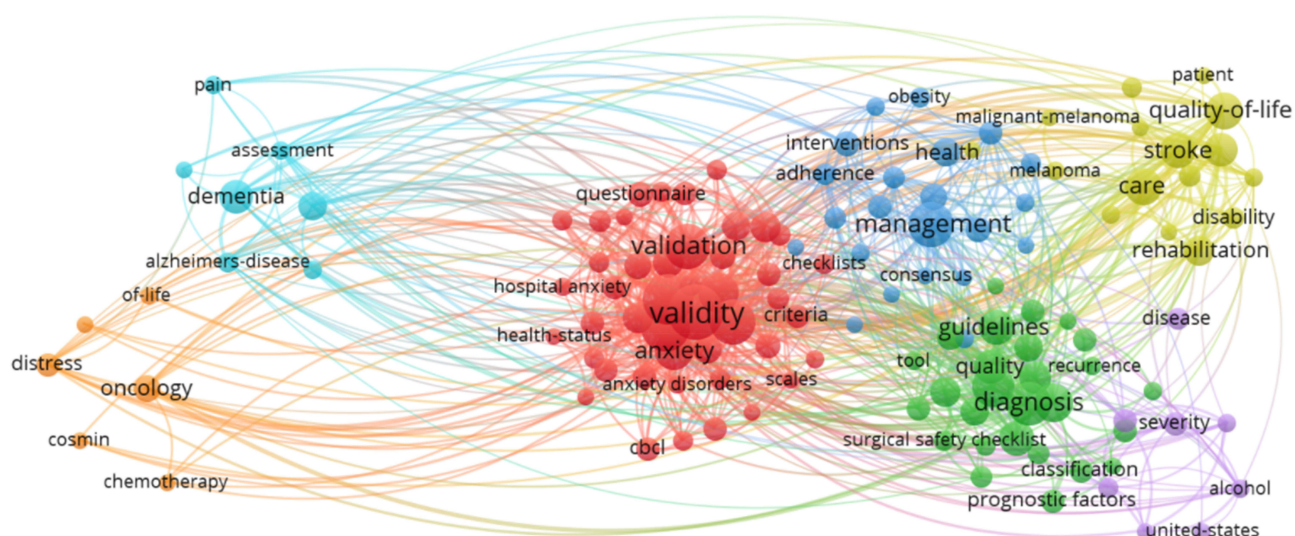
Figure 7 Co-occurrence assessment. Co-occurrence assessment (minimum occurrence 5). Notes: Author's illustration using VOSviewer [Co-occurrence, all keywords, the minimum number of occurrence of keywords (5), of the 2022 keywords, 131 meet the threshold, cluster 7, links 1960, total link strength 3144].
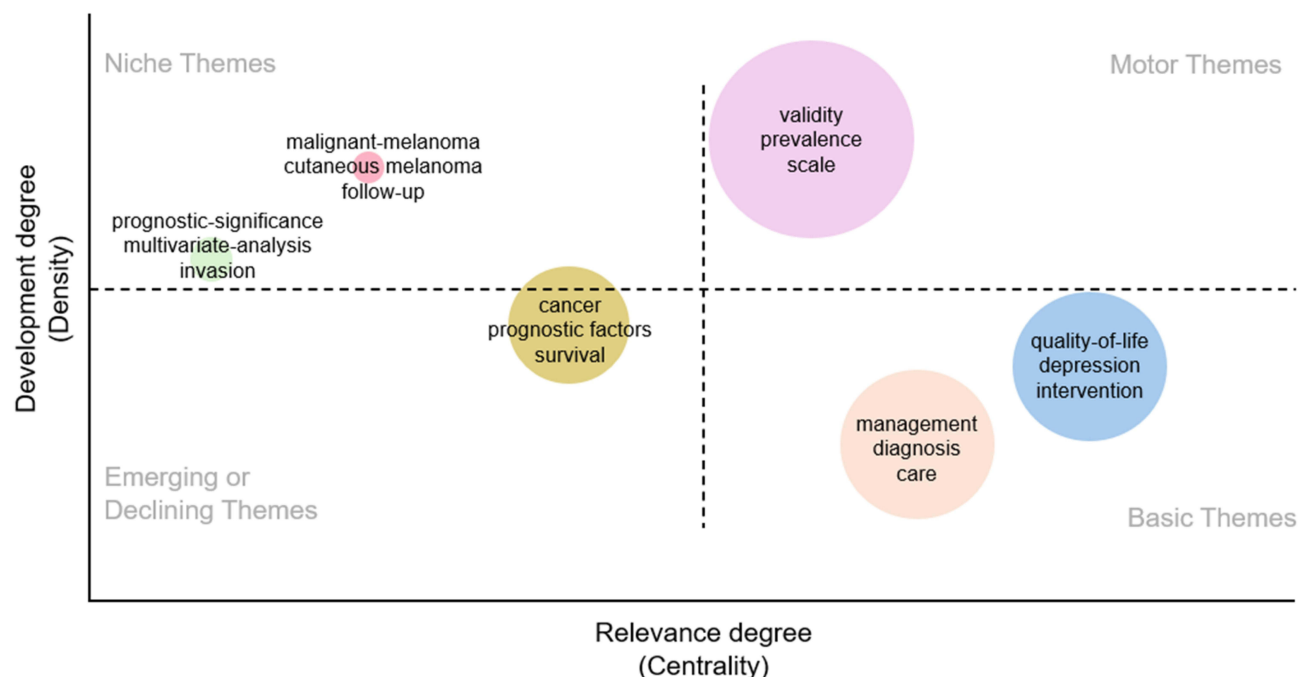
Figure 8 Thematic map of research focus.

Thematic Map of the Research Focus

We present a thematic mapping of the application of checklist in chronic disease in Figure 8 with the "keyword plus" mapping. This thematic map provides researchers with a visual tool to help them understand the relative importance and development trends of different research topics. According to the "keyword plus" mapping, there are 6 related circles such as (i) quality-of-life, depression, intervention, (ii) prognostic-significance, multivariate-analysis, invasion, (iii) validity, prevalence, scale, (iv) management, diagnosis, care, (v) cancer, prognostic factors, survival, (vi) malignant-melanoma, cutaneous melanoma, follow-up. From Figure 8, research focuses on more motor themes such as validity, prevalence, and scale development. Meanwhile, some Niche Themes, such as specific types of melanomas and abcd rules, although highly developed in certain fields, may not be the most core issues in the entire field of chronic disease management.

Discussion

Throughout the world, chronic disease has increased significantly, causing a huge medical and social burden.[2] Studies have shown that a checklist has a good effect on managing chronic disease.[31,32] Given this context, a systematic analysis is crucial for understanding the current research landscape and guiding future chronic disease efforts. Therefore, this study conducted a bibliometric analysis in the field of checklist and chronic disease to offer deeper insights and guidance for addressing this global challenge.

General Information

Using the WoSCC databases, we searched for articles and reviews published about checklist and chronic disease in the present study. The bibliometric study consisted of 408 papers from 784 institutions in 53 countries and regions with 2398 authors, published in 274 journals with 12,268 co-cited references.

The volume of publications can reflect the trend of a certain research field.[18] Overall, research showed an increasing trend in publication numbers. This upward trend suggests a growing interest among researchers in exploring the relationship between checklist and chronic disease, which is the same view that has been reached in previous studies.[33,34] However, there has been a sharp increase in the number of articles published in 2019 and 2020. This

increase may be attributed to the coronavirus disease 2019 (COVID-19) pandemic:[35] chronic disease is a major risk factor for patients with COVID-19.[27] Therefore, the prevention and control of chronic disease have a crucial role in the COVID-19 response.[35] In addition, there has been a decline in the number of publications in 2023. This trend may be associated with shifts in research focus and resource allocation after the end of global emergency status in 2023:[36,37] (1) the variation trend of COVID-19 was studied in depth;[38,39] (2) the side effects of the vaccine and the effectiveness of the vaccine against the mutant strain;[40,41] (3) the health status of COVID-19 rehabilitators.[42,43]

The United States stands out as the nation with the highest volume of published articles, the most cited research and the most active in collaborations. This finding is consistent with the results of previous studies.[44] This trend may be related to the US government's emphasis on chronic disease management.[45] We also find that most contributions come from developed countries or northern hemisphere, indicating a strong correlation between the advancements in medical science and a country's overall economic and technological strength.[36] However, it also reflects the variability in global health resources, suggesting that previous studies have neglected chronic disease health problems and health needs in developing countries.[46] Meanwhile, BOVIN MJ, 2016,[47] occupies a prominent position that confirms its role as a primary channel for disseminating research findings in this field.

Hotspots and Development Trends

Through research focus and growth, co-occurrence assessment, thematic map, thematic evolution, we identified research hotspots, assessed the growth and evolution of research, and explored the links between different research themes. The results show that the research frontiers and hotspots in this field mainly focus on two aspects. First, checklist has an important role as a tool in chronic disease management.[48] Second, checklist can improve the validity of treatment and recovery for patients with chronic disease.

Checklist Has an Important Role as a Tool in Chronic Disease Management

A checklist is an essential tool in chronic disease management.[49] On the one hand, the checklist can help healthcare professionals ensure that all necessary steps are consistently followed, reducing the likelihood of omissions and errors and improving the quality of care.[50] By standardizing management protocols, a checklist can lead to more consistent application of evidence-based practice, which is essential for the effective management of chronic conditions.[13] This view is consistent with the findings of previous study that checklist could highlight evidence of the effectiveness in reducing medication errors, surgical complications and other adverse events.[14] On the other hand, a growing body of research is devoted to the construction of checklist to promote self-management compliance in patients with chronic disease.[51] It is viewed as a useful tool for chronic disease to support the development, comparison and evaluation of self-management support programmers.[51] Gu Pan et al[31,32] also showed that the checklist could increase patients' adherence to rehabilitation and improve their self-management ability.

Checklist Can Improve the Validity of Treatment and Recovery for Patients with Chronic Disease

The implementation of structured checklist in the management of chronic disease has been recognized for its potential to enhance the validity of treatment and recovery processes.[52–54] For instance, a study found that checklist significantly reduced re-hospitalization rates and improved cardiac function in chronic heart failure (CHF) patients,[52] demonstrating how such a simple tool can have a profound impact on the validity of treatment and the path to recovery for patients with chronic disease. Additionally, a study focusing on hospitalized children with chronic disease validated the Comfort Behaviors Checklist, which improves the level of comfort in these patients. Qiao Li et al[49] also showed that the use of the checklist in patients with chronic disease can improve health outcomes and promote the rehabilitation.

Future Research Prospects

First, future research could focus on the use of chronic disease inventories in special populations. For instance, elderly patients with multiple chronic conditions face significant physical and cognitive decline, complicating disease management.[55] Moreover, children with chronic diseases have distinct needs due to growth, development, and psychology.[56] Therefore, future research should focus on meeting the specific needs of these special populations in the form of checklist.

Second, future research should center on the application of checklists within emerging healthcare scenarios. Delve into how doctors and patients can engage in effective communication and collaboration via checklists during telemedicine. Additionally, explore the seamless integration of checklists with hospital information systems. This integration aims to enable the automatic collection and analysis of medical data, thereby furnishing more precise decision - making support for chronic disease management.

The refined keyword analysis revealed that specific terms such as "breast cancer" and "prostate cancer" appeared only 3–4 times in the dataset. This low frequency may indicate that the use of checklists in these areas is still in its infancy, highlighting a significant knowledge gap. Several factors may explain this observation: (1) emerging area of research: The use of checklists in specific chronic disease areas (eg, rare cancers) may not be well established, resulting in limited published studies.; (2) data limitations: The dataset may under-represent certain areas due to the use of broader terms (eg, "cancer") without specifying subtypes; (3) variations in clinical practice: Checklists may be more commonly used in some chronic disease areas (eg, diabetes management) than others (eg, rare cancers), reflecting differences in clinical needs and practice. These findings highlight the need for targeted research to explore the potential benefits of checklists in under-represented chronic disease areas. Future studies could focus on developing and validating checklists for specific conditions, such as breast cancer or central nervous system neoplasms, to address these gaps.

In addition, checklist in chronic disease management varies significantly across countries and regions, likely due to differing research priorities and approaches among disciplines. The roles of subfields within medicine and health sciences (eg, public health, clinical medicine, and health informatics) also differ in managing chronic diseases by checklist. However, such comprehensive comparisons are beyond the scope of a single study. Future research should explore the roles of different disciplines and subspecialties in chronic disease management. This will enhance the understanding of diversification in chronic disease management and offer more targeted recommendations for policymakers and researchers.

Limitation

This study also has certain limitations. (1) Only the WoSCC database was searched (Citation data from other databases may be incomplete. This incompleteness can lead to errors when conducting bibliometric analyses or executing associated computational scripts.[57]); (2) the search only included review articles and original articles published in English; (3) the study covers a wide range of chronic conditions and all types of checklists so there is potential for heterogeneity in study design and results. However, the results and findings remain robust, as the study extensively includes authoritative and widely recognized scholarly journals.

Conclusion

Overall, bibliometric results indicate that research in checklist and chronic disease is still flourishing. Our study also reveals evolution, current research status, hotspots, and potential trends in the field. The US led in publications, international collaboration, and societal impact. Chronic disease management and validity of treatment and recovery have always been a hot topic of research. This work offers insights and avenues for future research in this important area.

Data Sharing Statement

The original data associated with this study has not been deposited into any publicly available repository, as the data used to support the results of this study are provided by the Web of Science Core Collection with permission. Additional data will be made available on request to the corresponding authors.

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 all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; had agreed on the journal to which the article has been submitted; and agreed to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

1. Clark T. Chronic Disease or Illness. In: *Encyclopedia of Behavioral Medicine*. Gellman MDeditor. Springer International Publishing; 2020:444–445.
2. Duda-Sikuła M, Kurpas D. Enhancing chronic disease management: personalized medicine insights from rural and urban general practitioner practices. *J Personal Med*. 2024;14(7):706. doi:10.3390/jpm14070706
3. Chen Y, Tang Z, Du C, He Y, Zhou Y, Zhang L. Visual analysis of chronic disease management over the past decade both domestically and internationally. *Mod Preventive Med*. 2024;51(14):2655–2661+2688.
4. Monitoring health for the SDGs, sustainable development goals [homepage on the Internet]. World health statistics; 2023. Available from: https://www.who.int/publications/i/item/9789240074323. Accessed October 21, 2024.
5. World Health Organization. *Noncommunicable Diseases Progress Monitor 2022*. Geneva: World Health Organization; 2022.
6. Carman W, Ishida M, Trounson JS, et al. Epidemiology of physical-mental multimorbidity and its impact among aboriginal and Torres Strait Islander in Australia: a cross-sectional analysis of a nationally representative sample. *BMJ Open*. 2022;12(10):e054999. doi:10.1136/bmjopen-2021-054999
7. Niebuur J, Vonk JM, Du Y, et al. Lifestyle factors related to prevalent chronic disease multimorbidity: a population-based cross-sectional study. *PLoS One*. 2023;18(7):e0287263.
8. Ekhtiari H, Zare-Bidoky M, Sangchooli A, et al. Reporting checklists in neuroimaging: promoting transparency, replicability, and reproducibility. *Neuropsychopharmacology*. 2024;50(1):67–84. doi:10.1038/s41386-024-01973-5
9. Ning Y, Teixayavong S, Shang Y, et al. Generative artificial intelligence and ethical considerations in health care: a scoping review and ethics checklist. *Lancet Digit Health*. 2024;6(11):e848–e856. doi:10.1016/S2589-7500(24)00143-2
10. Hales BM, Pronovost PJ. The checklist--a tool for error management and performance improvement. *J Crit Care*. 2006;21(3):231–235. doi:10.1016/j.jcrc.2006.06.002
11. Xu X, Ping P, Wang X. Community-based management of chronic heart failure patients using heart failure inventory project. *Chin Gen Pract*. 2020;23(2):141–146.
12. Tahkola A, Korhonen P, Kautiainen H, Niiranen T, Mäntyselkä P. Feasibility of a checklist in treating hypertension in primary care - base line results from a cluster-randomised controlled trial (check and support). *BMC Cardiovasc Disord*. 2018;18(1):240. doi:10.1186/s12872-018-0963-5
13. Abdul Aziz AF, Mohd Nordin NA, Ali MF, Abd Aziz NA, Sulong S, Aljunid SM. The integrated care pathway for post stroke patients (iCaPPS): a shared care approach between stakeholders in areas with limited access to specialist stroke care services. *BMC Health Serv Res*. 2017;17(1):35. doi:10.1186/s12913-016-1963-8
14. College of Family Physicians of Canada. Use of chronic disease management tools. *Can Fam Physician*. 2011;57(12):1423.
15. Ahn S, Smith ML, Altpeter M, Belza B, Post L, Ory MG. Methods for streamlining intervention fidelity checklists: an example from the chronic disease self-management program. *Front Public Health*. 2014;2:294. doi:10.3389/fpubh.2014.00294
16. Chance EA, Florence D, Sardi Abdoul I. The effectiveness of checklists and error reporting systems in enhancing patient safety and reducing medical errors in hospital settings: a narrative review. *Int J Nurs Sci*. 2024;11(3):387–398. doi:10.1016/j.ijnss.2024.06.003
17. Go CC, Maldonado DR, Go BC, et al. The fragility index of total hip arthroplasty randomized control trials: a systematic review. *J Am Acad Orthop Surg*. 2022;30(9):e741–e750. doi:10.5435/JAAOS-D-21-00489
18. Li R, Zhao Z, Huang H, Yu J. Bibliometric analysis of nutrition in gastric cancer from 2013 to 2023. *Frontiers in Nutrition*. 2024;11:1402307. doi:10.3389/fnut.2024.1402307
19. Dobre S, Herbert R, Shijie Ding A, Pohl H. A bibliometric analysis using a newly developed model and a customizable research tool: a case study of researcher mobility in Sweden. *PLoS One*. 2024;19(12):e0308147. doi:10.1371/journal.pone.0308147
20. Wang R, Cheng H, Bian Z. Global occurrence and environmental behavior of novel brominated flame retardants in soils: current knowledge and future perspectives. *J Hazard Mater*. 2024;480:136298. doi:10.1016/j.jhazmat.2024.136298
21. Pan B, Tian H, Pan B, et al. Investigating the environmental dynamics of emerging pollutants in response to global climate change: insights from bibliometrics-based visualization analysis. *Sci Total Environ*. 2024;957:177758. doi:10.1016/j.scitotenv.2024.177758
22. Xie Y, Xiong Y, Sun M, Zhao Y, Wu M. Research trends in nutritional interventions for stroke: a bibliometric analysis and literature review. *Front Nutr*. 2024;11:1489222. doi:10.3389/fnut.2024.1489222
23. Li Z, Li A, Liu P, Zhang B, Yan Y. Mapping the evolution and impact of ketogenic diet research on diabetes management: a comprehensive bibliometric analysis from 2005 to 2024. *Front Nutr*. 2024;11:1485642. doi:10.3389/fnut.2024.1485642
24. van Eck NJ, Waltman L. Software survey: vOSviewer, a computer program for bibliometric mapping. *Scientometrics*. 2010;84(2):523–538. doi:10.1007/s11192-009-0146-3
25. Aria M, Cuccurullo C. bibliometrix: an R-tool for comprehensive science mapping analysis. *J Informetrics*. 2017;11(4):959–975. doi:10.1016/j.joi.2017.08.007
26. Donthu N, Kumar S, Mukherjee D, Pandey N, Lim WM. How to conduct a bibliometric analysis: an overview and guidelines. *J Bus Res*. 2021;133:285–296. doi:10.1016/j.jbusres.2021.04.070

27. Wang B, Li R, Lu Z, Huang Y. Does comorbidity increase the risk of patients with COVID-19: evidence from meta-analysis. *Aging*. 2020;12 (7):6049. doi:10.18632/aging.103000

28. Waltman L. A review of the literature on citation impact indicators. *J Informetrics*. 2016;10(2):365–391.

29. The selection and use of essential medicines - TRS 1006; 2023. Available from: https://www.who.int/publications/i/item/9789241210157. Accessed October 22, 2024.

30. Krishen AS, Dwivedi YK, Bindu N, Kumar KS. A broad overview of interactive digital marketing: a bibliometric network analysis. *J Bus Res*. 2021;131:183–195. doi:10.1016/j.jbusres.2021.03.061

31. Anderson K, Burford O, Emmerton L. App chronic disease checklist: protocol to evaluate mobile apps for chronic disease self-management. *JMIR Res Protoc*. 2016;5(4):e204. doi:10.2196/resprot.6194

32. Gu P, Wang X. Design and application of a home self-management checklist for stroke patients in recovery. *Chin J Nurs Edu*. 2022;19 (03):230–235.

33. Xiao S, Dong Y, Xia Y, et al. Current trends in chronic non-communicable disease management: a bibliometric analysis of the past two decades. *J Multidiscip Healthc*. 2024;17:5001–5017. doi:10.2147/JMDH.S482427

34. Watson KB, Carlson SA, Lu H, Wooten KG, Pankowska MM, Greenlund KJ. Chronic disease indicators: 2022-2024 refresh and modernization of the web tool. *Prev Chronic Dis*. 2024;21:E46. doi:10.5888/pcd21.240109

35. Kluge HHP, Wickramasinghe K, Rippin HL, et al. Prevention and control of non-communicable diseases in the COVID-19 response. *Lancet*. 2020;395(10238):1678–1680. doi:10.1016/S0140-6736(20)31067-9

36. Tan C, Xiao Y, Chen S, et al. Bibliometrics analysis and knowledge mapping of pertussis vaccine research: trends from 1994 to 2023. *Infection*. 2024. doi:10.1007/s15010-024-02414-7

37. WHO declares an end to the global COVID-19 public health emergency; 2023. Available from: https://www.sciencenews.org/article/covid-public-health-emergency-who. Accessed November 24, 2024.

38. Cao Y, Jian F, Wang J, et al. Imprinted SARS-CoV-2 humoral immunity induces convergent Omicron RBD evolution. *Nature*. 2023;614 (7948):521–529.

39. Raisinghani N, Alshahrani M, Gupta G, Verkhivker G. Ensemble-based mutational profiling and network analysis of the SARS-CoV-2 spike omicron XBB lineages for interactions with the ACE2 receptor and antibodies: cooperation of binding hotspots in mediating epistatic couplings underlies binding mechanism and immune escape. *Int J mol Sci*. 2024;25(8):4281. doi:10.3390/ijms25084281

40. Gulati GK, Simpson AC, MacMillen Z, et al. Preclinical development of lyophilized self-replicating RNA vaccines for COVID-19 and malaria with improved long-term thermostability. *J Control Release*. 2024;S0168-3659(24):00767.

41. Esparcia-Pinedo L, Yarci-Carrión A, Mateo-Jiménez G, et al. Correction to: development of an effective immune response in adults with down syndrome after severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccination. *Clin Infect Dis*. 2024;ciae506.

42. Reyes Z, Stovall MC, Punyamurthula S, Longo M, Maraganore D, Solch-Ottaiano RJ. The impact of gut microbiome and diet on post-acute sequelae of SARS-CoV-2 infection. *J Neurol Sci*. 2024;467:123295. doi:10.1016/j.jns.2024.123295

43. García-Alfonso P, Jimenez-Fonseca P, Soto-Alsar J, et al. Three-year survival follow-up of patients with gastrointestinal cancer treated during the COVID-19 pandemic in Spain: data from the PANDORA-TTD20 study. *Oncologist*;2024. oyae300. doi:10.1093/oncolo/oyae300

44. Que Z-L, Wu M-S, Lai S-J, et al. Research status and hotspots in transjugular intrahepatic portosystemic shunts based on CiteSpace bibliometric analysis. *World J Gastroint Surg*. 2024;16(9):2996. doi:10.4240/wjgs.v16.i9.2996

45. National Center for Chronic Disease Prevention and Health Promotion (U.S.). Division for heart disease and stroke prevention. Addressing chronic disease through community health workers; a policy and systems-level approach: a policy brief on community health workers; 2015. Available from: https://stacks.cdc.gov/view/cdc/12052. Accessed November 18, 2024.

46. De Cock KM. Global health's evolution and search for identity. *Emerg Infect Dis*. 2025;31(1):1–7. doi:10.3201/eid3101.241026

47. Bovin MJ, Marx BP, Weathers FW, et al. Psychometric properties of the PTSD checklist for diagnostic and statistical manual of mental disorders-fifth edition (PCL-5) in veterans. *Psychol Assess*. 2016;28(11):1379–1391. doi:10.1037/pas0000254

48. Kramer HS, Drews FA. Checking the lists: a systematic review of electronic checklist use in health care. *J Biomed Inform*. 2017;71S:S6–S12. doi:10.1016/j.jbi.2016.09.006

49. Qiao L, Shen Z, Zheng F, Ding S. Review of standardized follow-up checklist in patients with chronic diseases. *Chin Nurs Manag*. 2019;19 (8):1248–1252.

50. Williams PD, Graham KM, Storlie DL, et al. Therapy-related symptom checklist use during treatments at a cancer center. *Cancer Nurs*. 2013;36 (3):245–254. doi:10.1097/NCC.0b013e3182595406

51. Moreels T, Cruyt E, De Baets S, et al. Self-Management Analysis in Chronic Conditions (SMACC) checklist: an international consensus-based tool to develop, compare and evaluate self-management support programmes. *BMJ Open*. 2023;13(12):e075676. doi:10.1136/bmjopen-2023-075676

52. Xu X, Cheng J, Zhang Y, et al. Effectiveness of heart failure checklist management in patients with chronic heart failure: an open-label, single-center controlled study during 18 months of follow-up. *Ther Clin Risk Manag*. 2023;19:983–992. doi:10.2147/TCRM.S417426

53. Vena A, Bouza E, Corisco R, et al. Efficacy of a 'checklist' intervention bundle on the clinical outcome of patients with candida bloodstream infections: a quasi-experimental pre-post study. *Infect Dis Ther*. 2020;9(1):119–135. doi:10.1007/s40121-020-00281-x

54. Flottorp SA, Oxman AD, Krause J, et al. A checklist for identifying determinants of practice: a systematic review and synthesis of frameworks and taxonomies of factors that prevent or enable improvements in healthcare professional practice. *Implement Sci*. 2013;8:35. doi:10.1186/1748-5908-8-35

55. Yang S, Gao T, Li J, et al. Chronic condition change and its longitudinal association with health care utilization among rural older adults: intergenerational financial support as a possible moderator? *BMC Geriatr*. 2024;24(1):837. doi:10.1186/s12877-024-05299-1

56. Iman K, Akter L, Rahman MM, Laila K, Islam MI, Rahman SA. Treatment of refractory poly articular course juvenile idiopathic arthritis with tofacitinib: extended experience from Bangladesh. *PLoS One*. 2025;20(1):e0312174.

57. Falagas ME, Pitsouni EI, Malietzis GA, Pappas G. Comparison of PubMed, Scopus, Web of Science, and Google Scholar: strengths and weaknesses. *FASEB J*. 2008;22(2):338–342. doi:10.1096/fj.07-9492LSF