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Global Trend Health Literacy Research for Self-Management of Non-Communicable Diseases: A Bibliometric Analysis

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Abstract
Background: Health literacy is increasingly recognized as a key determinant of effective self-management and improved health outcomes among individuals with non-communicable diseases (NCDs). As the global burden of chronic diseases continues to rise, understanding the development and direction of research in this field is essential. Objective: This study aimed to analyze global publication trends, leading contributors, and emerging research themes related to health literacy and self-management for NCDs. Methods: A bibliometric analysis was conducted using the Scopus database. English-language journal articles published between 2020 and 2026 were retrieved using predefined search terms related to health literacy, self-management, primary care, family medicine, and NCDs. A total of 338 articles met the inclusion criteria. Bibliometric mapping and network visualization were performed using VOSviewer to examine publication trends, productive countries and institutions, and keyword co-occurrence. Results: Scientific publications showed a consistent increase during the study period. The United States, Australia, and the United Kingdom were the leading contributors, while institutions specializing in family medicine, internal medicine, nursing, and public health produced the highest research output. Keyword analysis identified primary care, self-management, chronic disease, and chronic disease management as the dominant research themes, with recent studies increasingly focusing on health education, multimorbidity, public health, and patient-centered care. Conclusion: Research on health literacy and self-management for NCDs continues to expand and is shifting toward multidisciplinary, patient-centered approaches. These findings provide valuable evidence for researchers, clinicians, and policymakers in strengthening primary care and developing future health literacy interventions, particularly in low- and middle-income countries.

Keywords: bibliometric analysis; family medicine; health literacy; non-communicable diseases; primary care; self-management;

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INTRODUCTION

Non-communicable diseases (NCDs), including diabetes mellitus, hypertension, cardiovascular diseases, cancer, and chronic respiratory diseases, continue to represent the leading cause of mortality worldwide, accounting for approximately three-quarters of all global deaths according to numerous international reports [1,2]. The growing burden of NCDs has been driven by demographic transition, rapid urbanization, population ageing, and profound lifestyle changes characterized by tobacco use, unhealthy dietary patterns, and physical inactivity [3]. Evidence from regional and national studies further demonstrates that mortality attributable to the four major NCDs—cardiovascular diseases, cancer, chronic obstructive pulmonary disease (COPD), and diabetes—as well as their contribution to disability-adjusted life years (DALYs), increases substantially with advancing age and urbanization, underscoring the urgent need for comprehensive prevention and control strategies at both population and individual levels [4,5]. Nevertheless, reducing the burden of NCDs cannot rely solely on pharmacological treatment, as behavioral and socioeconomic determinants require individuals to actively participate in the long-term management of their conditions through effective self-management, health education, and sustainable lifestyle modification supported by public health policies, early screening initiatives, and continuous healthcare services [6]. In addition, community-based and multisectoral interventions have become increasingly important in responding to the epidemiological transition toward a greater NCD burden in low- and middle-income countries while supporting global efforts to reduce premature mortality through proactive, inclusive, and sustainable healthcare approaches [7]. Consequently, strengthening patients' capacity to manage their own health has become a global priority in chronic disease prevention and control.

According to the World Health Organization (WHO), health literacy refers to an individual's ability to access, understand, appraise, and apply health information to make appropriate health-related decisions. This competency plays a fundamental role in determining medication adherence, behavioral modification, informed decision-making, and the effective utilization of healthcare services, whereas inadequate health literacy has consistently been associated with poorer health outcomes [1,8]. Beyond merely obtaining health information, health literacy encompasses the capacity to critically evaluate and appropriately use health knowledge in daily self-care and long-term disease management, making it indispensable for successful NCD self-management through adherence to prescribed medications, healthy lifestyle adoption, and participation in disease screening and health monitoring programs [9,10]. A growing body of evidence has demonstrated that individuals with higher levels of health literacy are more likely to adhere to treatment recommendations, adopt healthier behaviors, make informed healthcare decisions, and effectively navigate healthcare systems. Conversely, limited health literacy is associated with poor treatment adherence, delayed disease detection, and unfavorable health outcomes across diverse populations, including migrants, vulnerable communities, and patients with chronic diseases in both high- and low-income settings [11,12]. Therefore, health literacy should be recognized not merely as a component of patient education but as a fundamental determinant of long-term self-management that requires multidisciplinary interventions to strengthen health knowledge, improve self-efficacy, and expand access to culturally and linguistically appropriate educational resources [13]. Therefore, health literacy has evolved into one of the most important determinants of successful self-management among individuals living with chronic diseases.

Health literacy has emerged as a key determinant of clinical outcomes by enabling patients to effectively manage chronic conditions through medication adherence, healthy dietary practices, regular physical activity, symptom monitoring, and complication prevention [14,15]. Numerous studies have consistently reported significant associations between higher levels of health literacy and improved glycemic control, better blood pressure management, enhanced medication adherence, improved quality of life, and greater patient empowerment [16,17]. To enhance these outcomes, a wide range of educational interventions has been developed to strengthen health literacy, improve self-efficacy, and increase access to culturally appropriate health information [18]. Such interventions have demonstrated considerable success in promoting healthier behaviors, increasing participation in disease screening and routine monitoring, and facilitating the achievement of important clinical targets, including lower HbA1c levels, improved blood pressure control, enhanced quality of life, and greater patient empowerment [19,20]. Although the effectiveness of health literacy interventions varies according to healthcare settings, population characteristics, and educational delivery methods—including face-to-face, digital, and blended approaches—there is broad consensus that health literacy constitutes a cornerstone of sustainable self-management for individuals with NCDs [21,22]. As a result, research on health literacy interventions has expanded rapidly across multiple chronic disease settings over the last two decades.

Within this context, family medicine plays a pivotal role in strengthening health literacy because it delivers comprehensive, patient-centered, and family-oriented primary healthcare through long-term therapeutic relationships. This continuity of care provides an ideal environment for implementing health education, shared decision-making, motivational interviewing, personalized care, and continuous behavioral support [23]. By enhancing patients' ability to obtain, understand, evaluate, and apply health information, family medicine contributes substantially to improving self-management practices, including medication adherence, healthy dietary behaviors, physical activity, symptom monitoring, and complication prevention. Previous studies have further demonstrated that health literacy interventions implemented within primary care settings are associated with better glycemic control, improved blood pressure management, greater medication adherence, enhanced quality of life, and increased patient empowerment [24,25]. Moreover, educational strategies designed to improve health literacy, strengthen self-efficacy, and provide culturally relevant educational resources have consistently promoted healthier behaviors and better clinical outcomes, although their effectiveness varies across populations and healthcare contexts [26]. These findings highlight the importance of integrating structured educational programs, continuous patient support, and digital health technologies into family medicine practice to optimize long-term management of NCDs and improve overall health outcomes [27]. Consequently, family medicine has become a strategic platform for implementing health literacy interventions aimed at improving long-term self-management outcomes.

Despite the remarkable increase in publications concerning health literacy and self-management of non-communicable diseases, the available evidence remains dispersed across several disciplines, including public health, primary care, nursing, behavioral medicine, digital health, and health education [28]. Existing research has predominantly concentrated on evaluating the effectiveness of specific interventions or investigating the relationship between health literacy and clinical outcomes within particular patient groups [29]. Although these studies have generated substantial evidence, relatively little attention has been devoted to understanding the overall

development and structure of this research field from a global perspective. Specifically, comprehensive evidence regarding publication growth, influential authors and institutions, international collaboration networks, highly cited studies, thematic evolution, and emerging research trends related to health literacy for NCD self-management remains limited. Furthermore, despite the central role of family medicine in delivering continuous, comprehensive, and person-centered healthcare, its scientific contribution to the advancement of health literacy research has not been systematically examined. Bibliometric analysis offers a robust quantitative approach to address these knowledge gaps by revealing research productivity, intellectual structures, collaboration patterns, and future directions within this rapidly evolving field [30,31].

Accordingly, this study aims to provide a comprehensive bibliometric analysis of the global scientific literature on health literacy for the self-management of non-communicable diseases, with particular emphasis on its relevance to family medicine. Using the Scopus database as the primary source of bibliographic records, this study examines publication trends, citation performance, leading journals, prolific authors, productive institutions, contributing countries, and international research collaborations. Furthermore, science mapping techniques—including co-authorship, co-citation, bibliographic coupling, and keyword co-occurrence analyses—are employed to uncover the intellectual structure of the field, identify thematic evolution, and explore emerging research frontiers. By synthesizing these bibliometric indicators, this study is expected to provide researchers, clinicians, and policymakers with a comprehensive understanding of the current state of research while identifying future opportunities to strengthen health literacy interventions in family medicine and ultimately improve self-management strategies for individuals living with non-communicable diseases.

METHODS

Search strategies and data collection

This study employed a bibliometric approach to analyze the global scientific landscape of research on health literacy for the self-management of non-communicable diseases (NCDs). The Scopus database was selected as the sole source of bibliographic data because of its extensive coverage of peer-reviewed journals, standardized indexing system, and widespread use in bibliometric studies. A comprehensive literature search was conducted in July 2026 using a predefined search strategy that combined controlled vocabulary and free-text terms related to health literacy, self-management, non-communicable diseases, and family medicine.

The search query was applied to the article title, abstract, and keywords (TITLE-ABS-KEY). The search strategy included combinations of the following terms: ("health literacy" OR "health competence" OR "health knowledge") AND ("self-management" OR "self care" OR "self-management support") AND ("non-communicable disease*" OR "chronic disease*" OR diabetes OR hypertension OR "cardiovascular disease*" OR cancer OR COPD) AND ("family medicine" OR "family physician*" OR "primary care" OR "general practice"). The search syntax was refined iteratively to maximize sensitivity while maintaining specificity.

Only original research articles and review articles published in English between 2000 and July 2026 were included. Conference papers, editorials, letters, notes, book chapters, errata, and non-English publications were excluded. Following the search, all retrieved records were exported in CSV format, including bibliographic information such as authors, titles, affiliations, publication year, abstracts, keywords, cited

references, journals, and citation counts. Duplicate records were identified and removed before analysis to ensure data accuracy and consistency.

Statistical analysis

Descriptive bibliometric analyses were performed to evaluate annual publication output, citation trends, document types, leading journals, productive authors, institutions, countries, and international collaboration patterns. Citation-based indicators, including total citations, average citations per publication, and h-index, were calculated to assess scientific impact.

Science mapping analyses were conducted using VOSviewer (version 1.6.20) to visualize the intellectual structure of the research field. Co-authorship analysis was performed to identify collaboration networks among authors, institutions, and countries. Co-occurrence analysis of author keywords was used to identify major research themes and emerging topics. Co-citation analysis was applied to determine influential references and journals, while bibliographic coupling was employed to examine relationships among contemporary publications based on shared references. Network visualization, overlay visualization, and density visualization were generated to illustrate collaboration patterns, thematic evolution, and research hotspots.

The bibliometric indicators were summarized using descriptive statistics. Network maps were interpreted according to node size, link strength, and clustering generated by the VOSviewer clustering algorithm. Larger nodes represented greater scientific productivity or influence, whereas thicker links indicated stronger collaborative or citation relationships. The findings were synthesized to describe the evolution of research on health literacy for self-management of non-communicable diseases and to identify future research opportunities, particularly within the context of family medicine.

Ethical concideration

No ethical approval was necessary to obtain the data because this bibliometric analysis did not involve patient personal data.

RESULTS

The publication and citation trends

A total of 376 records were initially retrieved from the Scopus database using the predefined search strategy. Following the application of the eligibility criteria, the publication period was restricted to 2020–2026, resulting in 372 records. Subsequently, only English-language publications were retained, reducing the dataset to 346 records. Finally, limiting the document type to peer-reviewed journal articles yielded 338 publications, which constituted the final dataset for bibliometric analysis (Fig. 1).

The final dataset comprised 338 journal articles published between 2020 and 2026, representing the global scientific output on health literacy for the self-management of non-communicable diseases. Figure 2 illustrates the annual publication trend in health literacy research related to the self-management of non-communicable diseases from 2001 to 2026. Overall, the number of publications exhibited a clear upward trend over the study period, reflecting a growing global interest in this research area. During the early years (2001–2010), publication output remained relatively low and stable, generally ranging from two to nine articles per year. From 2011 onward, research productivity began to increase steadily, with a more pronounced acceleration after 2014.

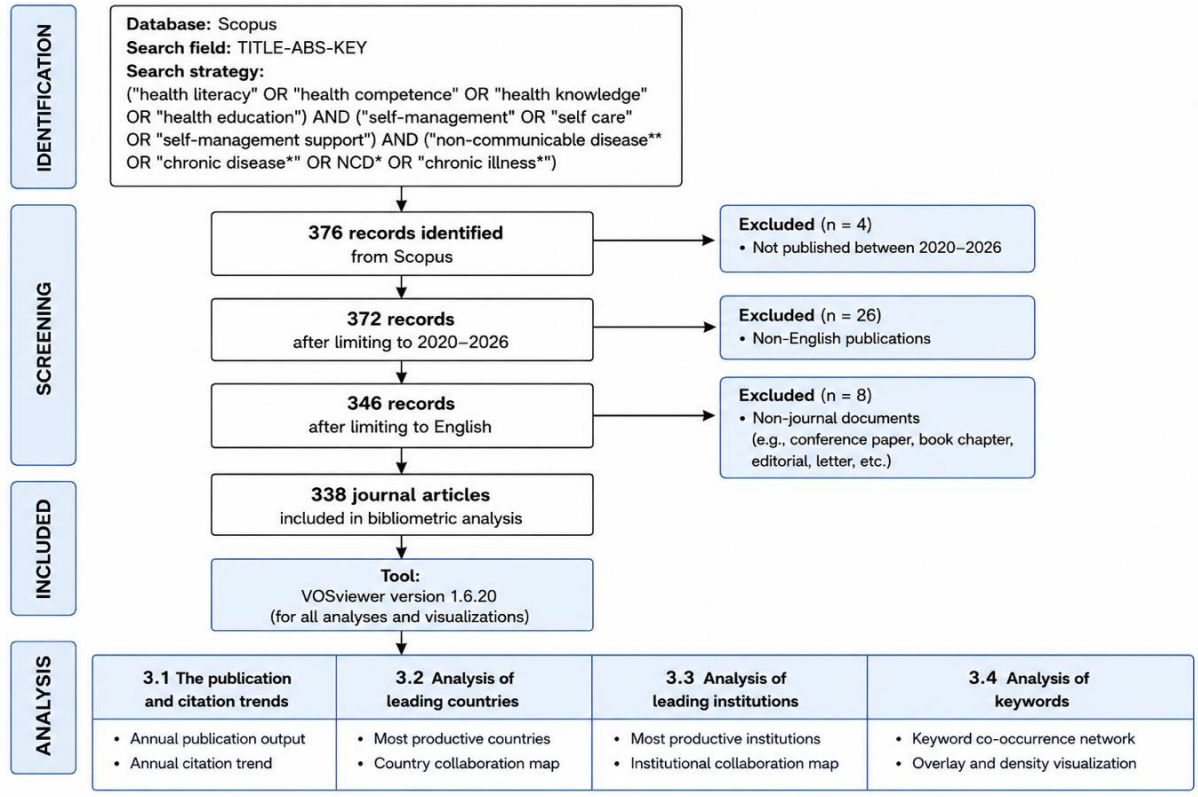

Figure 1. Flowchart of data screening process

Although several temporary declines were observed in 2017, 2020, and 2022, these fluctuations were followed by rapid recoveries, indicating sustained research momentum rather than a long-term decrease. Publication output reached its highest level in 2017 and again in 2024, with approximately 26 publications, followed by a slight decline in 2025 and 2026 while remaining substantially higher than in the early years. Overall, the increasing publication trajectory demonstrates that health literacy for self-management of non-communicable diseases has become an expanding and increasingly important research field, particularly in response to the growing global burden of chronic diseases and the emphasis on patient-centered care and primary healthcare strategies (Fig 2.).

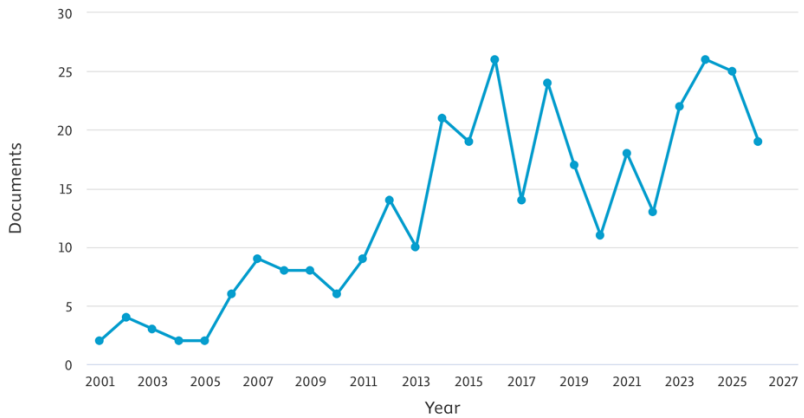

Figure 2. Annual number of publications from 2000-2026

Analysis of leading countries

Analysis of leading countries revealed that the United States was the most productive country in health literacy and self-management research for non-communicable diseases, contributing 116 publications (34.32%), accounting for more than one-third of the total articles included in this study. It was followed by Australia with 48 publications (14.20%) and the United Kingdom with 46 publications (13.61%), indicating that these three countries have played dominant roles in advancing research in this field. Other major contributors included Canada (33 publications; 9.76%), China (22; 6.51%), the Netherlands (16; 4.73%), and Germany (14; 4.14%). Countries such as Spain, Thailand, Belgium, Brazil, and South Africa also made notable contributions, although with substantially fewer publications. Overall, the findings demonstrate that research productivity is concentrated in high-income countries with well-established research infrastructures and strong healthcare systems. Nevertheless, contributions from emerging economies, including Malaysia (4 publications; 1.18%) and Indonesia (2 publications; 0.59%), indicate increasing research interest in health literacy and self-management of non-communicable diseases within developing regions. These findings underscore the need to strengthen international collaboration and research capacity in low- and middle-income countries to achieve a more balanced global distribution of scientific output in this important field (Table 1.)

Table 1. Top 25 most productive countries in health literacy and self-management research for non-communicable diseases (2020–2026).

Rank	Country/Territory	Articles	Freq (%)
1	United States	116	34.32
2	Australia	48	14.20
3	United Kingdom	46	13.61
4	Canada	33	9.76
5	China	22	6.51
6	Netherlands	16	4.73
7	Germany	14	4.14
8	Spain	9	2.66
9	Thailand	8	2.37
10	Belgium, Brazil, South Africa	7	2.07
13	India	6	1.78
14	Italy, Norway	5	1.48
16	Denmark, Finland, Malaysia, Mexico, Singapore, Sweden, Switzerland	4	1.18
24	Ireland	3	0.89
25	Indonesia	2	0.59

Analysis of leading institutions

Analysis of leading institutions showed that the Department of Family Medicine was the most productive institution in this research field, contributing 31 publications (9.17%) with a total of 1,021 citations and an average of 32.94 citations per article. It was followed by the Department of Medicine, which produced 23 publications (6.80%) and received 1,027 citations, averaging 44.65 citations per publication. Although the

School of Nursing ranked third in publication output with 15 articles (4.44%), it achieved the highest citation impact among the top institutions, accumulating 1,082 citations with an average of 72.13 citations per article, indicating its substantial scientific influence. Other notable contributors included the Division of General Internal Medicine (13 publications; 450 citations), School of Public Health (12 publications; 118 citations), and Department of General Practice (12 publications; 615 citations). Meanwhile, the Department of Family and Community Medicine, Faculty of Medicine, Department of Psychology, and Department of Internal Medicine also demonstrated meaningful research contributions, although with relatively lower publication outputs. Overall, these findings indicate that research on health literacy and self-management of non-communicable diseases is predominantly driven by academic units specializing in family medicine, internal medicine, nursing, public health, and primary care, highlighting the multidisciplinary nature of this research area and the central role of healthcare-related institutions in advancing evidence-based self-management interventions (Table 2.).

Table 2. Top 10 most productive institutions in health literacy and self-management research for non-communicable diseases (2020–2026).

Rank	Institution	Articles	Freq (%)	TC	Avg. Citations
1	Department of Family Medicine	31	9.17	1,021	32.94
2	Department of Medicine	23	6.80	1,027	44.65
3	School of Nursing	15	4.44	1,082	72.13
4	Division of General Internal Medicine	13	3.85	450	34.62
5	School of Public Health	12	3.55	118	9.83
6	Department of General Practice	12	3.55	615	51.25
7	Department of Family and Community Medicine	8	2.37	274	34.25
8	Faculty of Medicine	8	2.37	193	24.13
9	Department of Psychology	8	2.37	398	49.75
10	Department of Internal Medicine	6	1.78	174	29.00

Analysis of keywords

Figure 3 presents the keyword co-occurrence network generated using VOSviewer, illustrating the conceptual structure of research on health literacy and self-management for non-communicable diseases. The analysis identified several interconnected thematic clusters, indicating the multidisciplinary nature of this research field. The largest and most central nodes include primary care, self-management, chronic disease, and chronic disease management, demonstrating that these topics constitute the core knowledge base and are strongly linked to numerous related concepts. The green cluster is primarily associated with primary care and chronic disease management, incorporating keywords such as patient education, health promotion, empowerment, and communication, which emphasize patient-

centered care and disease management strategies. The red cluster focuses on chronic disease and primary health care, with associated terms including self-care, diabetes mellitus, quality of life, family practice, and patient participation, reflecting research on chronic disease prevention and patient engagement. The blue cluster is dominated by disease-specific topics such as diabetes, asthma, older adults, and chronic illness, highlighting studies addressing self-management across different patient populations. Meanwhile, the yellow cluster links health education, public health, multimorbidity, and disease management, suggesting the integration of educational interventions with population health approaches. Overall, the dense connections among keywords indicate that health literacy research has evolved toward comprehensive self-management strategies delivered through primary care, with increasing emphasis on patient education, multidisciplinary collaboration, and the management of chronic conditions across diverse healthcare settings.

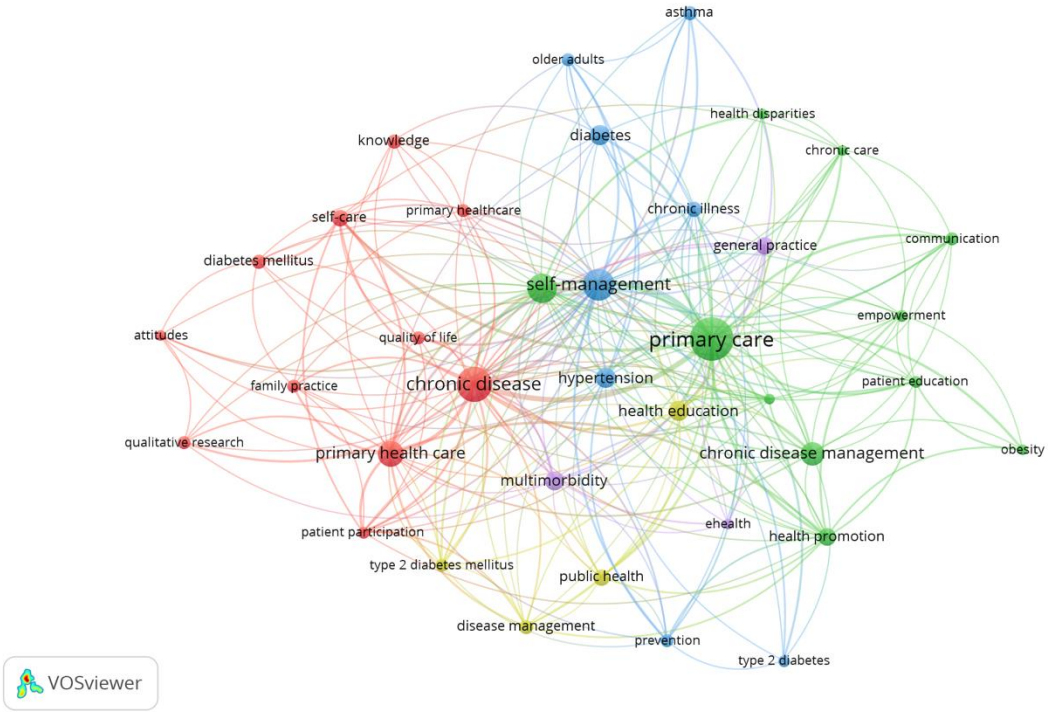

Figure 3. Keyword co-occurrence network in health literacy and self-management research for non-communicable diseases.

Figure 4 presents the overlay visualization of keyword co-occurrence generated using VOSviewer, illustrating the temporal evolution of research themes in health literacy and self-management for non-communicable diseases between 2016 and 2021. The color gradient represents the average publication year of each keyword, with blue and purple indicating earlier research topics, green representing intermediate themes, and yellow highlighting more recent areas of investigation. Early studies primarily focused on topics such as disease management, type 2 diabetes, chronic care, and patient education, reflecting the initial emphasis on chronic disease treatment and healthcare delivery. Over time, the research expanded toward broader concepts including primary care, chronic disease, primary health care, and chronic disease management, which occupy central positions in the network and demonstrate their

sustained importance within the field. More recent keywords, represented in yellow, include self-management, multimorbidity, health education, older adults, knowledge, and public health, indicating a growing research focus on integrated self-management approaches, patient empowerment, educational interventions, and population-based strategies for chronic disease prevention and control. Overall, the overlay visualization demonstrates a clear shift from disease-centered management toward more comprehensive, patient-centered, and health literacy–oriented approaches, emphasizing the increasingly important role of primary care and multidisciplinary interventions in supporting self-management among individuals with non-communicable diseases.

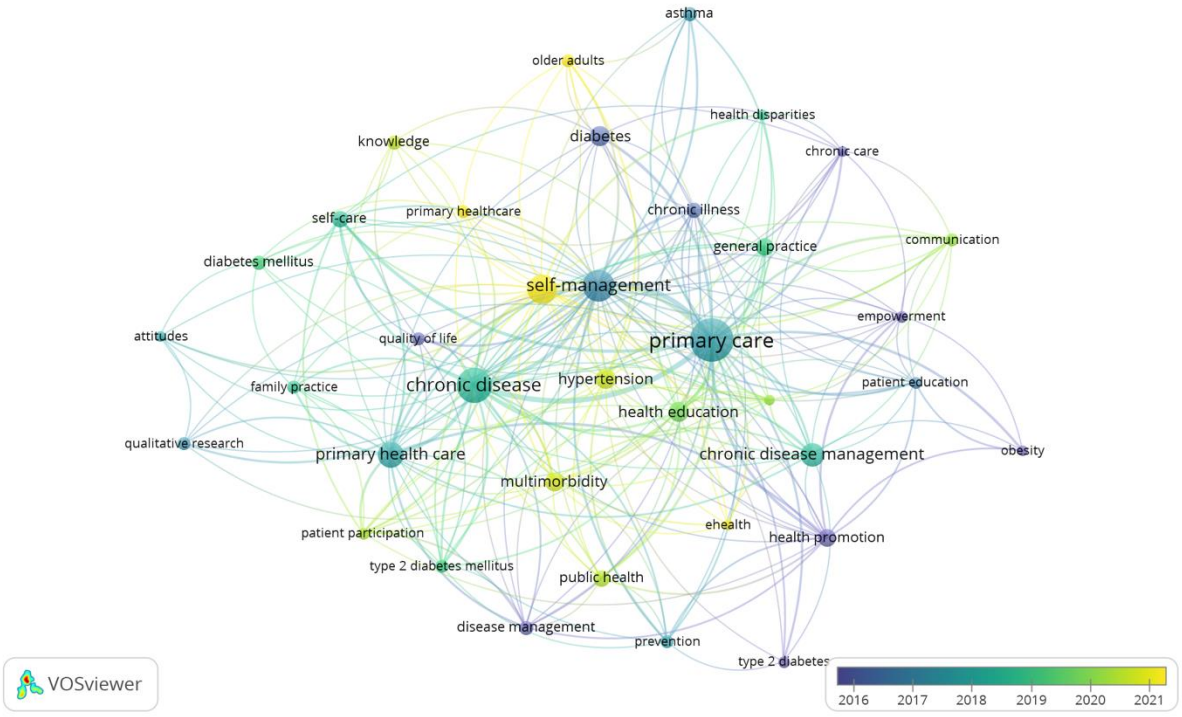

Figure 4. Overlay visualization of keyword co-occurrence in health literacy and self-management research for non-communicable diseases..

DISCUSSION

Overview of the bibliometric findings

The present bibliometric analysis demonstrates a consistent increase in global research on health literacy and self-management for non-communicable diseases (NCDs) over recent years. The findings indicate that scientific publications are predominantly produced by developed countries, while primary care and self-management remain the central themes across the literature [32]. Moreover, the research field has increasingly adopted a multidisciplinary approach by integrating healthcare professionals, community workers, digital technologies, and health education interventions to improve health literacy and patients' self-management abilities [33,34]. These interventions mainly focus on enhancing medication adherence, promoting healthy lifestyle changes, supporting symptom monitoring, and preventing disease complications. Nevertheless, differences in regional contexts, healthcare systems, and study designs have contributed to variations in the reported effectiveness of

interventions and the implementation of health literacy across different populations and countries [29,35].

Publication and citation trends

The results revealed a steady increase in publications related to health literacy and self-management for NCDs, particularly after 2020. This upward trend is closely associated with the growing global burden of non-communicable diseases and the World Health Organization's (WHO) emphasis on strengthening self-management as a core component of primary healthcare [32]. The rapid development of digital health has also accelerated research activities by introducing various health literacy interventions and self-management support tools through telemedicine, mobile applications, and other digital platforms. However, differences in healthcare systems, population characteristics, and national priorities have resulted in varying levels of intervention effectiveness across countries and study settings [35,36].

From a global policy perspective, the WHO Global Action Plan for the Prevention and Control of NCDs has highlighted health literacy and self-management as essential strategies for improving chronic disease outcomes. Previous bibliometric studies have similarly shown that developed countries dominate scientific production in this field, with research gradually shifting toward multidisciplinary approaches that combine primary care, patient education, community support, and digital health solutions [37].

Leading countries and institutions

The dominance of the United States, Australia, and the United Kingdom in publication output reflects the strength of their research systems and the successful integration of health literacy into primary healthcare services. These countries have made long-term investments in biomedical and public health research, supported by strong funding mechanisms, well-established research infrastructure, and extensive international collaborations. In addition, the development of family medicine and primary care as key components of their healthcare systems has created favorable conditions for research on patient education, chronic disease prevention, and self-management interventions [38]. The high prevalence of chronic diseases, including diabetes, cardiovascular disease, and multimorbidity, has also encouraged continuous efforts to improve disease management through health literacy-based approaches. These findings are consistent with previous bibliometric studies showing that countries with strong primary healthcare systems and high research capacity contribute the largest share of publications in chronic disease management and health promotion [39].

Institutional analysis also revealed that the most productive organizations were mainly affiliated with family medicine, internal medicine, nursing, and public health, demonstrating the multidisciplinary nature of health literacy research. The Department of Family Medicine, Department of Medicine, and School of Nursing produced the largest number of publications and received considerable citation impact, highlighting their important role in advancing evidence-based self-management strategies [40]. These institutions actively develop patient-centered interventions, evaluate health education programs, and support integrated chronic care within primary healthcare settings. The significant contribution of nursing and family medicine departments also emphasizes that successful self-management involves not only medical treatment but also patient empowerment, effective communication, behavior change, and continuous disease monitoring. Overall, these

findings underline the importance of collaboration among clinicians, nurses, public health professionals, and primary care researchers in improving health literacy and strengthening the management of non-communicable diseases [41,42].

Evolution of research themes

The bibliometric network analysis identified primary care, self-management, chronic disease, and chronic disease management as the most prominent keywords, indicating that these concepts form the core of current research in this field. Their strong connections suggest that primary care plays a central role in integrating health education, health literacy, and self-management interventions at both individual and population levels [28]. The network visualization also demonstrates that chronic disease management is closely linked with efforts to improve treatment adherence, symptom monitoring, and complication prevention through multidisciplinary approaches and the increasing use of digital health technologies [38].

The overlay visualization further illustrates the evolution of research topics over time, showing a gradual shift from disease management toward self-management, multimorbidity, health education, and public health. This transition reflects a movement from disease-centered interventions to more comprehensive, patient-centered, and population-oriented approaches that emphasize health literacy and patients' ability to manage chronic conditions independently [43]. The growing attention to these topics has been supported by global health initiatives, including WHO policies promoting health literacy as a key element of primary care. In addition, the COVID-19 pandemic accelerated the adoption of digital health and telehealth, expanding research on digital literacy, access to health information, and technology-based self-management interventions, despite differences in healthcare contexts and study designs across countries [44].

Research implications

The findings of this bibliometric study indicate that research on health literacy and self-management for NCDs has expanded considerably over the past decade, with primary care, self-management, and health literacy emerging as the main research themes [45]. These findings have important implications for clinicians, primary care providers, family physicians, nurses, and policymakers. Health literacy should not be viewed solely as patient education but also as a key strategy for disease prevention, patient empowerment, shared decision-making, and long-term chronic disease management. Healthcare providers should integrate health literacy interventions into routine clinical practice, make better use of digital technologies to improve access to health information, and encourage patients to participate actively in managing their own health. Likewise, primary care and family medicine should continue to serve as the foundation for health literacy promotion, self-management support, and multidisciplinary care coordination, ultimately improving patient adherence, behavioral changes, and quality of life among individuals with NCDs [36,46,47].

For developing countries, including Indonesia, these findings highlight the need for national policies that integrate health literacy into prevention, patient empowerment, and public health strategies. Universities and healthcare institutions should strengthen training programs for family physicians, nurses, and community health workers while promoting culturally appropriate health literacy interventions. Improving local research capacity, expanding digital health solutions, and increasing access to reliable health information will be essential for reducing health disparities

and improving outcomes among vulnerable populations [36]. In the long term, strengthening health literacy and self-management programs can enhance chronic disease management within healthcare facilities, empower communities, support the implementation of the WHO Global Action Plan, and contribute to the development of more responsive, inclusive, and sustainable primary healthcare systems in Indonesia and other developing countries [23].

Strengths, limitations, and future directions

This study has several important strengths. First, it provides a comprehensive overview of global research trends in health literacy and self-management for non-communicable diseases by analyzing publications indexed in the Scopus database, one of the world's largest and most reliable sources of peer-reviewed literature. Second, the study focuses on publications from 2020 to 2026, allowing recent developments and emerging research topics to be identified. Third, the use of VOSviewer enabled the visualization of publication trends, leading countries, productive institutions, and keyword networks, offering a clearer understanding of the intellectual structure and thematic development of this research field. These findings provide useful information for researchers, healthcare professionals, and policymakers when determining future research priorities.

Despite these strengths, several limitations should be considered. This study included only publications indexed in the Scopus database, which may have excluded relevant studies from other databases such as Web of Science, PubMed, Embase, or Dimensions. Furthermore, only English-language journal articles were included, which may have introduced language and publication bias by excluding valuable studies published in other languages or document types, including conference proceedings, books, and reports. In addition, bibliometric analysis focuses on publication productivity, citation performance, and research trends rather than evaluating the methodological quality or clinical effectiveness of the included studies. Therefore, the findings should be interpreted as an overview of research development rather than evidence of intervention effectiveness.

Future bibliometric studies should include multiple databases to provide broader coverage of the scientific literature and produce a more comprehensive understanding of research development. Future research should also examine international collaboration, institutional partnerships, and author networks using additional bibliometric indicators. As chronic disease management continues to evolve, greater attention should be given to emerging topics such as digital health literacy, artificial intelligence–supported self-management, telehealth, multimorbidity, personalized patient education, and implementation science in primary care and family medicine. Moreover, strengthening research capacity and international collaboration in low- and middle-income countries, including Indonesia, will be important for reducing disparities in scientific productivity and generating evidence that supports effective health literacy interventions for the prevention and management of non-communicable diseases.

CONCLUSIONS

This bibliometric study provides a comprehensive overview of global research trends in health literacy and self-management for non-communicable diseases (NCDs) published between 2020 and 2026. The findings demonstrate a steady increase in scientific publications, reflecting the growing recognition of health literacy as an

essential component of chronic disease prevention and management. Research productivity was dominated by developed countries, particularly the United States, Australia, and the United Kingdom, while institutions specializing in family medicine, internal medicine, nursing, and public health played leading roles in advancing this field. Keyword analysis revealed that primary care, self-management, chronic disease, and chronic disease management constitute the core research themes, with recent studies increasingly emphasizing health education, multimorbidity, public health, and patient-centered care. These findings indicate a clear shift from disease-centered approaches toward more comprehensive strategies that integrate health literacy, patient empowerment, and multidisciplinary care. Overall, this study highlights the critical role of health literacy in strengthening self-management for individuals with NCDs and provides valuable evidence to guide future research, clinical practice, and health policy. Greater international collaboration and increased research efforts in low- and middle-income countries are recommended to promote more equitable and sustainable advances in health literacy and self-management interventions worldwide..

CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest

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DECLARATION OF ARTIFICIAL INTELLIGENCE USE

This study utilized artificial intelligence (AI) tools during the manuscript preparation process. Specifically, ChatGPT (OpenAI, USA) was employed to assist with language refinement, including improving grammar, sentence structure, and readability of the manuscript, as well as for outline organization. We confirm that all AI-assisted processes were critically reviewed by the authors to ensure the integrity, accuracy, and reliability of the final content. The final decisions, interpretations, and conclusions presented in this article were made solely by the author..

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