SYSTEMATIC REVIEW

Components and entities of post-disaster damage and loss assessment program in healthcare sector: a scoping review

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Abstract

Background Disasters can cause casualties and significant financial loss. In accordance with the Sendai Framework for Disaster Risk Reduction, areas affected by disasters must be built back better. Accurate post-disaster damage and loss assessments are critical for the success of recovery programs. This scoping review aimed to identify the components and entities of the healthcare sector's post-disaster damage and loss assessment program.

Methods An comprehensive search for relevant literature was performed using several databases, including the Web of Science, PubMed, Scopus, ProQuest, and Magiran. The search was limited to papers published between 2010 and 2022. In addition, we searched the grey literature for resources related to post-disaster damage and loss assessments. Study selection and data extraction were evaluated by a third reviewer. The main themes were determined through a consensus process and agreement among team members.

Results A total of 845 papers were identified, 41 of which were included in the review. The grey literature search yielded 1015 documents, 23 of which were associated with the study's purpose. The findings were classified into five main themes, 20 subthemes, and 876 codes. The main-themes include the following: Concepts and Definitions; Post-Disaster Damage and Loss Assessment Procedures; Healthcare sector procedures; Assessments Tools, and Methods; Intra-sectoral, Inter-sectoral, and cross-cutting issues.

Conclusions The existing corpus of literature on post-disaster damage and loss assessment programs within the healthcare sector offers only limited insights into the entities and components involved. It is of great importance that stakeholders have an extensive grasp of these pivotal concepts and principles, as they are fundamental in enabling effective responses to disasters, informed decision-making, and facilitating rehabilitation and reconstruction efforts. Consequently, there is a considerable scope for further investigation in this area.

Scoping review registration number https://osf.io/nj3fk.

Keywords Disasters, Damage, Loss, Assessment, Healthcare sector, Health planning

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Introduction

The most significant consequences of disasters are health impacts that occur in the aftermath [1]. Natural disasters such as earthquakes and floods not only have a detrimental impact on an individual's health but also result in significant damage to the healthcare sector, reducing its capacity to respond and recover effectively. This, in turn, leads to a rise in mortality and morbidity rates [2, 3]. Disasters directly damage the physical structure of hospitals, clinics, and healthcare centers and indirectly affect the health sector by destroying community infrastructure, such as water, electricity, fuel, transportation, and communication systems. Additionally, disasters can impact healthcare providers and their families [4, 5].

Providing essential health services is challenging during disasters because of infrastructure failure and the inefficiency of healthcare centres [6]. It is evident that the health centres play a pivotal role in alleviating the negative consequences that arise in the aftermath of disasters. Therefore, it is of paramount importance to ensure the uninterrupted functioning of this vital infrastructures [7–9]. Comprehending the health consequences of disasters provides the basis for identifying demands, improving capacity, and providing opportunities for reconstruction and future disaster risk reduction [10].

The convergence of four seminal accords on disaster risk reduction, development finance, sustainable development, and climate change at the end of 2015 presented a singularly promising opportunity to achieve coherence across related policy domains. The Sendai Framework for Disaster Risk Reduction represents the global policy framework of the United Nations from 2015 to 2030. This represents a significant advance in global policy coherence concerning health, development, and climate change [11–13]. One of the principal objectives of the Sendai Framework is to enhance disaster preparedness for an effective response and "build back better"(BBB) in recovery [14].

The scope of disaster recovery is broader than that of response. In the context of the health system, recovery is defined as the reconstruction, restoration, and upgrading of the components of a country's health sector and the main functions of public health, in accordance with the BBB principle and the goals of sustainable development [15]. For an optimal reconstruction, it is necessary to develop a legal, technical, and comprehensive framework. The success of a reconstruction program depends on an accurate assessment of the damage, loss, and needs of the post-disaster area to determine the approaches, goals, priorities, and measures required for reconstruction [2].

The post-disaster reconstruction of the health system in developing countries is hindered by some factors, including a lack of knowledge and expertise, limited budget and planning, political competition, fraud, and embezzlement or misuse of social benefits [3, 16]. Considering the argument of 'humanitarian ignorance', In light of the argument put forth by scholars who refer to this phenomenon as "humanitarian ignorance," [17], it can be argued that this "knowledge" does exist and that it is purposeful ignorance of said knowledge.

In 2008, the European Union, World Bank, and United Nations Development Group implemented a standard post-disaster assessment approach and developed a comprehensive and collaborative post-disaster assessment program [18]. In damage and loss assessments, experts in each sector calculate post-disaster damage and loss, which are essential in reconstruction programs [19, 20].

Chapin et al. (2009) studied the impact of the 2007 Ica earthquake on healthcare facilities in southern Peru. They reported that after an earthquake of magnitude 7.9 in Peru, 60% of the health centers in the region were affected to the degree that they were unable to provide client services. This study revealed that reports of damage assessments in a single disaster were sometimes not the same [21]. Achour et al. (2020) evaluated hospital performance after the 2016 Kumamoto Earthquake in Japan. Data analysis revealed that the impaired function of some healthcare centers in the affected areas significantly affected the health needs of the local communities [22].

Similar to other social sectors, the disaster impacts on the healthcare sector is considerable and is one of the concerns of managers and experts in the healthcare sector. In light of the pivotal role of the health sector in post-disaster response and recovery, as well as in the development of a post-disaster reconstruction program, it is crucial to conduct a thorough assessment of damage and losses incurred following a disaster. A post-disaster damage and loss assessment in the health sector can serve as a foundation for the creation of a coherent and integrated framework for health reconstruction. The absence of a post-disaster damage and loss assessment program may result in certain requirements being overlooked, the results of which are not deemed acceptable, facilities being allocated on a non-prioritized basis, and there being no basis for monitoring the implementation of plans and activities. Assessment is a demanding and decisive management task that is effective in decision-making, planning, monitoring, handling a program, and taking coherent actions. Post-disaster damage and loss assessment has a direct impact on decision-making, planning, monitoring of responses, and the implementation of recovery operations. Consequently, these assessments must be purposeful and scheduled.

Review objective and research questions

This scoping review was conducted to identify the entities and components of post-disaster damage and loss assessment programs in the healthcare sector. The PCC framework, which includes the participants, concepts, and context recommended by the Joanna Briggs Institute, was used to develop the research question [23]. The research question for this scoping review is as follows: what information is available about the entities and components of the healthcare sector's post-disaster damage and loss assessment program?

Methods

A knowledge gap exists in the field of post-disaster damage and loss assessment in the healthcare sector. To address this issue, the most appropriate methodology for achieving the study's objective was identified as a scoping review. This systematic scoping review was conducted under the proposed Joanna Briggs Institute method [24]. The study included the following steps: defining and aligning the research objectives and questions, developing the inclusion and exclusion criteria, describing the planned approach to the evidence search, study selection, data extraction, presentation of the evidence, searching for evidence, selecting the evidence, extracting the evidence, analyzing the evidence, presenting the results, and summarizing the evidence [23]. The study protocol was registered in the Open Science Framework on 4 June 2022 [25] and was published in BMJ Open [26]. The Preferred Reporting Items for Systematic Reviews extension for Scoping Reviews (PRISMA-ScR Checklist 1) [27] checklist was used to report the results of this scoping review.

Inclusion and exclusion criteria

In keeping with the scoping review methodology, our inclusion criteria (Table 1) were broad, and our search was comprehensive in capturing the entities and components of the healthcare sector's post-disaster damage and loss assessment program. We included literature reviews, primary empirical articles, case studies, opinion pieces, and editorials published in English or Persian "due to geographical focus, and researcher language skills". In addition, grey literature related to the study objective, including dissertations, organizational documents, post-disaster assessment reports, and guidelines, was searched and reviewed. Table 2 presents a distribution of studies by location, organization, and document type.

Search strategy

The search strategy was drafted with the help of an experienced informaticist librarian and was further refined through team discussion. Initially, a primary search was conducted on the Google Scholar, PubMed, World Bank, and PreventionWeb websites. The following concepts were extracted from the documents: post-conflict consequences in health systems, disaster impacts on the healthcare sector, post-disaster damage and loss assessment, post-earthquake hospital functionality, post-disaster damage and loss assessment, disaster damage, operational status of healthcare facilities during a hurricane, and the impacts of extreme events. An appropriate search strategy was used for each database (Table 3).

Study selection

We searched all English and Persian articles published from 2010 to 2022 on the Web of Science, PubMed, Scopus, ProQuest, Google Scholar, and Magiran databases. Our search started on 20 January 2022. The search results were imported into Endnote X9 software. After removing the duplicates, J. Miri checked all the remaining titles to remove unrelated documents. The titles and abstracts of the remaining articles were independently examined by two authors (J. Miri and A.R. Raeisi) to reach a common understanding of the selection criteria, discussion of disagreements, and definition of the inclusion and exclusion criteria. The remaining articles were uploaded to Rayyan software to facilitate record screening. The full texts of articles whose abstracts did not meet the exclusion criteria or were ambiguous were reviewed. Discrepancies in inclusion or exclusion decisions were resolved through discussion (G. Atighechian). Finally, the reference lists were checked to identify relevant studies. In the grey literature search, researchers also investigated organizations' websites related to disaster management, such as

Table 1 Inclusion and exclusion criteria

Category	Inclusion criteria	Exclusion criteria
Context	post-disaster	
Concept	Healthcare sector, Damage and loss assessment, Disasters consequences	All other concepts
Types of evidence source	Peer-reviewed publications, grey literature, governmental reports, policy documents	Editorials/commentaries, letters, conference abstracts
Publication year	Publication years 2010–2022	Before 2010 and after the updated search
Language	English or Persian language	All other languages

Table 2 Distribution of studies by location, by organisation and by type of document

NO	Year	Location/publisher	Type/method
1	2021	IRAN	Policy document
2	2019	IRAN	Policy document
3	2014	ECLAC	Guideline
4	2010	World Bank	Guideline
5	2010	World Bank	Guideline
6	2010	World Bank	Guideline
7	2020	GFDRR	Guideline
8	2017	World Bank	Guideline
9	2010	UNDP	Guideline
10	2014	ECLAC	Guideline
11	2003	ECLAC	Guideline
12	2020	WHO	Guideline
13	2018	GRADE	Guideline
14	2014	GRADE	Guideline
15	2015	UNISDR	Guideline
16	2013	GRADE	Guideline
17	2018	INDIA	Book chapters
18	2015	France	Original research
19	2012	USA/Chile	Research Article
20	2018	China	Original research
21	2014	Iraq	Analytical Study
22	2017	Haiti	Original research
23	2017	Bangladesh/ Japan	literature review
24	2014	Lithuania	Original research/Conference
25	2019	Hungary/China	Original research
26	2020	United States	systematic review
27	2011	United States	Special Focus
28	2021	Iran	Original research
29	2020	USA	Review article
30	2019	Nepal	Review article
31	2020	Puerto Rico	Original Research
32	2020	Pakistan	case study
33	2019	Malaysia	Preliminary Study
34	2012	China	Original research
35	2015	EU	A Science and Policy Report
36	2018	Nepal	Research Article
37	2020	USA	Original research
38	2014	Japan	Brief report
39	2016	Japan	Original research
40	2013	Iran	Retrospective Survey
41	2012	Sweden	invited editorial
42	2020	Iran	Research Article
43	2015	Brazil	Descriptive study
44	2013	UK	mix methods
45	2017	Nepal	case study
46	2018	Nepal	Lessons from the field
47	2020	Japan	Research Paper
48	2012	Iran	Grounded Theory
49	2014	USA	Special report
50	2017	Italy	Lessons Learnt
51	2014	Japan	Original research
52	2017	Japan	Brief report
53	2013	USA	Special Article

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Table 2 (continued)

NO	Year	Location/publisher	Type/method
54	2012	New Zealand	Conference paper
55	2012	New Zealand	Review
56	2020	USA	Viewpoint
57	2014	Japan	Brief report
58	2011	Vietnam	Review
59	2020	Albania	Report
60	2020	Lebanon	Report
61	2019	India/Odisha	Report
62	2021	GAZA	Report
63	2019	Iran	Report
64	2015	Nepal	Report
65	2015	USA	Thesis

Table 3 Search strategy

Database	Search Syntax	results
PubMed	((((Disaster*[Title/Abstract]) OR ("Disasters"[Mesh])) AND ((((("Health Care Sector"[Mesh]) OR "Health Care Facilities, Manpower, and Services"[Mesh]) OR (Health Care Facilities[Title/Abstract])) OR (Health Care Sector[Title/Abstract]))) AND (((Assessment[Title/Abstract]) AND (Damage[Title/Abstract])) AND (Loss[Title/Abstract]))) OR (((Conceptual model[Title/Abstract]) OR (Reconstruction[Title/Abstract])) AND (post-disaster[Title/Abstract])) AND ((2011:3000/12/12[pdat]) AND (English[Filter]))	**61**
Web of Science	1= ((((((((TS= (Healthcare Sector)) OR TS= (Health Care Sectors)) OR TS= (Health Care System)) OR TS= (Healthcare System)) OR TS= (Healthcare Industry)) OR TS= (Health Care Industry)) OR TS= (Health Care Facilities)) OR TS= (Healthcare Facilities)) OR TS= (Healthcare Market)) AND (PY= ("2022" OR "2021" OR "2020" OR "2019" OR "2018" OR "2017" OR "2016" OR "2015" OR "2014" OR "2013" OR "2012" OR "2011" OR "2010")) = **241718** 2=((((TS=(Disaster*)) OR TS=(POST-conflict*)) OR TS=(Post-Disaster*)) OR TS= (Disaster impact) OR TS= (Disaster consequence) and 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014 or 2013 or 2012 or 2011 or 2010 (Publication Years)) = **70,944** 3=(((ALL=(Reconstruction)) OR ALL=(Damage)) OR ALL=(loss)) AND ALL=(Assessment) and 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014 or 2013 or 2012 or 2011 or 2010 (Publication Years) = **136,125** 4= #3 AND #2 AND #1 = **41**	**41**
ProQuest	TOPIC: (Damage and Loss Assessment) OR TOPIC: (Health Sector) OR TOPIC: (Disaster*) OR TOPIC: (Healthcare facilities*) OR TITLE: (Reconstruction) OR TOPIC: (Disaster impact) OR TOPIC: (Building Back Better) OR TOPIC: (Recovery) (Topic) Refined by: and Review Articles or Articles (Document Types) and 2019 or 2018 or 2020 or 2021 or 2017 (Publication Years) and Web of Science Core Collection or MEDLINE® (Database) and Health Care Sciences Services (Research Areas)	**521**
Scopus	(TITLE-ABS-KEY (disaster*) AND KEY (damage) AND KEY (loss) OR TITLE-ABS-KEY (healthcare AND facilities) AND KEY (planning*) OR TITLE-ABS-KEY (impact) OR TITLE-ABS-KEY (consequences)) AND PUBYEAR > 2011 AND (LIMIT-TO (LANGUAGE, "English"))	**184**
Magiran	TOPIC: (Damage and Loss Assessment) OR TOPIC: (Health Sector) OR TOPIC: (Disaster*) OR TOPIC: (Healthcare facilities*) OR TITLE: (Reconstruction) OR TOPIC: (Disaster impact) OR TOPIC: (Building Back Better) OR TOPIC: (Recovery) (Topic) Refined by: and Review Articles or Articles (Document Types) and 2019 or 2018 or 2020 or 2021 or 2017 (Publication Years) and Web of Science Core Collection or MEDLINE® (Database) and Health Care Sciences Services (Research Areas)	**152**

the UNDP, World Bank, UNDRR, International Recovery Platform, PreventionWeb, WHO, and FEMA. (Fig. 1)

Data extraction

Supplementary Tables 1 and 2 show the characteristics of the articles and grey literature discussed in this study. General information (title, authors, publication year, study location, and key findings) regarding the questions addressed in this scoping review was extracted from the selected studies. Two independent reviewers extracted all relevant information and any discrepancies were resolved through discussion.

Data analysis and presentation

The documents were organized and analyzed by the researchers using the MAXQDA 2020 software. The data analysis strategy employed at this juncture was a thematic analysis approach. Thematic analysis is a valuable approach for elucidating experiences, thoughts, or behaviors within a data set. Additionally, researchers have proposed that thematic analysis is an optimal analytical method for novice qualitative researchers due to its transparent and straightforward procedures [28, 29].
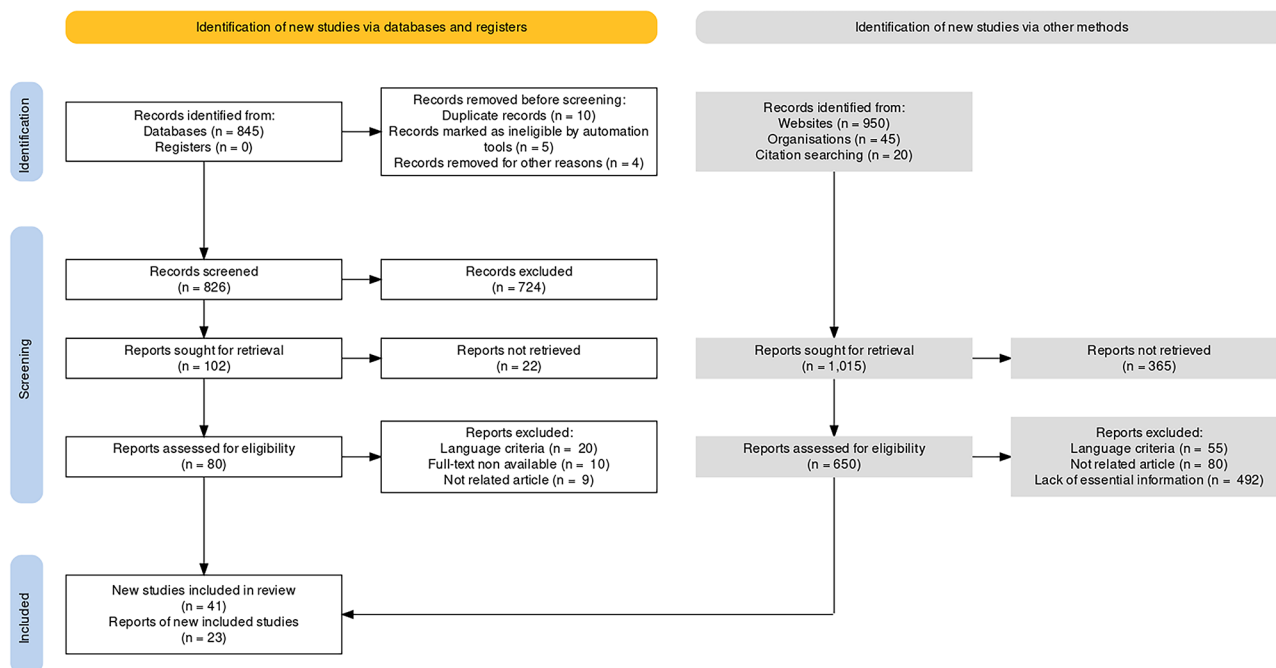
Fig. 1 PRISMA flow diagram of the scoping review process. Adapted from the PRISMA 2020 flow diagram from Page et al. [47].

Results

The search of the related electronic databases led to the identification of 845 articles. After removing the duplicates, 826 studies remained. The titles were screened, and 102 potentially eligible articles were selected. The simultaneous title and abstract review by two independent reviewers led to the selection of 80 articles that were uploaded to Rayyan software. Finally, 41 articles were selected for full-text review. The grey literature search identified 1015 documents, reports, manuals, and guidelines based on the inclusion and exclusion criteria and the study objectives, and 23 documents were selected for review.

Researchers have classified resources into five categories: articles, books, dissertations, policy documents, and reports. Studies have been conducted in different countries, half of which have been published in the last five years. The findings were categorized into five main themes, 20 subthemes, and 876 codes according to the research objectives and questions. The main themes, subthemes, and some related codes are presented in (Table 4).

Discussion

This study provides a comprehensive perspective on post-disaster damage and loss assessment in the healthcare sector. To achieve a common understanding of post-disaster damage and loss assessment in the healthcare sector, the researchers first collected definitions and related concepts. Then, organized concepts related to damage and loss assessment teams, damage and loss assessment stages, data collection elements, assessment tools, and programs. The paper concludes with a discussion of the linkages between the healthcare sector and other sectors affected by disasters.

The health system comprises a wide range of organizations, institutions, groups, and individuals in governmental and nongovernmental sectors that policy, produce resources, finance, and provide health services to restore, promote, and maintain public health [30]. According to the WHO framework, the health system comprises six building blocks; service delivery, health workforce, information, medical products, vaccines and technologies, financing, leadership, and governance [31, 32]. The realization and promotion of community health and fair cooperation in providing resources are crucial goals of the health system and are considered fundamental in most countries [33].

The continuity of services is critical in some businesses, such as those in the healthcare sector. However, these trends can be disrupted by disasters [34]. Achour et al. (2020) evaluated hospital performance after the 2016 Kumamoto Earthquake in Japan. The occurrence of this event resulted in a disruption to the continuity of healthcare services. The investigation revealed that the primary causes of the disruption were damage to the infrastructure, including buildings, critical systems, and medical equipment. The results of the study indicated a 15% reduction in healthcare functionality in the affected regions [22]. In the study by Gufue et al. (2024), the direct

Table 4 The main themes, subthemes, and some relevant codes

Main-Themes	Subthemes	Some relevant codes
Concepts and Definitions	**Disaster**	General concepts of disaster damage and loss
		Disaster classification
	Healthcare sector	Post-disaster background and conditions
		Healthcare sector performance
		Post-disaster consequences in the healthcare sector
	Post-disaster reconstruction	Managerial dimension
		Social dimension
		Physical dimension
	Damage and loss assessment	Recovery framework prerequisites for development
		Conduct damage and loss assessment
	Healthcare sector preparedness	Local personnel training
		Pre-disaster preparedness and agreement on assessment
		Business Continuity Plan for disaster
	limitations and challenges	Data collection in limited conditions
		Lack of suitable assessment teams
	Documents, plans, regulations and guidelines in Iran	National Disaster Management Strategy Document
		National reconstruction and rehabilitation program
		National preparedness and response program
		National Disaster Risk Reduction Program
Post-Disaster Damage and Loss Assessment Procedures	**Baseline information**	Public information available
		Basic regional health information
		National and integrated disaster information system
	Post-disaster situations and performance	Post-disaster phases based on Sendai Framework
		Preparing field visits to affected areas
		Having a timeline for assessment
	Estimation of disaster effects	Post-disaster damage assessment
	Estimation of disaster impacts	Additional costs
		Increase in demand
		Public health interventions costs
	Estimation of post-disaster reconstruction requirements	Reconstruction needs estimate
		Recovery needs estimate
		Additional tips for disaster damage assessment
Healthcare sector procedures	**The recommended assessment team**	Disaster damage and loss assessment organizations
		post-disaster damage and loss assessment team: The managerial structure
	Steps for conducting an assessment in the healthcare sector	Collect baseline information on sector assets and production
		Estimate value of damage and production flow changes
		Analyse the impacts of the damages and losses
Assessments Tools, and Methods	**Damage and loss assessment data application**	Disaster forensics
		Disaster loss accounting
		Disaster loss compensation
	Damage and loss assessment tools	Geographical measurements
		Interview with stakeholders
		Reconnaissance missions
	Data Collection and processing	Information and communication
	Post-disaster damage assessment programs	Post-Disaster Needs Assessment (PDNA)
		Preliminary Damage Assessments (PDA)
		Multisectoral Initial Rapid Assessment (MIRA)
		Global rapid post-disaster Damage Estimation (GRADE)

Table 4 (continued)

Main-Themes	Subthemes	Some relevant codes
Intra-sectoral, Inter-sectoral, and cross-cutting issues	**Post-disaster Sectoral assessment**	Social sector
		Economic sectors
		Productive and Financial Sectors
		Cross-cutting Sectors
		Roles and responsibilities
		Coordination and collaboration
	healthcare sector recovery framework	Leadership and governance
		Service delivery
		Healthcare workforce
		Allocation of financial resources

economic loss to the health system caused by war-related looting or vandalism in the Tigray region of Northern Ethiopia was quantified in excess of $511 million. The assessment revealed that 80.6% of health posts, 73.6% of health centres, 80% of primary hospitals, 83.3% of general hospitals and two specialized hospitals were damaged and/or vandalized either fully or in part due to the war [35]. Therefore, a disaster recovery plan in the healthcare sector is essential for providing necessary measures and minimizing disaster consequences, And international frameworks such as Sendai play an important role in this regard and emphasize the need to develop and implement measures for disaster risk reduction and vulnerability [36, 37].

For reconstruction, a reliable post-disaster damage and loss assessment method is required. The diversity of approaches and assessment-related outputs have led to various challenges. A significant obstacle to post-disaster damage and loss assessment is access to consistent, dependable, and detailed data on the impact of disasters. Establishing guidelines for reporting post-disaster damage and loss assessments is necessary to help national and regional institutions collect information in a structured manner [38]. Accurate data on disaster damage and losses are crucial for effective risk management, including loss accounting, disaster forensics, and risk analysis [39]. Assessment information is pivotal for effective policy development, resource allocation, and disaster preparedness [40]. We can improve disaster management and link disaster management science to disaster risk reduction policymaking by using these data [38].

In the Kermanshah Earthquake Lessons Learned study conducted by Khankeh et al. (2018) in Iran, it was recommended that a standard protocol be established for the receipt of reports from disaster locations in the initial days and weeks following an earthquake. Moreover, the establishment of rapid assessment teams at the local, regional, and national levels, with specific guidelines, was considered a crucial step [41]. The composition of the assessment team depends on the sector to be assessed. Healthcare sector assessment teams from different disciplines, including public health experts, physicians, epidemiologists, architects, civil engineers, and health economists, can estimate the value of production losses [18, 31, 42].

The post-disaster damage and loss assessment methodology includes pre-disaster baseline data collection, disaster effects, impact analysis, recovery needs estimation, and strategies that recommend appropriate interventions, implementation arrangements, and policies [43]. Documentation of damage and loss assessments should begin as soon as possible after a disaster [44]. A post-disaster damage and loss assessment report is a live document that is revised as better data become available [45]. Post-disaster damage and loss assessment reports should differ according to the assessment stage and type of disaster [46].

There is the fact that all societies and countries are susceptible to disasters. The primary responsibility for disaster and emergency management is affected by local communities and countries. After a disaster, the healthcare sector faces multiple hazards, limited resources for dealing with them, and high expectations regarding their performance. Multiple stakeholders engage in post-disaster damage and loss assessments and their interventions are guided by various damage and loss assessment methods. Such variations in techniques and related assessment outputs challenge the comparability across assessments and often present conflicting images. Despite the long history of reconstruction in Iran, there are numerous challenges in assessing post-disaster damage and loss. Therefore, there is a need to develop a set of post-disaster damage and loss assessment frameworks, including methodologies and guidelines, for the healthcare sector.

Limitation
Limited scientific resources for disaster damage assessment in the healthcare sector, access to imperative content, and documentation in the country were limitations of this study. As with all scoping reviews, we did not formally evaluate the quality of the evidence, and because of

the varying nature of the studies, only a limited synthesis of results was possible.

Conclusion

In light of the pivotal role of the post-disaster healthcare sector, it is of the utmost importance to develop appropriate post-disaster damage and loss assessment programme that can be adapted to different socio-cultural contexts and varying resources. To date, there have been few studies that have discussed the entities and components of disaster damage and loss assessment programme in the healthcare sector. It was, however, determined that identifying the entities and components of the healthcare sector's post-disaster damage and loss assessment program was a necessary step for advancing the healthcare sector in Iran. This review offers a detailed examination of post-disaster damage and loss assessment programs within the healthcare sector.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12889-024-19523-5.

Supplementary Material 1

Supplementary Material 2

Author contributions
J. Miri contributed to study design, title, abstract and full-text screening, data extraction, data analysis, writing the first draft of the manuscript, and subsequent revisions of the manuscript. A.R. Raeisi contributed to study design, literature search and project management. G. Atighechian was also involved in drafting the abstract, full-text screening, data extraction and writing the manuscript at all stages. H. Seyedin contributed to the study design and drafting of the manuscript. All authors critically revised the manuscript and approved the final version for submission.

Data availability
All data generated or analysed during this study are included in this published article [and its supplementary information files].

Declarations

Ethics approval and consent to participate
This study was approved by the Research Ethics Committee of the Isfahan University of Medical Sciences, Iran (IR.MUI.NUREMA.REC.1400.171).

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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