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A Bibliometric Analysis of Nursing Research Trends in Health Literacy

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A B S T R A C T

Introduction: Health literacy (HL) encompasses the ability to obtain, understand, evaluate, and apply health information in healthcare, disease prevention, and health promotion. This study aimed to conduct a bibliometric analysis of nursing research on health literacy (HL) through March 2024. Based on preliminary guidelines for reporting bibliometric reviews.

Materials & Methods: A bibliometric study on health literacy in nurses was carried out according to the guidelines. The Scopus database was used in this study. The terms "health literacy" OR "health knowledge" OR "health information" OR "health understanding" and “nursing” were searched through March 2024 without time limitations. In addition, VOSviewer Version 1.6.20 and Excel Version 2312 software were used for data analysis.

Results: The Scopus database contained 338 articles. Research on health literacy in nursing began 49 years ago. In total, 49 countries have been active in the field of health literacy in nursing. The United States (104 articles, 1602 citations) is in the lead, and Australia is the country with the highest number of international contributions. Among all the authors in this field, "Parnell, Terri Ann" is the most cited author, with 3 published articles and 69 citations. Journal Advanced Nursing is the most effective journal.

Conclusion: The study highlights the importance of health literacy in public health, highlighting its role in disease prevention, diagnosis, and treatment. It emphasizes the need for nursing researchers to focus on this area to develop strategies for improving health literacy among patients.

Keywords: Health Literacy, Nurse, Bibliometrics

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Introduction

Health literacy (HL) encompasses the ability to obtain, understand, evaluate, and apply health information within the contexts of healthcare, disease prevention, and health promotion (1). Currently, according to the definition of the World Health Organization, commonly referred to as WHO, HL refers to mental and social abilities that assess the individual's motivation and capability to obtain the information needed to maintain and promote health in daily life (2). HL is essential in disease prevention and effective clinical management (3). The relationship between low HL and adverse clinical outcomes as well as diminished disease knowledge among patients with conditions such as congestive heart failure, type II diabetes, asthma, systemic lupus erythematosus, and HIV has been proven (4).

Currently, with the shift from health-centered care paradigms to patient-centered care, the objectives of patient-centered communication are in harmony with the principles of health literacy (5). Nursing standards emphasize HL as an essential component of quality nursing care, and nurses' capacity to evaluate a patient's comprehension and adjust to the difficulties in communication associated with HL needs is essential for providing quality nursing care, and providing HL support to patients should be considered a critical nursing competency skill, and nurses should be encouraged to adopt information (6) and instruction to the individual's level of understanding or HL (3).

Nurses know the importance of HL support. However, they may lack the essential communication abilities to incorporate screening questions as part of their clinical routine or offer patient education at the appropriate level (6). HL should be included in the nursing student curriculum (7). The concept of HL should be taught at the beginning of nursing education and incorporated into the curriculum (8). Unfortunately, nurses who currently have insufficient skills are not trained in HL, and educational institutions have not incorporated HL courses into their curricula (7).

A bibliometric approach allows for a quantitative review of research trends related to health literacy in nursing and allows for the identification of developmental patterns and emerging topics of interest. It can also show the cooperation of authors and magazines in publishing related works. Finally, the findings can serve as a valuable resource for guiding future research efforts. Inadequate health literacy in nursing can have serious consequences for patient care. Without the ability to effectively communicate and educate patients, nurses may struggle to ensure that patients comprehend their diagnoses, treatment plans, and medication instructions. This can lead to misunderstandings, noncompliance, and ultimately poorer health outcomes for patients.

In this article, we aim to investigate the trend of research on this topic. In addition to clarifying the current research situation, we will offer suggestions for researchers in this field. In this article, the trend of research on this topic was investigated, and clarifying the current research situation, suggestions for researchers in this field were offered.

Materials and methods

Study Design

This study aimed to conduct a bibliometric analysis of nursing research on health literacy. According to the research purpose, the following questions were developed: How many articles were published, and what was the publication trend? Which publications and journals are the most effective? What are the most frequently used authors' keywords? What are the most popular topics? What are the most effective authors and organizations in this field?

Search Methods

The Scopus database was used in this study. A bibliometric study on health literacy in nurses was carried out according to the guidelines of Montazeri

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et al. (9). First, keywords relating to "health literacy" and "nursing" were extracted from the MESH and similar review articles. To confirm that the topic of this study was not duplicated, two researchers examined the databases Scopus. As a next step, one researcher wrote the search strategy, and another revised it. The search terms included "health literacy" OR "health knowledge" OR "health information" OR "health understanding" and "nursing, which were searched through March 2024 without time limitations. Exclusion and inclusion criteria were applied after extracting primary articles. This study included original and review articles that were published in journals and written in English. In addition, all types of articles, including book chapters, conference papers, notes, editorials, short surveys, books, and conference papers, as well as those published in sources other than scientific journals, were excluded).

Table 1. search strategies.

1	First, Search terms used for the formulation of the search strings in the systematic search based on the PICO concept
2	Second, a systematic search was conducted in March 2024 across Scopus. search terms were included for title or keywords.
3	Inclusion and exclusion criteria
4	Limits, The country of publication, Source title and time were not limited.
5	Together, 1,119citations to relevant studies.

Table 2. Search terms used for the formulation of the search strings in the systematic search.

PICO concept	Search Terms
Population	nurses (learning health literacy OR engaging in Articles about health literacy OR Writing Articles about health literacy)
Intervention (or Exposure)	health literacy
Comparison	Not applicable
Outcome	the trend of health literacy(Author, source, country, article , journal.)
Inclusion and exclusion criteria	
Inclusion criteria	(a) Be a full-text study written in English; (b) relevant to Nursing and health literacy (c) Document type: Review and Article (d) Source type: Journal
Exclusion criteria	a) Irrelevant to Nursing (681 articles); b) written in other languages (71 articles); (c) Wrong Document type (e.g., Conference paper, Note, Book chapter, Editorial, Short survey, Book, Conference paper,28 articles) (d) Wrong Source type (e.g., Trade journal,1 articles)

Table 3. Full search strings.

step	Search String	Number of

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		outcomes
#1	AUTHKEY ("health literacy" OR "health knowledge" OR "health information" OR "health understanding") OR TITLE ("health literacy" OR "health knowledge" OR "health information" OR "health understanding")	35,64۲
#2	(AUTHKEY (nurs*) OR TITLE (nurs*))	414,636
#3	#1 AND #2	1,119

Data collection and analysis

The Scopus data were extracted from all eligible articles in CSV format. The data pertains to citations, bibliographies, abstracts, and keywords. Additionally, we analyzed the data using VOSviewer Version 1.6.20 (10) and Excel Version 2312. A fraction counting technique was used for all bibliometric methods.

Table 1. Bibliometric data.

citations:	Citation analysis reveals the most effective country, journal, author, article, and organization and provides a roadmap for further research
Co-authorship:	The co-authorship analysis illustrates the collaboration between authors from different countries and demonstrates the desire for international collaboration among researchers.
Co-citation:	Keywords are generally analyzed based on their occurrence. In addition to introducing frequently used keywords, it can also identify thematic trends in research.
Co-citation:	Co-citation analysis indicates that a new item (journal, author, etc.) cites two previous items at the same time. Therefore, it is useful for authors to find relevant and intriguing items.

Results

The Scopus database contained 1119 articles; however, after applying the inclusion and exclusion criteria, only 338 articles remained. Research for the articles took place between 1975 and 2024.

Country analysis (citations and co-authorship)

IIn total, 49 countries have been actively engaged in the field of health literacy in nursing. According to our co-authorship analysis, authors from different countries collaborate. Australia is the country with the greatest number of international contributions (total link strength [TLS] = 18), followed by the United States (TLS = 10) and China (TLS = 7).

In total, 20 countries have published at least five articles on health literacy in nursing. The United States (104 articles, 1602 citations) is the leading country, followed by Australia (46 articles and 597 citations) and Brazil (37 articles, 182 citations, and TLS=4). South Korea has published only 13 articles, receiving 233 citations and TLS=2, resulting in third place. Additionally, Norway (211 citations, 8 articles, CPP = 26.37, and TLS = 3) ranks first based on the index of citations per publication [CPP]. According to this index, the following countries were listed: the United States (cpp=40.15), Australia (cpp=97.12), Brazil (cpp=91.4), and South Korea (cpp=17.92).

Analysis of authors' keywords (co-occurrence)

A total of 945 keywords were used in articles related to nursing literacy, 47 of which were used at least five times. In addition, 41 keywords remained after the duplicates were removed. According to Figure 1, the size of a node represents the frequency with which a keyword is used by authors. The occurrence between two nodes is indicated by their connection. According to Figure 1, keywords related to health literacy are grouped by subject into six clusters. According to the literature, these six clusters represent the most important research areas in the field of health literacy. The first cluster explains how knowledge, attitudes, performance, nursing care, and nursing students are applied to health

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literacy. In the second cluster, public health and the healthcare system are generally discussed in relation to health literacy. This cluster was characterized by public health, health information systems, electronic health records, communication, and patient safety as the most important keywords. A third cluster focused on mental health as a topic of research in health literacy. Nursing students, depression, mental health literacy, schizophrenia, and primary care were included in this cluster. In the fourth cluster, self-care, self-management, and social support were related to health literacy. The fifth cluster consisted of health education, patient education, and internet applications for health literacy. In the sixth cluster, treatment compliance, ethics, and electronic health records are discussed. According to Figure 2, keywords have also been analyzed by time, and the topics that have been emphasized by researchers at different times are shown. Newer keywords are indicated by a yellow color.

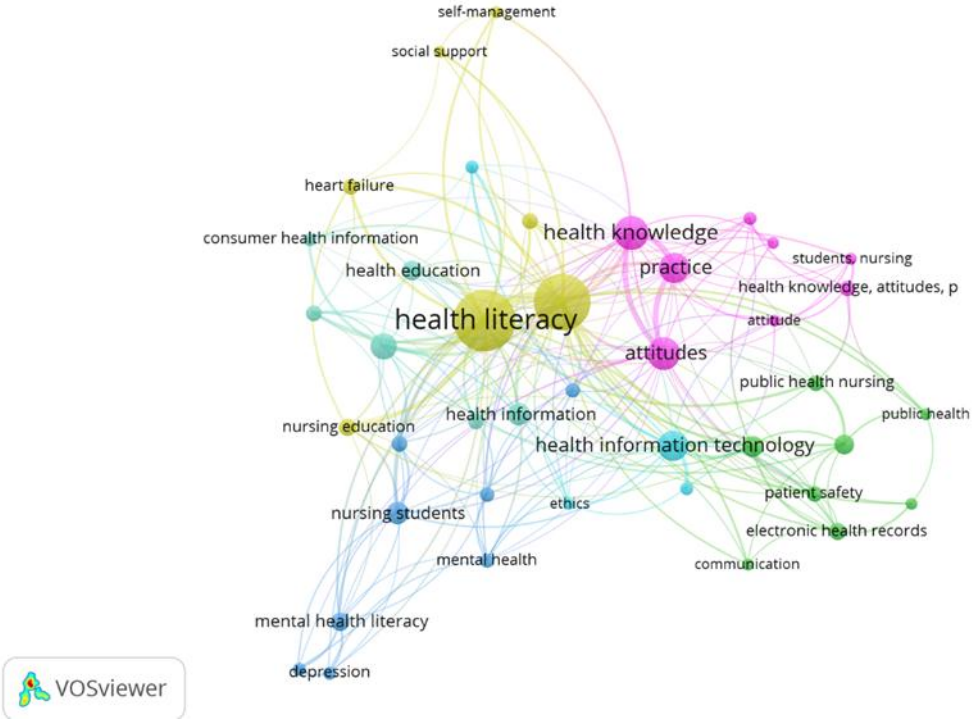


Figure 1. Keywords based on co-occurrence.

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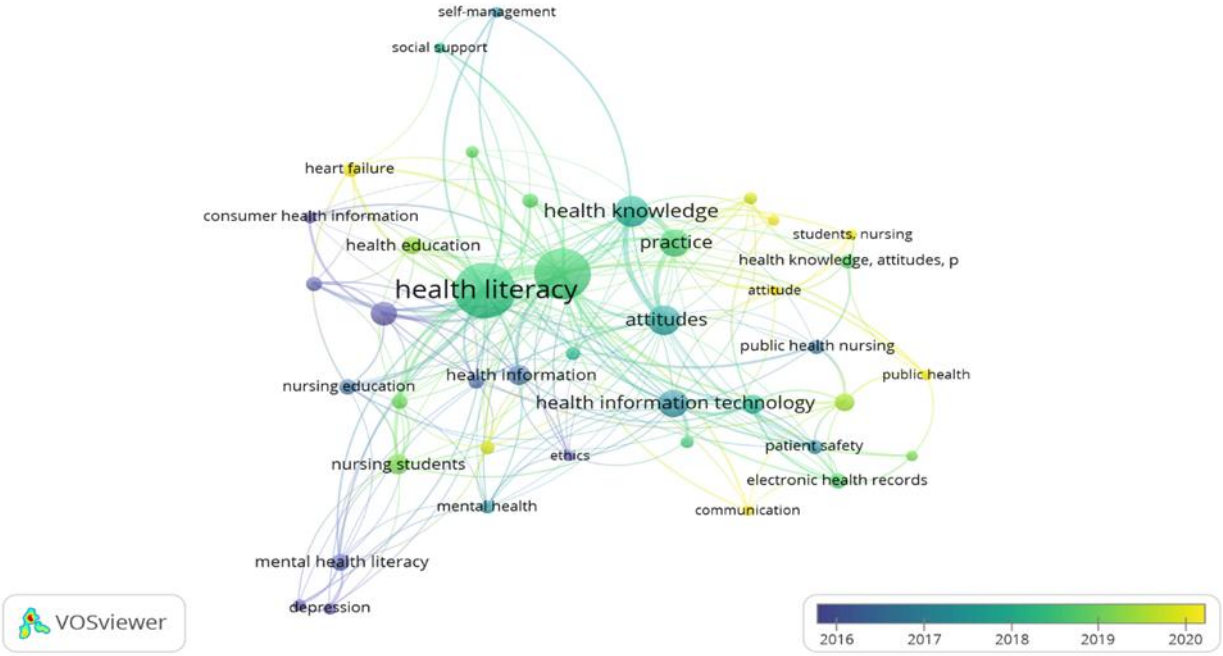


Figure 2. Keywords based on co-occurrence.

Source analysis (citations)

The topic of health literacy in nursing has been covered in 108 journals, although only 14 journals have published at least five articles. The Advanced Nursing Journal (36 articles, 938 citations, CPP = 26.05, and TLS = 5) is the most effective journal in this area. According to Table 5, the Journal of Clinical Nursing is in second place.

Table 5. Distribution of journals based on citations.

Journal	number of articles	citations	cpp	TLS	Publishers
journal advanced nursing	۳۶	۹۳۸	26/05	۵	Wiley
journal of clinical nursing	۲۲	۵۷۶	26/18	۳	Wiley
journal of pediatric nursing	۶	۱۴۴	۲۴	۰	Elsevier
revista da escola de enfermagem	۱۸	۱۲۲	6/77	0	other
International nursing review	7	112	16	2	Wiley

citations per publication[cpp]/ total link strength [TLS]

Author analysis (citations)

Health literacy in nursing has been investigated by 1245 authors, but only six of them have published at least three articles. Among all the authors in this field, "Parnell, Terri Ann" is the most cited author, with 3 published articles and 69 citations. The second author is "Barton, Amyj." This author has 3 published articles and 51 citations. Moreover, "Strudwick, Gillian" had the most published articles in this field (4 articles).

Organization analysis (citations)

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In total, 900 organizations have collaborated in the area of health literacy in nursing, of which only 12 organizations have published at least two articles. The "Loewenberg School of Nursing, University of Memphis, Memphis, United States" was the most strongly associated with 197 citations, while the "College of Nursing, Wayne State University, Detroit, MI, United States" was the second most strongly associated with 107 citations. As the third most cited organization, the Graduate School of Public Health, Ajou University, Suwon, South Korea, has 57 citations.

Article analysis (citations and trend)

In total, 338 articles were published in this field, and the first article was published in 1975. (30 review articles and 308 articles). Figure 3 showed the trends in the number of published articles. The "Health Literacy: Concept Analysis" by Speros, published in 2005, is the most cited article (195 citations) (11). Following the article by Kornburger, C., et al. (2013), which had 128 citations (12), the article by Tang, Y. Ho, et al. (2008) had 125 citations (13), the second and third articles, respectively.

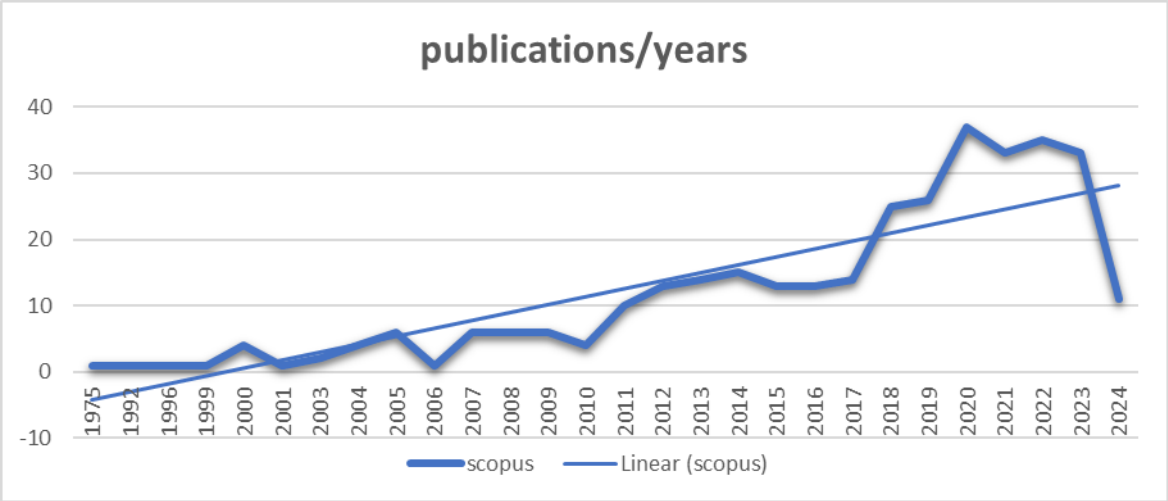


Figure 3. Trend of articles by year.

Source analysis (co-citations)

Co-citations indicate thematic similarity between items. Consequently, when an article cites articles from two different journals, it is called a co-citation. The co-citations of articles in this field were distributed among 4784 journals, but only 45 journals received at least 20 citations. As showed in Figure 4, the size of the nodes represents the activity of the journals.

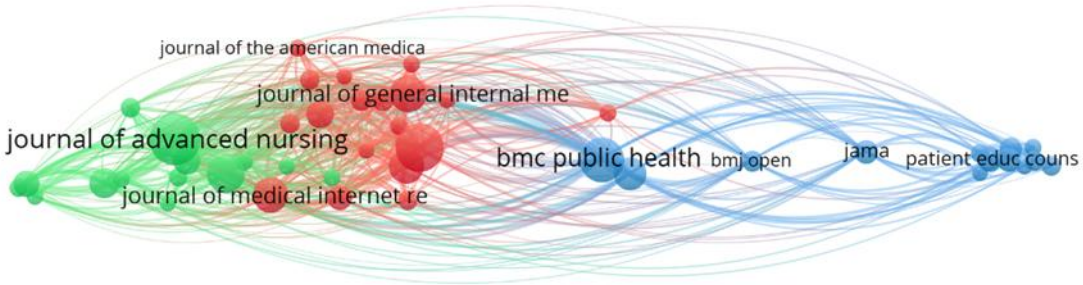


Figure 4. Distribution of journals based on co citations.

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Discussion

Research on health literacy in nursing began 49 years ago. Currently, the number of articles that have been published in this field is increasing, and it appears that researchers have been paying more attention to this topic in recent years (especially in 2018 and later). Future attention is expected to be focused on it. In addition, the most cited articles in this field were written between 2005, 2008, and 2013. One of the reasons is the publication of articles in specialized journals, increased attention from researchers, and free access to articles in these years, while the oldest article (14) is expected to be cited more frequently in this area as a result of a long-term trend. Academic papers play a crucial role in advancing knowledge and research in various fields. Most academic papers are seldom cited, but a few have been widely quoted. Many studies indicate that the number of citations is influenced by many factors.

In general, there are three categories of factors for receiving effective citations: 1. Factors related to the article (how to print, figures, writing, etc.) 2. Factors related to the magazine (impact factor, factors, language of the magazine, etc.) 3. Factors related to authors (scientific reputation, number of authors, academic degree, etc.) (15) This area is suitable for young researchers because it offers the opportunity to contribute to a growing field with ample room for innovation and advancement. Additionally, the presence of highly cited articles from recent years suggests that there is still much to explore and discover in this area, making it an exciting and promising field for young researchers to explore.

The number of articles published in a field indicates its importance (16). The United States leads in citations for health literacy in nursing, highlighting its significance for U.S. researchers. Norway has the highest citations per article, suggesting quality research that attracts the scientific community. Researchers can boost citations by engaging with their country's publications, enhancing their visibility and recognition.

Research collaboration can greatly influence the quality of research and its success (17). International scientific collaboration (ISC) has become a permanent necessity as science has progressed from “little science” to “big science (18). Therefore, by analyzing the collaborations between authors, it was determined that Australia has been the most successful in collaborating with other countries in the field of health literacy in nursing. Therefore, researchers who are considering international collaboration or who are interested in collaborating between countries may be able to cooperate with researchers in Australia, the United States, and China.

It was expected that United States organizations would be the most effective in this field because they have the largest number of articles and citations. Consequently, health literacy is prominently developed in Memphis and Detroit. Additionally, health literacy initiatives have been developed in other United States cities, making the United States one of the world's leading nations in this field. South Korea is also the third most cited organization and country. As a result of its efforts to improve health literacy, it has made significant contributions to the global health literacy movement.

Keywords are the primary themes in a scientific article, used by readers and search algorithms (19). The most common keywords included health literacy (111 occurrences, TLS=90), nursing (95 occurrences, TLS=91), and health knowledge (37 occurrences, TLS=34). Research has centered on mental health, self-care, nursing students' knowledge and attitudes, health system information, patient relationships, and education. Public health, nursing students, and heart failure have recently gained attention from nursing health literacy researchers. This helps identify trends and gaps in the field for future research.

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The journal Advanced Nursing is the most effective journal in the field of health literacy in nursing. It publishes research in education, management, and politics that promotes evidence-based practice (CiteScore (Scopus) = 3.5, Journal Impact Factor (Clarivate) = 3.8). Additionally, the Journal of Clinical Nursing (CiteScore (Scopus) = 6 and Journal Impact Factor (Clarivate) = 2.4) is ranked second. This journal examines nursing intervention and service delivery models to enhance clinical understanding. Wiley Publications published these journals in the first quarter (Q1). According to the most cited journals in health literacy, Wiley Publications is the most effective publisher. According to the cocitation analysis, researchers and authors intending to write articles or planning to submit articles in this area should use journals with high cocitation counts (see Figure 4). These journals can help to better understand the basics of the subject and learn more about important points.

Terri Ann Parnell, the most cited author in this field, is the Principal & Founder of Health Literacy Partners, LLC, and affiliated with Stony Brook University, School of Health Technology and Management. She is a nurse and health literacy expert. In second place is Amy J. Barton, associated with the University of Colorado, whose contributions include advancements in nursing and interprofessional education. Gillian Strudwick, from the Lawrence S. Bloomberg Faculty of Nursing, University of Toronto, has published four articles and received 43 citations recently, ranking her fourth.

Limitations and Strengths

One of the advantages of the current research is that there was no time limit for searching. The current research allows researchers to thoroughly investigate and analyze various aspects of the topic without being restricted by a time limit. Consequently, the research is strong and reliable since it is comprehensive and well informed. Additionally, the open-ended nature of the research allowed researchers to explore their ideas. There are several limitations [D1]: the search was limited to one database, and the research team has limited proficiency in other languages, so the articles were published in English. The use of one software package for data visualization is free and available. Because other powerful and non-free software helps to make studies attractive in combination with the current software or alone.

Conclusion

The results of this study showed the relationship between health literacy and public health knowledge, which has received little attention from researchers. Health literacy is crucial for enhancing public health, preventing diseases, and ensuring timely diagnosis and treatment. It empowers individuals to make informed health decisions, leading to better health outcomes and effective health system management. Given the vital role of nurses in patient care, nursing researchers need to focus on health literacy's impact on disease prevention, diagnosis, and treatment. Increased attention in this area can help develop strategies that improve health literacy among patients, ultimately enhancing overall health outcomes.

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CRediT authorship contribution statement

Conceptualization, Methodology, Validation, Formal Analysis, Investigation, Resources, Software, Data Curation, Writing–Original Draft Preparation, Writing–Review & Editing, Visualization, Supervision, Project Administration: SS, MNZ, MH.

Declaration of Generative AI and AI-assisted technologies in the writing process

This book was prepared and written without using any generative artificial intelligence (AI) techniques, such as ChatGPT or other big language models.

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Grammarly was used to rewrite and improve the content in terms of language and clarity.

Conflict of interest

There are no conflicts of interest.

Ethical considerations

In accordance with the Declaration of Helsinki, research involving human participants must prioritize their health, rights, and welfare. It must be scientifically justified, ethically approved, conducted by qualified professionals, and ensure informed consent. Special care must be given to vulnerable populations, and research findings should be transparently reported for the benefit of society.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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