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Disaster Health Management and Competencies Among Physiotherapy Professionals: An Exclusive Review with Bibliometric Analysis

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ABSTRACT

Background: Disaster health management is the management of concerns related to the health of populations and medical facilities before, during, and after a disaster. This paper aims to estimate the contribution of physiotherapy professionals in disaster health by literature search and bibliometric study.

Methods: The review is devoted to identifying physiotherapist competencies in disaster settings and the possible possibilities of their usage in emergency medical teams. The study underlines the shortcomings in the existing literature review examining this issue and underscores the need to strengthen physiotherapists' disaster health management competencies further. Therefore, one needs to take cognizance of the diverse range of skills that physiotherapists possess to enhance their function in emergency response units and preparedness and response to disasters.

Results: The articles reviewed totaled 654 of them on Disaster Health Management in Physiotherapy with increased research activity observed which is spearheaded by the U.S while Monash University was found to have contributed the most. Some of the key themes that came out were; education, competency, and physiotherapy with Physical Therapy journal publishing most articles.

Conclusion: This study covers general background information, areas of interest, and recent developments in Disaster Health Management and Physiotherapy Competencies. According to the analyzed literature, there is evidence that the amount of work done in these fields is increasing, and there are good opportunities to share information among researchers, institutions, and countries.

Keywords: Disaster Health Management, Physiotherapy Professionals, Competencies, EMTs, India.

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INTRODUCTION

Disaster means an event that leads to environmental loss, human loss, or a decline in health and medical services that requires an extraordinary response outside the affected community or geographical location [1-4]. Disaster in the context of the Disaster Management Act of 2005 is "a catastrophe, mishap, calamity or any other major event in any region, that is natural or man-made, accidental or intentional, which has devastating effects on the lives, properties, environment, resources of the community." or a group of people in an area beyond its capacity to cope." [5]. CRED: Brussels, Belgium, classifies disasters into two major groups: natural and technological. Natural disasters encompass six groups: technological disasters are classified as extra-terrestrial, hydrological and meteorological, biological, and geophysical [6]. Further, technological disasters have been categorized as 'Major Fires and Explosions,' 'Miscellaneous,' 'Mining Accidents,' 'Aviation Disasters,' and 'Rail Disasters' [7]. The UNISDR defines technical disasters as containing two subcategories: ' transport hazards' and 'chemical, nuclear, and radiological hazards' [8]. To be included in CRED's database, an event must meet at least one of the following criteria: the emergency was declared, or international Help was requested; ten or more fatalities were reported; or one hundred or more individuals were reported injured [6, 9]. In devising innovative disaster management solutions, the timing of a crisis is paramount. Quarantelli identified three phases of disaster management in 1980: pre-impact, trans-impact, and post-impact [10,11]. Apart from causing significant loss of life, disasters profoundly affect public health. Every new risk amplifies the difficulty of dealing with possible threats to the health of populations and the consequences of crises and disasters [12]. Disaster management encompasses victim recovery, preparedness readiness, mitigation, and prevention [3,9,13–15]. Disaster health management /Health disaster risk management is a multidisciplinary approach to assessing and managing health risks related to emergencies and disasters. The strategies are categorized under risk preparation and management, risk response, recovery, risk prevention, and reduction through hazard and vulnerability reduction [9,12,16]. Planning for disaster prevention, mitigation, response, and recovery is imperative, and preparedness within the healthcare industry is necessary. Healthcare disaster preparedness aims to enhance health professional's and volunteers' readiness and response capabilities to deliver disaster relief at all levels, pre- and post-disaster [17]. Identifying the duties of the healthcare staff also becomes important for planning and coordination among the staff [18]. Conversely, competency is defined as a multifaceted blend of knowledge, attitudes, and skills that individuals possess and are crucial for the effective functioning of an organization [19]. Competencies demonstrate the necessity for collaboration within and across organizations in managing readiness, response, and recovery efforts. Considering the current landscape of CBRNE threats and vulnerabilities in the healthcare system, a compilation of core competencies delineates the requisite knowledge, skills, and abilities for disaster preparedness and response among various hospital personnel. Applying these competencies in designing, implementing, managing, and evaluating disaster preparedness and response training programs will benefit hospitals [20]. While numerous studies on disaster preparedness and practices involve healthcare professionals in India and globally, limited research has explored the attitudes, knowledge, and abilities related to disasters among Indian physiotherapist health professionals [21].

METHODOLOGY

Search strategy

The search conducted on December 12, 2023, yielded a total of 584 results for articles or reviews of "Physical Therapists," "Physiotherapists," "Physical Therapy," "Physiotherapy," "Allied Health Professionals," "Paramedical," or "Paramedics" in combination with "Disaster Management" or "Disaster Health Management" and "Competencies" or "Competency." These results were limited to articles or review articles written in English.

Data extraction and visualization

The data extracted from the Web of Science (WoS) included information such as author names, article types, citations, country of origin, Digital Object Identifier (DOI), impact factors, journal names, affiliated institutions, keywords, sample sizes, study types, article titles, and publication years. These records were exported in text file format and subsequently summarized and analyzed using WPS Office (Version 11.2.0.9232; Kingsoft). All WoS database records were saved as text files and imported into VOSviewer (Version 1.6.13; Leiden University) for further analysis and examination.

RESULTS

Analysis of publication trends

The total findings amount to approximately 654, with document types categorized as follows: Articles - 503, Review Articles - 56, and the remaining 25 falling under other types. The search was confined to English-language articles only. Over the past decade, there has been a significant increase in the annual number of research articles focusing on Disaster Health Management and Competencies in Physiotherapy. The year 2022 recorded the highest number of publications, with 89 articles, while the lowest number was observed in 2014, with 22 articles. Additionally, the most citations were noted in 2022, with 89 citations observed each year (Figure 1 and Figure 2).

Figure 1: Number of publications in the last decade

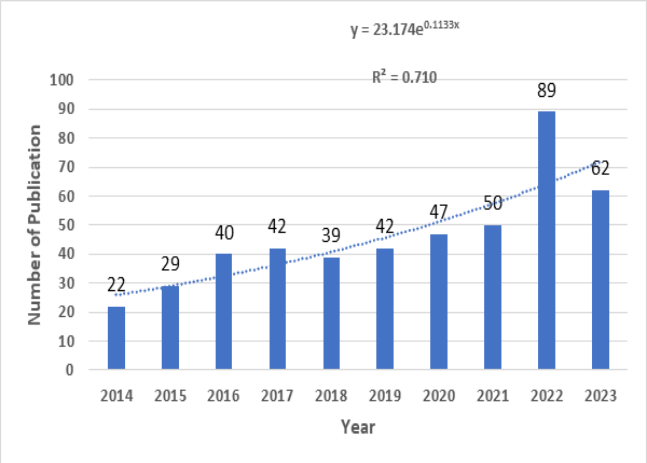


Figure 2: Sum of paper citations per year

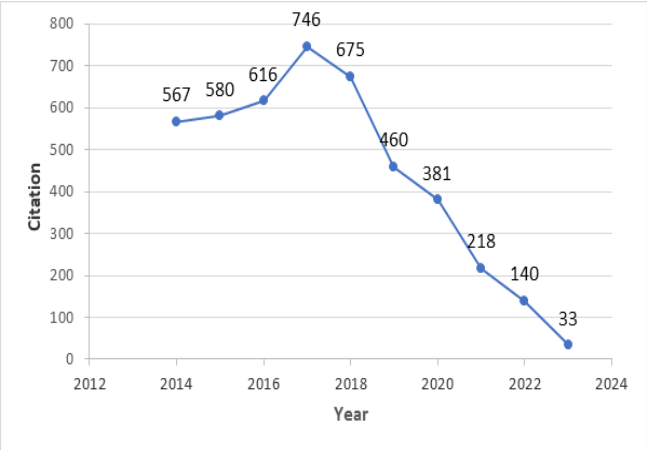


Figure 4: Global distribution of most publications

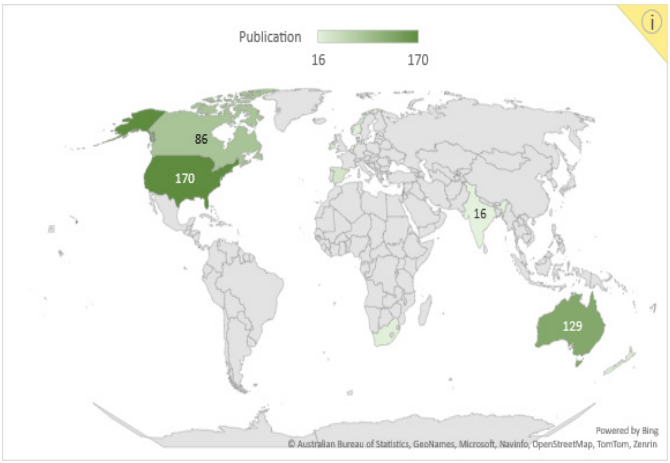


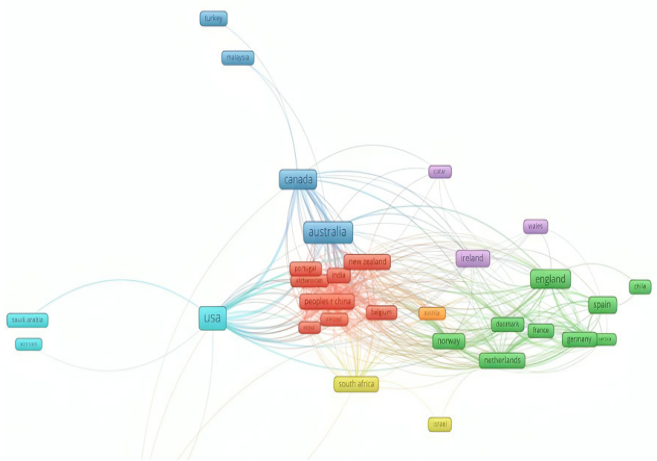
Table 1: Annual publication in the top 10 countries and regions

Country	Publication
USA	170
Australia	129
Canada	86
England	63
Spain	36
Ireland	32
Peoples R China	26
New Zealand	20
Norway	20
South Africa	19

Analysis of Country and Regions

From 2006 to 2022, there has been an annual increase in countries' worldwide contributions to publications. Publications originated from 67 nations (Figure 3), with the United States leading with 170 publications, followed by Australia (n = 129), Canada (n = 86), England (n = 63), and Spain (n = 36), as depicted in Table 1 (Figure 4). The countries with the greatest total link strength were the United States, which had 218 links; Canada, 173; and Australia, w 116 links.

Figure 3 Cluster maps of the global distribution of publication



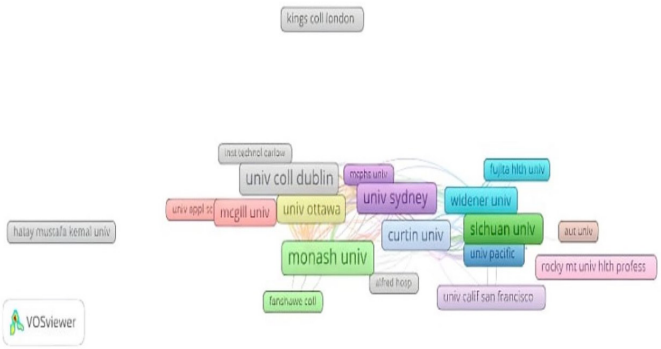
Analysis of Organizations.

Monash University featured prominently in publication with 19 papers and 343 citations, giving an average citation per year of 14. In second place is the University College Dublin, which published 15 papers with 314 citations and 1 year average citation. McMaster University completes the three with 12 papers, 75 cited papers, and an average of nine cited papers per year. Below is the list of the top ten organizations (Table 2) and their cluster map analysis. (Figure 5)

Table 2: presents the organizations most active in publication output and highest citation index.

Rank	Organization	Publica-tions	Citation	Average citation per year
1	Monash University	19	343	14
2	University College of Dublin	15	314	1
3	Mcmaster University	12	75	9
4	University Of Sydney	12	218	6
5	Curtin University	11	51	9
6	University Of Queensland	11	130	3
7	University Of Toronto	11	336	11
8	University Of British Columbia	9	141	1
9	University Of Ottawa	9	169	2
10	La Trobe University	8	94	2

Figure 5: Cluster maps analysis of organizations



Analysis of Author

Joseph Zorek leads the list of top authors with seven publications and 136 citations, averaging 19.43 per paper. Hans-Rudolf Ziswiler follows closely, with seven articles and a total of 58 citations, averaging 8.29 citations per paper. Below is the list of the top ten authors (Table 3).

Table 3: focuses on the top 10 authors published most frequently in the proceedings and cited most frequently by other authors.

Rank	Author	Publication	Citation	Average Citation of the Year
1	Zorek, Joseph	7	136	19.43
2	Ziswiler, Hans-Rudolf	7	58	8.29
3	Zilkens, Christoph	6	10	1.67
4	Zhou, Z.	5	29	5.80
5	Zhu, Quan	5	2	0.40
6	Zikan, Fernando Eduardo	5	0	
7	Zhou, Yujing	4	34	8.50
8	Zheng, Ai	4	14	3.50
9	Zheng, Yu	4	2	0.50
10	Zhou, Huiqing	4	2	0.50

Analysis of journals and most cited articles.

This research covered journal articles on Disaster Health Management and Competencies in Physiotherapy across 41 journals. The Physical Therapy journal put up the most significant number of articles of, 27, and total citations of 101, though the average citation by the articles it published, of 1.69, was relatively low among all the journals. The second most active was the Physiotherapy Canada journal, with twenty-one articles, one hundred and seven citations, and a mean citation rate of 5.1. Other elite journals in the ten are Physiotherapy Theory and Practice, Internet Journal of Allied Health Sciences and Practice, and BMC Medical Education. Here is the list of the top ten journals (Table 4).

The article "Knowledge, Practices, and Perceived Barriers of Physiotherapists Involved in Disaster Management: The study conducted among cross-sectional Nigeria-based and trained Physiotherapists was published in the International Health Scholar in 2021, received the most citations, followed by the papers listed below (Table 5).

Table 4: presents the rank list of top 10 journals basing on the most number of publications and citations.

Rank	Journal	Publications	Citations	Average citation per article
1	Physical Therapy	31	348	11.2
2	Physiotherapy Canada	21	107	5.1
3	Physiotherapy Theory and Practice	17	157	9.2
4	JAHSP (Journal of Allied Health Sciences and Practice)	14	19	1.4
5	BMC Medical Education	13	121	9.3
6	Journal Of Interprofessional Care	12	184	15.3
7	(IJERPH)	11	26	2.4
8	International Journal of Sports Physical Therapy	11	98	8.9
9	Nurse Education Today	10	290	29.0
10	Physiotherapy	10	79	7.9

Table 5: Top 10 articles with most citations

Rank	Title	Journal	Year	Citation	Reference
1	Paramedic Disaster Health Management Competencies: A Scoping Review	PREHOSPITAL AND DISASTER MEDICINE (PDM)	2019	416	Horrocks et al., 2019 [9].
2	Knowledge, practices and perceived barriers of physiotherapists involved in disaster management: a cross-sectional survey of Nigeria-based and trained physiotherapists	INTERNATIONAL HEALTH	2021	480	Ojukwu et al., 2021[22]but unfortunately information on the involvement of physiotherapists in DM is limited in sub-Saharan Africa. Methods: One hundred and fifty Nigeria-based and trained physiotherapists were recruited to complete a questionnaire investigating the knowledge, practices and perceived barriers of the role of physiotherapists in DM. Results: Physiotherapists had moderate knowledge of their role at every stage of DM. However, their involvement in specific DM-related activities during various stages of DM in the country was low. Major barriers to the involvement of physiotherapists in DM included a lack of established government policies on the integration of physiotherapists in DM (90.0%.

3	Evaluating digital competencies for allied health professionals in the United Kingdom	DIGITAL HEALTH	2023	193	Lee, et al., 2023 [23].as well as healthcare professionals, can access and interpret data in real-time, as well as providing trends in various clinical parameters including blood pressure for instance. Despite the aim of digital transformation in the National Health Service in the United Kingdom, this has not been fully realised and there is no consensus on the skills and competencies required for allied health professionals (AHPs
4	Promoting and achieving excellence in the delivery of Integrated Allergy Care: the European Academy of Allergy & Clinical Immunology competencies for allied health professionals working in allergy	CLINICAL AND TRANSLATIONAL ALLERGY	2018	164	Skypala et al., 2018 [24].bringing specific knowledge and skills related to the target patient population. The AHPs most often involved in allergy care are nurses and dietitians. Nurses are often involved in the care of patients with all types of allergy and also with asthma, whilst allergy-specialist dietitians provide vital nutritional and dietary support for the diagnosis and management of food allergy. There are many other AHPs who have a role to play in allergy care, including physiotherapists, psychologists, pharmacists and speech therapists, and their involvement is likely to develop as allergy care becomes more rooted in the community. With the development of multi-professional teams comes the requirement for disease-specific knowledge and skill sets, with all allergy team members required to have baseline knowledge and competency of the condition being managed. Whilst some competencies for AHPs practising in other disease states have been published, none are available for allergic disease against which AHPs can be benchmarked. The European Academy of Allergy & Clinical Immunology (EAACI
5	An argument for competency-based training in pelvic floor physiotherapy practice	PHYSIOTHERAPY THEORY AND PRACTICE	2019	153	Frawley et al., 2019 [25].\" affecting many people in the community yet under-recognized and insufficiently managed. There is evidence that pelvic floor physiotherapy can manage many of these disorders, however a competency framework to guide and inform pelvic floor physiotherapy training and practice is lacking. The assessment and management of the pelvic floor complex is not addressed as a core component of most entry-to-practice physiotherapy programs despite being within the scope of physiotherapy practice which is in contrast with the knowledge and skills that physiotherapists graduate with in core areas of clinical practice. This results in a registration-competency gap, and the need for post-graduation training to ensure clinicians are appropriately skilled to practice safely and effectively in this area. In addition, there are potential ethical and legal issues unique to this area of physiotherapy practice to be considered. We use a series of clinical scenarios to highlight the domains of knowledge, skills and communication required for practice in this area, based on our experience in Australia. We propose a framework for the future which defines competence in pelvic floor physiotherapy to provide clarity to clinicians about their clinical, ethical and legal obligations to the public, our referrers and third-party payers.\"\",\"author\":[{\"dropping-particle\":\"\",\"family\":\"-Frawley PG Cert Phty (Pelvic Floor
6	The LOvE ECHO Training: Developing a Web-Based LGBTQ Cultural Competency Training Module for Oncology Allied Health Professionals	JOURNAL OF ADOLESCENT AND YOUNG ADULT ONCOLOGY	2022	143	Block, et al., 2007 [26].
7	Cultural competency in physiotherapy: a model for training	PHYSIOTHERAPY	2007	139	O'Shaughnessy et al, 2007 [27].
8	Developing a core competency and capability framework for advanced practice physiotherapy: A qualitative study	PHYSIOTHERAPY THEORY AND PRACTICE	2023	137	Tawiah, et al., 2023 [28].implemented out of necessity in the absence of agreement as to the competencies and capabilities or formal education required for the roles. This study explores the views and perceptions of practitioners and key stakeholders on a draft competency and capability framework for advanced practice physiotherapists. OBJECTIVES: The purpose of this study was to: 1
9	Developing a National Consensus of the Physiotherapy Entry-Level Business and Practice Management Core Curriculum Competencies: A Delphi Study	PHYSIOTHERAPY CANADA	2024	121	Hopkins-Rosseel et al., 2023 [29].

10	A bibliometric analysis of statistical terms used in American Physical Therapy Association journals (2011-2012): evidence for educating physical therapists	BMC MEDICAL EDUCATION	2016	111	Tilson et al., 2016 [30].

Analysis of Keywords.

The table presents the co-occurrence of keywords significantly associated with one another. Additionally, Figure 6 illustrates the cluster diagram for these keywords, including clusters such as education, physiotherapy, physical therapy, competency, etc. The top 10 keywords, frequency, and total strength are presented below, accompanied by their cluster map analysis (Table 6) (Figure 6).

Figure 6: Cluster map analysis of highly cited keywords

Table 6 Top 10 most cited keywords and their total link strength

Keyword	Occurrences	Total link strength
Education	56	125
Physiotherapy	46	103
Physical therapy	39	102
Competency	34	72
Interprofessional education	25	45
Rehabilitation	23	49
Cultural competency	22	35
Curriculum	18	47
Emergency medical services	18	38
Students	18	38

DISCUSSION AND FEATURE PERSPECTIVE

According to UNISDR, disaster is a serious disruption of the functioning of a community or society that involves widespread human, material, economic, or environmental losses and impacts and exceeds the ability of society and community to respond and recover by using its resources [31,32]. The most common hazardous events globally include earthquakes, cyclones/windstorms, epidemics, industrial accidents, and transportation crashes. Technological and environmental catastrophes annually strike 190 million people directly and take over 77 thousand lives [33]. Conflict also affects an extra 172 million people [34]. Hitting hard, between 2012 and 2017, WHO reported 1,200 outbreaks of taint in 168 countries, some due to new, resurfacing infectious diseases. According to an analysis, more than 2.6 billion people experienced over 8,500 natural disasters over the last 20 years [35]. The WHO monitored 352 more infectious diseases in 2018, including Middle East respiratory syndrome coronavirus (MERS-CoV) and Ebola virus disease [36]. India also experiences a high risk of disasters, similar to other nations, due to its geographical position and climate. India is the seventh largest geographical country in the world, with an estimated total geographical area of 3,287,240 square kilometers as per 2011 census. Out of 36 legal persons comprised of twenty-eight states and eight union territories, twenty-five states and union territories are presumed vulnerable to natural disasters. Structural vulnerabilities include earthquakes, floods, cyclones, tsunamis, landslides, and avalanches, which threaten India. It is estimated that 59% of the country's area is vulnerable to affectation by earthquakes, 12% by floods, 76% of the coast is prone to cyclones and tsunamis, 68% of agricultural land by drought, and the hilly areas by landslides and avalanches are also common [37]. The escalation of illnesses and natural disasters is attributed to the overuse of natural resources, global warming, and relentless urbanization [37]. The UN Office for Disaster Risk Reduction reports that as many as 321 disasters have been natural, which cost about 79,732 lives and affected over 108 crore people in the country [18,37]. The current COVID-19 pandemic, with its high community transmission rate and deeply connected world, has caused many fatalities and has been difficult to combat, calling for efficient disaster risk management at a global level [38,39]. Sendai Framework for Disaster Risk Reduction (SFDRR) and Sustainable Development Goals (SDG-13) highlight the potential development of healthcare to avert disasters and procurement of necessary services and infrastructure, water, food, drugs, electricity, and communication.Physical therapists (PTs) and their colleagues in rehabilitation are increasingly playing a vital role in humanitarian responses at individual, organizational, and global levels [23,40–42]. They participate in all stages of the disaster cycle, including disaster prevention, immediate intervention, re-establishment, and recovery [32]. Being closely knowledgeable about the injury processes and other health problems that may result from disasters; PT services are vital in emergency planning, response, and recovery. Following Minimal Technical Standards & Recommendations for Rehabilitation by the World Health Organization, PTs & PTAs can contribute to the decision-making process of sorting the patients & performing the following interventions – Spinal cord injury, amputations,

head Injury, fractures, burns & peripheral nerve injury. They can provide therapies that help to reduce the load on the ICU during a time of high patient volume. PTs and PTAs can also reduce the demand for beds or the need for patients to use devices such as ventilators. Additionally, as mobility specialists, they can address accessibility issues, particularly concerning older adults or people with disabilities who use assistive devices or require assistance moving during evacuations and migrations to displacement facilities. Other aspects as highlighted by the WCPT 2016 report held in London hold that PTs and PTAs are also useful in handling or preventing the orthopedic strains among other emergency staff [43,44]. Competencies refer to the measurable, trainable knowledge, abilities, and attitudes required to perform professional tasks [38,45]. They encompass a set of behaviors comprising knowledge, abilities, character traits, and attitudes, which are measurable, observable, and identifiable [46]. Educational academic institutions, hospitals, professional associations, governments, and non-governmental organizations have designed educational programs that prepare healthcare systems and their personnel to meet the health necessity of populations that disasters have influenced. Unfortunately for staff of the disaster healthcare organization, many organizations/institutions have defined activities that have been considered as 'core competencies.' As it has been observed, there is usually no resource material/ guideline for best practices [47]. Effective readiness, response, and recovery management necessitates internal and external collaboration among organizations, reflected in core competencies. However, the specific skills physiotherapists require in disaster health management are not clearly defined [48]. Most research on physiotherapist competencies has focused on established practice areas such as orthopedics, with limited literature on skills for emerging practice areas such as disaster assistance [45,49].

Strength and limitations

Several limitations are present in this study. Firstly, we restricted our search to the SCI-E of the Web of Science core collection due to variations in database characteristics such as citation counts and export formats. Secondly, as the Web of Science database predominantly indexes papers in English, English-language papers comprised 98% of those included in our analysis. Consequently, valuable studies published in other languages may have been overlooked. Thirdly, recent high-quality publications may have garnered limited attention due to low citation frequency. At the same time, older works may have accumulated more citations, potentially skewing the perceived importance of more recently released articles. Thus, readers should consider these factors as potential sources of bias in our results.

CONCLUSION

This study provides an overview of general information, research hotspots, and trends in disaster health management and physiotherapy competencies. The current research indicates rapid progress in studying Disaster Health Management and Competencies in Physiotherapy, highlighting the need for enhanced cooperation among researchers, institutions, and countries. In densely populated countries such as India, having an adequate number of medical and allied health professionals, including physiotherapists, is essential for effectively dealing with and managing health disasters. Identifying their competencies and improving their skills are valuable assets for these nations to respond effectively to disasters. However, no surveys or policies have been implemented in India or other countries to assess the competencies of physiotherapists and enhance their skills for utilization in emergency medical teams.

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Author contributions: JS, AC, and RR were responsible for data acquisition, manuscript writing, and editing. JS and AC conceptualized the paper. RR and AC supervised and edited the manuscript. All authors have read and approved the final manuscript.

REFERENCES

[1] WHO. Risk reduction and emergency prepareedness : WHO six-year strategy for the health sector and community capacity development. 2007.

[2] Kumar A. Disaster and Strategy to Respond. SSRN Electron J. 2014;1–5.

[3] Mishra M. Global Environmental Changes and Disaster Management for Sustainable Life on Earth – A Burning Issue. 2014;2(6):314–7.

[4] WHO, Geneva. Community Emergency Preparedness: A Manual for Managers and Policy-Makers. 1999;(ISBN 92 4 154519 4.).

[5] Government of India. National Policy on Disaster Management. Ophthalmologica [Internet]. 2005;180(1):1–53. Available from: http://ndmindia.nic.in/NPDM-101209.pdf

[6] Wirtz A, Below R. Working paper Disaster Category Classification and peril Terminology for Operational Purposes. Context [Internet]. 2009;(October):1–20. Available from: cred.be/sites/default/files/DisCatClass_264.pdf

[7] Lerner M. Alternative Classification Schemes for Man-Made Hazards in the Context of the Implementation of the Sendai Framework. PreventionWeb [Internet]. 2016;(June). Available from: http://goo.gl/PFA5lw

[8] UNISDR. Words into action guidelines: Implementation guide for man-made and technological hazards. 2018;62. Available from: www.unisdr.org

[9] Horrocks P, Hobbs L, Tippett V, Aitken P. Paramedic disaster health management competencies: A scoping review. Prehosp Disaster Med. 2019;34(3):322–9.

[10] Al-Jazairi AF. Disasters and Disaster Medicine. In: Essentials of Accident and Emergency Medicine.

2017. p. 1–25.
[11] Perry RW. What Is a Disaster? In: Handbook of Disaster Research [Internet]. New York, NY: Springer New York; 2007. p. 1–15. Available from: https://doi.org/10.1007/978-0-387-32353-4_1
[12] Chimed-Ochir O, Amarsanaa J, Yumiya Y, Kayano R, Kubo T. Impact of Covid-19 in Health Emergency and Disaster Risk Management System: Healthcare Workforce Management in Covid-19. Prehosp Disaster Med. 2023;38(S1):s203–s203.
[13] Amatya B, Khan F, Racp F. Disaster Response and Management : The Integral Role of Rehabilitation. 2023;47(4):237–60.
[14] Trivedi N, Rathod PV, Rathod P. Physiotherapy in Disaster Management: Preliminary investigation. 2016;(June 2018). Available from: https://www.researchgate.net/publication/325813452
[15] Farroq A., Rathore, Gosney , Jan D.Reinhardt, AndrewJ.Haig JAD. Medical Rehabilitation After Natural Disasters,Why, When,.pdf. Arch Phys Med Rehabil. 2012;93.
[16] World Health Organization. Health Emergency and Disaster Risk Management: Overview [Internet]. Health Emergency and Disaster Risk Management Fact Sheets. 2019. 48 p. Available from: https://www.who.int/hac/techguidance/preparedness/health-emergency-and-disaster-risk-management-framework-eng.pdf?ua=1
[17] Krishnan S, Patnaik I. Health and Disaster Risk Management in India. 2020;(241):155–84.
[18] Sharma J, Rastogi R. Review On Healthcare Disaster Preparedness And Resilience. 2021;18(6):2532–49.
[19] Hsu EB, Thomas TL, Bass EB, Whyne D, Kelen GD, Green GB. Healthcare worker competencies for disaster training. BMC Med Educ. 2006;6:1–9.
[20] Department of Health, Division of Emergency Medical Operations FS. Recommended Disaster Core Competencies for Hospital Personnel. In: Florida department of Health website. 2011.
[21] Bhandari S, Wahl B, Bennett S, Engineer CY, Pandey P, Peters DH. Identifying core competencies for practicing public health professionals: results from a Delphi exercise in Uttar Pradesh, India. BMC Public Health. 2020;20(1):1–11.
[22] Ojukwu CP, Eze OG, Uduonu EM, Okemuo AJ, Umunnah JO, Ede SS, et al. Knowledge, practices and perceived barriers of physiotherapists involved in disaster management: A cross-sectional survey of Nigeria-based and trained physiotherapists. Int Health. 2021;13(6):497–503.
[23] Lee G, Caton E, Knight A. Evaluating digital competencies for allied health professionals in the United Kingdom. Digit Heal. 2023;9:20552076231176656.
[24] Skypala IJ, de Jong NW, Angier E, Gardner J, Kull I, Ryan D, et al. Promoting and achieving excellence in the delivery of Integrated Allergy Care: the European Academy of Allergy & Clinical Immunology competencies for allied health professionals working in allergy. Clin Transl Allergy. 2018;8:31.
[25] Frawley PG Cert Phty (Pelvic Floor), PhD, FACP HCPT, Neumann PhD, FACP PPT, Delany PhD, Masters Hlth and Med Law, Masters physio (Manips) CPT. An argument for competency-based training in pelvic floor physiotherapy practice. Physiother Theory Pract. 2019 Dec;35(12):1117–30.
[26] Block RG, Sampson A, Gagliardi J, Augusto B, Santiago-Datil W, Schabath MB, et al. The LOvE ECHO Training: Developing a Web-Based LGBTQ Cultural Competency Training Module for Oncology Allied Health Professionals. J Adolesc Young Adult Oncol. 2022 Dec;11(6):556–63.
[27] O'Shaughnessy DF, Tilki M. Cultural competency in physiotherapy: a model for training. Physiotherapy. 2007;93(1):69–77.
[28] Tawiah AK, Stokes E, Wieler M, Desmeules F, Finucane L, Lewis J, et al. Developing a core competency and capability framework for advanced practice physiotherapy: A qualitative study. Physiother Theory Pract. 2024 Jul;40(7):1477–91.
[29] Hopkins-Rosseel D, Yardley D, Turnnidge J, Dalgarno N, Kolomitro K. Developing a national consensus of the physiotherapy entry-level business and practice management core curriculum competencies: a delphi study. Physiother Canada. 2023;e20220054.
[30] Tilson JK, Marshall K, Tam JJ, Fetters L. A bibliometric analysis of statistical terms used in American Physical Therapy Association journals (2011-2012): evidence for educating physical therapists. BMC Med Educ. 2016 Apr;16:118.
[31] UNISDR. Disaster Risk and Resilience Thematic Think Piece. United Nations Int Strateg Disaster Reduct. 2012;(May).
[32] WCPT. The role of physical therapists in disaster management. World Confed Phys Ther Rep [Internet]. 2016;(March):1–78. Available from: https://www.wcpt.org/sites/wcpt.org/files/files/resources/reports/WCPT_DisasterManagementReport_FINAL_March2016.pdf
[33] World disasters report 2016: Resilience: saving lives today, investing for tomorrow. Geneva; 2016.
[34] People affected by conflict – humanitarian needs in numbers. Brussels; 2013.
[35] Hazards of Nature, Risks to Development. 2005.
[36] Ngom R, Gueye AS, Lassieur S, Oloo S, Shahid R, Mize V, et al. Five decades of infectious diseases outbreaks in the African region (1970–2018) a geographic snapshot. Soc Sci Humanit Open [Internet]. 2023;8(1):100625. Available from: https://www.sciencedirect.com/science/article/pii/S2590291123002309
[37] NIDM. TOT Module for Preparation and Implementation of Hospital Disaster Management Plan Focus on Emergency Health Services. 2014;(January).

[38] Hsu EB, Thomas TL, Bass EB, Whyne D, Kelen GD, Green GB. Healthcare worker competencies for disaster training. 2006;9:1–9.
[39] NDMA. National Disaster Management Plan National Disaster Management Authority Ministry of Home Affairs Government of India [Internet]. 2019. Available from: https://ndma.gov.in/sites/default/files/PDF/ndmp-2019.pdf
[40] Norton I, von Schreeb J, Aitken P, Herard P LC. Technical criteria for classification and minimum standards for Foreign Medical Teams (FMTs). 2013;
[41] Reinhardt JD, Li J, Gosney J, Rathore FA, Haig AJ, Marx M et al. GHA. Disability and health-related rehabilitation in international disaster relief. 2011;4.
[42] Sphere Project. The Sphere Project. Humanitarian Charter and Minimum Standards in Humanitarian Response. 2011.
[43] APTA. The Role of the PT and PTA in Disaster Management. APTA Website [Internet]. 2020; Available from: https://www.apta.org/patient-care/public-health-population-care/emergency-preparedness/role-of-pt-disaster-management
[44] Therapists P, Role V, Waldrop BS, Eskew R, Disasters C. APTA | Physical Therapists' Vital Role in Disaster Management APTA | Physical Therapists' Vital Role in Disaster Management Page 2 of 5. Am Phys Ther Assoc. 2008;10(6):1–5.
[45] Scodras S, Alsbury K, Heather N, Yeung E, Jaglal SB, Salbach NM. Methodological approaches for identifying competencies for the physiotherapy profession : a scoping review. Discov Educ [Internet]. 2022; Available from: https://doi.org/10.1007/s44217-022-00008-9
[46] SAXENA S, GUJRAL HK, PATHAK S. A study of Competency-based Approach to Identify High Performers among Disaster Management Professionals. Stud Appl Econ. 2022;40(S1).
[47] Daily E, Padjen P, Birnbaum M. A review of competencies developed for disaster healthcare providers: Limitations of current processes and applicability. Prehosp Disaster Med. 2010;25(5):387–95.
[48] Wittmeier K, Parsons J, Webber S, Askin N, Salonga A. Operational considerations for physical therapy during covid-19: A rapid review. Phys Ther. 2020;100(11):1917–29.
[49] Khan F, Amatya B, Lee SY, Vasudevan V. Rehabilitation in Disaster Relief. Phys Med Rehabil Clin N Am. 2019;30(4):723–47.