Review Paper

Mapping Disaster Health Literacy for Chronic Patients: A Scoping Scientometric Analysis

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ABSTRACT

Background: Natural hazards pose threats and opportunities for enhancing health literacy among chronic patients. This study aimed to investigate temporal distribution patterns of health literacy literature in disasters, depict collaborations among researchers and leading countries, and provide insights for future research directions in this domain.

Materials and Methods: Mapping studies using bibliographic tools and an oriented scoping review were conducted. A search strategy utilizing synonymous terms for "disaster literacy and chronic diseases" was implemented on Scopus, Web of Science (WoS), and PubMed from inception to 2024, resulting in the retrieval of 1,885 articles. VOSviewer, UCINET, and NetDraw software performed analyses.

Results: The concept of disaster health literacy (DHL) has grown since 2019. Patients with diabetes, hypertension, respiratory diseases, asthma, cancer, those on dialysis, and stroke survivors faced the most challenges during disasters. Seven thematic clusters of studies were identified, encompassing research methods, types of literacy, vulnerable groups, chronic patients, study locations, disease management, and comorbidity types.

Conclusion: Improving DHL plays a pivotal role in empowering individuals with chronic conditions to navigate crises with greater resilience and informed decision-making. To mitigate adverse outcomes, it is essential that national emergency frameworks integrate targeted health literacy interventions tailored to the needs of vulnerable populations.

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Introduction.

Natural hazards, such as floods, earthquakes, hurricanes, and pandemics, like COVID-19 are part of our surrounding world, and their occurrence is inevitable, carrying risks and significant human and financial losses. Disaster risk management is a continuous, four-phase cycle comprising mitigation, preparedness, response, and recovery that aims to minimize the adverse effects of natural or human-made disasters [1]. This cycle is particularly crucial for chronic patients, as they are more vulnerable during disasters due to their need for continuous medical care [2]. Chronic patients are individuals suffering from long-term medical conditions (lasting more than three months), such as diabetes, cardiovascular diseases, asthma, and kidney diseases, who require ongoing medical attention. According to the World Health Organization (WHO), chronic diseases are generally non-communicable, progressive, and often cannot be completely cured; however, they can be managed through medical interventions and lifestyle changes [3]. In the context of disasters, chronic patients encounter significant challenges, such as interrupted access to essential medications, medical supplies, and healthcare services, often resulting in the worsening of their conditions and the onset of severe health complications [4].

The mitigation phase of disaster risk management involves proactive measures, such as building resilient infrastructure and educating communities, which can help reduce the vulnerability of chronic patients. The preparedness phase includes strategic planning, resource allocation, and simulation drills to enhance readiness. The response phase focuses on immediate actions, like rescue operations and emergency shelter provision, while the recovery phase aims to restore normalcy and rebuild affected areas. Effective preparedness plans must ensure the availability of essential medications, medical equipment, and psychological support for chronic patients to mitigate the risk of symptom exacerbation and other disaster-related complications.

Preparedness plans for natural hazards primarily emphasize the evacuation of affected individuals, especially the disabled, chronic patients, and pregnant women, by trained caregivers. They also focus on ensuring transportation, food, water, and shelter, as well as preventing concentrated outbreaks of communicable diseases [5, 6]. Various reports indicate that acute psychological stress resulting from major disasters can exacerbate symptoms in chronic patients [7]. During natural hazards, issues such as non-adherence to medication, nutrition, and psychological support become more pronounced as significant barriers to patient compliance with treatment [8]. In various studies, the notion of disaster health literacy (DHL) has been introduced as a framework to address this issue. DHL encompasses the ability to acquire, interpret, and comprehend the knowledge, attitudes, and skills necessary for minimizing harm, enhancing preparedness, executing effective responses, and facilitating recovery, all of which are essential for making informed decisions to mitigate disaster risks [9, 10].

The significance of DHL is particularly pronounced for individuals with chronic illnesses. These patients often face unique challenges during disasters, such as maintaining access to necessary medications and medical care. By enhancing their DHL, chronic patients can better understand the potential impacts of disasters on their health and the healthcare system. This knowledge empowers them to develop personalized emergency plans, adhere to treatment regimens during crises, and seek timely assistance when needed. Ultimately, fostering DHL among chronic patients not only improves their individual resilience but also contributes to the overall stability and effectiveness of healthcare responses in disaster situations.

Natural hazards are both a threat and an opportunity to improve health literacy among chronic patients. While studies in the field of DHL are still in their early stages, progress in this area has lagged behind general health literacy research [11]. Previous studies have explored various aspects of DHL but have not conducted comprehensive bibliometric or scientometric analyses, despite the rapid growth of literature in this field. This gap highlights the need for a systematic examination of the intellectual and social structures shaping DHL research. Bibliometric research is particularly valuable in reducing subjective bias and providing an objective overview of the field's development. Bibliometric research is essential for mitigating authors' subjective biases. By employing quantitative data and objective analytical methods, this approach enables researchers to assess scientific literature impartially. Such objectivity not only enhances the credibility of research findings but also facilitates a more nuanced understanding of the scholarly landscape, ultimately contributing to the advancement of knowledge across diverse fields.

The present study aimed to address this gap by mapping the scientometric landscape of DHL research. Specifically, it sought to analyze temporal distribution patterns of publications, showcase researcher collaborations and

Table 1. Search strategies for different databases

Scopus	TITLE-ABS-KEY (“health literacy” OR “disaster health literacy” OR “disaster prevention literacy” OR “disaster risk reduction” OR “understanding disaster risk” AND “chronic disease” OR “non-communicable”)
PubMed	“Health literacy”[Title/Abstract] OR “disaster health literacy”[Title/Abstract] OR “disaster risk reduction “[Title/Abstract] AND (“chronic disease”[Title/Abstract] OR “non communicable”)
WoS	(“Disaster health literacy” OR “disaster prevention literacy” OR “disaster risk reduction “OR “understanding disaster risk”) AND (“chronic disease” OR “non-communicable”) (Topic)

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partnerships, identify leading countries in the field, and provide insights for future research directions. By doing so, this study contributes to a deeper understanding of DHL and its potential to improve disaster preparedness and response for chronic patients. The findings will offer valuable guidance for policymakers, researchers, and healthcare providers working to enhance disaster resilience among vulnerable populations.

Materials and Methods

A scoping review of the literature on DHL was conducted using a descriptive-bibliographic approach. The review followed the Arksey and O’Malley framework, a well-established methodology for scoping reviews, which consists of five key steps with an optional sixth step for expert consultation [12]. The steps are as follows:

Identifying the research question

The primary research question focused on understanding the relationship between DHL and chronic diseases. Chronic diseases were defined as non-communicable, long-term health conditions that persist for more than three months and require ongoing medical attention or management. Examples include diabetes, hypertension, chronic obstructive pulmonary disease (COPD), and cancer.

Identifying relevant studies

A comprehensive search was conducted in three major databases, including Scopus, Web of Science (WoS), and PubMed from inception to January 2024. These databases were selected because they are widely recognized for their high-quality, peer-reviewed content and their compatibility with bibliometric analysis tools. The search was limited to three fields (title, abstract, and keywords) to ensure precision. Unlike other platforms, such as Google Scholar, which lack standardized export formats, these databases provide structured bibliographic data in formats (e.g. RIS, BibTeX) that are directly compatible with bibliometric software, like VOSviewer and UCINET. To ensure comprehensive coverage of the literature, manual searches were conducted in Google Scholar and gray literature sources, including reports from official organizations, such as the WHO, government agencies, and non-governmental organizations (NGOs). Relevant articles and documents identified through these sources were manually extracted and imported into EndNote software, version 20 for integration with the main dataset. This approach ensured that valuable insights from non-traditional sources were included in the analysis. A total of 2518 records were retrieved from the three databases. Details of the search strategy are as follows:

Study selection

Following the removal of duplicates and irrelevant records, a total of 1,885 records were retained for further screening. These records were subjected to a multi-stage selection process:

Inclusion criteria application and screening: The inclusion criteria focused on peer-reviewed articles, conference proceedings, and highly cited gray literature from reputable government and NGOs. Initially, 650 records were identified as relevant based on a screening of titles and abstracts. These records were then reviewed in full by the research team. For articles where full texts were available, a thorough examination was conducted. After this detailed review, 450 records were selected for final inclusion in the study.

Keyword co-occurrence analysis: To uncover thematic clusters, emerging topics, and research trends in disaster health literacy, a keyword co-occurrence analysis was conducted. The analysis was restricted to terms with a co-occurrence threshold of 2, meaning only keywords appearing more than twice and demonstrating strong linkage strength were included [13-15]. This methodological approach facilitated the identification of key themes and gaps in the literature. A total of 696 records were utilized for this analysis.

Social network analysis (SNA): A total of 696 records were considered for this analysis to ensure consistency with the keyword co-occurrence analysis. This analysis aims to understand an author's role, influence, and contribution within the network.

Charting the data

Bibliographic data were extracted and merged into a single file using EndNote software, version 20, a reference management software. Before mapping the co-occurrence of terms, the research team conducted a rigorous screening process to ensure data accuracy and consistency. This process involved identifying and eliminating potential errors, duplicate terms, and ambiguous or meaningless keywords. Additionally, terms were standardized by merging synonyms, expanding abbreviations to their full forms, and, where applicable, replacing them with MeSH (medical subject headings) terms. A researcher-made, refined thesaurus in Tex format was compiled to facilitate this process. Finally, all extracted bibliographic information, along with the researcher-made thesaurus, was imported into VOSviewer for further analysis. The results are presented in two main phases, each addressing specific research goals:

Scoping review and concept extraction: As part of the scoping review, the concept of DHL was systematically extracted and analyzed. Definitions, key components, and conceptual frameworks related to DHL were identified and synthesized. These findings were organized and presented in Table 1, providing a clear and comprehensive overview of the concept as reflected in the literature. Additionally, the temporal trends of research on DHL were analyzed using data extracted from the Scopus database. The yearly progression of publications was visualized to identify key milestones, growth patterns, and emerging phases in the field. This temporal analysis is presented in Figure 1, offering insights into the evolution of DHL research over time.

Keyword co-occurrence analysis: The results of this analysis, highlighting the interconnectedness of key terms and thematic clusters, are visualized in Figure 2.

SNA: The collaboration network map, illustrating the relationships and interactions among researchers, is presented in Figure 3.

Collating, summarizing, and reporting results

Thematic clusters and author collaboration networks were mapped using VOSviewer software, version 1.6.19, UCINET software, version 6.771, and NetDraw software, version 2.183. The co-occurrence threshold was set to 2, meaning only terms with more than two occurrences and strong linkage strength were included [13-15]. Additionally, the purpose of mapping the social network of authors is to identify the level of participation, collaboration, and connections between authors in a specific field. Based on centrality indices (degree, closeness, and betweenness), active authors in a domain can be identified through collaboration networks. Degree, closeness, and betweenness are key centrality indices used to analyze the position and influence of authors within a collaboration network. Degree centrality measures the number of direct connections an author has, highlighting those who are highly active and well-connected in the network. Closeness centrality evaluates how quickly an author can access others, identifying individuals who are central to information flow and can efficiently interact with the broader network. Betweenness centrality identifies authors who act as bridges between different groups, playing a crucial role in connecting otherwise disconnected clusters and fostering interdisciplinary collaboration. Together, these metrics provide a comprehensive understanding of an author's role, influence, and contribution within the network, enabling researchers to identify key players and optimize collaboration dynamics in a specific field [16, 17].

Functionality of software: The following software was utilized for data analysis and visualization:

VOSviewer software, version 1.6.19: This tool was used for visualizing bibliometric networks, including the co-occurrence of keywords and thematic clusters. It employs advanced algorithms to map relationships between terms and authors.

UCINET software, version 6.771: A SNA tool used to measure centrality indices (degree, closeness, and betweenness) and identify active authors in the field. It provides quantitative metrics for network analysis.

NetDraw 2.183: A visualization tool integrated with UCINET for creating graphical representations of social networks. It allows for customizable and interactive network diagrams.

EndNote software, version 20: A reference management tool used to merge and organize bibliographic data, ensuring efficient handling of large datasets.

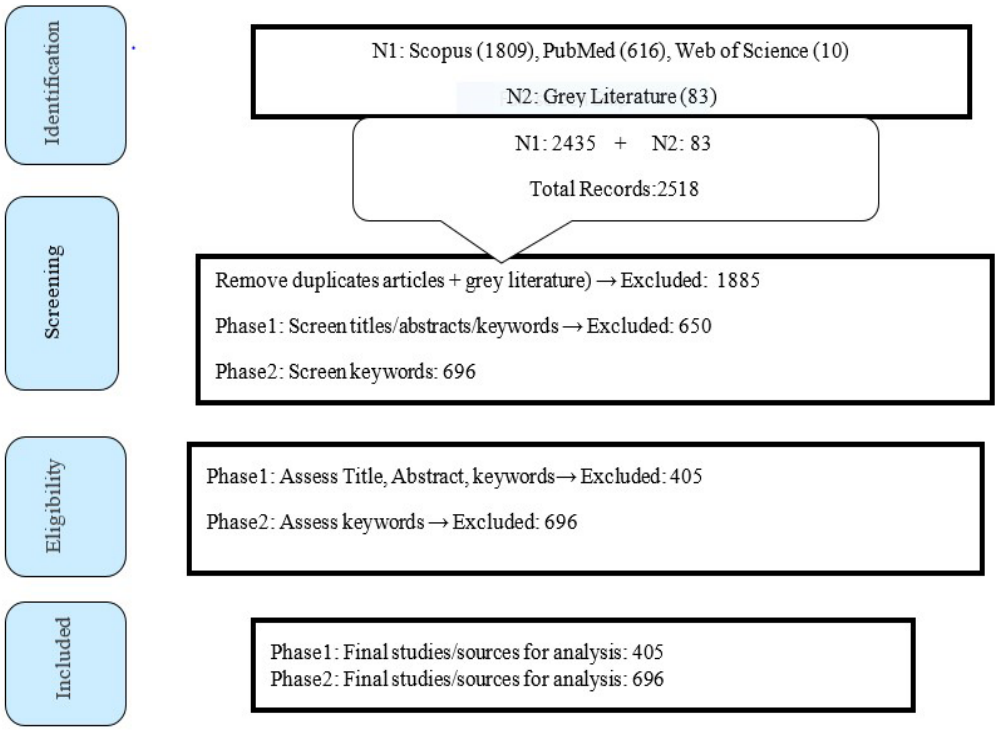

Figure 1. Screening for scoping review and co-occurrence analysis

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Optional expert consultation

This step was not included in the current study but can be added in future research to validate findings.

Results

The growth of research in the field of DHL over time is depicted in Figure 1, illustrating the status of growth across various publications. Initially, the domain of "health literacy" emerged in 2003, followed by "disaster literacy" in 2012, with a seminal article addressing these topics in the general domain. Additionally, four journals BMJ Open, BMC Public Health, PLOS One, and International Journal of Environmental Research and Public Health have significantly contributed to publications in this field.

According to Figure 1, the frequency distribution of publications in the field of DHL showed a gradual upward trend. Analysis of articles indicated a significant increase (55%) in research output, particularly in 2022, with 11 articles progressively published during 2023. The term DHL specifically gained prominence in the health and medical fields starting from 2019."

Keyword co-occurrence map

The keyword co-occurrence map of DHL is depicted in Figure 2, drawn using VOSviewer software. With a threshold set to 2 and utilizing the researcher-made thesaurus, a total of 696 keywords were selected for the map. As shown in the figure, the largest node in terms of link weight and frequency belonged to the keyword "health literacy," highlighted in pink. Its highest average publications are concentrated in the period of 2019, attributed to an increased research focus due to the COVID-19 pandemic. The research trajectory in this field has gradually continued with the dominance of the keyword "DHL" during the period of 2018-2020, represented in olive green on the map.

Thematic clusters of DHL

Table 2 presents a list of most frequent keywords found in articles in this field, along with their respective frequencies.

In scientific studies, multiple thematic clusters are often extracted, each containing different terms. Researchers interpret terms based on their ranking, focusing on those with high or very weak frequencies, thereby excluding unrelated terms from the interpretive cycle. Based on the extracted keywords, the following thematic research clusters were categorized:

Cluster 1: Types of literacy

Keywords extracted from the vocabulary occurrence map in health literacy included "health literacy," "disaster literacy," "natural disaster literacy," "medication literacy," "nutrition literacy," "e-health literacy," "medication literacy," "functional health literacy in adults," "digital health literacy," "sexual health literacy," "high blood pressure literacy," and "self-care literacy," all associated with patients with chronic diseases.

Cluster 2: Research methods and tools

According to bibliometric analyses, cross-sectional, survey, qualitative research, and follow-up studies were predominantly used in the methodology section of research.

Cluster 3: Vulnerable age groups in disasters

Most studies focused on vulnerable groups, such as individuals over 80 years old and women.

Cluster 4: Vulnerable chronic patients in disasters

Based on retrieved articles, patients with diabetes, hypertension, respiratory diseases, asthma, cancer, those on dialysis, and stroke survivors faced the greatest challenges in disasters.

Cluster 5: Study locations

Based on retrieved keywords, research was predominantly conducted in China, Iran, Australia, India, Germany, the United States, and Japan.

Cluster 6: Disease management

Keywords, such as self-management, self-care, disease management, and self-efficacy were predominantly used in research related to disease management.

Cluster 7: Comorbidity disorders

According to co-occurrence maps, keywords related to overweight (obesity) and hypertension had the highest links with chronic diseases.

Cluster 8: Diversity of terminology in DHL

Upon reviewing the keywords in this map, a variety of terminological diversity was identified in defining the concept of DHL, which appears interesting and even challenging. Therefore, articles related to this topic were examined, and various definitions were presented (Table 3).

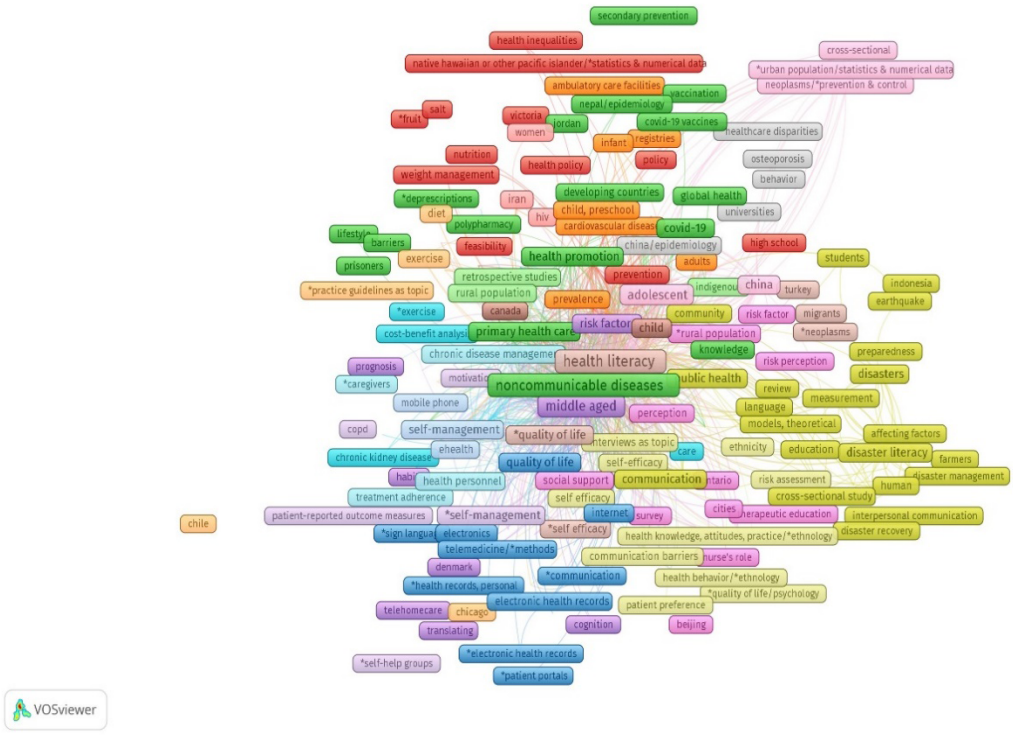

Figure 2. Frequency distribution of keywords in DHL [18]

Table 2. Distribution of most prominent keywords in DHL

Rank	Keywords	Frequency	Total Link Strength
1	Health literacy	361	3392
2	Non-communicable diseases	224	2178
3	Cross-sectional studies	132	1482
4	Surveys and questionnaires	97	1143
5	Diabetes mellitus	47	450
6	Aged 80 and over	46	676
7	Qualitative research	44	576
8	Self-management	43	437
9	Health promotion	41	396
10	China	37	434
11	Risk factors	35	432
12	Self-care	34	428
13	Lifestyle/Quality of life	33	399
14	Health behavior	29	376
15	Disaster literacy***	23	179
16	Hypertension	22	209
17	Medication adherence	22	198
18	Disease management	21	220
19	COVID-19	20	135
20	Telemedicine	17	177
21	Iran	16	125
22	Self-efficacy	14	181
23	Australia	13	135
24	Rural population	13	163
25	Ehealth	12	116
26	Obesity/weight management/diet	12	109
27	Psychometrics	12	122
28	Comorbidity-multimorbidity	11	143
29	Developing countries	11	115
30	Follow-up studies	11	157
31	Retrospective studies	10	101
32	Urban population	10	123
33	Electronic health records	9	99
34	Randomized controlled trials	9	93

Rank	Keywords	Frequency	Total Link Strength
35	Vulnerable populations	9	101
36	Disease management	8	53
37	India	8	67
38	Decision-making	7	89
39	Germany	7	72
40	Needs assessment	7	78
41	United States	7	89
42	Asthma	6	53
43	Behavior change	6	64
44	Disaster model	6	63
45	Tofhla	2	33
46	Disaster response	2	26

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Table 3 provides an overview of various researchers' definitions and contexts regarding DHL, highlighting different aspects, such as prevention, risk reduction, management, and self-help skills in various populations and countries. DHL generally includes abilities, such as identifying risks, understanding information related to disasters, making informed decisions, preparing for disasters, reducing risks, and recovering after disasters. These abilities help individuals to better respond to disasters and take appropriate actions.

Drawing the social network of authors

In this section, SNA and the use of centrality indicators were employed to analyze co-authorship networks. Centrality indicators focus on evaluating the key players in the network and aim to provide insights into the status of each player within the network [28]. Overall, 7,702 authors have contributed to writing research in the field of health literacy and chronic patients. Authors with a minimum threshold of 5 articles with high social impact

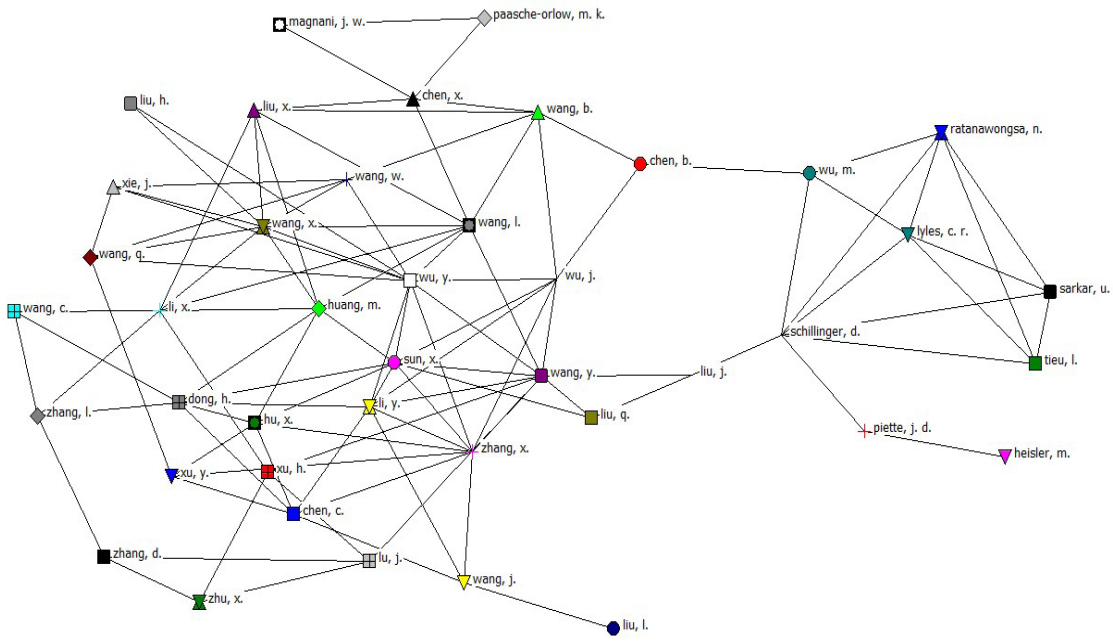

Figure 3. Social network visualization of authors in DHL (UCINET 6 for windows [14])

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Table 3. Diversity of terminology in DHL

Author(s), Year	English Term	Definition of DHL	Context
Chen & Lee 2012 [19]	Disaster prevention literacy	Disaster prevention literacy is defined as a combination of cognitive and emotional skills that enable individuals to respond to, analyze, and reflect on disaster situations in order to achieve greater well-being. It encompasses an individual's knowledge, attitude, and personal skills in relation to disasters.	Teachers and students/ Taiwan
Chan et al. 2012 [20]	Disaster risk literacy/Disaster health risk literacy	Disaster risk literacy, or disaster health risk literacy, refers to the ability to identify, understand, interpret, and obtain information related to disaster risks.	General public/China
Brown et al. 2014 [21]	Disaster literacy	Disaster literacy is the ability to read, understand, and use information to make informed decisions and comply with guidelines for disaster reduction, preparedness, response, and recovery.	Adult with disabilities/ USA
Kanbara et al. 2016 [22]	Disaster risk-reduction literacy	Disaster risk-reduction literacy is perceived as knowledge and techniques that help survivors reduce disaster risks and make faster decisions in such situations.	General public/Japan
Chung & Yin 2016 [23]	Disaster prevention literacy	Disaster prevention literacy can be seen as a dynamic approach to using disaster prevention knowledge and the ability to reconstruct and improve life after disasters.	Managers and teachers/ Taiwan
Olowoporoku et al. 2017 [24]	Disaster literacy	Disaster literacy refers to the ability to identify, understand, interpret, and find relevant information about disasters.	Household/ Nigeria
Seifi et al. 2018 [9]	Disaster health literacy	DHL is the skill of critically asking questions about health information and using this information in social, economic, and environmental health-risk situations.	Middle-aged women/Iran
Çalışkan & Uner 2021 [25]	Disaster literacy	Disaster literacy means the ability of individuals to access, understand, evaluate, and use disaster-related information for informed decision-making.	General public/Turkey
Wuthisuthimethawee et al. 2022 [26]	DHM	Disaster health management involves personal capacity building in terms of knowledge and skills in managing health emergencies (trauma and non-trauma), public health emergencies, risk assessment, and understanding the Incident Command System (ICS) and international standards in humanitarian aid.	Emergency medical teams/ASEAN
Panahi et al. 2023 [27]	Self-help literacy	Self-help literacy refers to the patient's knowledge and skills to manage his/her illness under critical conditions, encompassing 5 literacy dimensions: disaster risk literacy, drug literacy, nutrition literacy, resilience literacy, and diagnostic literacy.	Patients with diabetes/Iran

ASEAN: Association of Southeast Asian Nations; DHL: Disaster Health literacy.

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were estimated to be 122. Figure 2 illustrates the top authors in this field.

As illustrated in Figure 2, in the centrality analysis, Wu Ying, affiliated with an institution in China, along with Schillinger Dean and Ratanawongsa N., both affiliated with organizations in the United States, held the highest rank. Furthermore, Wang Yanhong, Wu Ying, and Wu Jing, all affiliated with institutions in China, emerged as the top scorers in closeness centrality. Additionally, in the betweenness centrality analysis, Wang Lingyun, Wang Wanchen, and Chen Baipei achieved the highest scores.

Additionally, the names of 40 prolific authors in the fields of health literacy, disasters, and chronic illness were identified based on their number of published articles. Several notable authors include R. H. Osborne, affiliated with the Australian Centre for Health Services Innovation (AusHSI), M. S. Wolf, associated with general internal medicine and geriatrics in the USA, L. Leila Dehghankar, affiliated with the Qazvin University of Medical Sciences, and R. Panahi, connected to the Health Education Department at the Tarbiat Modares University.

Discussion

The findings of this study highlight a significant evolution in the field of DHL, underscoring its growing relevance, particularly in the context of public health. Since the emergence of "health literacy" in 2003 and "disaster literacy" in 2012, there has been a notable increase in re-

search output, with a 55% rise in publications observed in 2022 alone. This surge, particularly pronounced post-2019, reflects an enhanced focus on DHL, likely catalyzed by the COVID-19 pandemic. Notably, previous studies have documented a parallel increase in biomedical publishing patterns during the pandemic, emphasizing the swift rise in publication volumes and changes in research dynamics [29-31]. The contributions of key journals, such as BMJ Open and BMC Public Health further emphasize the increasing academic interest and the critical role of DHL in addressing health literacy amidst disasters.

Comparatively, the keyword co-occurrence analysis reveals intricate thematic clusters that align with the findings of previous studies, while also highlighting unique aspects. For instance, while past research has often concentrated on general health literacy [30, 31], this study delineates specific clusters, such as vulnerable age groups and chronic disease management in disaster contexts. The prominence of keywords related to chronic patients indicates a deeper understanding of the specific challenges these individuals face during disasters. This aligns with trends identified in previous studies [31-33] and also expands upon them by addressing contemporary issues and needs that are particularly relevant today. The diversity of terminology surrounding DHL further complicates its definition, indicating an area ripe for future exploration and standardization. Overall, this study not only charts the trajectory of DHL research but also sets the stage for future investigations into its multifaceted dimensions and implications for public health policy.

A review of the literature reveals a focused examination of chronic patients, particularly those with diabetes, in crisis situations, assessing the impact of disasters on their health variables and disease progression. Notably, Japanese researchers have conducted longitudinal studies following major earthquakes to evaluate the effects of pre- and post-crisis interventions on these patients. Countries prone to disasters have intensified efforts to enhance education and DHL [34]. Surveys and questionnaires have emerged as the predominant tools in this research [22-24] due to their flexibility, ease of analysis, broad applicability, and compatibility with other findings. The test of functional health literacy in adults (TOFHLA) is frequently employed in health literacy studies.

Co-authorship analyses indicate that while some authors in the field of health literacy have a high publication output, this reflects a focus on quantity over quality, resulting in limited contributions to centrality indices. This highlights the need to improve these measures. Therefore, based on previous studies, it is strongly recommended that authors engage in collaborative writing and form research groups, as these strategies can enhance their visibility and overall international impact [35-37].

The most significant gap identified in the reviewed articles is the influence of health literacy on the cognitive and emotional capacities of patients during disasters, a topic that has been addressed in only a limited number of instances [9, 27]. Enhancing health literacy empowers patients to make informed health decisions in critical situations, better understand risks and preventive measures, and alleviate fear and anxiety arising from misinformation. Ultimately, improving DHL fosters informed decision-making, reduces health risks, enhances security, and elevates the overall quality of life and care for individuals.

Conclusion

In summary, enhancing DHL plays a crucial role in improving the conditions of chronic patients and their ability to cope with disasters. Achieving this goal necessitates collaboration among researchers, public health authorities, health organizations, and other relevant stakeholders to provide targeted education and foster a comprehensive understanding of disaster risks. DHL should be recognized as an essential component of national emergency strategies, enhancing individual preparedness for effective functioning during potential emergencies. This approach holds significant promise for transforming self-care practices in the context of emergencies and disasters.

To further advance this field, more in-depth studies are needed to broaden awareness and enhance the global community's understanding of disaster risk perception. Recognizing that DHL is a multidimensional concept that may yield varying results depending on the context, this study aligns with established concepts and dimensions of DHL. It also emphasizes the need for future research to adopt a healthcare perspective that prioritizes patient-centered approaches, ultimately leading to more effective outcomes. In light of United Nations Educational, Scientific and Cultural Organization (UNESCO)'s annual revisions of the definition of literacy, it is advisable for the organization to consider incorporating the term "disaster health literacy" in future updates to reflect its multifaceted nature. Furthermore, a comprehensive definition of this term should be integrated into medical subject headings to enhance its visibility and relevance in the field.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Scientific Committee of Isfahan University of Medical Sciences, Isfahan, Iran (Code: IR.MUI.NUREMA.REC.1400.184).

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Authors' contributions

Conceptualization: Somayeh Panahi; Study deign and methodology: Zahra Heidari, Golrokh Atighechian, and Maryam Heidarpour; Writing the original draft: Somayeh Panahi; Review and editing: Hasan Ashrafi-Rizi.

Conflict of interest

The authors declared no conflict of interest.

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